Trauma in BC Paramedics:

The Effect of the COVID-19 Pandemic on Paramedics' Experiences of Work-related traumatic Events and Coping

by

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Ethics Statement

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Abstract

Paramedics and other first responders are believed to be a high-risk group for experiencing trauma and developing Post-Traumatic Stress Disorder (PTSD). Given the potentially compounding effect of the COVID-19 pandemic, the interpersonal isolation experienced as the result of social distancing, and the front-line nature of their jobs, whether paramedics were at increased risk for developing PTSD after a traumatic event, both during and since the pandemic was explored. The current study was a qualitative investigation into the experiences of work-related traumatic events for BC paramedics. Participants were current BC paramedics with a minimum of four years' experience, including two years during the COVID-19 pandemic [from March 2020 to December 2023]. Interviews were conducted to assess paramedics' experiences of workplace trauma during and since the COVID-19 pandemic, how they believe that their coping was impacted, and other perceived changes in their work since March 2020. A Reflexive Thematic Analysis (RTA) was conducted. Although trauma and PTSD did not increase during COVID, the COVID-19 pandemic did increase factors that put paramedics at risk for poorer outcomes from a traumatic event if they experienced personally salient critical incidents. Additionally, bureaucratic and systemic factors pertaining to the COVID-19 pandemic contributed to increased stress and frustration during and since the pandemic. However, the indications are that most paramedics are part of a strong, socially interconnected group who cope via peer support. As a result, paramedics have protective factors in place in their workspace that could be moderating risks to their mental health.

Keywords: trauma; coping; PTSD; first responders; COVID-19; reflexive thematic analysis

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Introduction

For the past 50 years, those residing in the province of British Columbia have received urgent, life-saving care provided by BC Ambulance, the ambulance service under the BC Emergency Health Service (BCEHS; Government of British Columbia, 2024). Primary care paramedics (referred to subsequently as paramedics) with BC Ambulance undergo one to three years of certification and training through the Justice Institute of British Columbia (or other private training colleges) to prepare them to assess and manage critical health events and qualify as a paramedic for the service (Justice Institute of British Columbia, 2021). As of 2024, there are 5,100 paramedics working for BC Ambulance (Government of British Columbia, 2024). Although a gender divide of BC Ambulance service providers is not publicly available, in Canada, around 64% of paramedics are male and 36% of paramedics are female, making this the first-responder profession with the highest rates of female employees in Canada (Rowland & Brydges, 2023). Paramedics in British Columbia serve a cumulative 1,300 working hours per day. These hours comprise 12-hour shifts, worked in a four days on, four days off rotation, with paramedics doing two-day shifts of 7 am – 7 pm, followed by two overnight shifts of 7 pm to 7 am (Government of British Columbia, 2024). Paramedics work in pairs, with one driving the ambulance and the other attending to patients, with these roles often reversing across shifts. On average, the BC Ambulance responds to 1,900 calls to 9-1-1 per day, responding to a range of medical events including injuries and fatalities from falls, car accidents, child births, violent crimes, suicides, overdoses, etc. In the 2023-2024 year, the BC Ambulance Service (Government of British Columbia, 2024) responded to over 560,000 emergency events. The large call volume demonstrates the critical role paramedics play in the health and safety of the province.

Trauma and Posttraumatic Stress

Traumatic events are overwhelmingly disturbing events such as disaster, violence, death, or other threats to safety, that cause the individual high levels of distress (Kleber, 2019). Stress and trauma-related disorders, such as Post-Traumatic Stress Disorder (PTSD), result from exposure to a traumatic

event through direct experience, or witnessing or hearing about the events happening to another person (APA, 2022). Following exposure to traumatic events, symptoms of PTSD and other stressor-related disorders include not only fear, but also dissociation, changes in how one perceives themselves, increased arousal or hypervigilance, and the urge to persistently avoid reminders of the trauma (APA, 2022). First recognized as a syndrome and eventually a diagnosis conferred upon American veterans returning from the Vietnam War in the late 1970s and early 1980s, PTSD became well-recognized in North America about 45 years ago. It was first added to the Diagnostic and Statistical Manual Third Edition (DSM-III) in 1980 (Turnbull, 1998). The identification of the disorder and other trauma-related and trauma-induced disorders, such as depressive, anxiety, and substance use disorders has increased exponentially since that time. The resulting aversive psychological impact of traumatic events is highly detrimental to individuals and society, due both to the high social cost of such disorders, as well as the co-occurring mental health concerns, which exacerbate pre-existing mental and medical health issues that often develop when left untreated (APA, 2022; Asnaani et al., 2014; Borja & Callahan, 2010; Donaldson, 2018; Hapke et al., 2006; O'Donnell et al., 2004; Shakespeare-Finch & Armstrong, 2009; Smith et al., 2015). While it is estimated that 50-90% of the population will experience a traumatic event in their lifetime, moderating factors are likely for most people, as only 25% of individuals who experience a traumatic event develop PTSD (Carleton et al., 2019; Perrin et al., 2014).

Risk Factors for PTSD

As not all traumatic events lead to a diagnosis of PTSD, there are likely to be specific risk and protective factors that would mediate the possibility of meeting the diagnostic criteria. In their review of the available literature, Sayed et al. (2015) determined that risk factors fell into three categories: risks prior to the traumatic event, risks during the traumatic event, and risks after the event occurred. Factors prior to the trauma, or peritraumatic factors, include age, gender, cultural background, cognitive capability, sexual orientation, and other demographic and historical factors. Specifically, Sayed et al. found that being age 49-52, having lower intelligence, and belonging to minority groups increased the

risk of developing PTSD prior to experiencing a trauma. Prior trauma exposure, family history of mental disorder, and personal history of mental disorder were also factors likely to increase the likelihood of a later diagnosis of PTSD. Sayed et al. also identified several neurobiological factors relating to both susceptibility to trauma and resilience. One such vulnerability pertained to threat-detection sensitivity in the amygdala, which plays a role in the fear response. It might then follow that those more sensitive to detecting threat may have higher susceptibility to developing PTSD.

The type of trauma and the perception of threat duration and its endpoint have been demonstrated to be related to PTSD risk (Sayed et al., 2015). The authors indicated that among different types of traumatic events, physical or sexual assault was most highly associated with a risk for PTSD. Further, among traumatic events, threat to one's life or safety was most highly associated with PTSD. As the threat ends, being able to perceive it as ending or complete was associated with a lower risk of PTSD. This implies that events that have an unidentifiable end increase diagnostic likelihood of a trauma and stressor disorder. Post-trauma factors that decrease the risk of developing PTSD include access to resources such as therapy and having good social support networks. Additionally, the person's perspective and beliefs after the traumatic events influences risk; having rigid views and beliefs following a traumatic event increases the risk of PTSD, while flexible views, that include acceptance after the events, can decrease the risk of PTSD. Having a positive view of oneself and an optimistic outlook are also protective against PTSD, while a negative view of self can increase PTSD risk. The latter outcome is most likely when the negative view of the self directly results from the traumatic experience, such as thinking that the trauma makes one "broken" or "bad." The authors also noted that the factors pre-, during, and post-traumatic event interact and compound to influence risk.

Trauma and First Responders

Other known factors that increase the risk of PTSD include high frequency of exposure to, and the unanticipated and unpredictable nature of, traumatic events (Carleton et al., 2019; Perrin et al., 2014). These risk factors are especially prevalent in the work of first responders, such as police officers,

firefighters, and paramedics (Carleton et al., 2019). Paramedics are at a heightened risk for experiencing work-related traumatic events. They usually are providing emergency care, oftentimes attending to clients with life-threatening medical events (e.g., heart attacks, strokes, overdoses) and other serious, often fatal, injuries resulting from motor vehicle accidents (MVAs), workplace accidents, interpersonal violence, or suicide putting the paramedic at high risk for repeated trauma and developing PTSD (APA, 2022; Carleton et al., 2019, Grienacher et al., 2019; Klimey et al., 2018; Lewis Schroeder et al., 2018). Paramedics often encounter unpredictable, distressing critical incidents when attending to medical emergencies. The specific nature of the emergencies is often unclear until their arrival on scene. For example, the 9-1-1 operator may only be able to convey to the paramedic that the patient was a victim of violence, but not necessarily the full extent of the patient's injuries. Oftentimes paramedics arrive at clinical situations where the revival of a patient is not possible and death ensues. Extant research suggests that these factors contribute to paramedics experiencing higher rates of PTSD compared to the general population (Carleton et al., 2019, Grienacher et al., 2019; Klimey et al., 2018; Lewis Schroeder et al., 2018).

Some research suggests that 90% of Canadian first responders have experienced work-related traumatic events, with the majority (i.e., 86%) experiencing six or more during their careers (Carleton et al., 2019). PTSD often results in impaired vocational functioning, with the degree of functional impairment positively correlated with exposure to an increased number of traumatic events on the job (Borja & Callahan, 2010; Marshall et al., 2004; O'Donnell et al., 2004). Thus, paramedics who experience several work-related traumatic events are more likely to experience difficulties at work, decreased ability to perform duties, or require time off work. According to Daflos (2021), BC paramedics are already short-staffed by 40% daily, due to medical or mental health leave. With high rates of paramedics being disabled or requiring leave from work, currently there is a reduced number of paramedics available to respond to medical emergencies throughout BC. This psychological-injury absenteeism could add to the existing stresses for working paramedics by increasing overtime shift hours

and contributing to exhaustion and burnout over time. Additionally, paramedics being on leave could delay overall response time to medical emergencies by decreasing available ambulances on the road, which could increase the risk for the general population (Daflos, 2021).

Trauma and Gender

As discussed above, sex and gender also impact whether traumatic events lead to PTSD. Although men are more likely to experience traumatic events, women are twice as likely as men to develop PTSD following exposure to trauma (Breslau, 2002; Sayed et al., 2015). The rates of trauma and PTSD also differ in transgender or gender diverse (TGD) individuals. They show higher rates of traumatic experiences, and of the associated trauma and stress-related symptoms, compared to cisgender individuals (Newcomb et al., 2019; Sayed et al., 2015). Thus, female and TGD paramedics may be at greater risk of developing PTSD compared to their cisgender male counterparts. Notably, Canadian paramedic population reports do not mention TGD paramedics (Rowland & Brydges, 2023). However, those who are TGD may not have openly identified themselves historically, leaving them unidentified on reports.

Some research suggests that the gender disparity in the development of PTSD may be due to differences in the types of traumatic events experienced. In the general population, males are more likely to report experiencing physical assault, threatened violence, or serious accidents, whereas females more often report experiencing sexual abuse or being victims of rape (Hapke et al., 2005). TGD individuals are also more likely to experience harassment, discrimination, or assault due to their gender expression than cisgender individuals, which is likely to begin in youth, and be repetitive across their lifetime, leading to an increased risk in developing PTSD (Newcomb et al., 2019; Reisner et al., 2017). Also, Newcomb et al. (2019) found that TGD individuals are less likely to have prosocial supports in place, which can further impact their response to traumatic events. Therefore, it is possible that the difference in rates of PTSD are due to the different types of traumatic events experienced. Paramedics are likely to be exposed to similar events regardless of their gender as, for them, traumatic events typically are

related to work rather than personal matters. If differential rates of PTSD are found among paramedics, it might speak to a biological and/or socio-cultural risk factor for the development of traumatic disorders based on gender and sex. To date, no literature exists differentiating the rates of trauma in male, female, or TGD paramedics.

Trauma in a Pandemic

Since the start of the COVID-19 pandemic in March 2020, paramedics and other first responders have experienced significant changes in their jobs (Jaffe et al., 2020). The addition of cleaning protocols, changes to use of personal protective equipment (PPE), and decreases in patient contact time have impacted the quality of first responder work environments (Swaminathan et al., 2022). While protocols have been implemented to reduce overall virus transmission, health workers such as nurses, doctors, and paramedics report that these protocols have caused significant communication impairments and have had a negative impact on their performance and conduct with clients (Swaminathan et al., 2022). Health workers also experienced physical symptoms such as headaches and increased fatigue, indicating an overall decrease in wellbeing resulting from the enhanced PPE protocols (Swaminathan et al., 2022).

Additionally, first responders including paramedics experienced isolation from family, friends, and other social supports due to their front-line status during the pandemic (Zolnikov & Furio, 2020, 2021). Some paramedics and other first responders also purposefully distanced themselves from their families and friends as a preventative measure given their front-line work and virus-exposure risk. However, the impact of this practice was negative, and included increased stress and anxiety, decreased social support, and other negative emotions that contribute to overall decreased health and wellbeing (Zolnikov & Furio, 2020, 2021). Although protective factors against the development of PTSD require more research, some suggest that social supports and overall lower stress are protective factors that buffer against PTSD diagnoses after traumatic events (Lee et al., 2014). If this is true, it is reasonable to

suspect that paramedics have experienced increased rates of PTSD since the start of the COVID-19 pandemic. The present study will investigate that possibility.

Coping

Coping and coping strategies are an area of research of much contention. Littleton et al. (2007) describe some of the challenges associated with research on coping. The main methodological issues they identify pertain to the confounding of contradictory measures of coping. Some studies of coping may look at processing of events and outcomes from coping as equal, while others might see reduction of distress as a strategy, regardless of the adaptive or maladaptive nature of the strategy. There is a lack of clarity in the literature on what "coping" means and distinguishing between whether coping occurs through an adaptive or maladaptive process. The authors also mentioned a lack of agreement between coping models and limited research conducted on theoretical models of coping (Littleton et al., 2007). The main model of coping strategies differentiates between approach and avoidance strategies (Littleton et al., 2007). In their meta-analysis, Littleton et al. (2007) found that approach coping skills, such as seeking emotional support, resolving the trigger to stress, or pursuing better understanding of the stressor, resulted in lower overall distress. In a study of nurses who experienced work-related traumatic events, Niiyama et al. (2009) found that avoidance strategies for coping were most common in those who actively met diagnostic criteria for PTSD. Avoidance strategies were associated with a prolonging of the trauma symptom experience. Additionally, nurses who showed remission of PTSD symptoms commonly used "change of pace" strategies such as engaging in positive and healthy behaviors, cultivating hobbies, or spending time with others (Niiyama et al. 2009). Unfortunately, due to the lockdowns of the COVID-19 pandemic, many of these "change of pace" strategies were not available to paramedics, other first responders, or the general public. Exercise centers, hobbies, and social interactions were all impacted by the lockdowns through 2020 and 2021 (Fast, 2021; Larsen, 2020). Therefore, it is likely that paramedics would have had fewer positive coping strategies available to them during the pandemic. Additionally, without positive coping strategies, paramedics may have relied on

more maladaptive strategies such as rumination, "shelving," reliving trauma through repeated discussion, or avoidance, all of which have been associated with the prolonged experience of PTSD (Niiyama et al. 2009).

The Current Study

To date, limited research has focused on the experience of trauma among paramedics, and extant research on BC paramedics has focused on the opioid crisis exclusively (Williams-Yeun et al., 2019). Since the start of the pandemic, paramedics have experienced increased call frequency, responded to increasingly challenging crises, and faced greater risk on calls (Jaffe et al., 2020; Zolnikov & Furio 2020, 2021). It was expected that paramedics would have experienced an increased frequency of work-related traumatic events and were at higher risk of PTSD than in previous, pre-pandemic years. With the addition of cleaning and PPE protocols, it was also expected that during the pandemic, paramedics were under additional strain and time constraints, experienced greater frustration due to pandemic protocols, and were subject to both decreased quality of interactions with patients and a greater frequency of negative interactions. Additionally, with the social isolation experienced by many paramedics in their personal lives, many paramedics were likely lacking their typical social support networks and did not have access to their usual adaptive coping strategies due to lockdowns. As a result, paramedics may have lost these key protective factors buffering the development of PTSD during the pandemic.

It was expected that male, female, and TGD paramedics would have had similar work experiences within the context of COVID-19 and, specifically, would have had similar rates of work-related traumatic events during this time. If the experience of trauma among male, female, or TGD paramedics differed markedly, or during the COVID-19 pandemic specifically, this difference could be due to biological and/or sociocultural differences in gender. Thus, in this project, I investigated five primary questions. Due to the limited extant research, an exploratory qualitative investigation was conducted to address the following questions:

1. How has the COVID-19 pandemic impacted the experience of work-related traumatic events in BC paramedics?
2. How have interactions between paramedics and patients been impacted by COVID-19?
3. Have paramedics experienced a change in rates of PTSD resulting from work-related traumatic events?
4. How have paramedic coping strategies been impacted by the COVID-19 pandemic?
5. Are rates of work-related traumatic events, diagnoses of PTSD, use of coping strategies, or absenteeism due to traumatic incidents, different between female, male and TGD paramedics?

Methods

Participants

All participants were active paramedics in BC, recruited through several methods: online advertisements, from clinicians in the community who treat paramedics, and paramedics who had previously participated in ongoing lab research and consented to be recontacted. Interested participants were screened for meeting the following criteria:

1. Actively working as a BC primary care paramedic (PCP) with four years recent work experience, two of which have occurred within the COVID-19 pandemic (March 2020 – December 2023).
2. Work during the COVID-19 pandemic was performed within the Greater Vancouver, Tri-Cities, or Vancouver Island area.

A total of seven paramedics consented to participating. One completed the prescreening survey, but never followed up to complete an interview. Consequently, their data were not included. In total, six current BC paramedics completed the study. The average age of participants was 33.17 years (minimum: 25 years, range: 17 years). Two respondents identified as male, and the remaining 4 identified as female. All participants identified as either white (N=4) or Asian (N=2), and all indicated being in long-term committed relationships; either being married (N=4) or engaged to be married (N=2). All participants

had been primary care paramedics for a minimum of 6 years, with an average service duration of 8.75 years, including one participant who had been a paramedic for 20 years.

Materials

Pre-Screening Questionnaire

The pre-screening questionnaire included two instruments: the Lifetime Events Checklist for DSM-5 Extended Version (LEC-5 Extended) (Weathers et. al., 2013) and the Ways of Coping (revised 1988 version) (WCCL) (Folkman & Lazarus, 1988). The LEC-5 Extended is a self-report questionnaire that assesses exposure and response to 16 types of traumatic events (Weathers et. al., 2013). The original version of the LEC-5 established good convergent validity and test-retest reliability in a sample of combat veterans (Gray et al., 2004). Additionally, the original version was praised for including specifiers for how a traumatic event was experienced (i.e., "witnessed," "directly experienced," or "learned about it") (Gray et al., 2004). The LEC-5 Extended was chosen for its inclusion of the rating "part of my job," as this context is relevant for the experience of paramedics. The Ways of Coping (revised) is a 66-item checklist that provides descriptions of thoughts or actions individuals may have in response to traumatic or distressing events (Folkman, 2013). Respondents answered on a 4-point Likert scale (from 0-3), on whether they would use a specific strategy in response to an event (Folkman, 2013; Folkman, et al., 1986). The Ways of Coping (revised) was chosen for its inclusion of a variety of both approach and avoidance strategies, as well as strategies that could have been limited in access by the COVID-19 pandemic.

Qualitative Interview

The interview was designed with a semi-structured, open-ended format (see Appendix A). The interview aimed to address each research question, directing conversation to ensure each question was addressed. However, given the open-ended nature, responses were not redirected if discussion drifted off topic. In concordance with RTA methodology, prompts were added to subsequent interviews

considering comments made in previous interviews to assist in determining similarities and differences among paramedics' experiences.

SCID-5 Module G

In addition to the qualitative interview, all participants responded to the Structured Clinical Interview for DSM-5 (SCID-5) (First et al., 2015) Module G for Posttraumatic Stress Disorder, as it has good reliability and validity in the diagnosis of trauma and stressor disorders (First et al., 2015). The traumatic event chosen as most relevant or significant by the participant determined the diagnostic criteria used.

Procedures

Prior to meeting, participants were sent a link to the pre-screening survey. Interviews all occurred via Zoom, an online video conferencing site (Zoom Video Communications Inc., 2016) and with consent to be recorded for later transcription. Audio recordings were saved on an online Canadian cloud server through its partnership with Simon Fraser University (Information Systems at SFU, 2022). At the start of the interview, participants were asked demographic questions, including age, ethnicity, religious affiliations, and gender to allow for consideration of moderating variables. All interview questions were asked in an open-ended discussion format. During the interview, reference was made to responses on the LEC-5 (Extended) to allow for elaboration on events and the impact they had on participants. This elaboration was used to fill in the screener for the trauma module of the SCID-5 and to lead into the diagnostic assessment. Discussion was lastly directed to responses to the Ways of Coping (revised), to determine how coping was impacted by the COVID-19 pandemic.

Reflexive Thematic Analysis

This project used a reflexive thematic analysis (RTA) methodology as described by Braun and Clarke (2006, 2019, 2020, 2022). Thematic analysis is a qualitative method for identifying and understanding themes and experience (Braun & Clarke, 2006, 2022). This methodology highlights the reflexivity of the researcher concerning awareness of their role, assumptions, power, and values with

respect to how these individual, social, and cultural features may impact the conduct of the research and analyses of findings (Braun & Clark, 2019, 2022). In this method, researcher subjectivity is both acknowledged and valued as a tool for interpretation (Braun & Clark, 2019, 2022). RTA was chosen for its flexible approach, as it would allow themes to be informed by the dataset as well as interpreted within the frameworks and knowledge furnished by existing literature on trauma in first responders.

As there is an inescapably subjective aspect to RTA manifested by the researcher's role in collecting and interpretating participants' responses, it is important to acknowledge the preconceptions and potential biases held prior to conducting the research. First, the primary author is not a paramedic or first responder, and therefore does not have personal experience on which to draw in interpreting and analyzing participants' responses. Instead, assumptions about the experiences of paramedics are derived from research, anecdotes from clinicians experienced in treating first responders, and friends who are current first responders. Second, based on the extant literature about paramedics and first responders, which indicates a high risk for PTSD among first responders, the assumption was made that paramedics would likely have experienced a traumatic event and/or meet diagnostic criteria for PTSD. Additionally, as a student of clinical psychology, where training is given in diagnosing and classifying disorders and distress, it was assumed that there would be events of a traumatic nature that would cause diagnosable distress in participants. All of these factors need to be considered for their potential influence on the primary research questions, the qualitative interviews, and the interpretations of results.

Analytic Process

Prior to analyses, interview recordings were transcribed with Microsoft dictation software. For accuracy, transcripts were then reviewed manually by the researcher and corrected. Manual review of the transcripts is aligned with RTA as part of data-familiarization (Braun & Clarke 2022). Subsequently, transcripts were subjected to a systematic and in-depth review, and codes were assigned. Codes were assigned to all segments of the data with relevance to the research questions and used to discern and convey the meaning of responses (Braun & Clark, 2022). Codes were summary phrases that reflected

the experiences reported by participants. All codes were then grouped into meaningful clusters. Clusters were then used to help create the themes of the dataset. Themes were then reviewed for relevance to the research questions, condensed, and refined (Braun & Clark, 2022). Sub-themes were also identified.

Results

A total of five hours and 15 minutes of interview data were collected from the six participants. While it is customary in qualitative research to include brief biographies of participants, they are not included here, to protect the confidentiality of participants. No TGD paramedics participated in this study and, therefore, no analyses could be performed on that group. As well, due to low recruitment of males, meaningful comparison between men and women could not be made. Instead, the impact of work-related trauma on women will be discussed.

Through reflexive thematic analysis, five key themes were identified: 1) despite experiencing a high frequency of traumatic events, few events are considered traumatic by paramedics (When Not Much Fazes You); 2) the COVID-19 pandemic increased stress and burnout, but was not considered traumatic by paramedics (COVID Wasn't Traumatic, But…); 3) bureaucratic factors were a key cause of stress and burnout for paramedics during the pandemic (Problems with "The Man"); 4) paramedics have an interconnected coping network through their peers that may be a unique protective factor compared to the general population (I Get By With a Little Help From My Friends); and 5) sex differences could not be determined in this sample (The Role of Sex). The clusters that were identified and from which themes were established are displayed visually in a Theme Map (see Appendix B).

Theme 1: When Not Much Fazes You

The first theme related to the relatively low rate of PTSD resulting from traumatic events experienced by paramedics. Participants all reported a significant history of traumatic events. Participants reported an average of 13 types of traumatic events on the LEC-5 (minimum = 9, range = 7) and having experienced most of these traumatic events within the context of their job. However, not all events that are traumatic according to clinical definitions will be experienced as traumatizing; this

appears to hold true for paramedics. During interviews, participants were asked how many of the events reported on the LEC-5 they had experienced and felt traumatized by them. On average, only five events in a paramedic's experience were characterized (by the paramedics) as traumatic. Thus, there is a paradox here. Given that the LEC-5 identifies "traumatic" events, and although paramedics experience a high rate of them, paramedics do not consider those events to be "traumatizing" to them.

Respondents showed low susceptibility to trauma and stressor-related disorders resulting from the medical emergencies encountered on a daily basis with many of them normalizing the events that they experience.

> "Like, deaths and whatever, that was just part of the job. I would say a lot of it's just like, you know, it's just part of the job… it didn't affect me at least, just because again I mean if you kind of let every call affected you you're just not going to last long this service." – R01
>
> "It's part of the job." – R02

This low susceptibility to trauma is demonstrated by the rates of PTSD diagnoses made within the sample. As a result of the diagnostic interviews completed, only two of the six respondents met criteria for PTSD resulting from a work-related traumatic event (lifetime PTSD N = 2; past-month PTSD N = 0). Of note, one of these diagnoses was the result of events during the COVID-19 pandemic. While most respondents did not qualify for a diagnosis of PTSD, all participants met a minimum of 2 PTSD symptoms according to the SCID-5 interview, showing that the events were still emotionally distressing.

> "It was just the only call like I've ever done in my entire career that like has like stuck with me for more than like a few days and like bothered me… the thing that like made it like stick in my head was more so like what happened actually after the call while we were still on scene….I had

> this feeling that for some reason they're going to slow down and they're going to start shooting. – R06

Based on the discussions of the most salient distressing event encountered on the job, three categories of traumatic events specific to paramedics were defined: events that led to fear for their own or their partner's safety; witnessing medical emergencies that were specifically relevant to their own life or experiences; and events where paramedics had to act against their own values, which is often identified as "moral injury."

Protecting Yourself and The Ones You Love

Two participants reported traumatic events where they feared for their own and/or their partners' safety. While neither participant met a diagnosis of PTSD, both expressed distress immediately following and enduring after the call, with one respondent requiring a leave of absence from work following this call. One respondent described an incident where an individual they were treating had a weapon and was threatening their partner with it. The paramedic went on to express how overwhelmed they felt after the call:

> "I guess I when you didn't have a proper way of managing situations you kind of just - you just put it back in your mind and continue on through the day… and it was only after shift after my partner left, and one of the one of the other paramedics came in like "Yea I heard what happened last night, like you OK?" and then it was just like… I guess then I just kinda broke down, and I don't know why but I just start crying." – R01

These types of events were identified as uncommon by both respondents, who experienced them. As paramedics often attend to medical emergencies, the traumas they frequently witness are their patients suffering from illnesses, severe injuries, or death. While they may experience fear that they will lose a patient when treating them for a severe injury or illness, the paramedics themselves are not

immediately in danger in these situations. As previously discussed, individuals are more susceptible to experiencing PTSD after a traumatic event, when the event itself is unexpected in some way (Carleton et al., 2019; Perrin et al., 2014). For paramedics, because medical emergencies are their norm, such crises are expected and, therefore, may be less likely to cause PTSD. However, when paramedics or their partners are threatened, this may be unexpected, and therefore could violate their expectations on the job, which was the case mentioned by one respondent.

As traumatic events that are perceived as unexpected, can increase risk for PTSD, the unexpected nature of the paramedic being endangered may be a factor for increased susceptibility to emotional distress or developing a trauma disorder.

> "I think what specifically did it with that call is that I wasn't expecting it. Like, I thought it was just the normal cardiac arrest, and then it was kind of like a surprise at the end versus if I came into it knowing that this is a gang member's house and whatnot, like I think I would have been more okay." – R06

"It Matters to Me"

Paramedics face a wide variety of medical emergencies. Participants endorsed attending to medical emergencies ranging from fatal car accidents, elderly people having fallen, patients with flu-like symptoms, overdoses, heart attacks, strokes, and many other medical matters. Many events were seen by participants as being easy to emotionally distance from or cope with.

> "Not everything hits as close, like I went to a guy who was beat up, hit in the head with an axe and spray paint in the face and like those are fairly significant assault, but it didn't click on a personal level for me, so it doesn't really bother me." – R03

> "Deaths and whatever, that was just part of the job. Like, a lot of it didn't really - I would say a lot of it's just like you know, it's just part of the job … it didn't affect me." – R01

However, one respondent reported attending an event that was particularly salient for her and led to her experiencing symptoms of PTSD.

> "Worst call I've been in in my entire career was a cardiac arrest of a young child, that one has that with me for a very long time, and it's better now but it's still there… when we got there we realized it was pretty much futile, but we attempted resuscitation anyways. Being on scene for almost an hour attempting to work the little body, and then having the mother falling apart … that was hard, that lived with me for a long time." – R03

The following respondent was a mother, with a young child at the time, when she attended a cardiac arrest of a child of similar age to her own. She described it as being personally salient and thus, causing her great distress.

> "I know for myself when I have serious pediatric calls I usually often need time after that. Since I became a parent [these calls] particularly hit really close to home." – R03

This example indicates that while paramedics may be highly resilient against traumatization from dire and disturbing medical emergencies, those events most relevant to them personally may put them at higher risk for PTSD.

"I Wish I Could Help You"

At the beginning of each interview, participants were asked why they enjoyed being a paramedic. Some of the responses included:

> "Ultimately like being able to make a difference in someone like direct difference in someone's life and death situation." – R01

> "Most rewarding? probably see people get better. When we actually have to deliver anything, any medical treatments and they actually get better from a treatment that's pretty awesome – R02

> "Making the event a little bit easier for the patient, whether you know I'm able to help them sort something out, whether I'm able to do an intervention that helps them feel better, whether I can just console family when there's nothing to be done for the patient, just trying to make it better." – R03

> "Actually seeing a difference on the ground in terms of helping people and making people's days better when they're kind of down." – R04

Overall, a majority of responses indicated that paramedics most enjoyed feeling like they helped people in their job. This would imply that helping others is a key value for most paramedics. However, throughout the interviews, participants described changes to their role because of the COVID-19 pandemic that limited their ability to provide help. Some of these changes included not providing any medications that require aerosolizing and limiting the equipment initially available to a patient until an in-person assessment determined the required equipment for treatment. One participant mentioned the following changes and their impact:

> "like we weren't even giving oxygen to patients. Even though they might have desperately needed it, [management] were like 'no, you can't do it'… Basically everything changed, we had to rethink everything… I felt… It felt bad. It felt hard. 'Cause I mean the whole reason we're there is to help and to be like 'I know what I can do to make you feel better,' but I'm not allowed to do it. So, it's a whole lot of what they call moral injury." – R03

Witnessing or participating in the withholding of something considered morally right or, alternatively, providing something considered morally wrong to a person is considered an event of moral injury (Litz et al., 2022). Because most paramedics value helping others and are in paramedicine because they are motivated to help others, being in a situation where they could not provide adequate

care to patients made paramedics feel as though they were violating their own personal values. Several paramedics indicated that their actions resulted in moral injury from having to withhold treatments or interventions, as they believed such conduct went against their core beliefs of right and wrong. One participant stated the following:

> "Some of the ones that really hurt were making sure my patients said goodbye. Saying 'I don't think you're going to see your family again. You need to say goodbye before we leave the house.' Things like - I held a man outside the hospital 'cause they wouldn't let him go see his wife dying in ICU. Stuff like that, just nothing you can do about it were morally just so tough." – R05

In addition to some of these events being described as traumatic, systemic problems such as equipment shortages, hospitals being overcrowded, or paramedics restricted from providing a necessary level of care despite training, were cited as causes of distress and reducing paramedics' wellbeing, which ties into Theme 2 discussed below.

Theme 2: COVID Wasn't Traumatic, But….

Regarding the first and third research questions of this study, the COVID-19 pandemic did not appear to increase rates of traumatic events or diagnoses of PTSD in paramedics. Results from SCID-5 diagnostic interviews suggest that rates of traumatic events are consistent both prior to, and during the COVID-19 pandemic. Additionally, participants reported that events were not experienced as more traumatic under the restrictive conditions of the pandemic. However, participants did report that COVID increased their stress levels and feelings of burnout. As one participant described:

> "During the actual pandemic, that fatigue, like it was just so much physical and mental work… there were constantly just changes and just keeping on top of that, and then actually like physically doing all the cleaning and … it was just very tiring." – R06

One area of distress for paramedics was about the risk of them bringing the virus home to their families. Several participants mentioned experiencing fear early on about the nature and contagion of the virus, and how risky it would be to their family members. One participant also mentioned how this fear impacted a simple decision, such as whether to bring a packed lunch from home, due to fears of the virus lingering on her lunch bag that would then come back into her home. This fear not only increased distress, but also negatively impacted access to food and water throughout shifts. Other concerns were raised about public perceptions of paramedics as being transmitters or carriers of the COVID-19 virus and clients distancing from and avoiding paramedics. While not a traumatic event, there was increased distress around cleanliness and the spread of illness for participants.

> "Especially in the beginning of COVID, because again we didn't know what it was, so we all scared to bring it home as well, so it was really stressful at first…" – R02

> "… just being hyper aware of everything. Like, even something as simple as trying to like get dinner. I used to bring along meals from home because it's very regular, you don't know where you're going to be, what you're going to have access to. But to it's like I don't really want to carry much stuff in and out of my house so I'm not going to bring lunch bag, I'm going to try and like grab food easily at work and that way I can dispose of stuff. But then most of the restaurants were shut down, so it's like we can't even have access to food and water, and then if we even if we do like find gas stations, like alright we will find whatever is edible. You still [worry] like you know, how many people have touched this, how much do I have to wash my hands before I feel comfortable, and then having people being uncomfortable with [paramedics] being in the store because like you know seeing us as vectors of contamination." – R03

> "Really worrying about bringing something home to your family. So, I remember like making sure none of my clothes came home unless they're in a plastic bag and they went straight into the

> wash, and hot cycle. Like, the fear was huge 'cause we just had so much uncertainty… my practice really changed overnight to being very fearful, really trying to protect us and then protect our patients" – R05

Additionally, procedures introduced as a consequence of the COVID-19 pandemic were described as physically and mentally exhausting. These protocols entailed: the introduction of PPE, including gowns, gloves, masks, and respirators; increased cleaning of the ambulance such that all surfaces were disinfected after each call, rather than just the surfaces touched or soiled; venting of the ambulance for 20-30 mins after carrying patients; and restriction on some medical procedures with the goal of reducing aerosolizing and virus spread. Further, these procedures were subject to change continuously throughout the pandemic, as their PPE, cleaning protocols, and permitted medical practices evolved. Some participants reported getting new instructions most weeks, while others said the changes came every day. This ongoing uncertainty concerning requirements was seen as distressing generally across health care workers, and as a reason to leave the profession.

> "COVID took a toll on some people and a lot of people left after or during they just decided that they don't want to be in healthcare anymore - and that's for nurses and doctors as well, it's all healthcare. It really broke some people and in addition to COVID there was a few other things going on like the heat wave and opioid crisis meltdown that broke a lot of people, and people left." – R02

> "[COVID had] probably pretty big effect on my emotions. I know there's days I would come home, and I was furious, there were days I would come home, and I'd be so sad. And a lot of time you come home and you're just numb, you know like I just, I just need to turn everything off and go somewhere not think for a while." – R03

> "Those first I want to say six months we changed our protocols every day. That was so hard - I yeah, that was wild, never knowing when you came into work what you were doing. Whether what you had done the day before was putting your family at risk or another patient at risk, that was that was incredibly tough." – R05

Protective but Personally Exhausting

As previously stated, increased PPE became required during the pandemic for paramedics. While prior to COVID-19, paramedics may have worn gloves during medical procedures, and masks when facing certain respiratory calls, the majority indicated there was no need for extensive PPE during calls prior to the pandemic.

> "So, we would have to wear a lot more protective equipment during the pandemic - especially at first because no one knew what it was. So, we wore pretty much everything we have for every single call, which made it much more difficult to communicate with people and to figure what's going on." – R02

Paramedics reported that several elements of PPE clothing and gear impacted their ability to communicate. Especially initially when they were wearing respirators, participants said that it was difficult for patients to understand what they were saying. Even later on when they continued to wear just masks, the covering of their mouth made it harder for patients to understand them. This impediment caused frustration both for paramedics and their patients. It took longer for patients to understand what paramedics were saying and gathering necessary information about medical conditions or precipitating events was more difficult.

> "They couldn't hear us pronounce stuff because we were using the big respirators." -R02

> "Every time you put another barrier on it's something more between you and your patient. And the patients definitely feel that, like especially the older patients. They're always saying, 'take

that mask off I can't see you I can't understand you' and you're trying to explain to them like this is for your safety and mine, I have to wear this." – R03

"Depending on the area that we worked in, facial expressions and amounts of also lip reading was actually a huge thing because of language barriers and such. So, having a mask on or having a respirator on that muffled our voices was quite challenging, especially when we needed pertinent information and such." – R04

It's Getting Hot in Here

In addition to causing frustration with communication, participants described another significant impact of PPE: overheating while on duty. As one participant reported:

"And dealing with that I guess into the next year into the summertime… 'cause at that point it was still full PPE for everything, and it was really hot. People had to wear you know, the N95, the face shield and the gown, the gloves… and during this time there's a still the opioid crisis, any overdose you had to gown up, whatever, face shield, N95, the works really, so anytime you have to ventilate a patient you have to gear up, and so that added on another kind of complexity to calls…. and then it became really hot throughout the summer there was very little guidance to address that, that the fact that we're all like in PPE and it's just like a sweat… like by the time like you took off everything you were just like it was like you were in a steam room the whole time… you were just covered in sweat." – R01

Not only was the PPE uncomfortable, but the excessive perspiration may have contributed to dehydration. While PPE was considered necessary for public health reasons, it did contribute to an on-the-job hazard for paramedics, especially during the summer heat, but notably during the "heat-dome," when temperatures reached 35-40°C.

> "And [PPE] made us really really hot, because of everything we have to wear, so that was a struggle…" – R02

> "I would say that was highly stressful and is also physically demanding, because I mean it started in March when it's OK but as soon as start to warm up we're basically living wrapped in multiple layers of plastic sweating ourselves to death but covered in masks so we can't rehydrate ourselves. And sometimes you were stuck like that for hours, and then if you're doing heavy exertion - like doing a resuscitation, I mean like literally we were pouring out of our outfits when we were finally degowning." – R03

Can't Work with You Like This

Not only was PPE seen as physically exhausting, but participants also indicated that many patients or their families were resistant to paramedics wearing masks when they attended a call. The pandemic protocol usually required paramedics asking patients and their families to wear masks and communicating that this was mandatory due to current public health guidelines. One paramedic described the responses that they received from patients:

> "There was a lot of frustration from people who didn't believe COVID was real as well. And we have to wear masks, and they didn't want us to wear masks, and we made them wear masks and they didn't like that, so that was an issue." – R02

> "When we were still liking that high acute phase where we were gowning for everybody, masking for everybody, you had people who were quite violent or angry with it you know. They would see you in all this gear and then they would tell you how COVID isn't real … they had some very big strong feelings about it."– R05

With regard to the second research question of this study, it can be surmised that the main impact of the COVID-19 pandemic on patient and paramedic interactions appeared to be the increased frustration and hindered communication caused by PPE. Participants reported patients and families being more hostile and upset with paramedics during the pandemic, as compared to prior to it, when they were more likely to be seen as a positive figure.

> "There's always this moment to when you walk into a house and people just kinda likes sigh like they're so excited they are so happy that you're here like it's this huge relief. That's pretty rewarding… and [during COVID] they [patients or families] would come and bang on your window while you're getting ready, or you're getting dressed right? 'Why aren't you running into my house to save…' whatever is going on, right? There was a lot of that…" – R05

"You're Late"

Another impact of PPE mentioned by participants, was the time-consuming nature of wearing the equipment, changing PPE, as well as cleaning oneself and the ambulance between calls. As discussed, participants would spend 20-30 minutes between calls venting their ambulances, which delayed their ability to respond to calls. When they did arrive at a caller's locale, paramedics had to spend the first several minutes donning their PPE, during which several reported having patients' families come out and express their frustration that they were not rushing in to assess the patient and address the emergency situation. According to one participant, the delayed response time was most impactful during the heat dome of 2020. They reported that during this time, the rate of heat exhaustion calls was so high that paramedics were largely operating as "transport vehicles to the morgue." In part, due to the time spent cleaning, one participant stated that they were unable to respond to the volume of calls, or to prevent many people from dying.

> "Working through that heat dome that hit Vancouver pretty hard, there was a sense of guilt. Essentially, why are we failing to respond to as many calls as possible and stuff like that. And for that specific time period it was actually pretty hard mentally, seeing how long let's say code 3

> calls are holding - which are the lights and sirens calls. And then having to respond 12 hours later - to something that was coded as the lights and sirens called - the next morning and then seeing someone that might have already passed away and stuff like that." – R04

This delay in services due to PPE was also felt in the reduction of equipment brought into calls. As a means to reduce the time taken for cleaning after a call, management introduced the initiative to reduce the amount of equipment taken to the patient. According to respondents, this resulted in paramedics needing at times to go back and forth between the ambulance and the home or apartment of their patient to grab additional equipment. Others recounted feeling unprepared to provide medical care. While this method prevented unnecessary cleaning of equipment between calls, it also was described as delaying efficiency for paramedics, and slowing down their jobs.

> "At first we also had to not bring any equipment in unless it's absolutely necessary. Usually, we carry some stuff in, so we have it, and we were told to not bring anything other than that just minimal things we need… it was very very draining on resources on us in general." – R02

Theme 3: Problems with "The Man"

> "I don't think most of our management - even in education - knows what the heck we do. Like, the policies that's come out, memos and policies come out … like you were scratching your heads, like are these people like up on cloud nine?" – R01

Across all interviews, bureaucratic factors within BC Ambulance service were associated with causing increased stress for paramedics. The factors that participants identified included the constant changes to protocols, "micromanagement" of new rules and policies, and poor triaging decisions. Overall, paramedics appear to feel unsupported by management. Some participants also stated feeling abandoned by management when the initial work-from-home orders were given, as they could not see management working while they were on the front line.

> "I will say the management style changed. You went from you know, actually supporting us to 'supporting' us, you know what I mean? It's just like you know, they just had managers basically sitting at hospitals like, like 'oh why aren't you wearing…' 'cause a lot of people what they had done was take off their uniform shirt and they have like an undershirt underneath and [managers] were like "oh why don't you have uniform on" and it's just like you're like drenched in sweat… so I guess people just burnt out in that aspect." – R01
>
> "The biggest impact [of the pandemic]? Maybe that things can change really really fast; I mean the amount of times that things changed on us in one day is -is -is crazy! Because literally no one knew was going to happen, so you start work Monday and they say, 'this is a protocol we're following' and then the end of the day we're following something else. So, you just have to adjust, and you have to realize that this is just the world we live in, things are going to change really really fast, and you just have to deal with it. That definitely was a big impact there." – R02

Participants reported feeling as though the imposition of new rules was constant, obeying rules was policed by managers, and having participants opinions regarding rules and practices ignored. One participant attributed several paramedics leaving the force to frustration with these conditions:

> "I do enjoy my job, I do enjoy the patient care aspect of my job, but when it comes to working within the service like all problems…. it's very demoralizing to know that a lot of my colleagues have left like, more than half of the people I know have left or are on the way out." – R01

> "… those first I want to say six months we changed our protocols every day." – R05

It's The System

Participants expressed frustration with the "system" which dictates how paramedics operate. Specific concerns identified include the inefficient system for the triaging of calls, an inefficient use of resources, and a lack of available resources; overall these concerns were said to result in a reduced

capacity to provide care. Although BC Ambulance does triage calls, several participants raised concern with how effectively this is done. As skilled professionals in an already understaffed field, paramedics are a limited resource, and each call uses valuable resources. In the absence of appropriate triaging techniques when screening and coding calls, those resources were often mismanaged.

> "Probably one of the biggest [challenges with the system] is that when we get called for things that were not needed, and we - I mean I don't like to say wasting time, because we do get paid for it - but it feels like a waste of time when someone else could be using the services." – R02

When asked what changes they would make to the conduct of their jobs, several paramedics said that they would address these problems by reallocating funds within the healthcare system and changing its triaging model to improve conditions for paramedics and the outcomes for their patients.

> "I mean the biggest thing we need is adequate resources, and anyone in healthcare will tell you that we just need more we need more and more and more. We'll never get enough because it's expensive and we just don't have the money to invest, but it's the only way." – R03

> "[I would change] the healthcare system in general, because again we are small team out of the large moving machine that is our healthcare system. And if let's say the emergency department gets backed up because hospitals are backed up due to the lack of staff, lack of beds, then we get backed up and stuck holding patients in the back hallway. Which then impacts the population negatively. So, it would more so be the government actually putting more money into the health care system, or seeing politicians advocate more for the health care system just to bolster it and to acquire the staff necessary." – R04

Set Up for Failure

Another frustration conveyed by participants is the nature and relative lack of support and training for new paramedics. Several participants described a lowering of standards of training, as a way to expediate putting more paramedics on the road and in ambulances.

> "I think there's needs to be better support for new paramedics come into this field. 'Cause like I said, they're almost set up to fail. Come into this career and not having - and especially it's both ways is like new people coming in and a lot of I guess more experienced members leaving - and so a lot of times a brand new person will be working with another brand new person, and that's when you get like you know, [paramedics] not knowing what you need to know, or you're supposed to know and you don't have that guidance and that's when bad things happen right." – R01

While this lack of support and training was indicated to increase the number of paramedics on the road, it was also seen as being an additional stressor for paramedics:

> "I feel like I need to kind of be, I know we don't have like mentors, but you know be a source of information to the more junior people and be like you know 'if you encounter this, here's some ideas for how to deal with it' and making sure they have these experiences." – R03

By placing undertrained paramedics in ambulances, qualified paramedics were compelled to oversee the work of junior partners and colleagues adding further work pressures.

In addition, one paramedic highlighted the lack of psychological pre-screening in paramedicine.

> "There is no psychological exam to get into BC ambulance, which is absolutely terrifying…" – R05

Unlike police departments, which have a psychological assessment for all applicants to determine whether the applicant is fit to become a police officer (Wagner, nd.), one paramedic indicated

that applicants are just asked to discuss “something terrible” that they have experienced and how they coped with it. Although this specific practice could not be confirmed by this author, BC Ambulance’s hiring process does not indicate that any psychological screening takes place for new recruits (BC Emergency Health Services, 2024). If such is the case for BC Ambulance’s recruitment process, the absence of psychological screening could be considered insufficient for assessing the psychological resilience required for the traumatic nature of paramedicine. Additionally, the participant who expressed concern, specified that applicants asked this question may not be equipped to cope with the question, or the resulting psychological distress from recalling traumatic events.

It's Not Enough

When asked about changes in the policies and procedures associated with their job that they would like to see, paramedics indicated that adequate compensation was a key concern. Several participants referred to their recent renegotiated contract at the time of interviews, stating that although gains had been made, they still felt undervalued as first responders compared to other groups, such as police and firefighters.

> “I mean we can always get paid better if that's a that's one thing we can go for I mean we just did get a raise and we got a new contract, but I mean it's still not enough…” – R02

Specific reference was made to increasing mental health supports. While most participants reported increased awareness of mental health needs, especially during the pandemic, they also asserted that this was not represented in their medical benefits. One participant summed up the frustrations as the following:

> “We only get $1000 to use on an outside service for mental health which is way below the other industries.” – R05

From their responses, it appears that paramedics feel under-supported psychologically, and undervalued. It was mentioned that only specialized trauma therapists could help paramedics cope with trauma, given the details surrounding their traumatic events are often overwhelming for most clinicians. Without adequate benefits to pay for appropriate therapy, paramedics may delay seeking psychological treatment after a traumatic event, increasing their risk of burnout and psychological distress.

Theme 4: I Get by With a Little Help from My Friends

A notable pattern across respondents was the way in which paramedics spoke on behalf of their colleagues as a group. While difficult to capture in quotes, all paramedics interviewed spoke in the plural or used the term "we" in response to questions directed at them as an individual. This stylistic habit was interpreted as testament to an interconnectedness felt among paramedics.

We're All in This Together

Respondents named their colleagues as vital to their coping. Venting, debriefing, knowing that the people around you understand the nature of one's work and vocational experience, were all listed by respondents as factors that helped paramedics process difficult calls and potentially traumatic events.

> "talking to coworkers is easier because they've been through this before at some point, so we just share with each other." – R02

Additionally, venting to colleagues and peers was expressed to help reduce negative feelings, and preventing them from building up inside.

> "being able to vent is very important this job and to not be able to vent … you get bottled up…" – R01

> "I have a few really good friends in this line of work where we just call each other, whenever we have that kind of stuff, and or we text and say I need to talk and then we just call each other. And sometimes I do it when I'm driving home from the station, or I do that later in the day - just

> depends on what time of day it is - but we just make sure we talk it out. And so, we give each other advice if needed, or it's really just listening and venting for whatever happened that day, and it just helps to get it all out and in the open and done." – R02

Whether discussing their emotional reactions or expressing frustrations about events in a day, all participants disclosed that having another paramedic to talk to was helpful after emotionally difficult calls. The formal peer-support call system that is in place for paramedics is seen as an important vehicle for providing and obtaining this support. According to respondents, paramedics have the opportunity to volunteer as a peer support person. After certain types of calls, a peer automatically will call the paramedic to debrief and see if they need anything. Partners or colleagues can also refer paramedics for a check-in call if they are concerned about the effect of the call on their colleague. Participants also indicated that a long-term partner on the force helped them process tough calls.

> "I have a good partner at work, so we would take care of each other we you know … and we're able to debrief and vent when we need to, to each other knowing that like you know there's no judgement between us two, so if we have a really good partner, that helps a lot." – R01

Participants unanimously divulged that their peers had a significant and positive impact on their wellbeing. This connectedness between peers may serve as a protective factor against PTSD after traumatic events.

They're Trying to Come Between Us

Paramedics expressed concern that management undermined their sense of collegial community. The interconnection of paramedics is understood to have a positive impact on their mental health and functioning. However, participants indicated several ways that they perceived management to have undermined their sense of connection with other paramedics during the COVID-19 pandemic. First, policy changes to shift schedules led to paramedics seeing each other less at the dispatch and their

station. In accordance with social distancing policy, rather than starting and ending shifts at the same time, respondents said they worked shifts on staggered start and end times. This schedule led to fewer paramedics in the station and fewer opportunities to connect with colleagues. Respondents indicated that this absence detracted from the sense of community that makes paramedics feel more connected with their colleagues and capable in their job. One participant reported management's directive as being to social distance from all colleagues except for those necessary to share space with, such as partners. While consistent with public health guidelines at the time, this directive was in excess of the six feet of distance BC public health recommended. As a result, paramedics rarely encountered those colleagues that they did not share an ambulance with which, in turn, led to feelings of detachment and isolation among respondents.

Some of these changes were said to have occurred over several years prior to, as well as during, the pandemic. Over time, policies within BC Ambulance have reduced contact between paramedics, decreasing sense of community within the force. Participants indicated that these changes demonstrate how management does not consider paramedics' needs. One participant summarized the changes as follows:

> "I lament in general that for the last 10 years BC ambulance has been kind of breaking down our community. Something as simple as like, when I first worked, we voiced everything on the radio, so pretty much when you're working you had a mental map and you know everyone's voice - you knew who was working, what car they were in, where they were in the city, and what kind of call they were on. So, we all kind of felt we were keeping tabs on each other… a real sense of community. And at the beginning or the end of shifts, we all changed shift at the same time, so you have like you've got three ambulances in the station - so that's six people going off shift and the six people coming on - so there's twelve of us having a quick scrum together and like discussing things, so that really builds the relationships. BC ambulance has taken us off radio so now it's just beeps and clicks. We hardly ever hear voices, so you don't know who's working, you

> don't know where they are. And then they changed to a staggered start times so you're just seeing the people you're changing car over to, you're not seeing the whole group. And then call volume went through the roof so literally you weren't seeing anyone because you were like in and out, in and out, in and out… It felt like it was an organized breakdown of community and then COVID really just compounded that, 'cause they're literally like you're not allowed to talk to each other you know or see each other." – R03

Regarding the fourth research question, access to peers was impacted negatively by the pandemic, which could have restricted a significant coping factor. However, many paramedics admitted to finding ways to access their peers despite the restrictions detailed, thus protecting a main coping strategy. Peer support is therefore considered protective against PTSD within paramedics.

Theme 5: The Role of Sex

There were only two male participants, but four female participants. Approximately 30% of paramedics are female, meaning that the gender ratio in this study is not representative of the population. Therefore, meaningful comparison between male and female respondents is untenable. Two of the female participants met the diagnostic criteria for PTSD resulting from a work-related traumatic event during their careers; one of these events occurred during the COVID-19 pandemic and resulted in the participant being psychologically disabled from work. However, further conclusions cannot meaningfully be drawn.

Discussion

The main finding of this study is that in this sample of six, paramedics have relatively low rates of PTSD despite significant histories of exposure to what are considered to be traumatic events. Given that the extant literature suggests those with an increased number of traumatic experiences are at higher risk for PTSD, one expectation of the researcher was that more participants would meet diagnostic criteria for PTSD. Only two of the six respondents met criteria for PTSD within their lifetime, despite an

average of five subjectively traumatic experiences and 12 or more traumatic events reported on the LEC-5. This outcome holds true for events both during and prior to the COVID-19 pandemic. Paramedics therefore appear to be highly resilient to trauma.

One of the negative impacts of PTSD on psychosocial functioning is not being able to go to work. Conversely, high resilience is likely to be protecting paramedics from requiring leaves of absence, and therefore insuring public's access to ambulance services. As the expected results of this research were not confirmed, the conclusion being drawn is that further research is needed around paramedic resilience and protective factors.

While not diagnostically significant, all participants met the at least two of the six criteria needed for a PTSD diagnosis, showing that distress resulted from these calls nonetheless. Two participants also took a leave of absence from work during the pandemic due to distress or PTSD. Therefore, although the present student of paramedics did not find that they experience increased rates of PTSD during or subsequent to the pandemic, they did experience increased emotional distress associated with traumatic exposure. One possible explanation for their relative protection against further distress, is the interconnected social and collegial support of paramedics. Paramedics appear to cope through their peers; the shared understanding between paramedics appears to normalize feelings after upsetting calls and help paramedics feel as though they are not alone in these experiences. One symptom cluster of PTSD pertains to negative alterations in cognition which often present as self-perceptions of being a bad person or blaming oneself after experiencing a traumatic event (American Psychiatric Association, 2022). By engaging in open, non-judgmental dialogue about the calls undertaken and their feelings around it, peer-to-peer support might be protective against this specific symptom cluster. Further research into the role of peers in paramedic resilience is warranted to better understand the specific functions of this support.

A second main finding of this research was how impactful COVID-19 protocols and changes were on the emotional states of paramedics. The uncertainty around the virus, changes in cleaning

practices, shortages of gear, and the exhaustion resulting from wearing PPE all were said to increase emotional distress in paramedics. Further frustration around management and how it reacted to the pandemic appears to have also increased emotional distress. Although emotional distress is not synonymous with trauma, being in a heightened state of distress can increase threat detection in the brain (Blekić et al., 2021). As increased threat detection can be a risk factor for PTSD, it is possible that the experiences of the COVID-19 pandemic may have made some paramedics more susceptible to future PTSD reactions. This could help explain why some participants required leaves of absence from work due to traumatic events, as well as the more broadly seen shortages of paramedics due to mental health leave within the province.

Implications

While small in scale, this study provides some understanding of the experiences of BC paramedics during the COVID-19 pandemic. Through interviewing paramedics, key supports such as better mental health benefits, connection with peers, and better communication about policies around public health were identified as factors that could help reduce burnout and improve coping with work-related traumatic events. Better understanding of these niche needs of B.C. paramedics would lead to an improvement in social, therapeutic, and workplace supports offered by BC Ambulance, as well as by practitioners who serve paramedics in general. Not only is this beneficial knowledge for helping paramedics, but the health and wellbeing of paramedics is especially critical in the current context. First responders have been key supports during the pandemic and continue to provide care to the community. Providing them with the services to address trauma-related symptoms could alleviate the current shortage in paramedics across the province, by helping many of those who are on leave feel capable of returning to work.

Better understanding of the supports paramedics need could also prevent paramedics from requiring long absences due to prolonged disability, further alleviating the ongoing shortages in BC and reducing need for the under-experienced paramedics currently being rushed through training.

Additionally, this research may have broad impact on the development of services for all first responders, which is crucial not only during a pandemic, but also for preventing long-term negative consequences of PTSD.

A key finding of this research is identifying the types of events most likely to be perceived as traumatic and impactful by paramedics. Knowing that events of moral injury, threat to personal safety, and personal significance are some of the more distressing events for paramedics can help BC Ambulance better direct resources at paramedics after these calls. The extant literature suggests that earlier access to resources following a traumatic event is protective against development of PTSD (Sayed et al., 2015). By identifying earlier which events may have been traumatic, services and supports can be provided earlier to paramedics, reducing the risk of developing PTSD, of requiring a leave from work, and of experiencing the long-term impacts of PTSD. By protecting paramedics, society benefits by having more paramedics on the road to respond to medical emergencies and save lives.

This study also proposes several actionable takeaways for BC Ambulance. First, the peer-to-peer support system in place in BC Ambulance is considered by participants to be a protective factor against trauma. One outcome from the present research could be to direct BC Ambulance initiatives in the service. Providing further training to peers, increasing compensation for those who act as peers, and increasing the number of support calls made to paramedics could all further protect paramedics against trauma and stressor disorders. Paramedics expressed concern speaking to therapists as the paramedics' own experiences might be beyond the therapists' tolerance or treatment skills and capability. Speaking to peers with training as well as their own shared experiences of work-related traumatic events might be a preferable choice in seeking support. Additionally, as paramedics expressed a lack of financial support for their mental health, investing financially to expand this peer-to-peer service might be a cost-efficient and highly effective way to support paramedics.

One other actionable area for BC Ambulance to consider is to involve senior or experienced paramedics at the management level. Paramedics in this study expressed the concern that management

did not seem to understand their needs. They shared how bureaucratic decisions appear to be made without consideration for what it was like to be on the front line. Having senior and highly experienced paramedics, possibly near the end of their career, more involved in management decisions could help bridge this gap. By showing that they are willing to include paramedics' perspectives in decision making, BC Ambulance management could highlight paramedics' importance within the force. Additionally, including senior paramedics in BC Ambulance at a decision-making level could help management communicate to paramedics in a way that shows more consideration for paramedic needs, and reduce the frustration experienced by paramedics that may be contributing to burnout and stress.

Lastly, this study will contribute to the growing body of literature on the impacts of COVID-19, specifically on first responders. Although the pandemic has evolved since March 2020, and society has adapted to a "new normal," the long-term impact of the fear, stress, and regulation on all lives is still to be understood. Paramedics, like many first responders and health workers, have been at the forefront of the pandemic since it began, helping to keep our society healthy and safe. We do not yet know the long-term implications of working on the front line of a pandemic. However, this study shines light on the emotional distress caused by the pandemic. By highlighting this negative outcome, we may be able to allocate more resources to address challenges from the pandemic, design interventions to decrease stress and debrief about the pandemic, and hopefully prevent further COVID-related burnout in our first responders.

Limitations

There are limitations of this study which should be discussed. First, given the small sample for this qualitative investigation, the results are difficult to generalize. BC paramedics working primarily in major cities could be considered a niche group. Results may be difficult to generalize around BC or to other cities, as Lower Mainland and Vancouver Island paramedics have increased rates of opioid calls due to the concentration of homeless populations in those cities (Williams-Yeun et al., 2019). As such, further research in this area should include a larger sample with participants who work both in rural

areas as well as major city centers. This way, a better understanding can be found of how these experiences might vary.

Another limitation is the retrospective nature of the study. The interviews relied on participants reflecting on how they think they were prior to COVID-19. There is a possibility of errors of memory, selective bias, or fabrication, as interviews occurred three to three-and-one-half years after the start of the pandemic. Memory is constructive by nature and subject to bias and errors in recall (Schacter, 2012). Several respondents focused their reflection on the first year of the pandemic, during which there was the most confusion as protocols were being developed and PPE supply was limited. Paramedic participants might have been biased in their recall of events based on further information received later in time. Additionally, the majority of traumatic memories discussed were several years ago at the time of the interview, so memory about the impactful nature of events or symptoms experienced may be inaccurate. This mnemonic slippage could mean interpretation of how distressing these events were could be over- or under-emphasized.

Due to the interview design of the study, there are some additional limitations that should be considered. First, the open-ended nature of interviews led to conversations that did not directly address the primary research questions. Although allowing participants to guide the direction of the interviews is aligned with the RTA approach employed (Braun & Clarke, 2022), this orientation resulted in interviews straying off-topic at times. However, the data gathered still proved informative about paramedic experiences during the pandemic.

Additionally, gathering data beyond the initial research questions provided further insight into areas of paramedic experiences not initially considered in the research design and which further permitted an expanded view of how COVID-19 impacted paramedics, while identifying additional vulnerabilities to trauma. Another limitation of using interviews is the risk of social desirability bias. Social desirability bias is the tendency for respondents to minimize traits or responses that appear unpopular, or for respondents to answer researchers' questions in a way which places them in a more

favorable light (Nederhof, 1985). It is possible that respondents were unwilling to speak poorly of patients or their experiences with them, or to minimize their feelings, as they may not have wanted to appear as uncaring. However, participants did disclose some of their frustrations with patients during the interviews and, even if these experiences were minimized, participants still provided insights into their frustrations and experiences.

A further limitation of this study is the lack of control or random sampling used in recruitment. The sample itself was small, with only six participants. At the time of this research, there were over 5000 paramedics working for BC Ambulance (Government of British Columbia, 2024). British Columbia is a diverse province, and the experiences of six paramedics working in major cities may not accurately represent the experiences of those throughout the province. Further research with a larger sample of paramedics, from a more varied representation of communities would help us to better understand the experiences of this population.

The sample was also predominantly female, despite a significant proportion of all first responders being male. Not only were gender comparisons not possible due to this skew, but the results in general may be biased to more accurately represent one group compared to the other. Participants also were all in long-term relationships, and may have a different experience from single paramedics, as increased social support is a known protective factor against PTSD. Additionally, participants were self-selecting, which may have led to a selection bias.

The current study advertised that interviews would be focused on traumatic events. Participants who experienced more traumatic events may have self-selected to discuss their traumatic experiences while those who had fewer experiences may not have felt suited to the study. Conversely, as trauma may be hard to discuss for some, there is a risk that those who were not willing to discuss their experiences did not elect to participate. Of those who did meet the diagnosis of PTSD, both disclosed having participated in therapy following the events leading to their diagnosis. It could be that those paramedics who have experienced traumatic events but did not receive subsequent therapy may have also not been

willing to discuss their experiences. As well, given that the study was advertised to current paramedics, those who have left the force due to a traumatic event likely would have not been recruited. Therefore, the current study may misrepresent the types of events that traumatize paramedics, as well as the rate at which paramedics develop PTSD from work-related traumatic events. Therefore, caution must be taken in interpreting how COVID may have impacted rates of traumatic events and PTSD, as the sample may not be representative of all BC paramedics.

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Appendix A

Interview Script

Thank for you taking part in this interview. Before we begin, I just want to give you a brief idea of how this interview will go. I'm interested in understanding your experience, so there are no right or wrong answers. Many of the questions I will be asking you today will be open answer, and my goal is to let you share your experience. If I feel like I don't understand, or need more information to better understand your experience, I may ask you to elaborate further. I also may ask you to speak to some of the answers you gave in the survey you completed before today.

Do you have any questions?

Great, to start, I'm going to ask you some basic **Demographic Questions**.

1. How old are you?
2. How would you describe your gender or gender identity?
3. How would you describe your ethnicity?
4. How would you describe your religion or spirituality?
5. What is your relationship status?
6. What is your family or household makeup?

Background:

7. What is your job title?
8. What municipalities do you serve?
9. How long have you been working here? (if different roles, clarify how long they have been in current paramedic role in BC)
10. What are your job responsibilities?
11. What do you find most rewarding about being a paramedic?
12. What do you find most challenging about being a paramedic?

COVID-19:

13. The COVID-19 pandemic was declared on March 11th, 2020. From that time, how has your working environment changed? [eg. PPE, scheduling, working hours]

14. Have you noticed changes in your interactions with patients since March 11th, 2020?

15. Have you experienced changes in whom you work with since March 11th, 2020? [prompt: has your regular shift partner changed? Or: have you had a change in the quality of your interactions with coworkers].

16. Do you think that these changes to your [eg. work environment, interactions, or with your coworkers] have impacted you:

    Emotionally?
    Socially?
    Physically?
    Psychologically?

Trauma pre-COVID

17. You had filled out a couple of survey questions about traumatic experiences. In particular, you mentioned [insert specific events] that occurred [insert date – pre-COVID-19].
    When was this?
    What happened?
    Who was involved?
    Where did this happen?
    (if multiple events, discuss the events individually, and then ask if any one/ certain ones have been perceived as most impactful)

18. And do you feel this/these events[s] affected you:
    Emotionally?
    Socially?
    Physically?
    Psychologically?

Trauma in COVID-19:

19. Now thinking about the events since COVID-19, you mentioned [insert specific events] that occurred [insert date – since COVID-19].
    When was this?
    What happened?
    Who was involved?
    Where did this happen?

(if multiple events, discuss the events individually, and then ask if any one/ certain ones have been perceived as most impactful)

20. And do you feel this/these events[s] affected you:
    Emotionally?
    Socially?
    Physically?
    Psychologically?

Transition into SCID-V Trauma Module Here

21. Given your responses to the survey you completed, it sounds like you've experience ___ number of events you feel were traumatic. Does that feel accurate?

- Do you feel the frequency of traumatic events you experience at work has changed since the start of the COVID-19 pandemic in March of 2020?
- [bring up actual numerical comparison, and if non-congruent with perception, ask them why it feels this way]

Coping:

22. Before today, you also filled out a questionnaire on coping strategies. Some of the strategies you mentioned using were [list 3 examples]. Is that correct? Do you have main strategies you use when you feel stressed or overwhelmed? [if yes] What would they be?

    Thinking about [most impactful pre-COVID event], what coping strategies did you use after this event, to help you take care of your mental health?

    And thinking about [COVID event], what coping strategies did you use then?

    Were there strategies you would have wanted to use, but that weren't available to you during the COVID-19 pandemic?

Closing:

23. What would you say has been the biggest impact of the COVID-19 pandemic for you?

24. Is there anything you feel like you wanted to talk about today, that I didn't ask you about?

25. Was there anything you would like to see happen within your field of work, to support you or other paramedics?
    (e.g.

Appendix B

Theme Map