Beyond the frontline: Exploring indirect trauma and organisational stress in emergency communication centre employees

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Emergency communication centre employees are indirectly exposed to potentially psychologically traumatic events (PPTEs), yet research on their mental health is limited. This national census survey (73.4% response rate, n=58) examines symptoms of Major Depressive Disorder (PHQ-9), Generalised Anxiety Disorder (GAD-7), and PTSD (SPRINT) among Fire and Emergency New Zealand personnel. It also explores PPTE exposure, organisational stressors, employee experiences, and coping mechanisms (AUDIT-C, emotional numbing scale) using mixed methods. Results show 64% screened positive for at least one mental disorder, with high rates of emotional numbing (31%) and hazardous alcohol use (51%). Qualitative analysis, including interviews and open-text survey responses, highlights stressors such as inadequate staffing, excessive workload, and lack of support. As the first dedicated study on this group in New Zealand, findings highlight the urgent need for targeted interventions.

Key words: *Emergency responders. Communication centre, Dispatchers, Trauma exposure, Mental health, Psychological wellbeing*

INTRODUCTION

Emergency responders frequently suffer from elevated rates of mental disorders compared to the general population, including depressive- and anxiety-related disorders, and posttraumatic stress disorder (PTSD) (Berger et al., 2012; Beyond Blue Ltd., 2018; Carleton et al., 2018; Jones, 2017; Kyron et al., 2021; Stanley et al., 2015). This elevated prevalence of mental ill health is associated with their frequent direct exposure to potentially psychologically traumatic events (PPTEs) (Bryant & Harvey, 1996; Geronazzo-Alman et al., 2017; Harvey et al., 2016). There is a growing understanding that regular encounters with death and serious injuries can result in posttraumatic stress, which increases the odds of developing a psychological injury. While increasing attention has been given to the mental health of frontline responders, such as firefighters and police officers, emergency communication centre employees - who act as the critical link between the public and emergency responders - have been relatively overlooked (Galbraith et al., 2021; Willis et al., 2020; Załuski & Makara-Studzińska, 2022). However, these workers face unique risks from indirect trauma and organisational stressors, raising questions about how repeated exposure to PPTEs via emergency calls and workplace demands shape their mental health, and how these patterns may reveal overlooked vulnerabilities in occupational health psychology (OHP).

Emergency communication centre employees handle emergency calls, dispatch resources, and provide instructions under highly stressful conditions. Between mid-2022 and mid-2023, New Zealand Fire and Emergency call centres handled nearly 98,000 emergency calls (Fire and Emergency New Zealand, 2023). The communication centre role requires rapid, high-stakes decisions that directly impact both distressed individuals and the emergency personnel responding to the crisis (Kindermann et al., 2020; Lentz et al., 2021; Smith et al., 2019). Unlike their frontline counterparts, communication centre employees face intense emotional situations remotely, where language barriers, limited information, and lack of control over outcomes can contribute to distress (Adams et al., 2015; Galbraith et al., 2021; Giaume et al., 2024; Lentz et al., 2021; Makara-Studzińska et al., 2021; Pierce & Lilly, 2012; Załuski & Makara-Studzińska, 2022). They also frequently face occupational challenges such as shift work, sedentary work, long hours, poorly organised breaks, working alone, high noise levels, and inadequate organisational support (Galbraith et al., 2021; Makara-Studzińska et al., 2021; Willis et al., 2020).

Communication centre employees are exposed to PPTEs indirectly, through distressing phone calls and dispatch logs (Adams et al., 2015; Giaume et al., 2024; Kindermann et al., 2020). This indirect exposure places them at risk of developing secondary traumatic stress (STS) (American Psychiatric Association, 2013; Giaume et al., 2024; Kindermann et al., 2020; May & Wisco, 2016). Similar to other trauma-exposed professionals, such as mental health workers and refugee interpreters, emergency communication employees can experience PTSD symptoms despite not being physically present at the PPTE (Kindermann et al., 2020; May & Wisco, 2016). High call volumes, resource limitations, and ethical dilemmas can also lead to moral distress, where employees are unable to act according to their ethical

beliefs due to external constraints (Čartolovni et al., 2021; Lentz et al., 2021; Willis et al., 2020). In severe cases this can escalate into moral injury—a deeper, more enduring emotional wound associated with actions or inactions that violate one's moral code (Čartolovni et al., 2021; Lentz et al., 2021), complicating PTSD outcomes, which can contribute to increased suicide risk (Joannou et al., 2017). The Job Demands-Resources (JD-R) model frames these factors as high demands with insufficient resources like staffing or support (Bakker & Demerouti, 2007) a lens seldom applied to call takers and dispatchers.

Despite these challenges, the mental health risks faced by emergency communication centre employees have been largely overlooked in both research and policy. A small number of studies have examined the mental health challenges faced by police and medical dispatchers, or initial call takers who forward calls to the appropriate emergency service, often finding high levels of mental health disorders (Carleton et al., 2018; Galbraith et al., 2021; Giaume et al., 2024; Kindermann et al., 2020; Makara-Studzińska et al., 2021; Schneider et al., 2020). In a Canadian sample, emergency call centre operators and dispatchers were found to have even higher rates of positive screens for mental disorders than operational firefighters (Carleton et al., 2018). While direct or indirect exposure to PPTEs may be unavoidable, organisational factors such as perceived organisational support, control, and work environment, may play a central role in moderating the risk of PTSD and other mental health outcomes in emergency service personnel (Back et al., 2023; Drew & Williamson, 2024). As such, while continued investigation into the relationship between exposure to PPTEs and mental disorders is essential, and trauma-focused interventions should remain a priority, there is great potential to reduce distress and improve mental health by addressing organisational factors (Drew & Williamson, 2024). This is particularly important given that organisation -wide interventions have been shown to be more effective than those targeted at the individual level (Galbraith et al., 2021; McCreary, 2022). Enhancing support systems, improving working conditions, and ensuring better preparedness are key strategies that could mitigate the psychological burden on these employees and help prevent mental ill health while promoting wellbeing.

This mixed-methods analysis aims to advance understanding of the mental health risks among emergency communication centre staff in New Zealand by documenting the prevalence of mental disorders and exposure to PPTEs as well as exploring employee experiences alongside commander perspectives. By focusing on this understudied group, we contribute to OHP by quantifying the toll of indirect trauma and pinpointing organisational levers—like staffing and support—that could buffer its effects across trauma-exposed professions. This research will also provide a critical baseline assessment for the Whanaungatanga Program, a mental ill-health prevention program initially designed for New Zealand firefighters (Campbell, 2024; Mackay, 2024), and guide future interventions to enhance perceived support, strengthen workplace relationships, and improve mental health through targeted organisational improvements.

METHOD

Participants

Fire and Emergency New Zealand (Fire and Emergency NZ), established under the Fire and Emergency New Zealand Act 2017, is a national organisation responsible for a range of emergency prevention and response services across urban and rural communities. This includes response to fires in the built and natural environments, but additionally, hazardous substance incidents, transport accidents, urban search and rescue operations, and responding to medical emergencies, maritime incidents, severe weather events, and natural disasters. Fire and Emergency NZ employs approximately 3,000 paid staff in both operational and non-operational roles, supported by around 11,800 volunteers (Fire and Emergency New Zealand, 2023). While the broader Whanaungatanga Program includes all paid personnel (Mackay, 2023), this study specifically focuses on communication centre employees.

A census survey was administered to all paid personnel of Fire and Emergency NZ, encompassing both operational and non-operational staff. Among them, 79 operational communication centre employees were invited to participate. This sample represents all three Fire and Emergency New Zealand communication centres, making it a national-level study of this workforce. Results for other operational personnel, including active-duty firefighters and commanders, are reported elsewhere (Mackay et al., 2025).

A total of 58 communication centre employees responded to the survey, yielding a 73.4% response rate. The gender distribution was predominantly male (55.2%), with 43.1% identifying as female and 1.7% as another gender. In line with Statistics New Zealand standards, gender was treated as a flat classification with three categories. 1 Male / Tāne 2 Female / Wahine 3 Another gender / He ira kē anō (Stats NZ, 2021). The age distribution ranged from 20 to over 60 years, with the largest proportion (31%) in the 20–29 age group. On average, participants worked 52.79 hours per week (SD = 9.67), and the average length of service at Fire and Emergency NZ was 11.43 years (SD = 9.55).

Materials

Mental wellbeing and trauma exposure: The survey was developed collaboratively by the primary researchers, a technical advisory group from Fire and Emergency NZ, and external experts in organisational psychology and emergency responder research (see acknowledgements). It employed validated self-report measures to assess various mental disorders and wellbeing indicators, with full details available in Mackay et al. (2025).

The survey included a bespoke measure for psychological trauma exposure, based on the DSM-5 definition of potentially traumatic events (American Psychiatric Association, 2013). PPTEs were defined as events with direct, indirect, or witnessed exposure to actual or threatened death or serious injury. Participants reported whether they had been exposed to PPTEs since joining the organisation and estimated the number of PPTE exposures in the past month (0 to ≥20) and over the previous 12 months (0 to ≥50).

Mental health outcomes were measured using well established and validated scales: symptoms of Major Depressive Disorder with the Patient Health Questionnaire (PHQ-9), symptoms of Generalised Anxiety Disorder with the Generalised Anxiety Disorder Scale (GAD-7), and symptoms of PTSD with the Short Post-Traumatic Stress Disorder Rating Interview (SPRINT). Wellbeing was assessed through selected items from the Satisfaction with Life Scale, while maladaptive coping mechanisms were measured with the Emotional Reactivity and Numbing Scale, and the AUDIT-C for hazardous drinking patterns. Sociodemographic and occupational details were also collected to ensure the comparability of results with broader population norms. For more comprehensive information on the survey's design, development, and validation, please refer to MacKay et al. (2025).

Employee experiences and Commander perspective: The survey included an open-text response option, allowing participants to provide additional information to supplement Likert-scale survey questions on mental disorders, wellbeing and organisational climate. This allowed participants to freely express their thoughts and feelings regarding their roles, mental health struggles, and the organisational support they received, therefore providing valuable qualitative insights into the lived experiences of communication centre employees.

Procedure

A census survey of all employed staff using online self-report was conducted via the Qualtrics platform between 7 March and 30 March 2023. The study was approved by the Auckland University of Technology Ethics Committee (AUTEC 22/320), and all participants provided electronic consent prior to taking part. In March 2023, Fire and Emergency NZ distributed invitations to participate to all paid employees, which included a detailed participant information sheet. To encourage higher response rates, two reminder emails were sent to eligible participants throughout the survey period, with additional targeted reminders sent to those who began but did not finish the survey within five days.

In April 2024, semi-structured interviews were conducted with group, district and regional managers, also known as commanders, within Fire and Emergency NZ, along with two representatives from the New Zealand Professional Firefighters Union (NZPFU). The interviews aimed to assess the level of awareness among commanders and union representatives regarding the roles of communication centre employees and the mental health challenges identified in the 2023 survey. Each interview lasted approximately 60 minutes and allowed participants to freely discuss relevant topics while also focusing on specific mental health issues raised in the survey.

Interview participants were invited via email, with a follow-up reminder sent after 10 days to those who had not responded.

The study received ethical approval from the AUT Ethics Committee (reference number: 22/362).

Analytic Strategy

Statistical Analysis: Fifty-eight responses from communication centre employees were included in the analysis. Prevalence estimates for symptoms of mental disorders (including Major Depressive Disorder [PHQ-9 ≥ 10], Generalised Anxiety Disorder [GAD-7 ≥ 10], and PTSD [SPRINT ≥ 17]), well-being (high life and job satisfaction [both ≥ 6.0 on a 7-point scale]), and maladaptive coping mechanisms (such as emotional numbing [≥ 6.0 on a 7-point scale] and hazardous alcohol use [AUDIT-C ≥ 3 for females, ≥ 4 for males]) were calculated with 95% confidence intervals. Due to the small sample size, statistical analyses such as logistic regression could not be performed to explore the relationships between PPTE exposure and mental health, well-being, or maladaptive coping mechanisms. Instead, two-tailed Pearson's correlation coefficients (alpha = 0.05) were calculated to explore associations between PPTE exposure and mental disorders. All data processing and statistical analyses were performed in IBM SPSS Statistics for Windows (Version 27.0. Armonk, NY: IBM Corp).

Open text survey responses: Thematic analysis was employed to identify key themes and recurring concepts from the open-text responses provided by communication centre employees. An inductive approach was taken, whereby responses were read multiple times to ensure a thorough understanding before categorising them into themes and sub-themes. The analysis primarily focused on prominent themes related to employee roles, mental health challenges, and organisational support.

Additionally, a sentiment analysis was conducted to classify the open-text responses as positive, negative, neutral, or contextual/other. In cases where participants provided multiple comments within a single response, these were segmented and categorised individually. The proportion of positive, negative, neutral, and contextual responses was then calculated to provide insight into the overall sentiment expressed by communication centre employees. Quotations were lightly edited to enhance readability and ensure participant anonymity.

Interviews: Interview transcripts were analysed using a deductive approach, focusing on themes related to commanders' awareness of communication centre employees' roles and mental health challenges. Additional sub-themes were identified when common issues emerged across multiple interviews.

RESULTS

Mental Health and Well-being

As displayed in Table 1, 64% of participants screened positive for symptoms of at least one mental disorder (Major Depressive Disorder, Generalised Anxiety Disorder, or PTSD). More than half of participants (53%) met the criteria for symptoms of Major Depressive Disorder (PHQ-9 ≥ 10), and 43% screened positive for symptoms of Generalised Anxiety Disorder (GAD-7 ≥ 10). Additionally, 31% of survey respondents screened for probable PTSD (SPRINT ≥ 17). Potentially hazardous alcohol use (AUDIT-C ≥ 3 for females, ≥ 4 for males) was prevalent in 51% of the sample, and 31% of employees exhibited high levels of emotional numbing. Life satisfaction and job satisfaction were notably low in 19% and 40% of the sample, respectively.

Exposure to PPTEs

The majority of employees reported high exposure to PPTEs, with 75% experiencing more than 5 PPTEs in the

Table 1. Prevalence of mental disorders and well-being indicators, including symptoms of Major Depressive Disorder, symptoms of Generalised Anxiety Disorder, probable PTSD, potentially hazardous alcohol use, emotional numbing, life satisfaction, and job satisfaction. Results are expressed as percentages with 95% confidence intervals. Prevalence is also shown for uniformed firefighters as a comparison group.

Measure	Percentage of sample (n)	LCL	UCL	Percentage of firefighters
Any positive screen[a]	64 (35)	50	75	30
Major Depressive Disorder[b]	53 (31)	41	66	24
Generalised Anxiety Disorder[c]	43 (25)	31	56	13
Probable PTSD[d]	31 (17)	20	44	13
Potentially hazardous Drinking[e]	51 (28)	38	64	68
High Emotional Numbing[f]	31 (6)	20	44	9
High Life Satisfaction[g]	19 (11)	11	30	32
High Job Satisfaction[h]	40 (23)	28	53	45

Notes: a) Positive screen for symptoms of Major Depressive Disorder and/or Generalised Anxiety Disorder, and/or PTSD, b) PHQ-9 score ≥10, c) GAD-7 score ≥10, d) SPRINT score ≥17, e) AUDIT-C score females ≥ 3 and males ≥ 4, f) Emotional numbing ≥6, g) Life satisfaction ≥6, and h) Job satisfaction ≥6.

previous month (Figure 1a) and 82% experiencing more than 20 PPTEs in the past year (Figure 1b). Since the median number of events in the last month (Median = 20) and the last 12 months (Median = 50) reached the highest bracket available in the survey, these numbers represent a conservative estimate of exposure. Reflecting this, 51% of employees reported 20 or more exposures in the last month, and 62% reported 50 or more exposures in the last 12 months.

Trauma Exposure and Mental Health

Symptoms of Major Depressive Disorder, Generalised Anxiety Disorder, and PPTSD showed a medium, positive correlation (r = .30 to .44) with PPTE exposure in the last month and year (Table 2). Notably, neither potentially hazardous alcohol use nor emotional numbing were associated with PPTE exposure, however emotional numbing showed a large, positive correlation with symptoms of Major Depressive Disorder, Generalised Anxiety Disorder, and PTSD (r = .52 to .64).

Employee experiences

Open text responses: Open-text responses shed light on the challenges faced by communication centre employees, particularly concerning indirect trauma exposure and organisational stress. In sentiment analysis, the majority (61%) of comments were negative, while only 14% were positive. The remainder were either neutral or mixed sentiment (5%), or were contextual comments (21%).

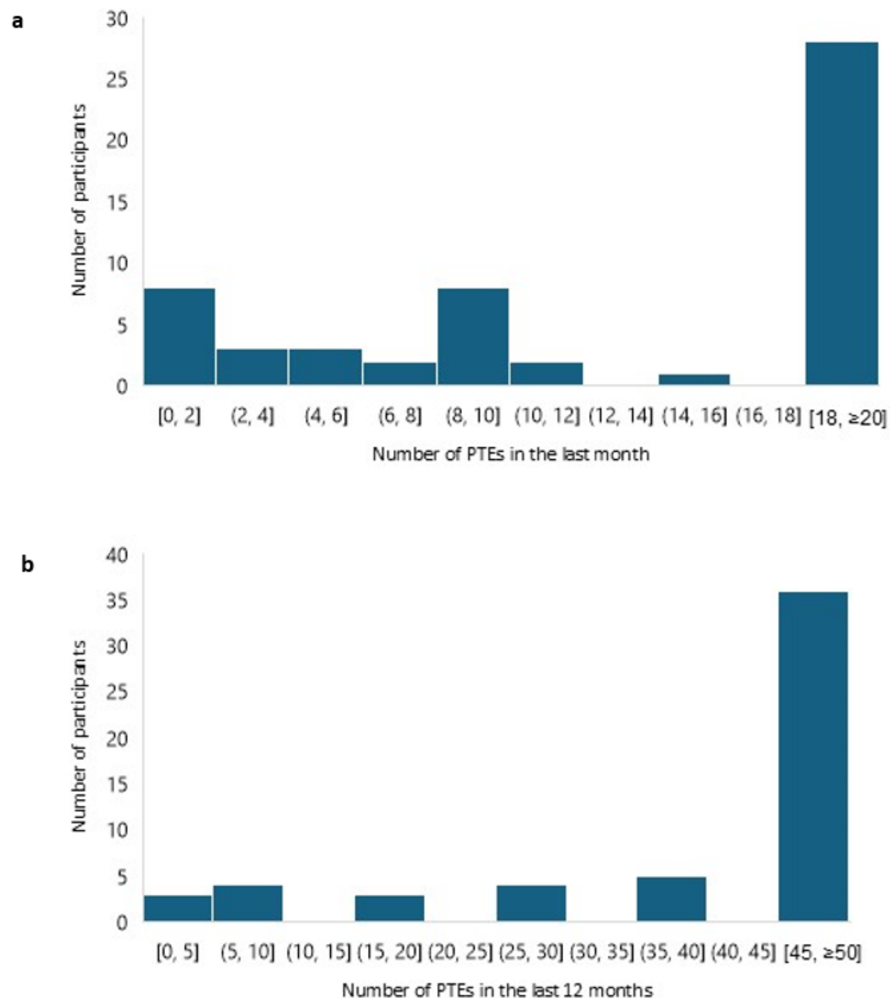
Key themes include the psychological impact of PPTE exposure, organisational stressors, and the positive role of workplace camaraderie. Employees reported indirect exposure to PPTEs, including situations where callers lost their lives during the call. These experiences were noted as having a lasting psychological impact, with employees citing difficulties such as trouble sleeping, anxiety, and nightmares. The intensity of this exposure and its impact

Table 2. Pearson correlation coefficients between symptoms of mental disorders (Major Depressive Disorder, Generalised Anxiety Disorder, PTSD, emotional numbing, potentially hazardous alcohol use) and PPTE exposure (last month, last year).

	Generalised Anxiety Disorder	PTSD	Emotional numbing	Alcohol use	Last month approximate exposure to PPTE	Last 12 months approximate exposure to PPTE
Major Depressive Disorder	0.85**	0.75**	0.57**	0.14	0.33*	0.30*
Generalised Anxiety Disorder	-	0.77**	0.52**	0.21	0.44**	0.31*
PTSD		-	0.64**	0.10	0.35**	0.30*
Emotional numbing			-	0.16	0.16	0.14
Alcohol use				-	0.09	-0.05

Notes: N's 55 to 58. Statistically significant correlations (two tailed) are indicated in bold text, * indicates p<0.05, ** indicates p<0.01. Major Depressive Disorder score, range 0-27 (9 items; α = .88), Generalised Anxiety Disorder score, range 0-21 (7 items; α = .91), PTSD (Post-Traumatic Stress Disorder) score, range 0-32 (8 items; α = .91), Emotional numbing average score (5 items; α = .93), Alcohol use score, range 0-12

Figure 1. Number of participants reporting potentially traumatic events (PPTEs) experienced (a) in the last month and (b) in the last 12 months, grouped by frequency intervals.



are highlighted in Table 3. In addition, employees reported considerable distress arising from organisational challenges, including inadequate staffing, lack of support, and a sense of being undervalued within the organisation. Employees described how these issues led to excessive overtime, disrupted work-life balance, and a heightened sense of professional isolation. Such organisational stressors were seen as exacerbating the already demanding nature of their roles.

Despite the various stressors, some employees highlighted the importance of positive relationships with their colleagues. Workplace camaraderie was mentioned as a critical factor in helping them cope with the job's challenges. Additionally, several employees expressed pride in their work and a sense of fulfilment in their roles, despite the emotional and organisational difficulties they faced.

Commander interviews: Interviews with commanders and union representatives revealed an increasing awareness of the challenges faced by communication centre employees (Table 4). Commanders acknowledged the emotional strain caused by the need to rapidly move from one distressing call to the next without time to process potentially traumatic events. Commanders also felt that team camaraderie among communication centre employees, while present, is more limited due to the isolated nature of their work environment and fewer opportunities to connect as a team compared to firefighters.

A key issue raised by commanders and union representatives was the ongoing staffing shortages, which echoed concerns previously voiced by communication centre employees in their open-text responses. Commanders noted that reductions in staff over recent years had left communication centre employees overworked, with limited opportunities for breaks or recovery. Union representatives emphasised that this issue had been highlighted during previous industrial action. Both groups agreed that current staffing levels were a major contributor to employee stress and burnout.

Some commanders expressed regret for not having engaged more with communication centre teams, recognising their isolation, but acknowledged the difficulty in addressing this due to operational constraints. Others, particularly commanders located closer to the

Table 3. Examples of quotations from open text responses.

Exposure to trauma	Organisational stressors	Positive comments
"In my time with Fire and Emergency, I have experienced callers burning to death, being shot and drowning. I have also worked through earthquake events."	*"Comcens especially are completely forgotten about and poorly funded. Often running with high levels of stress due to workload and staffing issues. Our waking watch is killing us.......*	*"My workmates are my world, we get the job done, and with them, I am happy and free."*
"It would be important to note that as dispatchers we experience things very differently because for most jobs we don't get a resolution. So while we take awful calls, and might get a patient status or K41 we never get any context or information. This is the hardest part of our job."	*"Our role is under-estimated and misunderstood by both firefighters and senior managers; we are under-resourced in terms of personnel, meaning we work a lot of overtime; we are under-paid when compared to similar jobs in other industries (despite the recent pay rises); and there is little welfare support for Dispatchers."*	*"I am very proud to work for FENZ and support the public."*
"Major incidents like [details removed] had a large negative effect on me; Such as trouble sleeping, nightmares, panicking and anxiety."	*"I have watched staff being placed in positions they are not trained for and not well supported afterwards."*	*"Ultimately, I would do it again if it helped someone."*
	"While one of my managers has our best interests at heart. They are often so tied up by diplomatic and business obligations that they are unable to help us they way they want to."	*"I believe my managers have the best intent at heart and do their best to make change."*
	"Our role is under-estimated and misunderstood by both firefighters and senior managers."	
	Relationships and home life is often tarnished by work spilling over into the home."	

centres, made efforts to check in with staff and offer support when possible.

Commanders also noted that relocating communication centres away from shared spaces with fire crews had further isolated communication centre employees, weakening the sense of connection and support they had previously experienced.

DISCUSSION

The findings of this study reveal very high levels of PPTE exposure, and a severe mental health burden among fire service communication centre employees, with around two-thirds (64%) of participants screening positive for symptoms of at least one mental disorder. Specifically, 53% of employees reported symptoms of Major Depressive Disorder, 43% reported symptoms of Generalised Anxiety Disorder, and 31% screened positive for probable PTSD. These rates are notably higher than general population estimates and recent data from New Zealand firefighters (Mackay et al., 2025), as well as being higher than those found in many international studies of frontline emergency responders (Beyond Blue Ltd., 2018; Carleton et al., 2018; den Heyer, 2021; Jones, 2017). The high prevalence of mental disorder symptoms in the current sample indicates that indirect exposure to PPTEs through emergency calls can lead to marked psychological distress, comparable or even greater than that experienced by those with direct PPTE exposure. Through the lens of the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007), these elevated rates reflect an imbalance where high emotional demands—such as relentless call volumes and unresolved trauma—outstrip resources like adequate staffing or recovery time, amplifying mental health risks in this overlooked workforce.

Prior studies have reported similar mental health outcomes in communication centre employees, although international estimates of prevalence vary widely. Studies of emergency dispatchers from France (Schneider et al., 2020), Germany (Kindermann et al., 2020), and Poland (Załuski & Makara-Studzińska, 2022) have all found high

Table 4. Examples of quotations from interviews with commanders and union representatives.

Stressors inherent to the role	Organisational factors
"One thing that really jumped out at me was the control room staff. I wasn't aware of that. But looking at it and hearing that, and thinking about it, I'm not surprised, really, now we're a lot more aware of what they go through. And what they what they probably carry."	*"Comms centre literally struggle to even go to the toilet because there's so few of them on"*
"They'll just take the next call. They haven't even processed it in their head. And the next ones coming up, it's pretty, pretty tough." *"The floods in [location removed] was a big one here. Comcen operators [are telling people] 'get up in your roof space, get higher, get higher'. And then eventually the phone just goes dead, it's like, 'oh [profanity removed]'. You've just heard someone die. So, they've had to wear that. Whereas on the trucks, you know, it's more of a, it's in front of you, it's physical..... and you have a team around you as well."*	*"The staffing crisis in the comms centre has been ongoing for a while but it's actually been mainly driven by management decisions ... 5 to 6 years ago they used to run every of the three comms centres used to have least 4 dispatches/ call takers on and a shift manager. If we're lucky, a very, very good day in New Zealand is where we have 2 dispatchers and one shift manager on three different call centres".*
"Not being able to do anything physically. It's not like when you turn up at a job and you're actually gonna cut them out. You can have a go at it.................... And then when the fire brigade do turn up and rescue the lady people involved, and the person goes off the call. And then she just takes a breath composes itself and gets back to work." *"At least the firefighters can feel that they can actively do something... for those on the end of the line, it's really bad"* *"Say it's a motor vehicle crash, they would take the 111 call and .... then 'ding dong, ding dong' there's another triple one call coming in. So they've got that, do the job. It's a housefire or something and they have to move on all the time. So they're left hanging, wondering all the time, what's happening, what's going on............ they have to keep their mind and move onto the next thing. They do get affected, the want to help just like firefighters."*	*"There has to be an agreement that we will not go under x amount of people on each centre every shift unless there's something extraordinary... We need the ratios, more shift managers as well."*

rates of Major Depressive Disorder, Generalised Anxiety Disorder, PTSD, and burnout, though the specific figures are lower than those observed in our sample. The wide variation in mental health prevalence across countries may reflect differences in call volumes, the intensity of emergencies handled, organisational climate, or the availability of mental health support services in each country's emergency services sector. When assessing a large number of Canadian public safety personnel, Carleton et al. (Carleton et al., 2018) found higher rates of Major Depressive Disorder (33%), PTSD (18%), and Generalised Anxiety Disorder (18%) among call-takers compared to firefighters, aligning with the present results. However, the prevalence rates in our sample markedly exceed those reported for both firefighters and the Royal Canadian Mounted Police – the group with the highest rates of mental disorders in the same study (Carleton et al., 2018). Several factors may contribute to the observed differences, including differences in organisational factors between New Zealand and Canada, therefore affecting mental health outcomes. Police, firefighters, and paramedics report lifetime exposure to 9–16 PPTE types (Carleton et al., 2019), with nearly all experiencing at least one, often involving shootings, fatalities, or traumatic injuries (Carleton et al., 2019; Harvey et al., 2016). Wagner et al. (2024) found 82% of public safety personnel reported at least one PPTE in the past month. In the present study, 75% of emergency communicators reported more than five PPTE exposures per month, and 82% more than 20 per year. Recent data from New Zealand firefighters, by contrast, show that just 19% report six or more PPTEs in a single month (Mackay et al., 2025). These figures suggest that emergency communicators

may experience a comparable or greater cumulative burden of PPTE exposure than many frontline responders.

When comparing our results to the general New Zealand population, the differences are even more striking. In the general population, approximately 9% of individuals experienced moderate-to-severe depressive symptoms in the previous two weeks (Ministry of Health, 2023), compared to 53% in our sample. Similarly, approximately 7% of the general population reported symptoms of moderate-to-severe anxiety in the previous two weeks (Ministry of Health, 2023), while 43% of our sample reported symptoms consistent with Generalised Anxiety Disorder. The 12-month PTSD prevalence rate of 4% in Australia (McEvoy et al., 2011) and the prevalence of probable PTSD in the New Zealand police and military is approximately 14% and 10% respectively (den Heyer, 2021; Richardson et al., 2020), which is considerably lower than the 31% observed in the present study. These differences suggest that emergency communication centre employees may be more vulnerable to developing mental disorders than both the general population and some other high-risk professions, such as the military. This heightened vulnerability stems from repeated exposure to PPTEs, organisational stressors, and the unique challenges of their role, such as limited agency in outcomes, the inability to see resolution, and the rapid transition from one call to the next without closure.

The high rates of mental disorder symptoms observed in this study may be partially explained by the organisational stressors reported by participants. These stressors, including inadequate staffing and lack of support, reflect patterns seen in police and paramedic workforces, where understaffing and limited supervisor support have been identified as major stressors (Edgelow et al., 2022; Galbraith et al., 2021). This is consistent with prior research showing that poor organisational support exacerbates the effects of PPTE exposure (Back et al., 2023; Meyer et al., 2012; Ryu et al., 2020). Only 19% of employees reported high life satisfaction, and 40% reported high job satisfaction. This is compared to the 85% of the general NZ population who reported high or very high life satisfaction (Ministry of Health, 2023), and 75% who reported being satisfied or very satisfied with their job (Stats NZ, 2022a). Additionally, data from the full survey (Mackay, 2023) highlight a high rate (47%) of presenteeism among communication centre employees, compared to 32% among firefighters. These findings indicate that employees may feel compelled to attend work even when unwell, potentially due to already low staffing levels, high levels of camaraderie, and a desire to avoid placing further strain on their colleagues. Their behaviour is likely to have negative long-term health consequences, further contributing to the emotional and physical toll observed in this group.

Potentially hazardous drinking and emotional numbing emerged as key coping mechanisms among participants. Neither coping mechanism was statistically significantly directly associated with the level of PPTE exposure. Emotional numbing, however, was moderately associated with symptoms of Major Depressive Disorder, Generalised Anxiety Disorder, and probable PTSD. While these symptoms are associated with PPTE exposure, emotional numbing may arise as a response to these symptoms rather than as a direct response to PPTE exposure itself. Hazardous drinking was reported by 51% of communication centre employees, a rate substantially lower than the 68% reported among firefighters (Mackay et al., 2025). This lower prevalence of hazardous drinking may indicate that communication centre employees are less likely to rely on alcohol to manage their stress compared to their frontline counterparts, potentially reflecting a different workplace culture than that of firefighters. Emotional numbing, by contrast, was reported by 31% of communication centre employees, a much higher rate than the 9% observed in firefighters. The elevated emotional numbing rates may reflect the long-term impact of indirect trauma, which can cause individuals to suppress emotional responses to continue performing their duties. The lack of association with PPTE exposure may initially appear surprising, but the majority of participants recorded exposures in the highest bracket, reducing variability in the data and reducing our ability to detect relationships. Future interventions should target maladaptive coping mechanisms and promote more adaptive ways to process exposure to PPTEs.

Interviews and focus groups with commanders and union representatives provided valuable context for understanding the broader organisational challenges faced by communication centre employees. Although they did not directly oversee communication centre employees, all interviewees demonstrated clear awareness of the stressors that contribute to communication centre employees' mental health struggles. Staffing shortages were repeatedly highlighted as a critical issue, mirroring comments from communication centre employees themselves, and reinforcing the idea that reduced employee numbers have led to increased workloads and burnout. The commanders' recognition of these challenges, alongside their understanding of the isolation caused by the physical separation from fire crews, highlights the organisational barriers that increase feelings of disconnection among many communication centre employees. The inability to take physical action during emergencies, unlike their frontline colleagues, was also identified as a unique source of emotional strain. Considering these insights, involving communication centre employees in identifying and targeting organisational interventions to improve wellbeing, such as improving staffing ratios, promoting team cohesion, and offering more robust mental health support systems could improve employee wellbeing.

Implications

The results from the study suggest that indirect exposure to PPTEs through emergency calls has a substantial impact on mental health, with higher rates of mental disorders observed in communication centre employees compared to those experiencing direct PPTE exposure as frontline emergency responders. Statistically significant associations emerged between indirect PPTE exposure and mental health outcomes. Higher volumes of indirect PPTE exposure were particularly associated with greater symptoms of Major Depressive Disorder, Generalised Anxiety Disorder, and PTSD. The association between indirect PPTE exposure and mental health symptoms reinforces the need to address the cumulative

psychological impact of repeated indirect trauma by designing and implementing targeted interventions that help to buffer against these effects. Effective strategies could include increasing staffing levels to alleviate excessive workloads, improving shift structures to promote better work-life balance, and fostering a culture of support and recognition within the workplace. Prioritising initiatives that strengthen team cohesion and provide opportunities for peer connection may also help mitigate feelings of isolation and disconnection inherent to the role. These findings extend the JD-R model by showing how resource deficits, like understaffing, exacerbate the demands of indirect trauma, offering actionable insights for trauma-exposed occupations beyond emergency services (Bakker & Demerouti, 2014). Addressing these organisational issues is essential to reducing the cumulative psychological burden faced by employees.

Recognising this pattern is crucial for ensuring that work-related mental injuries are properly acknowledged and supported. Some compensation and support frameworks, including those in New Zealand, limit coverage for mental injuries to those resulting from direct exposure to a single PPTE. Both the DSM-5 and our research, however, highlight that repeated and indirect exposure to PPTEs also constitutes a legitimate pathway to psychological injury. Failure to acknowledge this gap can prevent individuals from accessing necessary mental health support, potentially hindering recovery and exacerbating existing mental disorders. Such misalignment highlights a broader OHP challenge: adapting policy to reflect the realities of indirect trauma’s toll, a contribution this study advances by quantifying its scale and sources. In the New Zealand context, these findings have applicability to all employees, including the indigenous Māori population, who comprise a notable portion of the national workforce (Stats NZ, 2022b). While our sample did not disaggregate by ethnicity, the Whanaungatanga Program—grounded in Māori values of kinship and collective support—offers a culturally responsive framework that could enhance interventions for communication centre employees, Māori and non-Māori alike. Organisational solutions addressing indirect trauma could therefore align with Māori wellbeing principles.

Limitations

Despite the robust findings, several limitations should be noted. One concern is the reliance on self-report measures, which introduces the potential for response bias, as participants may have under- or over-reported their symptoms. The self-selected nature of the sample also raises the possibility that individuals experiencing mental health challenges may have been more likely to participate, which could have inflated the prevalence estimates. Alternatively, those with the most severe symptoms may have been unable or unwilling to participate, therefore resulting in underestimation. It is also possible that individuals most severely impacted by PPTEs and/or organisational stressors may have left the organisation, either voluntarily or due to medical leave. Furthermore, due to the high frequency of PPTE exposure among communication centre employees, most participants fell into the highest bracket of exposure. This lack of variability in exposure levels and the small sample size prevented us from examining the dose-response relationships between PPTE exposure and mental health outcomes using methods such as logistic regression. The bespoke measure of PPTE exposure used in this study highlights the need for a validated measure that is specifically designed for occupations with repeated direct and indirect exposure to a range of events. Finally, the survey used in this study was originally designed with operational firefighters in mind, which may have resulted in the communication centre employees' unique stressors being underrepresented in the quantitative measures. Future studies should aim to develop more targeted instruments for assessing the mental health and occupational stressors of this group.

Conclusions

The present study highlights the substantial mental health risks faced by fire service communication centre employees; a group that has been largely overlooked in previous research. By surveying all three Fire and Emergency New Zealand communication centres, this study provides a comprehensive, national-level assessment of this workforce. The high prevalence of symptoms of Major Depressive Disorder, Generalised Anxiety Disorder, and PTSD observed in this study suggests that indirect exposure to PPTEs through emergency calls can have considerable psychological effects, comparable to those experienced by frontline workers. Organisational factors such as inadequate staffing and perceived lack of support further compound these risks. Together, these insights not only fill a gap in OHP research on indirect trauma but also signal practical organisational modifications that could enhance wellbeing across similar high-demand, low-control roles.

Future research should continue to investigate the unique stressors faced by communication centre employees and explore how organisational factors, gender, and experience interact to influence their mental health. Future studies should also include additional exposure bands to better capture higher levels of PPTE exposure and prioritise the development of a validated measure of PPTE exposure tailored to the unique experiences of first responders.

Given the high response rate and comprehensive national sampling, this study provides critical insights into an under-researched workforce. Implementing organisation-wide mental health interventions, as recommended by this study, has the potential to meaningfully improve the wellbeing of these essential but often overlooked workers.

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Data availability

Due to ethical restrictions, the data supporting this study’s findings are not publicly available.