



AKADÉMIAI KIADÓ

Are first responders interested in psychedelics? Assessing previous use, interest, and willingness to participate in psychedelic-assisted therapy

Journal of Psychedelic
Studies

8 (2024) 2, 204–210

DOI:

10.1556/2054.2024.00318

© 2024 The Author(s)

SONIA M. BRODIE¹ , CHELSEA STUNDEN¹ ,
JAY A. OLSON² , DESPINA Z. ARTENIE³ ,
VENUGOPAL KARAPAREDDY^{1,4,5} and
RYAN C.N. D'ARCY^{1,6,7*}

¹ Centre for Neurology Studies, HealthTech Connex, Surrey, BC, Canada

² Department of Psychology, University of Toronto Mississauga, Mississauga, ON, Canada

³ Department of Psychology, Université du Québec à Montréal, QC, Canada

⁴ Department of Psychiatry, Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada

⁵ Burnaby Centre for Addiction & Mental Health, Burnaby, BC, Canada

⁶ BrainNet, Faculty of Applied Sciences, Simon Fraser University, Vancouver, BC, Canada

⁷ DM Centre for Brain Health, Department of Radiology, The University of British Columbia, Vancouver, BC, Canada

Received: August 25, 2023 • Revised manuscript received: December 28, 2023 • Accepted: January 14, 2024

Published online: April 2, 2024

ORIGINAL RESEARCH
PAPER



ABSTRACT

Background and aims: First responders such as firefighters and police officers often experience traumatic events as part of their work. As a result, they are more likely to have mental health issues such as post-traumatic stress disorder, depression, and anxiety compared to the general population. Psychedelic-assisted therapy has emerged as a promising avenue to alleviate these issues, but little is currently known about first responders' interest in, and barriers to, these treatments. Here, we aimed to document first responders' attitudes towards LSD-assisted therapy and previous use of psychoactive drugs. **Methods:** We recruited 102 participants through mailing lists of first responders' unions. Respondents were typically male firefighters in western Canada; others were police officers, paramedics, and military personnel across Canada and the United States. They were asked about their attitudes towards LSD- and marijuana-assisted therapies, previous psychiatric diagnoses, psychosocial impairments, and substance use. **Results:** Respondents showed higher rates of distress and illicit drug use compared to the general population. Of those who sought professional treatment, a minority reported that the treatment had helped them. The respondents were generally interested in taking part in therapy or research involving LSD or marijuana. The setting (e.g., at home vs. a clinic), therapist presence, and drug dose were commonly reported to influence this participation. **Conclusions:** First responders may particularly benefit from psychedelic therapy given their high interest in psychedelic drugs and high rates of treatment-relevant disorders. Better understanding the needs of this population will help inform future clinical trials and psychedelic therapies.

KEYWORDS

psychedelic-assisted therapy, first responders, firefighters, LSD, marijuana

*Corresponding author. Address:
1004, 13761 96 Ave, Surrey, BC,
V3V 0E8, Canada.
Tel.: +1 604 639 9057.
E-mail: ryan@healthtechconnex.com

INTRODUCTION

First responders, such as firefighters, police officers, and paramedics, are often exposed to potentially traumatic events as part of their occupation. As a result, they experience higher rates of mental and physical health issues compared to the general population (Fullerton,

Ursano, & Wang, 2004; Hourani et al., 2020; Jones, 2017; Pedersen, Ugelvig Petersen, Ebbenhøj, Bonde, & Hansen, 2018; Sareen et al., 2021; Wright et al., 2021). Notably, first responders are at an increased risk of post-traumatic stress disorder (PTSD), which often co-occurs with depressive symptoms, suicidal thoughts, and related behaviours (Jones, 2017; Lewis-Schroeder et al., 2018; Stanley, Hom, & Joiner, 2016). First responders who were exposed to a human disaster, for example, reported rates of PTSD that were nine times higher than in the general population, while depression rates were twice as high (Carey, Al-Zaiti, Dean, Sessanna, & Finnell, 2011; Fullerton et al., 2004). High-risk behaviours such as illicit substance use and binge drinking are also more prevalent in first responders (Carey et al., 2011; Kleim & Westphal, 2011).

Psychedelic drugs have shown promising results in the treatment of post-traumatic stress, depression, and anxiety. Studies tend to find large pre–post effects of psychedelic treatments (Hedges' $g > 1$), even when comparing against placebos ($g = 0.8$; (Goldberg, Pace, Nicholas, Raison, & Hutson, 2020). Because of their large effects and rapid action, psychedelics could serve as a viable alternative to slower and less effective standard treatments. Preliminary work has begun to explore the use of psychedelic-assisted therapy in first responders (Barone, Beck, Mitsunaga-Whitten, & Perl, 2019; Mithoefer et al., 2018) and military personnel (Davis, Averill, Sepeda, Barsuglia, & Amoroso, 2020) with promising results. High-quality research into these emerging interventions will be required to determine their feasibility, safety, and potential effectiveness among first responders. Prior to initiating full-scale clinical interventions, however, it is critical to understand the perspective of potential participants given that first responders have additional barriers to seeking treatment. Social barriers include a culture of self-reliance and heroic roles (Wright et al., 2022) as well as concerns of confidentiality and negative career impact (Haugen, McCrillis, Smid, & Nijdam, 2017). Additional practical barriers include scheduling concerns and not knowing where to seek help (Haugen et al., 2017). Currently, little research has examined first responders' views of psychedelic treatments in particular.

In this study, we explored the self-reported use, interest, and potential barriers to trying psychedelic-assisted therapy, focusing on LSD, in research or clinical contexts among first responders in Canada and the USA. Our preliminary results aim to inform the development of larger patient-oriented clinical trials and eventually the design of clinical programs to address the needs of this specific population.

METHODS

Recruitment

An estimated 1,000 first responders or military personnel in Canada and the USA were invited to participate by email with a link to an anonymous survey. Email invitations were distributed primarily through mailing lists of first responder

professional networks and unions. These organizations are typically trusted by first responders and military personnel as they are independent from employers and aim to promote the best interests of their members. Emails with the survey link were circulated approximately every month for 9 months. As inclusion criteria, participants needed to be aged 19 or older, working as first responders or military personnel in Canada or the USA, and able to read and write English.

The study was conducted in accordance with the Declaration of Helsinki and was approved by a research ethics board (Advarra IRB; Pro00053720).

Procedure

The survey was distributed via the SurveyMonkey online platform. An introductory page described the study and consent details. The survey was designed to take approximately 15 min to complete, and each question was voluntary. Participants were able to review and change their answers until the submission was complete, and the order of the questions was the same for each participant. No personally identifiable information was collected beyond IP addresses, which were used to exclude duplicate entries. Data were collected between June 2021 and February 2022.

Once the survey was submitted, participants could provide their email address on a separate form to enter a draw for prizes varying in value (\$50 to \$500 CAD) or to be contacted for future research studies.

Survey

Survey questions were generated by the study team and technical functionality was tested prior to distribution. The survey included 41 questions distributed over 6 pages. The questions asked about basic demographics, history of mental health conditions, satisfaction with current life status, substance use history, and interest in and potential barriers to trying LSD-assisted therapy in a research or clinical context. To serve as a comparison, we additionally asked about marijuana-assisted therapy.

The majority of the questions were original to this survey. The survey also included the *Brief Inventory of Psychosocial Functioning* (B-IPF; Marx et al., 2019), the *National Institute on Drug Abuse (NIDA) Quick Screen V1.0* (Smith, Schmidt, Allensworth-Davies, & Saitz, 2010), and a subset of the *NIDA-Modified Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) V2.0* (Ali et al., 2002). The B-IPF is a 7-item questionnaire that assesses PTSD-related psychosocial functional impairment across various domains — romantic relationships, family relationships, work, friendships and socializing, parenting, education, and self-care — with good internal consistency (Cronbach's $\alpha = 0.84$) and adequate test–retest reliability ($r = 0.65$) in veteran populations (Kleiman et al., 2020). The NIDA Quick Screen and Modified ASSIST were designed to assist clinicians in screening for drug use in adult patients. Our analysis focused on descriptive statistics and frequency distributions. The free-text responses in the survey were limited and brief, so the results are presented as a basic count with examples.



RESULTS

A total of 102 participants completed the survey, which is equivalent to an estimated response rate of 10%. The completion rate was 90%. Nine participants started but did not complete the survey; their responses were included in the analysis where applicable. One participant responded “prefer not to say” or “not applicable” to all questions and was therefore excluded. Participants spent an average of 9.5 min (3.5–49 min) completing the survey.

Demographics

The typical respondents were aged 35–44 years (41%), were male (78%), worked as firefighters (71%), had full-time schedules (89%), and had ten or more years of experience in their current position (48%; Table 1). Most respondents were from British Columbia (62%); the rest were from across Canada (17%) and the USA (21%).

Mental health and previous treatment

Half of the respondents (53%) indicated that they had been diagnosed with at least one mental health disorder: PTSD

Table 1. Demographic characteristics

Characteristic	%
Age	
25–34	30
35–44	41
45–54	26
55–64	4
Sex	
Male	78
Female	21
Prefer not to say	2
First responder type	
Firefighter	72
Police officer	13
Paramedic	10
Military	2
First aid	1
Other	14
Current working status	
Employed full-time	89
Employed part-time	3
Self-employed	2
Volunteer	1
Retired	4
Unemployed	1
Years in current position	
<1 year	1
1 year < 3 years	11
3 years < 5 years	15
5 years < 10 years	26
≥ 10 years	48

Note. Multiple selections possible for first responder type. Other occupations included: registered nurses ($n = 4$), counsellor/social worker (2), correctional officer (2), sheriff (2), veteran (1), emergency department technician (1), and engineer (1).

(20%), occupational stress injury (18%), anxiety disorder (34%), or depression (30%), with 28% reporting two or more diagnoses. These rates were higher than in the general population (e.g., Pelletier, O'Donnell, McRae, & Grenier, 2017; Shields et al., 2021; Van Ameringen, Mancini, Patterson, & Boyle, 2008), consistent with other research showing poor mental health in firefighters (Carey et al., 2011). In addition, 22% of respondents indicated they had been diagnosed with a sleep disorder and 25% with chronic pain. Other reported health concerns included ADHD ($n = 4$), trauma and grief ($n = 1$), anger ($n = 1$), eating disorders ($n = 1$), and brain injury ($n = 1$). The majority of respondents (55%) indicated they had sought professional treatment for a mental health disorder, however only 16% felt confident that it had worked or was working for them (Table 2).

Psychological functioning

Ninety-seven respondents completed the B-IPF scale. The median B-IPF score was 24.4 (IQR: 32.7). On average, 6.39 domains out of the 7 assessed ($SD = 1.10$) were applicable to respondents (i.e., they reflected a domain that respondents had participated in over the past 30 days). The domain applicable to the largest number of participants (99%) was self-care, and the domain that was applicable to the fewest was parenting (67%). A score of at least 3 indicates some problems with functioning in the specific domain. The domain with the highest frequency of reported problems was work, with 38% of the sample reporting some problems in functioning. Across all 7 domains, an average of 32% of respondents reported some problems in functioning. Using the suggested cut-off scores for categories of impairment (Kleiman et al., 2020), 80% showed at least mild psychological impairment, with 22% showing impairment that would be categorized as severe or extreme. See Table 3 for descriptive statistics of the B-IPF and Table 4 for frequency distributions of B-IPF scores with categories of impairment.

When asked what interventions they were currently using to manage their mental and physical health, the most common responses were exercising alone (82%) and eating well (67%). Notably, of the 10 participants who reported other interventions beyond the ones asked about, 6 indicated that they were currently using psychoactive substances such as marijuana and psychedelics. See Table 5 for frequencies of responses.

Table 2. Participants seeking clinical treatment

Have you ever sought clinical treatment for PTSD, occupational stress injury, anxiety, or depression?	%
Yes, and I am confident that it worked/is working for me	15
Yes, but I am not confident that it worked/is working for me	38
No	34
Not applicable	6
Prefer not to say/no response	7



Table 3. Brief Inventory of Psychological Functioning (B-IPF) descriptive statistics

Variable	Mean (SD)	Percentage of participants who indicated the domain was applicable to them
B-IPF total score	31.1 (23.8)	
Romantic relationships	2.30 (2.01)	89
Parenting	1.77 (1.83)	67
Family	1.83 (1.79)	96
Friendships and socializing	1.85 (1.90)	98
Work	2.02 (1.86)	98
Education	1.58 (1.64)	93
Self-care	1.60 (1.88)	99

Table 4. Frequency of cut-off scores for the B-IPF

B-IPF score	Impairment	%
0–10	None	19
11–30	Mild	44
31–50	Moderate	14
51–80	Severe	17
81–100	Extreme	5

Note: 1 participant responded “Not Applicable” to all categories and is not included in this Table.

Table 5. Strategies used for well-being

What therapies/interventions are you using to manage your mental/physical health?	%
Regular exercise on my own	82
Eating well	67
Quality time with friends/family	40
Maintaining good sleep hygiene	38
Practising mindfulness, relaxation techniques, or meditation	38
Taking prescription medications	35
Personal hobbies	34
Regular exercise with a group/team	34
Psychological therapy (e.g., seeing a counsellor)	30
Journaling	3
Other	10
None of the above	3

Substance use

The NIDA Quick Screen and Modified ASSIST questions were answered by 94 participants. Most (81%) were deemed at-risk drinkers, reporting one or more days of heavy drinking, and most of these reported heavy drinking on a weekly basis. In addition, 23% of participants reported using prescription drugs for non-medical reasons and 44% reported using illegal drugs at least once. A follow-up question from the NIDA-Modified ASSIST tool asked how often the respondents had a strong desire to use illicit or non-medical prescription drugs; 35% reported having a strong urge to use cannabis daily or almost daily and 40% reported having a strong urge to use hallucinogens (e.g., LSD, psilocybin) at least once.

Regarding cannabis use, 53% of respondents reported using it at least once a month, and 19% reported daily use. Most (88%) regular cannabis users — those who use cannabis at least once a month — stated that they had used it to support their mental health. When asked about their use of other psychoactive substances, 64% had used psilocybin, 45% had used MDMA, and 32% had used LSD at least once. Participants who reported using these drugs commonly stated that they used them to support their mental health (46%, 27%, and 20% of those who reported at least one use of psilocybin, MDMA, and LSD, respectively).

Interest in marijuana- and LSD-assisted therapy in clinical and research contexts

Most first responders were interested in trying medical marijuana-assisted therapy in a clinical context, with 90% reporting being at least somewhat interested in using it to support their mental health and 91% to support their physical health. When asked whether they thought that marijuana-assisted therapy would help improve their performance at work, 83% responded positively. Additional comments from respondents included further clarification that marijuana was already being used recreationally for positive thinking, pain relief, inflammation, mental health, relaxation, and sleep.

The rates for LSD-assisted therapy were somewhat lower. Most first responders reported being at least somewhat interested in receiving this therapy to support their mental (83%) or physical health (76%). When asked whether they thought that the therapy would help improve their performance at work, 75% responded positively. Additional comments on how LSD-assisted therapy might improve performance at work were overall positive, and included: “improved empathy, sense of connection to others, more open-minded”, “give[s] a more steady frame of mind,” and “can be a great tool to shift perspective in a positive way”.

When asked whether they would consider participating in a clinical trial studying safety and efficacy of marijuana-assisted therapy, 85% responded ‘yes’, 8% were unsure, and 8% responded ‘no’. Rates were again somewhat lower for LSD-assisted therapy: 76% responded ‘yes’, 17% were unsure, and 8% responded ‘no’.

Barriers

When asked what factors might influence the decision to pursue marijuana-assisted therapy, the most common response (62%) was the environment or setting (at home vs. in a clinic vs. outdoors). The least common response (18%) was the opinions of loved ones or co-workers. In free-text responses, work regulations ($n = 5$) were reported as an additional barrier. When asked what factors might influence their decision to pursue LSD-assisted therapy, the highest frequency response (70%) was the presence of a therapist or trained clinician. Like medical marijuana, the lowest frequency response (20%) was the opinions of others (Table 6). Other potential barriers included work regulations, such as random drug testing ($n = 4$), travel or time

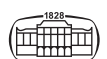


Table 6. Factors influencing treatment decisions

Which factors might influence your decision to pursue [substance]-assisted therapy?	Marijuana (%)	LSD (%)
Setting (at home vs. in a clinic vs. outdoors)	62	68
Presence of a therapist/clinician	47	70
Size of dose (macro- vs. microdose)	47	56
Proximity to my home	42	41
Group-based vs. individual therapy	32	31
Legal status of substance	25	33
Frequency of appointments	23	30
Opinions of loved ones or co-workers	18	20

required to receive it ($n = 2$), and not being able to operate a vehicle ($n = 2$).

DISCUSSION

This study aimed to explore the mental health, psychological functioning, substance use, interest, and potential barriers to trying LSD- or marijuana-assisted therapy among first responders. Consistent with past reports, we found that first responders reported a higher rate of mental health disorders than the general population, with the majority reporting that they had been diagnosed with at least one of the following disorders: PTSD, occupational stress injury, anxiety disorder, or depression. The impact of diagnosed and undiagnosed mental health challenges on psychosocial functioning was apparent, with over 80% reporting at least mild psychological impairment, and over 20% reporting severe or extreme levels of impairment, particularly in the domains of self-care and work.

A previous study found that 45% of first responders in need of mental health care sought treatment (Rikkens & Lawrence, 2021). Similarly, in our survey, 55% of respondents had sought professional treatment for a mental health disorder, however only 16% reported that they were confident that the treatment worked for them. Thus, there remains a critical, unmet need to improve access to novel, evidence-based interventions that are tailored to the specific needs of first responders (Kleim & Westphal, 2011).

To help manage their health, most of the respondents reported regular exercise and healthy eating. However, many also reported greater high-risk substance use, such as heavy drinking, prescription drugs for non-medical reasons, and illicit drugs, compared to the general population (Rush et al., 2008). Cannabis use was also high, with 19% reporting daily use, which is predictive of an increased risk of cannabis-related problems (Zeisser et al., 2011). Most had experimented with psychedelics, including psilocybin, MDMA, and LSD. Our results are in line with previous literature; heavy drinking is considered part of the first responder culture (Haddock, Sue Day, Poston, Jahnke, & Jitnarin,

2015) and substance use is more common among first responders than the general population (Carey et al., 2011). PTSD symptoms are also higher among first responders (Bonumwezi, Tramutola, Lawrence, Kobezak, & Lowe, 2022) and are associated with alcohol and drug use (Bonumwezi et al., 2022). Cannabis is currently legal for recreational use in Canada and some of the USA, and its use has been increasing in the general population (Compton, Han, Jones, & Blanco, 2019). While most common psychedelic substances are illegal in Canada and the USA, their use remains relatively common (Krebs & Johansen, 2013).

Interestingly, unlike heavy alcohol use or taking prescription drugs for non-medical reasons, many respondents indicated that they were using psychoactive substances like cannabis and psychedelics to *manage* their health. While large-scale clinical trials to evaluate the safety and efficacy of cannabis use are lacking (Tibbo et al., 2021), a systematic review showed that cannabis and synthetic cannabinoids may have a role in the treatment of PTSD. Similarly, prior research has demonstrated that psychedelic-assisted therapy can benefit people who experienced trauma (Mohamed, Touheed, Ahmed, Hor, & Fatima, 2022). To our knowledge, only one study has focused on using psychedelics in PTSD treatment for first responders. This small randomized clinical trial was conducted with 26 veterans, firefighters, and police officers, and found active doses (75 and 125 mg) of MDMA with adjunctive psychotherapy to be effective and well tolerated in reducing PTSD symptoms (Mithoefer et al., 2018), with qualitative perceived benefits extending beyond quantifiable symptom reduction (Barone et al., 2019). While not currently available in the legal medical system, psychedelic-assisted therapy is being practiced in underground subcultures across Canada and the USA (Pilecki, Luoma, Bathje, Rhea, & Narloch, 2021). Thus, it appears that some first responders are self-medicating with psychoactive substances, regardless of their legal status, perhaps because they have found them to be more effective than other available treatment options. Similarly, participants reported being receptive to participating in research or clinical care using psychoactive substances as an adjunct to therapy.

Given our small and self-selected sample, however, it is difficult to generalize our results to the broader population of first responders. In particular, male firefighters from Western Canada were disproportionately represented in our analyses. Another plausible limitation is response bias; fear of potential ramifications at work may have reduced reporting rates to sensitive questions asking about functional impairments or psychedelic use. Further, the self-selection may have attracted disproportionately more respondents who were already interested in psychedelics or those who had unsatisfying results from traditional therapies. Our overall pattern of results — poor mental health, high substance use, and interest in psychedelics — may thus be more reliable than generalizing any specific rates.

In sum, our results confirm that first responders and military personnel experience disproportionately high rates of mental health challenges, substance use, and issues with psychological functioning. There is a need to find safe and



effective therapies that are tailored specifically for these populations. Our results suggest that many first responders are receptive to marijuana- or LSD-assisted therapy in research or clinical contexts. These preliminary data can help inform the development of larger patient-oriented clinical trials to address the barriers and needs of this unique population.

Conflicts of interest: Empower Psychedelics funded the study, conceptualized the study and survey design, and contracted SB, CS, RCND, and VK to do the research. SB, CS, and RCND analyzed the data and wrote the manuscript independently from Empower Psychedelics. JO and DA assisted with the manuscript and currently hold a separate industry–university grant funded by Mitacs (IT32313) and Empower Research Inc.

ACKNOWLEDGEMENTS

This study was funded by Empower Psychedelics. Contracted research services were provided by the Centre for Neurology Studies, a division of Surrey Neuroplasticity Clinic, Inc.

The authors would like to acknowledge Neha Kodali for her contributions to manuscript development.

DZA acknowledges funding from the Social Sciences and Humanities Research Council and the Fonds de recherche du Québec - Société et culture.

JO acknowledges funding from the Canadian Institutes of Health Research.

REFERENCES

- Ali, R., Awwad, E., Babor, T. F., Bradley, F., Butau, T., Farrell, M., et al. (2002). The alcohol, smoking and substance involvement screening test (ASSIST): Development, reliability and feasibility. *Addiction*, 97(9), 1183–1194. <https://doi.org/10.1046/j.1360-0443.2002.00185.x>.
- Barone, W., Beck, J., Mitsunaga-Whitten, M., & Perl, P. (2019). Perceived benefits of MDMA-assisted psychotherapy beyond symptom reduction: Qualitative follow-up study of a clinical trial for individuals with treatment-resistant PTSD. *Journal of Psychoactive Drugs*, 51(2), 199–208. <https://doi.org/10.1080/02791072.2019.1580805>.
- Bonumwezi, J. L., Tramutola, D., Lawrence, J., Kobezak, H. M., & Lowe, S. R. (2022). Posttraumatic stress disorder symptoms, work-related trauma exposure, and substance use in first responders. *Drug and Alcohol Dependence*, 237, 109439. <https://doi.org/10.1016/j.drugalcdep.2022.109439>.
- Carey, M. G., Al-Zaiti, S. S., Dean, G. E., Sessanna, L., & Finnell, D. S. (2011). Sleep problems, depression, substance use, social bonding, and quality of life in professional firefighters. *Journal of Occupational and Environmental Medicine/American College of Occupational and Environmental Medicine*, 53(8), 928. <https://doi.org/10.1097/JOM.0B013E318225898F>.
- Compton, W. M., Han, B., Jones, C. M., & Blanco, C. (2019). Cannabis use disorders among adults in the United States during a time of increasing use of cannabis. *Drug and Alcohol Dependence*, 204, 107468. <https://doi.org/10.1016/j.drugalcdep.2019.05.008>.
- Davis, A. K., Averill, L. A., Sepeda, N. D., Barsuglia, J. P., & Amoroso, T. (2020). Psychedelic treatment for trauma-related psychological and cognitive impairment among US special operations forces veterans. *Chronic Stress*, 4. <https://doi.org/10.1177/2470547020939564>.
- Fullerton, C. S., Ursano, R. J., & Wang, L. (2004). Acute stress disorder, posttraumatic stress disorder, and depression in disaster of rescue workers. *American Journal of Psychiatry*, 161(8), 1370–1376. <https://doi.org/10.1176/APPL.AJP.161.8.1370/ASSET/IMAGES/LARGE/N18T5.JPEG>.
- Goldberg, S. B., Pace, B. T., Nicholas, C. R., Raison, C. L., & Hutson, P. R. (2020). The experimental effects of psilocybin on symptoms of anxiety and depression: A meta-analysis. *Psychiatry Research*, 284. <https://doi.org/10.1016/j.psychres.2020.112749>.
- Haddock, C. K., Sue Day, R., Poston, W. S. C., Jahnke, S. A., & Jitnarin, N. (2015). Alcohol use and caloric intake from alcohol in a national cohort of U.S. Career firefighters. 76(3), 360–366. <https://doi.org/10.15288/JSAD.2015.76.360>.
- Haugen, P. T., McCrillis, A. M., Smid, G. E., & Nijdam, M. J. (2017). Mental health stigma and barriers to mental health care for first responders: A systematic review and meta-analysis. *Journal of Psychiatric Research*, 94, 218–229. <https://doi.org/10.1016/j.jpsychires.2017.08.001>.
- Hourani, L. L., Davila, M. I., Morgan, J., Meleth, S., Ramirez, D., Lewis, G., et al. (2020). Mental health, stress, and resilience correlates of heart rate variability among military reservists, guardsmen, and first responders. *Physiology & Behavior*, 214. <https://doi.org/10.1016/j.physbeh.2019.112734>.
- Jones, S. (2017). Describing the mental health profile of first responders: A systematic review. *Journal of the American Psychiatric Nurses Association*, 23(3), 200–214. <https://doi.org/10.1177/1078390317695266>.
- Kleim, B., & Westphal, M. (2011). Mental health in first responders: A review and recommendation for prevention and intervention Strategies. *Traumatology*, 17(4), 17–24. <https://doi.org/10.1177/1534765611429079>.
- Kleiman, S. E., Bovin, M. J., Black, S. K., Rodriguez, P., Brown, L. G., Brown, M. E., et al. (2020). Psychometric properties of a brief measure of posttraumatic stress disorder-related impairment: The Brief Inventory of Psychosocial Functioning. *Psychological Services*, 17(2), 187–194. <https://doi.org/10.1037/SER0000306>.
- Krebs, T. S., & Johansen, P.-Ø. (2013). Over 30 million psychedelic users in the United States. *F1000Research*, 2, 98. <https://doi.org/10.12688/F1000RESEARCH.2-98.V1>.
- Lewis-Schroeder, N. F., Kieran, K., Murphy, B. L., Wolff, J. D., Robinson, M. A., & Kaufman, M. L. (2018). Conceptualization, assessment, and treatment of traumatic stress in first responders: A review of critical issues. *Harvard Review of Psychiatry*, 26(4), 216–227. <https://doi.org/10.1097/HRP.0000000000000176>.
- Marx, B. P., Schnurr, P. P., Lunney, C., Weathers, F. W., Bovin, M. J., & Keane, T. M. (2019). *Brief inventory of psychosocial functioning (B-IPF)*.
- Mithoefer, M. C., Mithoefer, A. T., Feduccia, A. A., Jerome, L., Wagner, M., Wymer, J., et al. (2018). 3,4-methylenedioxy-methamphetamine (MDMA)-assisted psychotherapy for post-



- traumatic stress disorder in military veterans, firefighters, and police officers: A randomised, double-blind, dose-response, phase 2 clinical trial. *The Lancet Psychiatry*, 5(6), 486–497. [https://doi.org/10.1016/S2215-0366\(18\)30135-4](https://doi.org/10.1016/S2215-0366(18)30135-4).
- Mohamed, A., Touheed, S., Ahmed, M., Hor, M., & Fatima, S. (2022). The efficacy of psychedelic-assisted therapy in managing post-traumatic stress disorder (PTSD): A new frontier? *Cureus*, 14(10). <https://doi.org/10.7759/CUREUS.30919>.
- Pedersen, J. E., Ugelvig Petersen, K., Ebbelhøj, N. E., Bonde, J. P., & Hansen, J. (2018). Incidence of cardiovascular disease in a historical cohort of Danish firefighters. *Occupational and Environmental Medicine*, 75(5), 337–343. <https://doi.org/10.1136/OEMED-2017-104734>.
- Pelletier, L., O'Donnell, S., McRae, L., & Grenier, J. (2017). The burden of generalized anxiety disorder in Canada. *Health Promotion and Chronic Disease Prevention in Canada*, 37(2), 54–62. <https://doi.org/10.24095/HPCDP.37.2.04>.
- Pilecki, B., Luoma, J. B., Bathje, G. J., Rhea, J., & Narloch, V. F. (2021). Ethical and legal issues in psychedelic harm reduction and integration therapy. *Harm Reduction Journal*, 18(1), 1–14. <https://doi.org/10.1186/S12954-021-00489-1/METRICS>.
- Rikkers, W., & Lawrence, D. (2021). Mental health help-seeking experiences and service use among Australian first responders. *Australian Journal of Psychology*, 73(2), 125–133. <https://doi.org/10.1080/00049530.2021.1882271>.
- Rush, B., Urbanoski, K., Bassani, D., Castel, S., Wild, T. C., Strike, C., et al. (2008). Prevalence of Co-occurring substance use and other mental disorders in the Canadian population. *The Canadian Journal of Psychiatry*, 53(12), 800–809. <https://doi.org/10.1177/070674370805301206>.
- Sareen, J., Bolton, S. L., Mota, N., Afifi, T. O., Enns, M. W., Taillieu, T., et al. (2021). Lifetime Prevalence and Comorbidity of Mental Disorders in the Two-wave 2002–2018 Canadian Armed Forces Members and Veterans Mental Health Follow-up Survey (CAFVMHS): Prévalence et Comorbidité de Durée de vie Des Troubles Mentaux Dans l'Enquête de Suivi S. *Canadian Journal of Psychiatry. Revue Canadienne de Psychiatrie*, 66(11), 951. <https://doi.org/10.1177/07067437211000636>.
- Shields, M., Tonmyr, L., Gonzalez, A., Weeks, M., Park, S. B., Robert, A. M., et al. (2021). Symptoms of major depressive disorder during the Covid-19 pandemic: Results from a representative sample of the Canadian population. *Health Promotion and Chronic Disease Prevention in Canada*, 41(11), 340–358. <https://doi.org/10.24095/HPCDP.41.11.04>.
- Smith, P. C., Schmidt, S. M., Allensworth-Davies, D., & Saitz, R. (2010). A single-question screening test for drug use in primary care. *Archives of Internal Medicine*, 170(13), 1155–1160. <https://doi.org/10.1001/ARCHINTERNMED.2010.140>.
- Stanley, I. H., Hom, M. A., & Joiner, T. E. (2016). A systematic review of suicidal thoughts and behaviors among police officers, firefighters, EMTs, and paramedics. *Clinical Psychology Review*, 44, 25–44. <https://doi.org/10.1016/J.CPR.2015.12.002>.
- Tibbo, P. G., McKee, K. A., Meyer, J. H., Crocker, C. E., Aitchison, K. J., Lam, R. W., et al. (2021). Are there therapeutic benefits of cannabinoid products in adult mental illness? *Canadian Journal of Psychiatry. Revue Canadienne de Psychiatrie*, 66(2), 185. <https://doi.org/10.1177/0706743720945525>.
- Van Ameringen, M., Mancini, C., Patterson, B., & Boyle, M. H. (2008). Post-traumatic stress disorder in Canada. *CNS Neuroscience & Therapeutics*, 14(3), 171–181. <https://doi.org/10.1111/j.1755-5949.2008.00049.x>.
- Wright, H. M., Fuessel-Hermann, D., Pazdera, M., Lee, S., Ridge, B., Kim, J. U., et al. (2022). Preventative care in first responder mental health: Focusing on access and utilization via stepped telehealth care. *Frontiers in Health Services*, 2(June), 1–8. <https://doi.org/10.3389/frhs.2022.848138>.
- Wright, H. M., Griffin, B. J., Shoji, K., Love, T. M., Langenecker, S. A., Benight, C. C., et al. (2021). Pandemic-related mental health risk among front line personnel. *Journal of Psychiatric Research*, 137, 673–680. <https://doi.org/10.1016/J.JPSYCHIRES.2020.10.045>.
- Zeisser, C., Thompson, K., Stockwell, T., Duff, C., Chow, C., Vallance, K., et al. (2011). A 'standard joint'? The role of quantity in predicting cannabis-related problems. *Addiction Research & Theory*, 20(1), 82–92. <https://doi.org/10.3109/16066359.2011.569101>.

