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Review article

A systematic review of probable posttraumatic stress disorder in first responders following man-made mass violence



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ARTICLE INFO

Article history: Received 26 September 2014 Received in revised form 3 June 2015 Accepted 25 June 2015 Available online 26 June 2015

Keywords:
Trauma
Psychopathology
Terrorism
Emergency services
Rescue workers

ABSTRACT

The current study was a systematic review examining probable posttraumatic stress disorder (PTSD) in first responders following man-made mass violence. A systematic literature search yielded 20 studies that fit the inclusion criteria. The prevalence rates of probable PTSD across all 20 studies ranged from 1.3% to 22.0%. Fifteen of the 20 articles focused on first responders following the September 11th terrorist attacks and many of the studies used the same participant recruitment pools. Overall, the results of the systematic review described here suggest that our understanding of PTSD in first responders following man-made mass violence is based on a very small set of articles that have focused on a few particular events. This paper is meant to serve as a call for additional research and to encourage more breadth in the specific incidents that are examined.

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1. Introduction

First responders exposed to major disasters (e.g., natural disasters, transportation accidents, terrorist attacks) are at increased risk of posttraumatic stress disorder (PTSD) when compared to first responders who have not worked major disasters and the overall prevalence of PTSD in the general population (Berger et al., 2012; Fullerton et al., 2004). This increase in risk is due to a range of experiences, such as exposure to potential physical harm, witnessing injury and death, and learning upsetting details about horrifying events (Berger et al., 2012). For example, the 12-month prevalence of PTSD among the general population in the United States is approximately 4% (Kessler et al., 2005), whereas the

worldwide current prevalence rate among first responders who have worked major disasters is 10% (Berger et al., 2012). The heightened risk demonstrated in first responders following disasters is particularly concerning because empirical evidence suggests that the prevalence of such events is increasing. From 1980 to 1989, there were 2870 disasters, which included natural disasters, technological accidents and man-made mass violence incidents (Eshghi and Larson, 2008). Conversely, from 2000 to 2005, the number of disasters had increased to almost 5000 incidents.

In the quake of recent disasters, particularly mass violence purposely caused by humans (e.g., terrorist attacks, bombings), there has been a growing interest in the mental health of first responders and an emphasis on the quality of care provided to these workers. These events are of particular interest because evidence suggests that man-made disasters lead to more negative

 Table 1

 Sample and measurement characteristics of the identified studies, and prevalence (prev) rates of probable PTSD in a systematic review of PTSD among first responders following man-made mass violence.

| Study | Prevalence N | Population | Event | Recruitment source | Prev (%) | Time elapsed since event | PTSD measure |
|--------------------------|--------------|---------------------------------------------------------------------|-------------------|------------------------------|---------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Berninger et al. | 8679 | Firefighters | September 11th | FDNY-WTC-MMP | 9.8 | 1 year | Self-report measure; adapted from PCL-civilian using yes-no re- |
| (2010a) | | _ | - | | 9.9 | 2 years | sponse format; required endorsement of at least 2 arousal |
| | | | | | 11.7 | 3 years | questions, 1 re-experiencing question, 3 avoidance/numbing |
| | | | | | 10.6 | 4 years | questions, and an endorsement of at least 9 total questions. |
| Berninger et al. | 5656 | Firefighters | September 11th | FDNY-WTC-MMP | 8.6 | 6 months | Self-report measure; adapted from PCL-civilian using yes-no re- |
| (2010b) | | | | | 11.1 | 3-4 years | sponse format; required endorsement of at least 2 arousal |
| | | | | | | | questions, 1 re-experiencing question, 3 avoidance/numbing |
| Bowler et al. (2010) | 4017 | Police officers | September 11th | WTCHR | 8.3 | 2-3 years | questions, and an endorsement of at least 9 total questions. Self-report measure; PCL-civilian using 5-point Likert response |
| bowlet et al. (2010) | 4017 | Folice officers | September 11th | WICHK | 0.5 | 2-5 years | format; required endorsement (response of 3 or above) of at least |
| | | | | | | | 1 re-experiencing question, 2 arousal questions, and 3 avoidance/ |
| | | | | | | | numbering questions. |
| Chiu et al. (2011a) | 1915 | Firefighters | September 11th | FDNY-WTC-MMP | 22.0 | 4-6 years | Self-report measure; adapted from PCL-civilian using 5-point |
| ` ' | | | | | | , | Likert response format; required total score of 39 or greater. |
| Chiu et al. (2011b) | 1915 | Firefighters | September 11th | FDNY-WTC-MMP | 17.0 | 4-6 years | Self-report measure; adapted from PCL-Civilian using 5-point |
| | | | | | | | Likert response format; required endorsement (response of 3 or |
| | | | | | | | above) of at least 1 re-experiencing question, 2 arousal questions, |
| | | | | | | | and 3 avoidance/numbering questions. |
| Corrigan et al. | 8487 | Firefighters | September 11th | FDNY-WTC-MMP | 12.0 | 6 months | Self-report measure; adapted from PCL-civilian using yes-no re- |
| (2009) | | | | | | | sponse format; required endorsement of at least 2 arousal |
| | | | | | | | questions, 1 re-experiencing question, and 3 avoidance/numbing questions. |
| Gabriel et al. | 153 | Police officers | Madrid bombing | Police officers who helped | 1.3 | 5-12 weeks | Self-report measure; Spanish version of DTS using 5-point Likert |
| (2007) | 133 | Tolice officers | Madrid bollibling | with rescue effort | 1.5 | J-12 WCCKS | response format; required total score of 40 or greater. |
| Luft et al. (2012) | 8508 | Police officers | September 11th | WTC-MMTP | 5.9 | 10 months to | Self-report measure; PCL-civilian using 5-point Likert response |
| , | | | | | | 7 years | format; required total score of 50 or greater. |
| Misra et al. (2009) | 191 | Ambulance personnel | London bombing | Ambulance personnel who | 6.0 | 2 months | Self-report measure; TSQ; required endorsement of at least |
| | | | | helped with rescue effort | | | 6 symptoms. |
| Niles et al. (2011) | 5363 | Firefighters | September 11th | FDNY-WTC-MMP | 8.5 | 1 year | Self-report measure; adapted from PCL-civilian using yes-no re- |
| | | | | | 10.2 | 3-4 years | sponse format; required endorsement of at least 2 arousal |
| | | | | | | | questions, 1 re-experiencing question, 3 avoidance/numbing |
| North et al. (2002a) | 181 | Firefighters | Oklahoma City | Firefighters who helped with | 13.3 | 34 months | questions, and an endorsement of at least 9 total questions. Interview; DIS for DSM-III-R Disaster Supplement; the specific |
| 1101til et al. (2002a) | 101 | Thelighters | bombing | rescue and recovery efforts | 13.3 | 34 III0IIIIIS | guidelines used to identify PTSD were not specified in the article. |
| North et al. (2002b) | 176 | Firefighters | Oklahoma City | Firefighters who helped with | 13.0 | 34 months | Interview; DIS for DSM-III-R Disaster Supplement; the specific |
| North et al. (2002b) | 170 | Thenghers | bombing | rescue and recovery efforts | 15.0 | 54 months | guidelines used to identify PTSD were not specified in the article. |
| Perrin et al. (2007) | 8898 | Police officers $(n=3925)^1$, firefighters | September 11th | WTCHR | 8.3 ¹ | 2-3 years | Self-report measure; adapted from PCL-civilian using 5-point |
| , | | $(n=3232)^2$, emergency medical ser- | | | 17.4^{2} | 3 | Likert response format; required endorsement of at least 2 arou- |
| | | vices $(n=1741)^3$ | | | 14.1^{3} | | sal questions, 1 re-experiencing question, and 3 avoidance. |
| Pietrzak et al. | 4035 | Police officers | September 11th | WTC-HP | 8.6 | 3 years | Self-report measure; adapted from PCL-specific stressor using |
| (2014) | | | | | 9.3 | 6 years | 5-point Likert response format; required total score of 44 or |
| | | | | | 9.8 | 8 years | greater. |
| Pietrzak et al. | 8466 | Police officers | September 11th | WTC-MMTP | 5.4 | 4 years | Self-report measure; adapted from PCL-specific stressor using |
| (2012) | | | | | | | 5-point Likert response format; required total score of 50 or |
| | | | | | | | greater, and endorsement of at least 2 arousal questions, 1 re- |
| Renck et al. (2002) | 41 | Police officers | Sweden dis- | Police officers who helped | 2.0 | 18 months | experiencing question, and 3 avoidance. Self-report measure; impact of event scale-revised; using 6-point |
| NCHER EL di. (2002) | 41 | i office officers | cotheque fire | with rescue efforts. | 2.0 | 10 1110111115 | Likert response format; required total score of 20 or greater. |
| Soo et al. (2011) | 11,006 | Firefighters | September 11th | FDNY-WTC-MMP | 7.7 | 5-6 years | Self-report measure; PCL-civilian using 5-point Likert response |
| (2011) | - 1,000 | | premiser min | | 6.3 | 6–7 years | format; required endorsement (response of 3 or above) of at least |
| | | | | | 7.1 | 7–8 years | 1 re-experiencing question, 2 arousal questions and 3 avoidance/ |
| | | | | | | | |
| | | | | | 7.4 | 8-9 years | numbering questions, and a total score of 44 or greater. |
| Webber et al. (2011a) | 10,829 | Firefighters $(n=9614)^1$, emergency medical services $(n=1215)^2$ | September 11th | FDNY-BHS | 7.4 7.0 ¹ 6.5 ² | 8–9 years 6–9 years | numbering questions, and a total score of 44 or greater. Self-report measure; PCL-civilian using 5-point Likert response format; required endorsement (response of 3 or above) of at least |

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