South Southwest (HHS Region 6)
PTTC Prevention Technology Transfer Center Network
Funded by Substance Abuse and Mental Health Services Administration

Substance Use and Disasters: A Brief Review of the Literature

What do we know about exposure to disasters and behavioral health problems overall?

Although most people who experience a disaster "bounce back" to pre-disaster levels of functioning, a significant number do experience some mental health problems, and a smaller proportion go on to develop trauma-related mental health disorders such as post-traumatic stress disorder, depression, and anxiety (Goldman & Galea 2014; Hauser, 2013; Neria et al., 2008; Sayed et al., 2015; Vetter et al., 2008). And while previous research has indicated that one out ten naturally bereaved individuals experiences prolonged grief following a loss, a systematic review by Dijelantik et al. (2020) suggests that nearly half (49%) of adults who experienced losses due to "unnatural" deaths (deaths due to violence, accidents, disasters, terror and war) suffer prolonged grief disorder (PGD) lasting 6 months or more. This review found that some individuals might experience PGD up to 3 decades after the loss. Symptoms of PGD include difficulties accepting the loss, depressive symptoms including suicide ideation, and significant impairment of daily functioning. Mental health problems stemming from disaster-related trauma and loss may in turn increase the risk for substance misuse and substance use disorders, although the explicit connection between post-disaster mental health problems and subsequent substance misuse is not entirely clear. (Garland et al., 2013; NCCD, 2010; Pollice et al., 2011; Reijneveld et al., 2003; Wagner et al. 2009).

What does the research literature say specifically about disasters and substance use patterns?*

The relationship between disasters and substance use patterns is complex. Comprehensive reviews on the topic suggest that the effects of disasters on rates of substance use disorders are minimal at the overall population level (Neria et al., 2008; North et al., 2011). The following examples illustrate these findings:

- A study by North (2004) of St. Louis, Missouri area survivors of the Great Midwestern Floods of 1993 showed nearly one-half of the men in the sample had a pre-existing alcohol use disorder and virtually no new substance abuse followed the floods.
- While 15% of the direct survivors of the 1995 Oklahoma City Bombing reported using alcohol to cope at six months after the attack, seven years later no new post-disaster alcohol use disorders were observed (North et al., 1999; North et al., 2011).
- In an examination of 2004 to 2005 National Epidemiologic Survey of Alcohol and Related Conditions data, experiencing one or more natural disasters by age five increased the risk of mental health disorders, particularly anxiety disorders, in adulthood, but not the risk of substance use disorders (Maclean et al. 2016)

Additional research suggests that the elevation of self-reported substance use rates following a natural disaster may be due to overestimation by users (Cepeda et al., 2009; Cerda et al., 2008; Johnson & Fendrich, 2009; North, 2010).

Certain risk factors may increase the likelihood of substance misuse following disasters (Cepeda et al., 2009; Cerda et al., 2008; Johnson and Fendrich, 2009; Neria, 2009; North,

SAMHSA
Substance Abuse and Mental Health Services Administration

2010). Increased post-disaster alcohol use and increased substance use disorders have been linked to having more lifetime traumatic events pre-disaster, prior drinking involvement by adolescents, and experiencing more racial and sexual discrimination pre-disaster (Cerda et al., 2011; Keyes et al., 2011; Schroeder & Polusny, 2004). Exposure to natural disasters has also been linked to exacerbation of symptoms among those with a history of substance use disorders and to increased likelihood of relapse among those in recovery (Cepeda et al., 2009; Keyes et al., 2011).

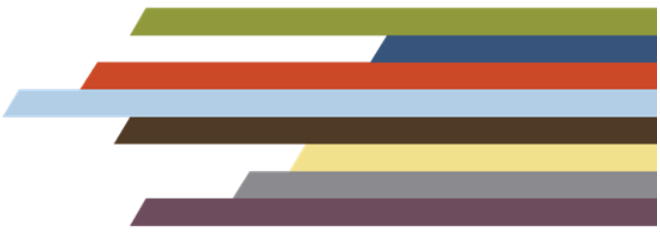
***** *To date, most research on the relationship between disasters and substance misuse has focused on natural disasters and terrorism. Extrapolation of those findings to disease pandemics is speculative.*

Are there studies that describe the relationship between substance use and infectious disease outbreaks?

In one study of the coping strategies of emergency department health care workers in Singapore who cared for the patients in the 2003 severe acute respiratory syndrome (SARS) outbreak, reported use of alcohol or drugs as coping strategy was noticeably absent (Phua et al., 2005). Another survey of non-infected community health care patients collected 16 weeks after the first national outbreak of SARS in Singapore found significant rates of SARS-related psychiatric (22.9%) and posttraumatic morbidities (25.8%), but low rates of substance use as a coping mechanism (Sim et al., 2010). However, in another survey of hospital employees in Beijing, China three years after the 2003 SARS outbreak, alcohol use disorder symptoms were positively associated with having been quarantined or working in high-risk locations such as SARS wards during the outbreak. Symptoms of post-traumatic stress, depression, and having used drinking as a coping method, were also significantly associated with increased alcohol use disorder symptoms. However, having had family members or friends contract SARS was not related to alcohol use disorder symptoms. (Wu et al., 2008)

What do we know about the role of community capacity in disaster recovery?

According to a survey of public health workers in Florida following the 2004 hurricane season, lower rates of posttraumatic stress disorder were associated with communities with higher collective efficacy and programs which enhance collective efficacy "may be an important part of prevention practices and possibly lead to a reduction in the rate of posttraumatic stress disorder, post-disaster" (Ursano et al. 2014). Similarly, a study of survivors of the 2011 Great East Japan earthquake and tsunami found that participants who gave and received emotional and instrumental support before the disaster were significantly less likely to develop depressive symptoms after the disaster compared to those without support (Sasaki et al. 2019). Smiley, Howell, and Elliott (2018) found that the most equitable recoveries occur in places with community organizations that are cross-cutting and involve a variety of individuals. Churches are important on a small scale, and "counties with increasing numbers of advocacy organizations, such as local environmental groups, political organizations, and human-rights groups, tend to have a better recovery" (p. 115). There is limited research on what communities can do to meet the needs of children following catastrophic events. In a review of the literature, Bothe et al. (2018) emphasize that addressing the needs of children with pre-existing developmental, behavioral, and medical problems, including children of substance misusing parents and those with prenatal exposure to alcohol or other drugs is critical.



Bibliography

Bothe, D.A., Olness, K.N., and Reyes, C. (2018). Overview of Children and Disasters. *Journal of Developmental Behavior Pediatrics 39*; pg. 652-662.

Chemtob, C.M., Nomura, Y., Josephson, L., Adams, R.E., Sederer, L. (2008). Substance use and functional impairment among adolescents directly exposed to the 2001 World Trade Center attacks. *Disasters*, 33(3):337-352.

Cepeda, A., Valdez, A., Kaplan, C., and Hill, L.E. (2010). Patterns of substance use among Hurricane Katrina evacuees in Houston, Texas. *Disasters*, 34(2):426-446.

Cerda, M., Tracy, M., and Galea, S. (2011). A prospective population based study of changes in alcohol use and binge drinking after a mass traumatic event. *Drug and Alcohol Dependence*, 115:1–8.

Cerda, M., Vlahov, D., Tracy, M., and Galea, S. (2008). Alcohol use trajectories among adults in an urban area after a disaster: *Evidence from a population-based cohort study. Addiction*, 103:1296-1307.

Djelantik, M.J., Smid, G.E., Mroz, A., Kleber, R.J., and Boelen, P.A. (2020). The Prevalence of Prolonged Grief Disorder in Bereaved Individuals Following Unnatural Losses: Systematic Review and Meta Regression Analysis. *Journal of Affective Disorders 265*, pg. 146-156.

Garland, E.L., Pettus-Davis, C., and Howard, M.O. (2013). Self-medication among traumatized youth: Structural equation modeling of pathways between trauma history, substance misuse, and psychological distress. *Journal of Behavioral Medicine*, 26:175-185.

Goldmann, E. and Galea, S. (2014). Mental Health Consequences of Disasters. *Annual Review of Public Health*. 35:169–83

Hauser, A. (2013, May 21). PTSD risk after the Oklahoma tornado. Retrieved from www.weather.com/health/ptsd-okla-tornado-20130521

Johnson, T.P. and Fendrich, M. (2009). Substance use under conditions of uncertainty and trauma: An introduction. *Substance Use & Misuse*, 44:1661-1664.

Sim K., Chan Y.H., Chong P.N., Chua H.C., Soon W.S., (2010). Psychosocial and coping responses within the community health care setting towards a national outbreak of an infectious disease. *Journal of Psychosomatic Research* 68, 195–202.

Keyes, K.M., Hatzenbuehler, M.L., and D.S. Hasin. (2011). Stressful life experiences, alcohol consumption, and alcohol use disorders: The epidemiologic evidence for four main types of stressors. *Psychopharmacology*, 218:1-17.

Maclean, J. C., Popovici, I., and French, M. T. (2016). Are natural disasters in early childhood associated with mental health and substance use disorders as an adult? *Social Science and Medicine*, 151, 78–91.

Moise, I., and Ruiz, M. (2016). Hospitalizations for substance abuse disorders before and after Hurricane Katrina: Spatial clustering and area-level predictors, New Orleans, 2004-2008. *Preventing Chronic Disease*, 13:1-5.

National Commission on Children and Disasters (NCCD). (2010). National Commission on Children and Disasters: 2010 report to the President and Congress. AHRQ Publication No. 10-MO37. Rockville, MD: Agency for Healthcare Research and Quality.

Neria, Y., Nandi, A., and Galea, S. (2008). Post-traumatic stress disorder following disasters: A systematic review. *Psychological Medicine*, 38:467-480.

North C.S., Nixon S.J., Shariat S., et al. (1999) Psychiatric Disorders Among Survivors of the Oklahoma City Bombing. *JAMA*.;282(8):755–762.

North, C.S. (2004). The course of PTSD, major depression, substance abuse, and somatization after a natural disaster. *The Journal of Nervous and Mental Disease*, 192 (12), 823-829.

North, C.S. (2010). A tale of two studies of two disasters: Comparing psychosocial responses to disaster among Oklahoma City bombing survivors and Hurricane Katrina evacuees. *Rehabilitation Psychology*, 55(3):241-246.

North, C. S., Pfefferbaum, B., Kawasaki, A., Lee, S., and Spitznagel, E. L. (2011). Psychosocial adjustment of directly exposed survivors 7 years after the Oklahoma City bombing. *Comprehensive Psychiatry*, 52(1), 1–8.

North, C.S., Ringwalt C.L., Downs D., Derzon J., Galvin D. (2011). Postdisaster Course of Alcohol Use Disorders in Systematically Studied Survivors of 10 Disasters. *Archives of General Psychiatry*. 68(2):173–180.

Phua D.H., Tang H.K., Tham K.Y. (2005). Coping responses of emergency physicians and nurses to the 2003 severe acute respiratory syndrome outbreak. *Academy of Emergency Medicine*, 12:322–8.

Pollice, R., Bianchini, V., Rancone, R., and Casacchia, M. (2011). “Marked increase in substance use among young people after L’Aquila earthquake.” *European Child Adolescence Psychiatry*, 20:429-430.

Reijneveld, S.A., Crone, M.R., Verhulst, F.C., Verloove-Vanhorick, S.P. (2003). The effect of a severe disaster on the mental health of adolescents: A controlled study. *The Lancet*, 362:691-696.

Sayed, S., Iacoviello, B., and Charney, D. (2015). Risk factors for the development of psychopathology following trauma. *Current Psychiatry Reports*, 17, 70-80

Schonfeld, D. (2004). Are we ready and willing to address the mental health needs of children? Implications from September 11th." *Pediatrics*, 113(5):1400.

Schroeder, J., and Polusny, M. (2004). Risk Factors for Adolescent Alcohol Use Following a Natural Disaster. *Prehospital and Disaster Medicine*, 19(1), 122-127. doi:10.1017/S1049023X00001576

Smiley, K., Howell, J., and Elliott, J. (2018). Disasters, local organizations, and poverty in the USA: 1998 to 2015. *Population and Environment*, 40(2), 115-135.

Sasaki Y., Aida J., Tsuji T., et al. (2019). Pre-disaster social support is protective for onset of post-disaster depression: Prospective study from the Great East Japan Earthquake & Tsunami. *Scientific Reports*. 9(1):19427.

Ursano R.J., McKibben J.B., Reissman D.B., et al. (2014). Posttraumatic stress disorder and community collective efficacy following the 2004 Florida hurricanes. *Plos one*. 9(2):e88467.

Vetter, S., Rossegger, A., Rossler, W., Bisson, J.I., and Endrass, J. (2008). Exposure to the tsunami disaster, PTSD symptoms and increased substance use – an Internet based survey of male and female residents of Switzerland. *BMC Public Health*, 8:92-98.

Vlahov, D., Galea, S., Ahern, J., Resnick, H., Boscarino, J.A., Gold, J., Bucuvalas, M., Kilpatrick, D. (2004). Consumption of cigarettes, alcohol, and marijuana among New York City residents six months after the September 11 terrorist attacks." *The American Journal of Drug and Alcohol Abuse*, 30(2):285-207.

Wagner, K.D., Brief, D.J., Vielhauer, M.J., Sussman, S., Keane, T.M., and Malow, R. (2009). The potential for PTSD, substance use, and HIV risk behavior among adolescents exposed to Hurricane Katrina. *Substance Use & Misuse*, 44:1749-1767.

Wu, P., Liu, X., Fang, Y., Fan, B., Fuller, C.J., Guan, Z., Yao, Z., Kong, J., Lu, J., Litvak, I.J., (2008). Alcohol Abuse/Dependence Symptoms Among Hospital Employees Exposed to a SARS Outbreak. *Alcohol and Alcoholism*, 43(6): 706–712