Disaster Mental Health Services Review of Care for Older Persons After Disasters

Allison Gibson, PhD, MSW; Jessica Walsh, MS, MSc; Lisa M. Brown, PhD, ABPP

ABSTRACT

As older persons make up an ever greater proportion of the world's population, a range of concerns are being voiced by policy-makers, program managers, and care providers about best or optimal practices for serving this population's needs during all stages of disasters. Given that age-related vulnerabilities are common in late life, this article describes existing systems of care in the United States for the provision of disaster mental health services. Second, it evaluates the evidence for disaster treatment interventions with this subgroup of the population. Third, it synthesizes the findings of recent studies focusing on screening, assessment, and treatment approaches. To advance our current system of care and to adequately respond to the mental health needs of older persons, it is advantageous to periodically review progress, identify current gaps and unmet needs, and describe opportunities for improvement. (*Disaster Med Public Health Preparedness*. 2018;12:366-372)

Key Words: disaster response, aging, disasters, disaster intervention

In 2005, the now infamous Hurricane Katrina barreled down on southeastern Louisiana and on coastal Mississippi. Of the 1836 residents who lost their lives, 71% were aged over 60 years and 47% were aged over 75 years.[1] This marked age discrepancy in fatality rates ignited conversations across the fields of public, medical, and mental health about the unique needs of older persons in preparing for and recovering from disasters. Dialogue between behavioral health practitioners and policy-makers heralded an increased focus on improving services for older persons. However, despite such newfound acknowledgment of this vulnerable subgroup, older persons' behavioral health needs remain understudied in the broader post-disaster assessment and treatment literature. The "special needs" of older persons then must be delineated and addressed to fill this gap.

This article first describes existing systems of care in the United States for the provision of disaster mental health services. Second, it evaluates the evidence for disaster interventions with this subgroup of the population. Finally, it synthesizes the findings of recent studies focusing on screening, assessment, and treatment approaches. Currently, many intervention practices focus on providing immediate disaster response but are scarcely sufficiently adapted to the needs of older persons.[2-6] While literature comparing older to younger cohorts in the context of disasters is limited, there is evidence that older persons experience fewer behavioral health symptoms than do their younger counterparts,[7] but still experience other age-related vulnerabilities common to late life.[2,3] While certain interventions and treatments for older persons affected by disasters are recommended over others, the field has not reached consensus regarding what is most effective following mass trauma for the immediate and post-mid-term phases.[8] This article will identify recommendations for future research to establish post-disaster behavioral health best practices for the growing and diverse aging population.

POPULATION RISK

With advanced age, it is not unusual for older persons to face chronic health conditions that are compounded by sensory deficits (ie, limited vision or hearing), impaired mobility, cognitive decline, or mental health conditions such as depression or anxiety.[9,10] Because of these age-related vulnerabilities, older persons are often exposed to a greater level of danger during disasters, are predisposed to life-threatening challenges when trying to evacuate or relocate, are less likely to receive disaster warnings, and usually incur greater financial losses than their younger counterparts.[7,9,11] Refining and expanding existing systems of care to more fully meet the needs of older persons is critical given our rapidly changing demographics.

SYSTEM OF CARE

Most current models for the delivery of services to trauma survivors use a stepped care approach that offers 3 levels of mental health intervention and treatment, ranging from informal (public health worker and volunteer-delivered) to formal (licensed clinician-delivered).[12] Each step has a respective assessment procedure and set of interventions.[13-15] The philosophy underpinning the delivery of most

post-event mental health care to survivors is the military PIES (Proximity, Immediacy of response, Expectancy of recovery, and Simplicity) model.[16]

Screening and assessment often occur sequentially. Screening is generally a brief process to determine the need for further evaluation. As it often consists of simple yes or no questions and behavioral observations, screening does not demand any special training (informal providers) to administer instrument questionnaires.[17] Its goal is to quickly, accurately, and easily detect current and potential future behavioral health problems. Formal assessment, on the other hand, pursues evaluation a step further to confirm the presence of symptoms and the magnitude of problems that ensue after the disaster.

Most disaster survivors will experience temporary distress following disasters, but some, without appropriate intervention, will continue experiencing debilitating symptoms.[18] Such symptoms necessitate specific interventions to provide structure, reassurance, and education. People who require immediate psychiatric treatment and those who may be at risk of developing post-traumatic stress disorder (PTSD) in the future are identified by first responders to better target specialized post-disaster services. In other words, screening is used to identify older persons with heightened risk for adverse outcomes in mass trauma, while also enabling rapid, large-scale, low-cost evaluation of this vulnerable population. Evaluation of the impact of disaster on older persons should incorporate an understanding of survivors' immediate needs, available resources, clinical symptoms, psychological distress, and social and community support systems.

Timing is one of the main distinguishing features of intervention versus treatment. Psychological first aid (PFA) is offered as an intervention to all who are affected by the disaster in the immediate aftermath of an event. Crisis counseling is provided in the weeks and months that follow for those who require greater assistance with recovery. The next step, formal psychological treatment, is provided to people who did not sufficiently benefit from crisis counseling. Although interventions can be as short as 5 minutes, treatment normally consists of at least six 1-hour sessions.[19] While interventions and treatment are often conceptualized as components on a continuum of care, they can be differentiated by the requisite level of provider training required and expectations for outcomes. Whereas interventions following a disaster are designed to respond to an individual's immediate psychological response to disaster, treatment is instead aimed at addressing the larger repercussions of the trauma of a disaster on the psyche. Accordingly, treatment demands a more extensive and nuanced form of initial assessment than do more remedial interventions, requiring different personnel and settings for delivery.[19] While interventions are oftentimes offered by a range of professionals and trained volunteers (eg, community first responders, emergency managers), in the field (eg, on site during a disaster), treatment requires clinical training in specific modalities and is usually administered in more traditional mental health clinics or hospital settings by licensed clinicians (eg, social workers, psychologists). It should be noted, however, that while these distinctions exist, they may be much less apparent in practice when resources are scarce and large numbers of people need care.[19] Similarly, interventions delivered immediately after a disaster or while a disaster is ongoing differ quite markedly from those delivered 6 to 8 months after the event.[20] Below, we describe a stepped care approach that has been modified for use with older persons after disasters to illustrate how care should be provided over time.

FIRST STEP

Screening

Screening is conducted not to generate a clinical diagnosis, but to identify the risk level of disaster survivors. Essentially those who are well-functioning and not in need of immediate assistance are identified as low-risk, whereas someone who is significantly impaired is high-risk and needs to be quickly evaluated for their mental health needs. For example, immediate medical assistance is required for older persons who have not been able to take medications as required or who are experiencing delirium, a sudden change in mental functioning. Within the context of a shelter setting, it can be difficult to distinguish an older person with dementia from an older person with delirium. However, certain tools have been developed to combat this ambiguity in assessment.

Seniors Without Families Triage (SWiFT) is a screening tool developed to assess the needs of frail older persons and to identify those requiring care most rapidly.[21] The tool assesses for 3 categories of criteria. The first category, "health/mental priority," evaluates current health conditions, medication use, activities of daily living, and using basic time/place orientation questions to determine cognitive functioning. The second, "case management needs," gauges current needs and resources (ie, income/entitlement resources) and the third, "needs to be linked to family and friends," measures an individual's level of informal supports. This same practicality parlays into interventions delivered during disasters as well.

During-Disaster Interventions

Interventions delivered during a disaster should first and foremost be guided by a fundamental pragmatism and should aim to foster a sense of safety, comfort, and security, while at the same time alleviating pain and discomfort.[20] PFA is the disaster response intervention used by most disaster relief and responder organizations; its ultimate goal is to mitigate stress and to bolster adaptive coping by offering direct assistance, support, and referral. Provided as either a single session or as multiple sessions for an unspecified period of time, PFA helps survivors secure medical attention, locate family members, obtain safe shelter, navigate necessary services, and obtain community and family support. An informal screening

https://doi.org/10.1017/dmp.2017.60 Published online by Cambridge University Press

is used in PFA to guide the responder in assistance-survivor matching. While its initial goal was to have a single universal intervention, PFA soon revealed the necessity of tailored interventions for specific populations, such as older persons.[22]

Distinguishingly, older persons have been found to be particularly responsive to natural spontaneous discussions among peers, reporting accompanying feelings of normalcy, validation, and calm.[23] Such social support has been found to be a critical resource in coping with trauma,[24] especially for older persons given that they are at heightened risk for social isolation and are more likely than other age groups to live alone. Reminders of resiliency, such as having survived other traumatic and taxing events (eg, the Vietnam War, the Holocaust, Pearl Harbor) may also be beneficial in mitigating psychiatric sequelae of the disaster.[25]

Clinical Symptoms

During and immediately following a disaster, older persons may be emotionally labile or overwhelmed, struggling to manage feelings of agitation, rage, terror, guilt, and fear.[20] Subject to often chaotic and quickly changing environs during relocation, older persons may grapple with sensory disorientation (delirium), confusion due to lack of clear, valid information and concurrent sensory difficulties (eg, hearing, vision), exacerbation of premorbid cognitive or physical impairments or painful medical conditions, and the withdrawal and isolation associated with being uprooted.[20] As such, cultivating a sense of safety should be a responder's first line of intervention. Even rudimentary helping techniques can restore calm for individuals at high risk of developing more permanent disaster-related sequelae.[20]

SECOND STEP

Screening

In the first few weeks and months after a mass casualty event, a sense of disbelief is not uncommon. Most of the media attention, initial support, and resources have dwindled. It is at this point when those affected begin to truly experience the trauma and losses from the disaster.[26] For some older persons, this can be especially damaging and can result in exacerbated symptoms of depression, anxiety, and substance abuse.

Intervention

Older persons requiring more assistance with psychological recovery are frequently offered crisis counseling. Crisis counselors can play a key role in helping survivors beyond initial disaster response.[27] Primarily focused on building coping skills, crisis counseling can be an effective second-stage intervention, following PFA, for helping older persons manage increasing or persistent symptoms of depression, anxiety, and substance abuse.

Designed to mitigate the immediate impact of trauma-related stress, PFA and crisis counseling provide a critical foundation on which to lay subsequent treatments. If this frontline approach does not provide sufficient relief, formal psychological treatment is offered. However, it is important to note that while PFA and crisis counseling programs are evidence-informed, they are not yet evidence-based interventions. Therefore, any psychological intervention for older persons following disasters should be delivered with caution, and most importantly, individualized to the unique needs of the older adult.

Clinical Symptoms

Although similarities exist between responses experienced immediately following a disaster and those experienced later, older persons' symptoms sometimes evolve as the urgent threat diminishes. While many initial reactions may spill over to the next stage, sometimes new symptoms also surface for the first time. For instance, some individuals may still experience emotional liability, but to a lesser extent than immediately after a disaster. Others may experience the onset of frightening and intrusive or repetitive imagery of the disaster for the first time, a sense of inadequacy around inability to cope, altered worldviews, and deeper religious questioning of why the disaster occurred,[20] having had more time for their thoughts to percolate and for the gravity of trauma's aftermath to hit.

THIRD STEP

Assessment

Many older persons do not require further assistance after PFA and crisis counseling. A small but significant few, however, need formal treatment. One major challenge in assessing post-traumatic and depressive symptoms in older persons is an increased likelihood of an abnormal disease presentation.[28] Generational stigma for seeking and using mental health treatment among older persons often results in somatic versus psychological symptom presentations rather than admitting to psychological ones.[29] As many depressed older persons report fewer mood-related symptoms (eg, overt sadness, anhedonia) than the general population, crisis counselors and clinicians should be cognizant of what has been dubbed "non-dysphoric or masked depression" when assessing older persons after a disaster.[28]

Exposure to a disaster increases risk for PTSD, as is well documented within the literature.[30,31] As discussed, post-disaster risk factors for psychopathology in older persons differ from those of the general population.[7] PTSD is frequently missed or misdiagnosed in studies on the mental health needs of older persons.[32,33] Many older persons may present with chronic psychiatric conditions or lifelong trauma, both of which not only increase the risk for disaster-related psychopathology[7,11] but can also complicate diagnosis. Older persons are also more likely to experience a cluster of PTSD symptoms.[34] It is useful to thoroughly examine and to classify

https://doi.org/10.1017/dmp.2017.60 Published online by Cambridge University Press

psychological trajectories in older persons because this can aid in pinpointing, and preemptively addressing, specific problematic factors that may lead to PTSD.[35]

Treatment

For the most part older persons do not require further assistance beyond PFA and crisis counseling, but for those who do, the third line of treatment is formal psychotherapy. Approximately 6% to 20% of the trauma-exposed population develops symptoms congruent with PTSD.[36,37] To combat such symptoms, all post-disaster treatments should be individualized. Numerous evidence-informed treatments exist for addressing the psychological conditions that can result following mass trauma (eg, PTSD, depressive disorders, anxiety disorders), but scant studies have examined the efficacy of these post-disaster interventions for older persons. Moreover, the National Institute for Clinical Excellence has not detailed or disseminated any guidelines for the treatment of PTSD in old age,[38] leaving specific challenges, such as cognitive decline, unaccounted for in psychotherapy,[39,40] which can impair an older person's ability to remember therapeutic material.[41] Cognitive deficits can necessitate modifications for older persons such as multimodal ways of conveying psychoeducation and therapeutic tasks.[42]

Cognitive processing therapy and prolonged exposure therapy are forms of cognitive-behavioral therapy found to be effective for a variety of conditions, populations, and settings.[43-45] However, no randomized controlled trials have explored the efficacy of cognitive techniques for older persons with PTSD and no outcome data have been reported to date.[5] Research on the use of exposure techniques with older persons is similarly mixed, given the potentially harmful strong physiological reactions associated with the high vegetative arousal they educe. Particular caution should be exercised if an older person has cardiovascular disease.[46] However, research has found life-review therapy, combined with exposure therapy, to be effective in reducing PTSD severity among older persons.[47] Life-review therapy, a narrative approach frequently used for treating older persons, works to integrate the traumatic event into a coherent life story using biographical and emotional recall. Although empirical validation is still required, preliminary research indicates that cognitive techniques, delivered in tandem with life-review interventions, may offer a way forward in effectively treating older persons following disasters.[7]

Acceptance and commitment therapy (ACT), which posits that distress arises from an individual's efforts to avoid emotional pain, has also been identified as a potentially helpful treatment for PTSD. The primary goals of this therapy are to reduce experiential avoidance and increase psychological flexibility. Although research on ACT is limited, it is emerging as an effective treatment for older persons and could be helpful for those with PTSD.[48] In sum, despite the discussed dearth of evidence-based post-disaster treatments for older persons, initial findings indicate that general-disorder-specific interventions are effective if based on a life-review methodology.[7] Cultural factors, however, should be taken into consideration and treatments adapted accordingly. Future studies need to explore the specific effectiveness of these therapies on older persons.

Clinical Symptoms

Long after the immediate threat posed by a disaster has subsided, older persons sometimes continue to experience ongoing post-trauma symptoms. Although it is rare, chronic symptoms may linger, especially if the symptoms were not treated or addressed adequately at an earlier stage.[20] PTSD, acute stress disorder, and depression are the most frequently occurring psychiatric disorders people develop following a terrorist attack[28] or a natural disaster. Although some older persons may develop PTSD after a disaster, what is unknown is which age groups (eg, young-old, old-old, and oldest old) are at greatest risk and why. Two main questions have guided research on symptom profiles among older persons after disasters: (1) whether age is a protective or a predictive factor with regard to the onset, severity, and presentation of PTSD symptoms, and (2) whether symptom profiles among older persons differ following human-made versus natural-caused disasters. No consensus has been reached on differences in symptom severity between older and younger persons. Moreover, studies examining age-based correlates of PTSD following disasters have found no significant differences between the 2 cohorts.[49,50] Conversely, other studies have reported that older persons are at increased risk of PTSD following natural disasters.[51] Further research is needed to understand PTSD within the older population. A summary of these 3 steps is presented in Figure 1.

DISCUSSION

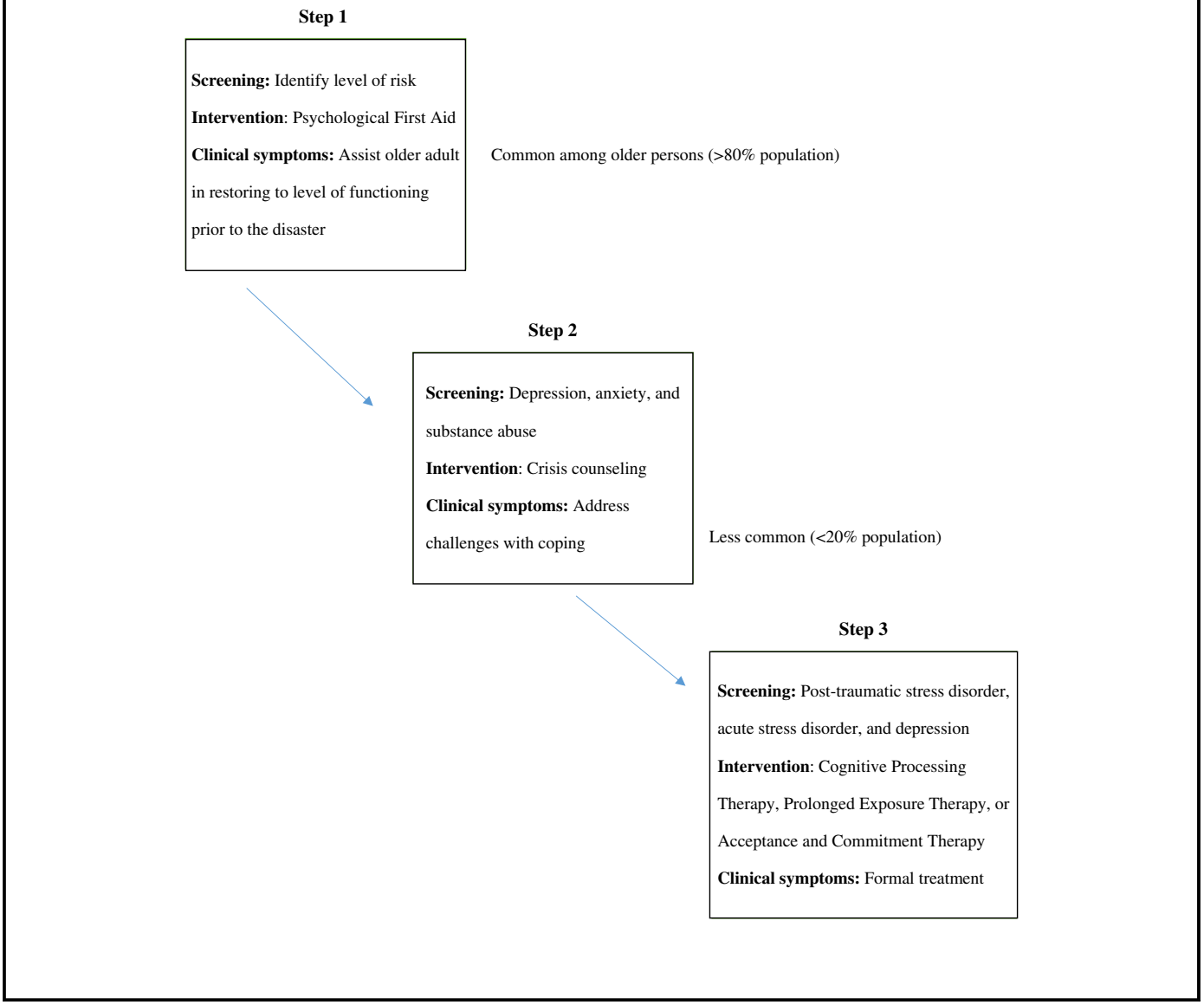
This article reviewed the system of care approaches with consideration of the unique needs of older persons following a disaster. Mass traumatic events impact both individuals and communities, leading to increased prevalence of psychological distress and mental illness, demanding effective evidence-informed approaches. Trauma response approaches typically rely on the PIES model and incorporate acute, intermediate, and long-term interaction stages.

While this review illustrates the significant vulnerabilities of older persons following disasters, it also acknowledges that mental health outcomes are not automatically worse for older persons. Given extant considerable debate within the literature regarding whether age is a predictive or protective factor against post-disaster psychopathology, further research on post-disaster PTSD, depression, and anxiety is warranted. Future studies should include more stringent control samples of non-exposed older persons and deepened consideration of the confounding effects of disability, gender, prior traumatic experiences, and bereavement when analyzing the role of older age in the

https://doi.org/10.1017/dmp.2017.60 Published online by Cambridge University Press

FIGURE 1

Summary of the 3-Step Response for Older Persons After a Disaster.



epidemiology of post-disaster mental health conditions.[51] A common issue that continues to persist is that current assessments and treatments routinely used with older persons are based on research that excludes participants over the age of 65. Consequently, they are not sufficiently tailored to this population's unique needs, leaving extensive gaps in knowledge regarding current best-practice policies for older persons.

Although strides have been made, services are still limited in their ability to provide sufficient targeted post-disaster care for older persons. After 2005's Hurricane Katrina, older persons' health declined by nearly 4 times compared to an age-matched group unaffected by the storm,[52] underscoring the consequences of an inadequate system of care. Morbidity rates increased 12.6% compared with 3.4% nationwide, alongside increased prevalence of cardiac disease, congestive heart failure, and sleep problems.[52] Even emergency department visits rose from the pre-Katrina year (up 21%), as did hospitalization rates (up 23%).[52] These numbers remained fairly consistent during recent disasters.[53-55] Despite these marked statistics, too little is done to conduct research, train responders, build infrastructure, and develop support systems for older persons relative to other vulnerable populations, such as children and adolescents.

Specifically, serious consideration should be given to (1) designing disaster shelters that older persons can readily access, (2) creating communication systems whereby the safety and mental health of isolated older persons can be monitored, and (3) developing triage systems that both

https://doi.org/10.1017/dmp.2017.60 Published online by Cambridge University Press

facilitate speedy reunions with family members as well rapidly address their basic physical health needs.[51] Currently such plans, to the extent to which they address the psychological impact of disasters, overlook the needs of older persons, leaving a gaping hole in terms of first responders, case managers, and psychotherapy providers equipped to respond to the mental health needs of this high-risk population.

CONCLUSION

Given an already overtaxed social security system and an aging population expected to increase by 50% in coming years, older persons are at greater risk of being excluded from federal aid distribution.[56] Such shifts, coupled with the "stiff upper lip" mentality of older persons, could exacerbate help-seeking stigmas out of worry that others may need it more, particularly when confronted with high levels of devastation, injury, death, and pervasive uncertainty. As social connectedness and financial stressors have both been shown to be important predictors of mental health outcomes in older persons, clinicians should be aware of these generational trends. Public health initiatives to increase education around issues of underreporting and somatization of symptoms should also be created. Because older persons are more likely to accept help from religious institutions or from their families, policy-makers should ensure that federally funded geriatric mental health programs are proactive rather than reactive in nature. Addressing the aforementioned deficits in current emergency systems of care for older persons demands a large-scale reconceptualization and greater synergy across aging, mental health, and physical health services to better address the multifaceted and interrelated needs of older persons in the aftermath of disasters.

About the Authors

College of Social Work, University of Kentucky, Lexington, Kentucky (Dr Gibson); Department of Clinical Psychology, Palo Alto University, Palo Alto, California (Ms Walsh and Dr Brown).

Correspondence and reprint requests to Allison Gibson, PhD, MSW, University of Kentucky, College of Social Work, 659 Patterson Office Tower, Lexington, KY 40506 (e-mail: allison.gibson@uky.edu).

Acknowledgments

Additional Information: This paper was submitted as part of the special section Caring for Older Adults in Disasters. Disaster Med Public Health Prep. 2017;11:25-152. doi: https://doi.org/10.1017/dmp.2017.4.

Published online: August 30, 2017.

REFERENCES

1. Centers for Disease Control and Prevention. CDC's disaster planning goal: Protect vulnerable older adults. http://www.cdc.gov/aging/pdf/disaster_planning_goal.pdf. Published 2006. Accessed March 18, 2016.
2. Brown LM. Older adults and people with disabilities. In: Jacobs GA, ed. *Community-Based Psychological First Aid: A Practical Guide for Helping Individuals and Communities during Difficult Times*. Cambridge, MA: Elsevier Inc; 2016:159-176. https://doi.org/10.1016/B978-0-12-804292-2.00015-6.
3. Gibson MJ, Hayunga M. We can do better: Lessons learned for protecting older persons in disaster. Washington, DC: AARP. http://assets.aarp.org/rgcenter/il/better.pdf. Published 2006. Accessed March 10, 2016.
4. Hutton D. *Older People in Emergencies: Considerations for Action and Policy Development*. Geneva, Switzerland: World Health Organization; 2008.
5. Böttche M, Kuwert P, Knaevelsrud C. Posttraumatic stress disorder in older adults: an overview of characteristics and treatment approaches. *Int J Geriatr Psychiatry*. 2012;27(3):230-239. https://doi.org/10.1002/gps.2725.
6. O'Donnell ML, Forbes D. Natural disaster, older adults, and mental health–a dangerous combination. *Int Psychogeriatr*. 2016;28:9-10.
7. Acierno R, Ruggiero KJ, Kilpatrick DG, et al. Risk and protective factors for psychopathology among older versus younger adults after the 2004 Florida hurricanes. *J Am Geriatr Soc*. 2006;14:1051e9.
8. Gersons BPR, Olff M. Behandelingsstragieen bij post traumatishche stresstoornissen [Treatment strategies for PTSD]. Houten, Netherlands: Bohn Stafleu van Loghum; 2005.
9. Aldrich N, Benson WF. Disaster preparedness and the chronic disease needs of vulnerable older adults. *Prev Chronic Dis*. 2008;5(1). http://www.cdc.gov/pcd/issues/2008/jan/pdf/07_0135.pdf. Accessed March 18, 2016.
10. Dyer CB, Regev M, Burnett J, et al. SWiFT: a rapid triage tool for vulnerable older adults in disaster situations. *Disaster Med Public Health Prep*. 2008;2:S45-S50. https://doi.org/10.1097/DMP.0b013e3181647b81.
11. Sakauye KM, Streim JE, Kennedy GJ, et al. AAGP position statement: disaster preparedness for older Americans: critical issues for the preservation of mental health. *J Am Geriatr Soc*. 2009;17:916e24. https://doi.org/10.1097/JGP.0b013e3181b4bf20.
12. Brown LM, Beutler LE, Patterson JH, et al. Psychotherapy with people exposed to mass casualty events: theory and practice. In: Consoli AJ, Beutler LE, Bongar B, eds. *Comprehensive Textbook of Psychotherapy: Theory and Practice*. 2nd ed. New York, NY: Oxford University Press; 2016:409-425.
13. Brewin CR, Scragg P, Robertson M, et al. Promoting mental health following the London bombings: a screen and treat approach. *J Trauma Stress*. 2008;21(1):3-8. https://doi.org/10.1002/jts.20310.
14. Inter-Agency Standing Committee. *Guidelines on Mental Health and Psychosocial Support in Emergency Settings*. Geneva, Switzerland: World Health Organization. http://www.who.int/mental_health/emergencies/9781424334445/en/. Published 2007. Accessed July 25, 2017.
15. The Sphere Project. *Humanitarian Charter and Minimum Standards in Disaster Response*. Southampton, UK: Hobbs; 2011.
16. Ursano RJ, Fullerton CS, Norwood AE. *Terrorism and Disaster: Individual and Community Mental Health Interventions*. Cambridge, UK: Cambridge University Press; 2003.
17. US Department of Health and Human Services. *Substance Abuse Treatment: Addressing the Specific Needs of Women*. Rockville, MD: Substance Abuse and Mental Health Services Administration. Treatment Improvement Protocol (TIP) Series, No. 51. Chapter 4: Screening and Assessment. http://www.ncbi.nlm.nih.gov/books/NBK83253/. Published 2009. Accessed March 21, 2016.
18. Brewin C, Rose S, Andrews B. Screening to identify individuals at risk after exposure to trauma. In: Schneider U, ed. *Early Intervention for Psychological Trauma*. Oxford, United Kingdom: Oxford University Press; 2002:130-142.
19. Substance Abuse and Mental Health Services Administration. *Brief Interventions and Brief Therapies for Substance Abuse*. Treatment improvement protocol (TIP) series 34. Rockville, MD: SAMHSA; 1999.
20. Toner JA, Mierswa TM, Howe JL. *Geriatric Mental Health Disaster and Emergency Preparedness*. New York, NY: Springer Publishing; 2010.
21. Baylor College of Medicine and American Medical Association Recommendations for Best Practices in the Management of Elderly Disaster Victims. Washington, DC: Baylor College of Medicine, Harris County Hospital District, American Medical Association, Care for

Elders, and AARP. https://www.bcm.edu/pdf/bestpractices.pdf. Published 2006. Accessed March 11, 2016.
22. Brown LM, Bruce ML, Hyer K, et al. A pilot study evaluating the feasibility of psychological first aid for nursing home residents. *Clin Gerontol*. 2009; 32(3):293-308. https://doi.org/10.1080/07317110902895317.
23. Langan JC, Palmer JL. Listening to and learning from older adult Hurricane Katrina survivors. *Public Health Nurs*. 2012;29(2):126-135. https://doi.org/10.1111/j.1525-1446.2011.00996.x.
24. Norris FH, Friedman MJ, Watson PJ. 60,000 disaster victims speak: part II. Summary and implications of the disaster mental health research. *Psychiatry*. 2002;65(3):240-260. https://doi.org/10.1521/psyc.65.3.240.20169.
25. Lewis M. The frail and the hardy seniors of 9/11: the needs and contributions of older Americans. The Johns Hopkins University website. http://www.upmcbiosecurity.org. Published 2003. Accessed March 16, 2016.
26. Myers D, Zunin L. Phases of reactions to disaster. In: DeWolfe D, ed. *Training Manual for Mental Health and Human Service Workers in Major Disasters*. DHHS publication no. ADM 90-538. Washington, DC: US Government Printing Office; 2000:52-53.
27. Norris FH, Hamblen JL, Rosen CS. Service characteristics and counseling outcomes: lessons from a cross-site evaluation of crisis counseling after Hurricanes Katrina, Rita and Wilma. *Adm Policy Ment Health*. 2009;36(3):176-185. https://doi.org/10.1007/s10488-009-0215-1.
28. Hall RCW, Hall RCW, Chapman M. Effects of terrorist attacks on the elderly– part II: posttraumatic stress, acute stress, and affective disorders. *Clin Geriatr*. 2006;14:17-24.
29. Brown LM, Haley C, Bryant C. The role of social marketing in developing disaster behavioral health programs. In: Framingham J, Teasley M, eds. *Behavioral Health Response to Disasters*. Boca Raton, FL: Taylor & Francis Group; 2012:371-388. https://doi.org/10.1201/b11954-29.
30. Galea S, Tracy M, Norris F, et al. Financial and social circumstances and the incidence and course of PTSD in Mississippi during the first two years after Hurricane Katrina. *J Traumatic Stress*. 2008;21:357e68.
31. Pietrzak RH, Southwick SM, Tracy M, et al. Posttraumatic stress disorder, depression, and perceived needs for psychological care in older persons affected by Hurricane Ike. *J Affect Disord*. 2012;138(1-2):96-103. https://doi.org/10.1016/j.jad.2011.12.018.
32. Warchal JR, Graham LB. Promoting positive adaptation in adult survivors of natural disasters. *Adultspan J*. 2011;10:34-51. https://doi.org/10.1002/j.2161-0029.2011.tb00005.x.
33. Davidson JR. Recognition and treatment of posttraumatic stress disorder. *JAMA*. 2001;286(5):584-588. https://doi.org/10.1001/jama.286.5.584.
34. Pietrzak RH, Goldstein RB, Southwick SM, et al. Psychiatric comorbidity of full and partial posttraumatic stress disorder among older adults in the United States: results from wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions. *J Am Geriatr Soc*. 2012;20:380-390.
35. Pietrzak RH, Van Ness PH, Fried TR, et al. Trajectories of posttraumatic stress symptomatology in older persons affected by a large-magnitude disaster. *J Psychiatr Res*. 2013;47(4):520-526. https://doi.org/10.1016/j.jpsychires.2012.12.005.
36. Breslau N, Kessler RC, Chilcoat H, et al. Trauma and posttraumatic stress disorder in the community: the 1996 Detroit Area Survey of Trauma. *Arch Gen Psychiatry*. 1998;55(7):626-632. https://doi.org/10.1001/archpsyc.55.7.626.
37. Kessler RC, Sonnega A, Bromet E, et al. Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry*. 1995;52(12): 1048-1060. https://doi.org/10.1001/archpsyc.1995.03950240066012.
38. National Institute for Health and Care Excellence. Post-traumatic stress disorder: management. https://www.nice.org.uk/guidance/cg26. Published 2005. Accessed October 21, 2016.
39. Brown LM, Cohen D, Kohlmaier J. Older adults and terrorism. In: Bongar B, Brown LM, Beutler L, Zimbardo P, Breckenridge J, eds. *Psychology of Terrorism*. Oxford, United Kingdom: Oxford University Press; 2007:288-310.
40. Owens PJ, Forgione A Jr, Briggs S. Challenges of international disaster relief: use of a deployable rapid assembly shelter and surgical hospital. *Disaster Manag Response*. 2005;3(1):11-16. https://doi.org/10.1016/j.dmr.2004.10.004.
41. Hyer LA, Sohnle SJ. *Trauma Among Older People: Issues and Treatment*. New York: Brunner-Routledge; 2001.
42. Cook JM, Niederehe G. Trauma in older adults. In: Friedman MJ, Keane TM, Resick PA, eds. *Handbook of PTSD: Science and Practice*. New York: Guilford Press; 2007:252-276.
43. Lopes AP, Macedo TF, Coutinho ESF, et al, Systematic review of the efficacy of cognitive-behavior therapy related treatments for victims of natural disasters: a worldwide problem [published online October 8, 2014]. *PLOS One*. https://doi.org/10.1371/journal.pone.0109013.
44. Cox D, D'Oyley H. Cognitive-behavioral therapy with older adults. *BCMJ*. 2011;53:348-352.
45. Jeffreys MD, Reinfelda C, Nairb PV, et al. Evaluating treatment of posttraumatic stress disorder with cognitive processing therapy and prolonged exposure therapy in a VHA specialty clinic. *J Affect Disord*. 2014;28:108-114.
46. Hyer LA, Woods MG. Phenomenology and treatment of trauma later in life. In: Follette VM, Ruzek JI, Abueg FR, eds. *Cognitive-Behavioral Therapies for Trauma*. New York: Guilford Press; 1998: 383-414.
47. Maercker A. Life-review technique in the treatment of PTSD in elderly patients: rationale and three single case studies. *J Clin Geropsychol*. 2002;8(3):239-249. https://doi.org/10.1023/A:1015952429199.
48. Petkus AJ, Wetherell JL. Acceptance and commitment therapy with older adults: rationale and considerations. *Cognit Behav Pract*. 2013; 20(1):47-56. https://doi.org/10.1016/j.cbpra.2011.07.004.
49. Kohn R, Levav I, Garcia ID, et al. Prevalence, risk factors and aging vulnerability for psychopathology following a natural disaster in a developing country. *Int J Geriatr Psychiatry*. 2005;20(9):835-841. https://doi.org/10.1002/gps.1369.
50. Chung MC, Dennis I, Easthope Y, et al. A multiple-indicator multiple-cause model for posttraumatic stress reactions: personality, coping, and maladjustment. *Psychosom Med*. 2005;67(2):251-259. https://doi.org/10.1097/01.psy.0000155675.56550.5f.
51. Parker G, Lie D, Siskind DJ, et al. Mental health implications for older adults after natural disasters – a systematic review and meta-analysis - corrigendum. *Int Psychogeriatr*. 2015;28:11-20.
52. Burton LC, Skinner EA, Uscher-Pines L, et al. Health of Medicare Advantage plan enrollees at 1 year after Hurricane Katrina. *Am J Manag Care*. 2009;15:13-22.
53. Doocy S, Daniels A, Packer C, et al, The human impact of earthquakes: a historical review of events 1980-2009 and systematic literature review [published online April 16, 2013]. *PLOS Curr Dis*. https://doi.org/10.1371/currents.dis.67bd14fe457f1db0b5433a8ee20fb833.
54. Doocy S, Daniels A, Dick A, et al, The human impact of tropical cyclones: a historical review of events 1980-2009 and systematic literature review [published online April 16, 2013]. *PLOS Curr Dis*. https://doi.org/10.1371/currents.dis.2664354a5571512063ed29d25ffbce74.
55. Doocy S, Daniels A, Dick A, et al, The human impact of tsunamis: a historical review of events 1900-2009 and systematic literature review [published online April 16, 2013]. *PLOS Curr Dis*. doi: https://doi.org/10.1371/currents.dis.40f3c5cf61110a0fef2f9a25908cd795.
56. Powell S, Plouffe L, Gorr P. When ageing and disasters collide: lessons from 16 international case studies. *Radiat Prot Dosimetry*. 2009; 134(3-4):202-206. https://doi.org/10.1093/rpd/ncp082.

https://doi.org/10.1017/dmp.2017.60 Published online by Cambridge University Press