
AI translation · View original & related papers at
chinaxiv.org/items/chinaxiv-202312.00051

Exploring the Construction of a Psychological Crisis Intervention System Following Major Natural Disasters (Postprint)

Authors: Sun Yankun, Gong Yimiao, Huang Xuebing, Qian Ying, Sun Siwei, Chen Hongguang, Lu Lin

Date: 2023-12-04T00:00:00+00:00

Abstract

Major natural disasters not only inflict severe casualties and social losses, but also engender a series of psychological traumas. Timely and effective post-disaster psychological crisis intervention can prevent irreparable damage to the mental health of survivors, family members of victims, witnesses, rescue personnel, and other affected populations. This article outlines the impact of major natural disasters on mental health status and the characteristics of post-disaster psychological crises; summarizes previous experiences in post-disaster psychological crisis intervention work; and proposes recommendations for such interventions, including further improving the legal framework for psychological crisis intervention, clarifying the government's role in these efforts, establishing and refining China's psychological crisis intervention network and system following major natural disasters, and building a comprehensive and high-quality psychological crisis intervention workforce. It is hoped that this article will provide a theoretical foundation for future post-disaster psychological crisis intervention endeavors.

Full Text

Preamble

ChinaXiv Partner Journal
Policy & Management Research

Citation Format: Sun Y K, Gong Y M, Huang X B, et al. Probe into mental health issues caused by major natural disasters and crisis interventions. *Bulletin of Chinese Academy of Sciences*, 2023, 38(11): 1710-1717, doi: 10.16418/j.issn.1000-3045.20230907003.

SUN Yankun, GONG Yimiao, HUANG Xuebing, QIAN Ying, SUN Siwei,
CHEN Hongguang, LU Lin*
Peking University Sixth Hospital, Beijing 100191, China

Abstract

Major natural disasters not only cause severe casualties and social losses but also inflict long-lasting psychological trauma. Timely and effective post-disaster psychological crisis intervention can prevent indelible psychological damage to survivors, victims' families, witnesses, and rescue personnel. This article reviews the impact of major natural disasters on mental health and the characteristics of post-disaster psychological crises, summarizes previous experiences in post-disaster crisis intervention, and proposes recommendations for future interventions. These include further improving the legal framework for psychological crisis intervention, clarifying the government's role in such efforts, establishing and refining China's post-disaster psychological crisis intervention networks and systems, and building comprehensive, high-quality intervention teams. We hope this article provides a theoretical foundation for future post-disaster psychological crisis intervention work.

Keywords: major natural disasters, psychological crisis intervention, survivors, victims' families, witnesses, rescue personnel

DOI: 10.16418/j.issn.1000-3045.20230907003

CSTR: 32128.14.CASbulletin.20230907003

Author Biographies

SUN Yankun is Director of the General Office for Changping Branch at Peking University Sixth Hospital (Institute of Mental Health) and Deputy Director of the Department for Patient Services. As an Assistant Professor, she works on promoting mental health and conducting research on health policy and hospital management. E-mail: yankunsun@bjmu.edu.cn

LU Lin is an Academician of the Chinese Academy of Sciences, Professor and Director of Peking University Sixth Hospital (Institute of Mental Health), President of Shandong First Medical University & Shandong Academy of Medical Sciences, and Director of the National Clinical Research Center for Mental Disorders in China. His research focuses on identifying neurobiological mechanisms and clinical interventions for psychiatric disorders, and he is committed to promoting the sustainable development of mental health services in China. E-mail: linlu@bjmu.edu.cn

*Corresponding author

In recent years, extreme weather events including torrential rains, floods, hurricanes, and heatwaves, as well as natural disasters such as earthquakes and mud-

slides, have occurred frequently, causing severe casualties and losses while inflicting widespread psychological trauma. The psychological devastation caused by major natural disasters is often the deepest and most severe, destroying people's mental worlds and leading to abnormal emotions and cognitive functions, loss of hope for life, pessimism, nihilistic consciousness, and diminished sense of security. Without early intervention, the physical and mental health of affected individuals will suffer irreparable damage. The impact of post-disaster psychological trauma is extensive, encompassing not only victims' families and survivors but also witnesses and rescue personnel [1]. Timely and systematic psychological intervention can not only reduce intense stress reactions caused by floods but also prevent long-term mental health problems. Analyzing the current state of psychological problems caused by major natural disasters and exploring the construction of an efficient crisis intervention system based on China's national conditions are of great significance for future post-disaster psychological crisis intervention and mental reconstruction efforts.

1. Impact of Major Natural Disasters on Mental Health

Disasters inflict tremendous negative psychological impacts on those who experience them. Epidemiological surveys indicate that both disaster survivors and rescue personnel may develop mental illnesses, with severity varying according to the magnitude of the disaster [1]. The World Health Organization reports that within one year of a disaster, approximately 30–50% of affected populations experience moderate to severe psychological problems [2]. In recent years, investigations into psychological issues following major natural disasters in China have gradually increased, with all studies demonstrating high detection rates of post-disaster mental health problems.

1.1 Mental Health Problems Among Disaster Survivors

In a survey of orphans who survived the 1976 Tangshan earthquake, 23% of respondents exhibited post-traumatic stress disorder (PTSD), and a follow-up survey conducted 30 years after the earthquake revealed a current prevalence rate as high as 12% [3]. Following the 2008 Wenchuan earthquake, a mental health survey of victims in severely affected areas found that 30.9% of respondents experienced acute stress disorder, 31.1% had depressive symptoms, and 12.9% had suicidal ideation [4]. In addition to earthquakes, major natural disasters such as floods and mudslides also cause significant psychological harm. A survey conducted five years after the 2010 Zhouqu mudslide disaster in Gansu Province showed PTSD detection rates of 32.30%, anxiety symptom detection rates of 25.77%, depressive symptom detection rates of 26.80%, and comorbid anxiety-depression detection rates of 22.34% [5]. A 2010 survey of residents affected by flooding in Jiangxi Province revealed psychological symptom detection rates of 84.6%, with 7.9% of disaster victims experiencing moderate or severe psychological problems and PTSD detection rates of 3.19% [6]. A cross-sectional survey of 572 residents following the “7·20” extreme rainstorm

disaster in Henan Province in 2021 found that 27.4% of residents had severe stress scores. Residents who were trapped, experienced or witnessed others in distress, or witnessed damage to public facilities such as buses and subways had significantly higher scores for anxiety and stress [7].

Various factors contribute to different mental health outcomes, including whether relatives died, the number of deceased relatives, age, severity of property loss, gender, education level, social support, and satisfaction with support. Therefore, post-crisis interventions must be implemented across different groups and contexts.

1.2 Mental Health Problems Among Rescue Personnel

The mental health of rescue personnel deserves equal attention. After disasters, soldiers and medical staff who directly enter disaster sites for rescue operations experience significant sensory impacts and are prone to strong negative emotional reactions. Research on the psychological stress status of rescue personnel after the Wenchuan earthquake revealed significant individual differences in the duration of psychological stress, with approximately 15% of personnel continuing to show stress reactions after 10 days. The prevalence of acute stress disorder remained as high as 13.5% one month after the earthquake, and surveys conducted from two months to two years post-earthquake showed significantly elevated PTSD prevalence among rescue personnel, indicating that the Wenchuan earthquake as a major stressor had a substantial impact on rescuers' mental health. Although overall PTSD prevalence declined two years after the earthquake, the remission rate among those already diagnosed with PTSD was very low [8–10].

Following major natural disasters, local firefighters and medical rescue personnel hold dual identities as both disaster victims and rescuers. They may experience the same post-disaster psychological problems as the general public while also facing additional impacts from exposure to disaster scenes during rescue operations, making their mental health needs particularly worthy of sustained attention.

2. Characteristics of Post-Disaster Psychological Crisis

2.1 Stages of Psychological Change After Disaster

Generally, the psychological change process of disaster-affected populations can be divided into four stages [11]. (1) **Numbness and Shock Stage**: During this stage, trauma victims typically fall into two categories. Some become numb, their minds go blank, and they even lose self-care abilities, requiring assistance from others. Others appear unusually calm, as if nothing has happened, and remain in an avoidance state for self-protection. Such reactions are normal within three days to one month after a disaster. During this phase, trauma victims lack a sense of security and require basic necessities as well as understanding

and companionship. (2) **Denial and Searching Stage:** In this stage, some trauma victims may continue to believe that deceased family members are still alive one to two months after their death and attempt to search for them. This state typically lasts three to six months. During this phase, it is essential to fully respect trauma victims—neither reinforcing their searching behavior nor rushing them back to reality, but allowing them to process their emotions. (3) **Confusion and Depression Stage:** During this period, trauma victims have accepted the reality of family members' deaths and experience depression and grief. Friends and relatives should focus on empathizing with their emotions and providing support to help them enter the reconnection stage, gradually returning to reality, regaining a sense of security, connection, and efficacy, and beginning a new life. (4) **Reconnection Stage:** Many disaster victims cannot complete post-disaster psychological reconstruction through their own efforts or with the help of friends and relatives. Their stress reactions do not diminish over time, and their suffering may even intensify. In such cases, psychological intervention is necessary to prevent the development of acute stress disorder or PTSD.

2.2 Characteristics of Acute Stress Reactions and Acute Stress Disorder

The first one to three days after a disaster constitute the acute stress reaction period, which typically resolves spontaneously within one to three days and no later than two weeks. However, a minority of individuals may experience acute stress reactions lasting up to one month after the disaster, potentially developing anxiety, depression, insomnia, or even acute stress disorder symptoms. Acute stress disorder usually resolves within one month. If acute stress reaction symptoms persist for more than one month after the trauma, or only begin after one month, and significantly impair social functioning and quality of life, the emergence of PTSD symptoms should be alerted. PTSD patients often experience sudden re-experiencing of trauma scenes while awake and typically have trauma-related nightmares during sleep, followed by intense emotional or physical symptoms. Without intervention, these symptoms can persist for years, severely affecting victims' post-disaster lives. Therefore, to reduce the likelihood of acute stress disorder or PTSD and alleviate subsequent suffering, rapid assessment of victims' mental status and scientific psychological intervention must be provided after disasters.

Thus, based on the characteristics of post-disaster psychological crises, the persistent and profound psychological harm caused by disasters demonstrates that both short-term crisis intervention and long-term psychological reconstruction are essential components of post-disaster mental health work [12,13].

3. Current Status of Post-Disaster Psychological Crisis Intervention

The primary objectives of post-disaster psychological crisis intervention are to reduce the impact of disasters on populations, promote normal psychological recovery, and enable individuals to adapt to new life circumstances. In 1994, experts from Peking University Sixth Hospital provided psychological crisis intervention for families of victims in the Karamay fire, marking the birth of post-disaster psychological crisis intervention in China. Since then, psychological intervention experts have responded to numerous disasters, including the 1998 Yangtze River floods and the “12·25” major fire in Luoyang in 2000. During the 2003 SARS outbreak, China organized extensive psychological crisis interventions for various groups, including patients, suspected cases, close contacts, quarantined individuals, and frontline medical staff [12]. Following the 2008 Wenchuan earthquake, the Party, government, and all sectors of society attached great importance to post-disaster psychological crisis intervention. The former Ministry of Health established a psychological crisis intervention medical team that went deep into the disaster area—the first professional psychological crisis intervention organization in national disaster relief operations. After the Wenchuan earthquake, volunteers and psychological counselors from across the country gathered to actively carry out interventions. However, this spontaneous response also led to disorganized, unfocused intervention efforts that could potentially cause secondary harm to disaster-affected populations [12]. To address the unique challenges of post-disaster work and guide scientifically sound and standardized interventions, the former Ministry of Health issued the *Guiding Principles for Emergency Psychological Crisis Intervention*, representing the first national-level guidance on psychological crisis intervention issued by a government ministry.

Post-disaster psychological crisis intervention remains a long-term endeavor. It requires not only establishing and improving national systems and mechanisms but also actively popularizing knowledge about psychological crisis characteristics and interventions among the public, continuously increasing awareness of mental health issues, further enhancing the quantity and quality of intervention personnel, and effectively promoting the development of psychological crisis intervention work.

4. Construction and Improvement of Post-Disaster Psychological Crisis Intervention Management Systems

Organized, purposeful, and systematic psychological counseling and crisis intervention for disaster-affected populations before, during, and after disasters is an effective means to reduce the occurrence and development of post-disaster psychological problems [14]. The successful implementation of post-disaster psychological crisis intervention requires extensive, organized, and systematic support, involving organizational structures and allocation of responsibilities at

all government levels, as well as integration and collaboration of social and professional resources [15]. Therefore, building and improving post-disaster psychological crisis intervention management systems based on China's public health and emergency management frameworks is imperative.

4.1 Establishing China's Post-Disaster Psychological Crisis Intervention System

As a public service, post-disaster psychological crisis intervention falls under both emergency management and health promotion, requiring government leadership for implementation and support. To strengthen national-level coordination for major disaster psychological crisis intervention, we recommend establishing a National Psychological Crisis Intervention Center under central government leadership. This center would integrate various departments, including health, emergency management, and finance, to form a joint crisis intervention team that provides support for emergency response. Drawing on China's current status and challenges in post-disaster psychological crisis intervention and emergency management, and learning from international best practices, China should develop a psychological crisis intervention system tailored to its national conditions from the four stages of crisis management—prevention, preparation, response, and recovery—while considering the characteristics of major natural disasters and practical implementation of interventions [Figure 1: see original paper]. This involves coordinating relevant departments, preparing emergency plans, and laying an institutional foundation for post-disaster psychological crisis intervention and mental rehabilitation.

4.2 Continuously Improving Policies, Regulations, and Systems for Psychological Crisis Intervention

The construction of post-disaster psychological crisis intervention management systems involves multiple aspects of emergency management and mental health promotion. Recent government policies and regulations demonstrate increasing attention to psychological crisis intervention, with many provisions emphasizing the importance of mental health support and assistance activities. For example, the *Mental Health Law of the People's Republic of China* clarifies the scope of psychological counseling and therapy and emphasizes the necessity of conducting crisis interventions during major disasters. However, current policies lack specific provisions regarding who should implement interventions, when, how, and how to evaluate their effectiveness.

Therefore, future efforts should involve close collaboration between the Ministry of Emergency Management and the National Health Commission to improve top-level design and promptly refine relevant content in the *Mental Health Law of the People's Republic of China* and the *Emergency Response Law of the People's Republic of China*. Building on the social psychological service system and emergency management framework, we must further clarify top-level design, organizational structures, implementing agencies, operational mechanisms, fund-

ing sources, personnel qualifications, and training management to standardize the organization and implementation of post-disaster psychological crisis interventions [13]. Improving the policy and regulatory system for post-disaster psychological crisis intervention will enable departments at all levels to leverage their functional strengths and continuously promote the legalization, institutionalization, and standardization of crisis intervention work [12].

4.4 Establishing and Improving Post-Disaster Psychological Crisis Intervention Networks and Systems

The establishment and effective operation of psychological crisis intervention systems require full government leadership, complemented by active participation from society, markets, and individuals. Governments at all levels must play a leading role to normalize and standardize post-disaster psychological crisis intervention work. Integrating post-disaster psychological crisis intervention into government emergency response plans at all levels will greatly enhance the timeliness, smooth implementation, and effectiveness of interventions, playing a crucial role in post-disaster rescue operations and overall social stability [12,13].

After disasters occur, rapidly establishing service groups for psychological crisis intervention is a critical task for reducing post-disaster mental health problems and “secondary harm.” Key measures include establishing organizational management groups, expert teams, hotline consultation services, and counseling groups to form a comprehensive intervention network that provides organized and targeted post-disaster crisis interventions.

We recommend establishing national psychological crisis intervention guidance agencies through relevant state departments or professional institutions to organize training for crisis intervention personnel, build talent pools, and clarify responsibilities of governments and organizations at all levels during the intervention process [16]. Additionally, daily operations should continuously strengthen organizational management by establishing a four-tier grid system connecting city, district, street, and community levels. This system would leverage community doctors, psychological specialists, and social workers to create a comprehensive network reaching horizontally across all areas and vertically to all levels.

4.5 Establishing Comprehensive, High-Quality Psychological Crisis Intervention Teams

Improving national psychological crisis intervention capabilities requires not only strengthening management systems but also comprehensively promoting the scientific application of clinical psychology, psychiatry, and related disciplines as a complete guidance system in post-disaster interventions. While building crisis intervention talent pools, we must also expand the development of crisis intervention by cultivating professional psychological talents and experts to enhance the professional quality of intervention personnel [17]. Ad-

ditionally, we should fully utilize the advantages of social workers, strengthen popularization of psychological crisis intervention knowledge among them, and integrate crisis intervention into their daily service work. Mental health professionals, psychological counselors/therapists, social workers, and grassroots staff should form psychological crisis intervention teams that conduct targeted interventions based on intervention objects and division of responsibilities, ensuring the smooth and effective implementation of crisis intervention work.

4.6 Leveraging Digital Technology to Establish “Online + Offline” Psychological Crisis Intervention Systems

The rapid development of emerging technologies such as the Internet, Internet of Things, big data, cloud computing, and new sharing economies has driven the application of digital technology in healthcare, particularly in mental health. Especially since the COVID-19 pandemic [18], digital diagnosis and treatment have not only expanded services for mental and psychological disorders but also promoted the development of online mental health medical services, psychological counseling, psychotherapy, and crisis intervention. Therefore, we can leverage these emerging technologies to develop remote psychological crisis intervention platforms based on major natural disaster emergency management. These platforms would assist in organizational management, assessment, and intervention for post-disaster psychological crisis, continuously improving traditional intervention systems and enhancing the accessibility and effectiveness of crisis intervention.

References

1. Liao P. The study on the influences and intervention strategy for the mental health of affected residents in floods. Nanchang: Nanchang University, 2012. (in Chinese)
2. Yan J. The study of the psychological crisis intervention by our government under major disaster. Shenyang: Shenyang Normal University, 2014. (in Chinese)
3. Zhang B, Zhang F G, Wang L P, et al. A cross-sectional study on the current prevalence of post-traumatic stress disorder in adults orphaned by Tangshan earthquake in 1976. *Chinese Mental Health Journal*, 2008, 22(6): 469-473. (in Chinese)
4. Wang X L, Tao J, Wen S, et al. Mental health status of victims of Wenchuan Earthquake and affecting factors. *Journal of Sun Yat-Sen University (Medical Sciences)*, 2008, 29(4): 367-371. (in Chinese)
5. Li K, Jiang X, Wang C, et al. The investigation of post-traumatic stress disorder, anxiety and depression in Zhouqu residents after debris flow for 5 years. *Chinese Journal of Prevention and Control of Chronic Diseases*, 2016, 24(11): 817-820. (in Chinese)
6. Hu G L, Mao X Q, Ji L, et al. Mental health status of victims following flood disaster in Jiangxi Province. *Journal of Nanchang University*

- (*Medical Science*), 2011, 51(1): 4-7. (in Chinese)
7. Yao Y C, Meng H L, Li Y P, et al. Influence of “7·20” heavy rainstorm disaster on mental health of residents in Henan province. *Henan Journal of Prevention Medicine*, 2022, 33(6): 438-442. (in Chinese)
 8. Li M, Wang T, Li P P, et al. Wenchuan earthquake rescue armed police officers and soldiers psychological stress characteristics. *Journal of Army Medical University*, 2009, 31(14): 1397-1398. (in Chinese)
 9. Wang J L, Zhang Y J, Zhao C Y, et al. Investigation of stress in servicemen participating in rescue and relief in earthquake disaster area. *Medical Journal of the Chinese People's Armed Police Forces*, 2009, 20(3): 209-212. (in Chinese)
 10. Cui H, Niu S, Gu K S, et al. Qualitative research on PTSD symptoms among succors in major disasters. *Chinese Journal of Health Care and Medicine*, 2011, 13(1): 25-27. (in Chinese)
 11. Liang F, Li P P, Peng H J. Psychological crisis intervention analysis of the public in the event of major disasters. *Journal of Catastrophology*, 2020, 35(1): 179-183. (in Chinese)
 12. Liu Y. The effective way to construct the psychological crisis intervention mechanism. *Journal of Shaanxi Administration School*, 2015, 29(1): 72-77. (in Chinese)
 13. Yang J. Research on the intervention of psychological crisis in local government emergency management taking the “7.28” Flood Disaster in Yongji as an example. Jilin University, 2019. (in Chinese)
 14. Zhang Y M. Enlightenment on disaster management system construction of psychological crisis intervention in “8.16 Fushun Flooding”. *China Health Standard Management*, 2014, 20(5): 3-4. (in Chinese)
 15. Liu B Z. Experience and enlightenment of post-territorial adolescent psychological reconstruction after extraterritorial disasters. *Social Work and Management*, 2015, 15(6): 29-34. (in Chinese)
 16. Zhang K, Wang R C. Psychological assistance and mental reconstruction after disasters. *Bulletin of Chinese Academy of Sciences*, 2008, 23(4): 304-310. (in Chinese)
 17. An J, Liu Z R, Liang H, et al. Psychological crisis intervention in public health emergencies. *Chinese Mental Health Journal*, 2021, 35(9): 795-800. (in Chinese)
 18. Yue J L, Su S Z, Qian Y, et al. Psychological crisis intervention and coping strategies for the COVID-19 pandemic. *Chinese Journal of Psychiatry*, 2020, 53(3): 176-180. (in Chinese)

Responsible Editor: Wen Yanjie

Note: Figure translations are in progress. See original paper for figures.

Source: ChinaXiv — Machine translation. Verify with original.