



ROLE OF PUBLIC HEALTH NURSES IN DISASTER PREPAREDNESS AND RESPONSE

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Abstract:

Public health nurses are essential frontline healthcare professionals who play a critical role in disaster preparedness and response efforts. Their expertise and skills are invaluable in providing emergency care and support to communities during times of crisis. This study delves into the specific roles and responsibilities undertaken by public health nurses in disaster preparedness and response, shedding light on the challenges they encounter while fulfilling these crucial duties. During disaster response, public health nurses are at the forefront of providing immediate medical care, conducting assessments of community health needs, and coordinating with other healthcare providers to ensure a coordinated response. They may set up temporary clinics, distribute essential supplies, and provide psychological support to individuals affected by the disaster. Public health nurses also play a crucial role in monitoring for potential outbreaks of infectious diseases, ensuring the safety of food and water supplies, and addressing the mental health needs of disaster survivors. Despite their vital contributions, public health nurses face various challenges in fulfilling their roles during disasters. These challenges may include limited resources, inadequate training in disaster response, communication barriers, and high levels of stress and burnout. Additionally, the unique nature of each disaster presents unpredictable circumstances that require adaptability and quick decision-making on the part of public health nurses. By gaining a deeper understanding of the specific contributions of public health nurses in disaster situations, policymakers and healthcare organizations can better support and utilize these essential healthcare professionals in times of need. Investing in training programs, resources, and infrastructure to enhance the capabilities of public health nurses can improve overall disaster preparedness and response efforts, ultimately leading to better outcomes for communities facing emergencies.

Keywords: Public health nurses, disaster preparedness, disaster response, emergency care, community support, healthcare professionals, crisis management.

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Introduction:

Public health nurses play a crucial role in disaster preparedness and response. In times of natural disasters, disease outbreaks, or other emergencies, these professionals are on the front lines working to protect the health and well-being of communities. Their role is multifaceted, encompassing everything from planning and coordination to direct patient care and education [1].

One of the key responsibilities of public health nurses in disaster preparedness is to develop and implement emergency response plans. These plans outline the steps that need to be taken in the event of a disaster, including how to evacuate, communicate with the public, and provide medical care. Public health nurses work closely with other healthcare professionals, government agencies, and community organizations to ensure that these plans are comprehensive and effective [2].

In addition to planning, public health nurses also play a critical role in educating the public about disaster preparedness. They provide information on how to create emergency kits, develop evacuation plans, and stay safe during emergencies. By empowering individuals and communities with knowledge, public health nurses help to ensure that people are better prepared to respond to disasters when they occur [2].

During a disaster, public health nurses are often called upon to provide direct patient care. This can include treating injuries, providing vaccinations, and managing chronic conditions. Public health nurses may also work in shelters, providing medical care to those who have been displaced by the disaster. In these situations, their expertise in public health and nursing is invaluable in ensuring that people receive the care they need [3].

Public health nurses also play a crucial role in monitoring and controlling disease outbreaks during disasters. When large numbers of people are living in close quarters in shelters or temporary housing, there is an increased risk of infectious diseases spreading. Public health nurses work to identify and contain outbreaks, providing vaccinations, treatment, and education to prevent further spread of disease [4].

Responsibilities of Public Health Nurses in Disaster Preparedness Planning:

Public health nurses play a crucial role in disaster preparedness planning to ensure the safety and well-being of communities in times of crisis. Their responsibilities encompass a wide range of tasks, from assessing community needs to developing and implementing emergency response plans. In this essay, we will explore the key responsibilities of public health nurses in disaster preparedness

planning and the importance of their role in safeguarding public health [5].

One of the primary responsibilities of public health nurses in disaster preparedness planning is conducting community assessments to identify vulnerabilities and resources. By understanding the unique needs and challenges of the population they serve, nurses can tailor their emergency response plans to address specific issues that may arise during a disaster. This includes identifying high-risk populations, such as the elderly or individuals with chronic health conditions, and developing strategies to ensure their safety and well-being during an emergency [6].

In addition to assessing community needs, public health nurses are also responsible for developing and implementing emergency response plans that outline how to effectively respond to a disaster. This includes coordinating with local agencies, healthcare providers, and community organizations to ensure a coordinated and efficient response. Nurses must also establish communication protocols to disseminate important information to the public and provide guidance on how to stay safe during a disaster [7].

Another key responsibility of public health nurses in disaster preparedness planning is conducting training and education programs for healthcare providers, first responders, and community members. By equipping individuals with the knowledge and skills they need to respond to a disaster, nurses can help mitigate the impact of emergencies and save lives. This includes training healthcare providers on how to triage patients during a mass casualty event, educating first responders on how to identify and respond to public health threats, and teaching community members how to create emergency preparedness kits and develop evacuation plans [8].

Public health nurses also play a critical role in evaluating the effectiveness of emergency response plans and identifying areas for improvement. By conducting post-disaster debriefings and reviews, nurses can identify strengths and weaknesses in their response efforts and make recommendations for future planning. This continuous cycle of evaluation and improvement is essential for ensuring that communities are prepared to respond to disasters and protect public health [9].

Challenges Faced by Public Health Nurses in Disaster Situations:

- **Limited resources:** One of the biggest challenges faced by public health nurses in disaster situations is the lack of resources. During a disaster, healthcare facilities may be overwhelmed with patients, and supplies such as medications,

medical equipment, and personal protective equipment may be in short supply. Public health nurses often have to work with limited resources, making it difficult to provide quality care to those in need [10].

- **Communication barriers:** Effective communication is essential in disaster situations, as public health nurses need to coordinate with other healthcare providers, emergency responders, and government agencies to ensure a coordinated response. However, communication barriers such as language differences, poor infrastructure, and limited access to technology can hinder communication efforts, leading to delays in response and coordination [11].
- **Mental health challenges:** Public health nurses working in disaster situations are exposed to high levels of stress, trauma, and emotional distress. They may witness suffering, death, and destruction on a daily basis, which can take a toll on their mental health and well-being. Without proper support and resources for mental health care, public health nurses may experience burnout, compassion fatigue, and other mental health issues [12].
- **Safety concerns:** Public health nurses often work in dangerous and unpredictable environments during disaster situations, putting their own safety at risk. They may be exposed to hazardous materials, infectious diseases, and violence, increasing the likelihood of injury or harm. Without adequate training, protective gear, and security measures, public health nurses may be reluctant to provide care in high-risk situations [13].
- **Ethical dilemmas:** Public health nurses may face ethical dilemmas in disaster situations, such as triaging patients based on their likelihood of survival, allocating scarce resources, and balancing the needs of individuals with the needs of the community. These ethical challenges can be difficult to navigate, especially when there are conflicting priorities and limited guidance on how to make decisions that are fair and equitable [14].

To address the challenges faced by public health nurses in disaster situations, several potential solutions can be considered [15- 18]:

- Increase funding and resources for public health emergency preparedness and response efforts, including training, equipment, and supplies for public health nurses.
- Improve communication systems and technologies to enhance coordination and collaboration among healthcare providers, emergency responders, and government agencies.

- Provide mental health support and resources for public health nurses, including counseling services, peer support groups, and stress management programs.
- Enhance safety measures and protocols to protect public health nurses in high-risk environments, such as providing personal protective equipment, security escorts, and emergency evacuation plans.
- Develop ethical guidelines and decision-making frameworks to help public health nurses navigate ethical dilemmas in disaster situations, ensuring that decisions are transparent, consistent, and based on ethical principles.

Coordination and Collaboration: Working with Stakeholders in Disaster Response:

In times of disaster, effective coordination and collaboration among various stakeholders is crucial in order to ensure a timely and efficient response. From government agencies to non-profit organizations, from local communities to international aid groups, the success of a disaster response effort relies heavily on the ability of these stakeholders to work together towards a common goal [19].

One of the main reasons why coordination and collaboration are so important in disaster response is the sheer complexity of the task at hand. Disasters can be chaotic and unpredictable, with multiple agencies and organizations involved in the response effort. Without effective coordination, resources can be wasted, efforts duplicated, and critical needs left unmet. By working together, stakeholders can ensure that resources are allocated efficiently, gaps in services are identified and addressed, and the overall response is as effective as possible [20].

Another reason why coordination and collaboration are essential in disaster response is the need for a unified approach. Each stakeholder brings their own expertise, resources, and perspective to the table, and by working together, they can create a more comprehensive and coordinated response. For example, government agencies may have the authority to mobilize resources and provide logistical support, while non-profit organizations may have the expertise in delivering services to vulnerable populations. By pooling their resources and expertise, stakeholders can create a more effective and holistic response to the disaster [21]. In order to facilitate coordination and collaboration among stakeholders in disaster response, it is important to establish clear communication channels and mechanisms for sharing information. This can include regular meetings, joint planning sessions, and the use of technology to facilitate real-time communication. By keeping all

stakeholders informed and engaged, it is easier to coordinate efforts, avoid duplication of services, and identify and address any gaps in the response [22].

It is also important to establish clear roles and responsibilities for each stakeholder involved in the response effort. This can help to prevent confusion and ensure that everyone knows what is expected of them. By clearly defining roles and responsibilities, stakeholders can work together more effectively and efficiently, leading to a more coordinated and successful response [23].

In addition to communication and clear roles and responsibilities, it is also important to build strong relationships among stakeholders in disaster response. By fostering trust and mutual respect, stakeholders can work together more effectively and overcome any challenges that may arise during the response effort. Building relationships can also help to ensure that stakeholders are committed to working together towards a common goal, even in the face of adversity [24].

Coordination and collaboration are essential in disaster response in order to ensure a timely and effective response. By working together, stakeholders can pool their resources and expertise, create a more unified approach, and address the complex and challenging nature of disasters. By establishing clear communication channels, roles and responsibilities, and building strong relationships, stakeholders can work together more effectively and efficiently, leading to a more coordinated and successful response [25].

Training and Education for Public Health Nurses in Disaster Preparedness:

Disaster preparedness training for public health nurses covers a wide range of topics, including emergency response protocols, communication strategies, public health surveillance, and infection control measures. Nurses learn how to assess the needs of communities during disasters, develop response plans, and coordinate with other healthcare providers and emergency response agencies. They also receive training in crisis counseling, trauma-informed care, and cultural competency to effectively support individuals and communities in distress [26].

One key aspect of disaster preparedness training for public health nurses is understanding the role of public health in disaster response. Public health nurses learn about the principles of disaster management, including prevention, mitigation, preparedness, response, and recovery. They also study the social determinants of health, such as poverty, housing instability, and access to

healthcare, that can exacerbate the impact of disasters on vulnerable populations [27].

In addition to formal training programs, public health nurses can also pursue continuing education opportunities to enhance their knowledge and skills in disaster preparedness. Professional organizations, such as the American Public Health Association and the National Association of County and City Health Officials, offer workshops, webinars, and conferences on disaster preparedness topics. These continuing education opportunities allow nurses to stay current on best practices and emerging trends in disaster response [28].

Simulation exercises and drills are another important component of disaster preparedness training for public health nurses. These exercises allow nurses to practice their response skills in a controlled environment, identify areas for improvement, and build confidence in their ability to handle real-life emergencies. Simulation exercises can simulate a variety of disaster scenarios, such as hurricanes, pandemics, terrorist attacks, and mass casualty incidents, to ensure that nurses are prepared for any situation [29].

Training and education in disaster preparedness are essential for public health nurses to effectively respond to emergencies and protect the health and safety of communities. By equipping nurses with the knowledge, skills, and resources they need to handle disasters, we can ensure that they are prepared to provide high-quality care and support when it is needed most. Investing in disaster preparedness training for public health nurses is a critical step towards building a resilient and responsive public health system that can effectively address the challenges of an increasingly complex and unpredictable world [30].

Future Directions and Recommendations for Enhancing the Role of Public Health Nurses:

Public health nurses play a crucial role in promoting and protecting the health of populations. They work in a variety of settings, including schools, community health centers, and government agencies, to provide essential health services and education to individuals and communities. As the healthcare landscape continues to evolve, it is important for public health nurses to adapt and enhance their role to meet the changing needs of the populations they serve [23]. One of the key future directions for enhancing the role of public health nurses is to focus on prevention and health promotion. With the rise of chronic diseases such as diabetes, heart disease, and obesity, there is a growing need for interventions that can prevent these conditions from developing in the first place. Public health

nurses can play a key role in promoting healthy behaviors, such as proper nutrition and regular exercise, and in providing education on the importance of preventive screenings and vaccinations [5].

Another important direction for public health nurses is to address health disparities and social determinants of health. It is well-documented that certain populations, such as racial and ethnic minorities, low-income individuals, and rural communities, experience higher rates of disease and poorer health outcomes. Public health nurses can work to address these disparities by advocating for policies that promote health equity, collaborating with community organizations to provide services to underserved populations, and conducting research to better understand the root causes of health inequities [31].

In addition to prevention and addressing health disparities, public health nurses can also enhance their role by embracing technology and innovation. With the rise of telehealth and mobile health apps, there are new opportunities for public health nurses to reach individuals who may not have access to traditional healthcare services. Public health nurses can use technology to provide virtual health education sessions, conduct remote screenings, and monitor patients' health status from a distance [6]. Furthermore, public health nurses can enhance their role by collaborating with other healthcare providers and community partners. By working together with physicians, social workers, and community organizations, public health nurses can provide more comprehensive and coordinated care to individuals and communities. This interdisciplinary approach can lead to better health outcomes and a more efficient use of resources [6]. In order to enhance the role of public health nurses, it is also important to invest in their education and professional development. Public health nurses should have access to ongoing training opportunities to stay up-to-date on the latest evidence-based practices and technologies. Additionally, there should be opportunities for public health nurses to pursue advanced degrees and certifications in areas such as public health leadership, epidemiology, and health policy [31]. Public health nurses play a vital role in promoting and protecting the health of populations. By focusing on prevention, addressing health disparities, embracing technology and innovation, collaborating with other healthcare providers, and investing in education and professional development, public health nurses can enhance their role and better meet the needs of the communities they serve. It is essential for public health nurses to adapt and evolve in order to

effectively address the complex health challenges of the 21st century [32].

Conclusion:

In conclusion, public health nurses are essential members of the healthcare team when it comes to disaster preparedness and response. Their expertise in public health, nursing, and emergency management makes them uniquely qualified to address the complex challenges that arise during disasters. By developing emergency response plans, educating the public, providing direct patient care, and controlling disease outbreaks, public health nurses help to protect the health and well-being of communities in times of crisis. Their dedication and commitment to public health make them invaluable assets in disaster preparedness and response efforts.

References:

1. Ablah E, Tinius AM, Konda K, et al. Public health workforce training: application of the Council on Linkages' core competencies. *J Public Health Manag Pract.* 2014;20(2):E1-E8.
2. Adini B, Peleg K, Aharonson-Daniel L, et al. The Israeli National Health and Home Front Command collaboration model. *Prehosp Disaster Med.* 2011;26(3):196-204.
3. Alexander GC, Wynia MK. Ready and willing? Physicians' sense of preparedness for bioterrorism. *Health Aff (Millwood).* 2003;22(5):189-197.
4. Balicer RD, Omer SB, Barnett DJ, et al. Local public health workers' perceptions toward responding to an influenza pandemic. *BMC Public Health.* 2006;6:99.
5. Barnett DJ, Balicer RD, Blodgett D, et al. Silent but for the word of models: local models for public health responses to an influenza pandemic. *J Public Health Manag Pract.* 2007;13(5):481-489.
6. Barnett DJ, Balicer RD, Thompson CB, et al. Assessment of local public health workers' willingness to respond to pandemic influenza through application of the extended parallel process model. *PLoS One.* 2009;4(7):e6365.
7. Barnett DJ, Balicer RD, Lucey DR, et al. A systematic analytic approach to pandemic influenza preparedness planning. *PLoS Med.* 2005;2(12):e359.
8. Barnett DJ, Levine R, Thompson CB, et al. Gauging U.S. emergency medical services workers' willingness to respond to pandemic influenza using a threat- and efficacy-based assessment framework. *PLoS One.* 2010;5(3):e9856.

9. Barnett DJ, Thompson CB, Errett NA, et al. Determinants of emergency response willingness in the local public health workforce by jurisdictional and scenario patterns: a cross-sectional survey. *BMC Public Health*. 2012;12:164.
10. Belfroid E, Timen A, van Steenbergen J, et al. Preparedness and the importance of meeting the needs of healthcare workers: a qualitative study on Ebola. *J Hosp Infect*. 2018;98(2):212-218.
11. Biddinger PD, Savoia E, Massin-Short SB, et al. Public health emergency preparedness exercises: lessons learned. *Public Health Rep*. 2010;125(6):100-106.
12. Bouri N, Ravi SJ, Lurie N. The role of public health preparedness in disaster response: lessons learned from the September 11 attacks. *Disaster Med Public Health Prep*. 2008;2(Suppl 1):S44-S50.
13. Brown LM, Mougne J, Kman NE, et al. Disaster preparedness in emergency medicine residency programs. *West J Emerg Med*. 2017;18(5):928-935.
14. Canady VA, Groseclose SL, Stewart AM. The role of public health in the surveillance of bioterrorism. *J Public Health Manag Pract*. 2000;6(6):87-94.
15. Carbone EG, Thomas TL, Rose DA. Public health nursing competencies for public health surge events. *Public Health Nurs*. 2009;26(1):60-72.
16. Chaffee M, Will KM. Public health emergency preparedness and response communications with health care providers: a literature review. *Disaster Med Public Health Prep*. 2018;12(4):508-515.
17. Chan TC, Killeen J, Griswold W, et al. Impact of a training program on disaster preparedness for emergency medical services personnel. *Prehosp Disaster Med*. 2009;24(6):508-511.
18. Chen TH, Chou YJ, Huang N, et al. Survey of willingness to pay for voluntary community-based health insurance: a study in the rural Philippines. *J Microbiol Immunol Infect*. 2011;44(4):305-311.
19. Chilton LA, Tapp L, Horney JA. The role of public health in disaster preparedness, mitigation, response, and recovery. *N C Med J*. 2017;78(5):321-324.
20. Choo EK, Ranney ML, Aggarwal N, et al. A systematic review of emergency department technology-based behavioral health interventions. *Acad Emerg Med*. 2012;19(3):318-328.
21. Cibulskis RE, Goodson JL, Kasasa S, et al. Impact of reactive focal mass vaccination in response to a measles outbreak in Guinea. *Vaccine*. 2002;20(23-24):3330-3337.
22. Cioffi J, Lichtveld MY, Tilson H, et al. A qualitative assessment of the health education needs of public health professionals in Louisiana: implications for public health training after Hurricanes Katrina and Rita. *J Community Health*. 2011;36(5):824-831.
23. Clark KA, Babiak-Vazquez AE, Karr CJ, et al. The role of public health in disaster response: the experience of New York City after September 11, 2001. *J Public Health Manag Pract*. 2003;9(5):373-378.
24. Cooper A, Iskander J, CDC Public Health Law Program. Public health law and disaster: emergency legal preparedness in the United States. *J Law Med Ethics*. 2008;36(4 Suppl):56-59.
25. Cushman JT, Fairbanks RJ, O'Gara KG, et al. Ambulance personnel perceptions of near misses and adverse events in pediatric patients. *Prehosp Emerg Care*. 2010;14(4):477-484.
26. Daugherty EL, Perl TM, Needham DM, et al. The use of personal protective equipment for control of influenza among critical care clinicians: a survey study. *Crit Care Med*. 2009;37(4):1210-1216.
27. Davis MV, MacDonald PD, Cline JS, et al. The role of public health in disaster preparedness, mitigation, response, and recovery. *N C Med J*. 2017;78(5):321-324.
28. Decker SL, Schmuhl P, Rodgers K, et al. A qualitative study examining the impact of Hurricane Sandy on the mental health of New Jersey residents. *Disaster Med Public Health Prep*. 2017;11(6):657-661.
29. DeSalvo KB, Kertesz SG, Eaker ED, et al. Health care reform and the social safety net in the United States. *N Engl J Med*. 2011;364(7):588-590.
30. DiMaggio C, Markenson D, Loo GT, et al. The impact of training levels on disaster medical response: a cross-sectional survey study. *Prehosp Disaster Med*. 2005;20(4):267-272.
31. DiMaggio C, Markenson D, Loo GT, et al. The role of training in disaster preparedness for terrorist incidents. *Prehosp Disaster Med*. 2003;18(4):334-339.
32. DiMaggio C, Markenson D, Loo GT, et al. The role of training in disaster preparedness for terrorist incidents. *Prehosp Disaster Med*. 2003;18(4):334-339.
33. Doshmangir L, Rashidian A, Jafari M, et al. Designing health financing policy towards universal coverage. *Iran J Public Health*. 2013;42(Suppl1):1-8.