

A review on nursing reserve team in hospital emergency management

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Abstract: The Nursing Reserve Team plays a pivotal role in managing hospital emergencies, providing critical support during crises. This paper reviews recent research on the effectiveness of nursing reserve teams, highlighting their contributions to emergency management and public health preparedness. Historically rooted in disaster response, nursing's role has evolved to encompass a wide range of responsibilities, including emergency care, psychological support, and management during crises. Despite their importance, significant gaps in emergency preparedness training for nurses have been identified, particularly in light of past public health emergencies like SARS, H1N1, and COVID-19. This paper underscores the need for comprehensive training programs that enhance nurses' knowledge and skills, ensuring they are equipped to respond effectively to emergencies. It advocates for the empowerment of nursing reserve teams within healthcare facilities to bolster overall emergency response capabilities. By articulating the roles and responsibilities of nursing professionals in disaster preparedness, this study emphasizes the crucial link between nursing education, practice, and the ability to safeguard public health during emergencies. Investing in continuous training, institutional support, and formal recognition of nursing reserve teams is essential to build a robust, responsive healthcare system capable of withstanding future crises.

Keywords: Emergency management, Emergency response capabilities, Nursing reserve team, Public health preparedness, Training programs.

1. Introduction

Nursing reserve team is crucial in managing unexpected hospital emergencies by providing essential support during any crisis. Hence, it is important to understand the role and effectiveness of nursing reserve team and the impact of nursing reserve team in hospital emergency management. In emergency response, nursing reserve team is an important part of the medical rescue team. The teams are always on the front line of rescue and play an indispensable and important role. As early as the Cold War, Werley [1] of the U.S. Army Nursing Corps pioneered education and nursing research in large-scale disasters. Nursing reserve team participated in large-scale disaster response through publications, educational programs, and disaster nursing conferences [2].

Nursing groups were recognized as key to disaster management. Member and collaborator on interdisciplinary research. After the 2004 Indian Ocean tsunami disaster, when rescue teams from various countries carried out medical rescue at the scene, they generally felt that they had insufficient prior understanding of the important role of nursing in rescue [3]. Sociologists and medical scientists have become more and more aware that medical rescue will be unable to undertake its mission and carry out its work without the theory and practice of nursing. The role of nursing staff in emergency rescue of public health emergencies can be summarized in the following aspects [4-6]: (1) Carry out a large number of emergency nursing operations such as cardiopulmonary resuscitation, hemostasis, bandaging, immobilization, debridement of wounds,

and maintaining airway patency, on-site maintenance and recovery; (2) Play a role in the safe transfer of the wounded, cooperation in emergency surgery, intensive care, and in-hospital follow-up treatment; (3) Provide psychological support and comfort to survivors to stabilize the emotions of the wounded and their families; (4) Senior nursing staff also participate in the management and decision-making of medical rescue; (5) Implement disinfection and isolation, distribute protective equipment and medicines to prevent the outbreak of infectious diseases; (6) Carry out health education for the affected people; (7) Provide assistance to special groups in the disaster-stricken areas such as children, pregnant women, the elderly, and patients with chronic diseases, etc.

2. Emergency Response

Emergency response means that when a public health emergency occurs, relevant emergency response agencies and departments collect relevant information, make judgments on the nature and cause of the event, select appropriate emergency strategies based on the emergency plan, and finally achieve a solution. Crisis and learn from experience and lessons learned results. The contents of emergency response include [7, 8]: (1) monitoring and preventing the occurrence of public health emergencies; (2) timely and effective control of the development of events that have occurred and preventing their deterioration; (3) rapid and effective response to the incident-related population. Rescue and disposal; (4) After a public health emergency occurs, stabilize public sentiment and guide public opinion, maintain a good social order and raise public health awareness. It mainly includes the prevention stage before the occurrence, the preparation stage after the occurrence, the emergency response stage and the recovery stage at the end of the event. Among them, the prevention stage and the emergency response stage are the most critical periods [9].

A study pointed out that the death peak of trauma patients after injury is mostly at the accident site or within 1 hour after injury, accounting for about 50.0% of the total trauma deaths and transit timeliness. Incident response generally refers to the preparations made by an organization to respond to various unexpected events and the measures taken during or after the occurrence of an emergency. The purpose is to reduce the losses caused by emergencies, including the loss of life and property of the people, economic losses of the country and enterprises, and corresponding adverse social impacts. The object of emergency response refers to security incidents of information stored, transmitted, and processed by computers or networks [10].

The main body of the incident may come from the natural world, system malfunctions, internal or external people of the organization, computer viruses or worms, etc. For network security emergency response (referred to as emergency response), it refers to monitoring, analyzing, coordinating, processing, and protecting asset security for security incidents that have occurred or may occur. Emergency response should have data collection, storage, and retrieval capabilities, be able to restore full-flow data protocols, store the restored data, and quickly retrieve the stored data. The emergency response model, such as the PDCERF model, divides emergency response into six stages: preparation, detection, containment, eradication, recovery, and follow-up [11]. It defines appropriate goals for each stage based on the overall strategy for cybersecurity emergency response, and clarifies the response sequence and process. For example, in the detection stage, it is necessary to identify and detect security incidents, analyse their sources and types; in the containment stage, it is necessary to limit the impact of the incident and prevent its further spread; in the eradication stage, it is necessary to find and remove the root cause of the security incident to prevent it from happening again; in the recovery stage, it is necessary to restore the system to normal state and ensure its stability and security; in the tracking stage, it is necessary to track and monitor the incident to ensure there is no omission or delay [12, 13]. In summary, emergency response is a complex and important concept that requires organizations and individuals to attach great importance to and take it seriously. In the face of various unexpected events, only by making sufficient preparations and taking timely and effective measures can we minimize losses and protect asset security to the greatest extent.

3. Public Health Emergency

Public health emergencies refer to major infectious disease outbreaks, group diseases of unknown origin, major food and occupational poisoning, and other events that seriously affect public health that occur suddenly and cause or may cause serious damage to public health [14, 15]. According to their nature, emergencies can be divided into six categories: natural disasters, infectious disease events, poisoning events, terrorist events, nuclear/radioactive radiation accidents and other mass events involving life, health and safety; Public health emergencies can be divided into four levels: particularly major public health emergencies, major public health emergencies, major public health emergencies, and general public health emergencies [16]. Public health emergencies have the characteristics of suddenness, publicity, seriousness, urgency and complexity.

Public health emergencies can be classified into different levels, such as extraordinarily serious (level I), serious (level II), relatively serious (level III) and ordinary (level IV) [17] based on the nature, degree of harm and scope of involvement of the event. For example, particularly serious public health emergencies include the occurrence and spread of infectious diseases such as pulmonary pestis and pulmonary anthrax in large and medium-sized cities.

Public health emergencies not only pose a direct threat to public health, but also have an impact on national economy, social stability, and other aspects. Therefore, the government and relevant institutions need to develop emergency plans and take effective measures to ensure public health and safety and social stability [18].

At the international level, public health events are also known as "public health emergencies of international concern" under the World Health Organization [19]. When such events occur, the World Health Organization can provide technical guidance, assess the effectiveness of prevention and control measures, and provide further assistance to contracting states, including assessing the severity of international hazards and the appropriateness of control measures. Once they occur, they will not only seriously threaten the health and life safety of the people, but also cause immeasurable economic losses and may endanger social stability and harmony.

4. The Role of Nursing Reserve Team

The American Association of Colleges of Nursing (AACN) has published The Essentials of Baccalaureate Nursing Education for Professional Nursing Practice in 2008. This has provided the framework for the 21st century baccalaureate nursing curriculum. The baccalaureate nursing graduates were expected to have knowledge and experiences needed for emergency preparedness, response to MCI and other emergency situations specifically as per outlined in Essential VII and Essential IX of the curriculum. The 2010 National Council Licensure Exam for Registered Nurses (NCLEX-RN®) published by The National Council of State Boards of Nursing (NCSBN) on the revised test plan structure described the nursing actions and competencies and focuses on clients in all settings required. Knowledge, skills and abilities needed to provide a safe and effective care environment was described as one of the four client need categories on the test plan framework. Emergency response was included as the related content in this subcategory. Moreover, public health nurses' contributions towards emergency preparedness and response were described among the twelve competencies which clarify the expertise by the Association of State and Territorial Directors of Nursing (ASTDN) [20, 21]. This shows that nursing reserve team plays a very important role in emergency response and public health emergency, therefore, it is very crucial to acknowledge and empower the nursing reserve team in each and every healthcare facility.

4.1. Definition and Structure s

Approximately 2.6 billion people around the world have been affected by different crisis and emergency situations like earthquakes, floods, hurricanes and other natural disasters in the past decades. Most recently, the COVID-19 pandemic also emerged as a public health emergency that strike the whole world. Nurses have been and continue to be pivotal to safeguard people during and even after

these disastrous emergencies. Standing in the frontline in patient care, they play a vital role to educate and protect people, to engage with and build trust with the community, helping people to prepare and respond and even foster resilience to help communities fully recover. However, fundamental reformation is required in terms of nursing education, practice, research, and policy across both healthcare and public health settings to ensure that all nurses, be it the frontline professionals to the researchers have the baseline knowledge, skills, abilities and autonomy they needed to protect the populations exposed to great risk and improving the readiness, safety and support of the nursing workforce especially in times of hospital emergency.

Having a nursing reserve teams who are well-prepared with the knowledge, skills and abilities to respond is critically important to manage the increasing frequency of natural and environmental disasters, along with public health emergencies such as the COVID-19 pandemic. As natural disasters and public health emergencies will continue to threaten the population health in the future, articulation of the roles and responsibilities of nurses in disaster preparedness and public health emergency response will be critical for any nation's capacity to plan and respond to the emergencies. The conceptual model framework developed by the Committee on the Future of Nursing 2020–2030, describes that strengthening nurses' capacity to aid in disaster preparedness and public health emergency response is one of the key ways to enhance nursing's role in addressing social determinants of health and improving health and healthcare equity. This concept applies for the nursing reserve team where this group of nurses who may not be necessarily from the frontline but are trained and prepared to provide additional support during emergencies [22]. Fig. 1 has presented a framework for understanding the nurse's role in addressing the equity of health and health care.

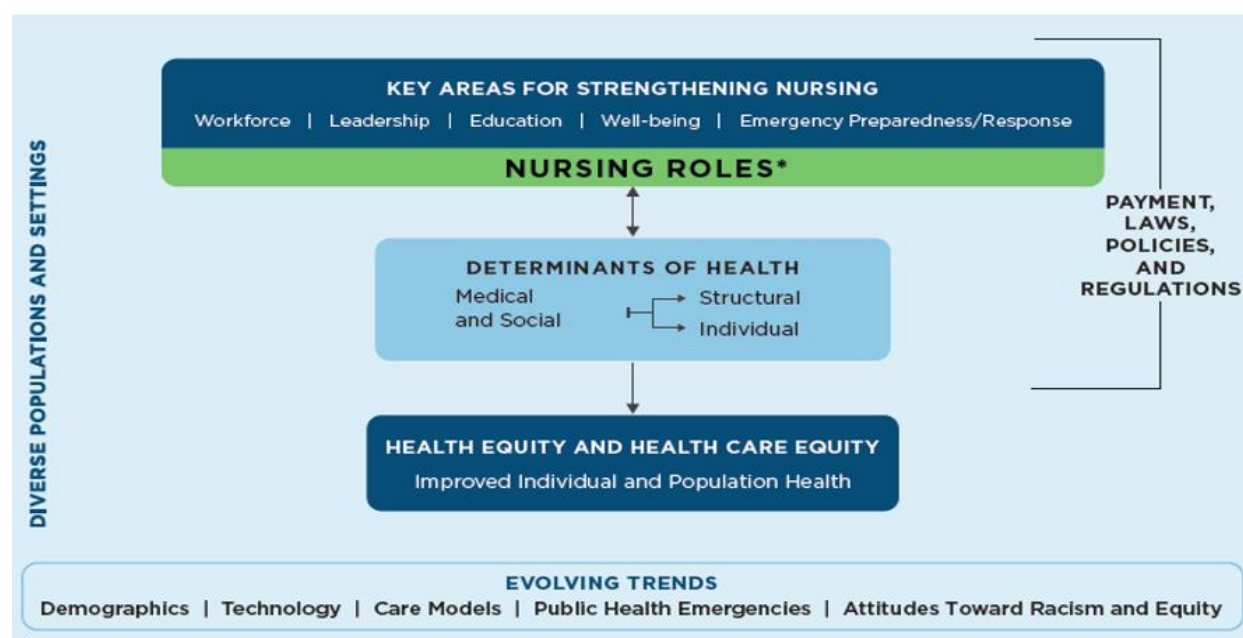


Figure 1.

A framework for understanding the nurse's role in addressing the equity of health and health care. *Examples of nursing roles in acute, community, and public health settings include care coordinator, policy maker, clinician, advocate, educator, researcher/scientist, administrator, and informaticist.

4.2. Training and Preparation

Critical lessons learned from the prior infectious disease outbreaks like the 2003 severe acute respiratory syndrome (SARS) outbreak, the 2009 H1N1 influenza pandemic and the Ebola virus outbreak in West Africa were not applied to workforce planning for future infectious disease outbreaks

like COVID-19 [23]. These previous public health emergencies have highlighted significant deficiencies in terms emergency preparedness and workforce development, as well as the negative impacts on nurses. Consequently, there have been numerous calls to enhance nurse readiness for emergency pandemic response [24–26].

As such, nursing reserve team who are readily available for emergency response needs to be trained. The nurses are expected to play important roles during public health emergencies, however, the basic knowledge about health system emergency preparedness is generally lacking among nurses, including those school nurses [27–30]. A survey involving more than 5,000 nurses across the Spectrum Health system has concluded that 78 percent of the respondents said that they had little or no familiarity with emergency preparedness and disaster response [31]. Similar findings from the studies evaluating curricular content in the United States Schools of Nursing [32, 33] and worldwide [34] showed that healthcare emergency preparedness content is notably absent and there is very little evidence that among the few students who received instructions in this context had achieved the relevant competency in these emergency skills. In addition, research suggested that many nurses feel that they are unequipped to respond to the emergency situations and this led to the variable willingness among the individual nurses and other healthcare providers to respond [35, 36]. Another factor to consider is the knowledge level regarding infectious disease manifestation, transmission and protection. The more knowledgeable the nurses are about the infectious diseases, the more confident and successful the nurses will be when they are working during the emergency outbreaks [37, 38]. Besides that, nurses who have gained previous experiences working with infectious disease outbreaks are found to be more confident and will be better prepared during a subsequent outbreak [37, 39, 40]. In addition, they are more knowledgeable about infection control and prevention measures required for the situation, and they are more skilled in treating those with such infectious diseases. In terms of mental readiness, nurses with stronger sense of their professional value, in other words, those who treat this profession is not merely a job but a great responsibility to serve and protect the public, they are more likely to be readily available to work during an infectious disease outbreak [39]. This group of nurses is the best candidates for the nursing reserve team.

Another area to look at the training and preparation required for the nurse reserve team is the nurse leadership, which is another important component of nurses' role in disasters or emergency management [41]. Leadership module in the training programmer can cultivate communications skills between the nurses and other healthcare professionals, business and leadership competencies and in turn, these nurse leaders can help to improve healthcare provider's response, outcome for patients, staff well-being and the financial stability of hospitals [42]. As a result, this warrants a better response and management to the emergency situations. In a nutshell, education and readiness among the nursing reserve team towards hospital emergency management is vital and needs to be emphasized.

5. Impact on Hospital Emergency Management

5.1. Improved Patient Outcome

Studies have shown that hospitals with well-organized nursing reserve teams experience better patient outcomes during crises. For instance, hospitals with reserve teams had lower mortality rates and shorter patient wait times compared to those without [43].

5.2. Enhanced Efficiency

The presence of reserve teams improves overall efficiency in emergency departments. Research suggests that these teams help in reducing bottlenecks and ensuring that emergency resources are utilized effectively [44].

5.3. Stress and Burnout Reduction

Reserve teams also play a role in alleviating the stress and burnout of regular nursing staff by providing additional support during high-demand periods. This helps maintain a more sustainable

working environment for all staff members [45].

6. Conclusion

In conclusion, the Nursing Reserve Team is an essential component of effective emergency response in healthcare settings. Their multifaceted roles encompass direct patient care, psychological support, and critical decision-making during crises, highlighting the necessity of their involvement in emergency management. The findings from this review underscore the pressing need for enhanced training and preparation for nurses, particularly in the context of public health emergencies. Historical shortcomings in emergency preparedness highlight the urgency of integrating comprehensive emergency response education into nursing curricula. By fostering a well-equipped nursing reserve team, healthcare systems can improve their resilience against future crises, ensuring a robust response to public health threats. Ultimately, investing in the training and empowerment of nursing professionals is vital for safeguarding community health and enhancing the overall efficacy of emergency management strategies.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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