

An EPIQ Mass Shelter Training for Public Health Nurses in Georgia to Improve Core Competencies in Disaster Preparedness: A Pilot Study

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ABSTRACT

Background: Research shows that nurses are often ill-prepared for disaster response. A survey conducted by the Georgia Department of Public Health Office of Nursing in April of 2021, demonstrated that 45% of the public health nurses surveyed had never deployed to a mass congregate shelter, and 43% reported they had no formal training related to emergency preparedness or mass sheltering. The purpose of this pilot study was to measure public health nurses' improvement in familiarity with emergency preparedness and disaster response core competencies as defined by the Emergency Preparedness Information Questionnaire (EPIQ) after a focused educational program and tabletop workshop.

Methods: This project used a pre-and post-survey descriptive survey design, integrated six education modules delivered via an asynchronous learning platform, and participation in one synchronous interactive workshop.

Results: Pre- and post-responses to individual items in the EPIQ survey were compared using a paired samples t-test to determine if any significant change occurred ($\alpha = 0.05$). In addition, an overall familiarity score was computed as the sum of responses for each participant in the EPIQ survey (max of 90) and compared using a pre to post paired t-test to determine if there was an overall statistical change. A total of 249 Georgia department of public health nurses participated in the Emergency Preparedness and Mass Sheltering training. The overall familiarity score showed a statistically significant improvement ($p < .001$; 98% confidence interval) related to emergency preparedness core competencies with an average pre-survey familiarity score of 57.78 and an average post-survey familiarity score of 70.43.

Keywords: Public health nurse, Emergency preparedness, Mass shelter, Disaster response, EPIQ

INTRODUCTION

Background

According to the National Oceanic and Atmospheric Administration (NOAA), the United States has seen 300 natural disasters over the past forty years. Each disaster carried an estimated financial burden of 1 billion dollars. These disasters occur an average of seven per year, with deaths of 400 people (NOAA, 2021). Nurses play a significant role in these disaster responses to safeguard public health (National Academy of Sciences, 2021). Throughout the disaster continuum, the public health nurse may work to provide first aid in a shelter, provide education in the community, participate in the incident command system, or triage victims (National Academy of Sciences, 2021). Ensuring that these nurses have appropriate training and competency in emergency preparedness competencies is imperative to increase response time and efficiency during times of crisis and disaster (Dang & Dearholt, S., 2017). McNeill et al. (2020) determined that nurses are less likely to return to work to support a disaster when they are not knowledgeable of emergency preparedness competencies. The insufficient number of frontline workers during a natural disaster or public health crisis inadvertently creates a separate tragedy within itself. Implementation of education

Most undergraduate nursing curricula or new-hire nursing orientation programs do not provide adequate training to effectively prepare public health nurses for disaster response or mass sheltering events (Georgino, et.al, 2015). A survey conducted by the Georgia Department of Public Health (DPH) Office of Nursing in April of 2021 demonstrated that 45% of the public health nurses surveyed had never deployed to a mass congregate shelter. The survey also established that 43% of public health nurses had no formal training related to emergency preparedness or mass sheltering, which supports the research that nurses are often ill-prepared for disaster responses (Labrague, et. al,2018). Strengthening a nurse's ability to respond to disasters and public health emergencies is one way to improve public health and health equity (National Academy of Sciences, 2021). The purpose of this pilot study is to measure public health nurses' improvement in familiarity with emergency preparedness and disaster response core competencies as defined by the Emergency Preparedness Information Questionnaire (EPIQ) after a focused educational program.

to promote engagement of the public health nurse in these emergency preparedness and disaster competencies will expectantly improve their ability to respond when disasters occur and ultimately lead to improvements in the overall public health response.

Disaster Preparedness Education

In a 2015 quality improvement project, Georgino et al. directly correlated education and emergency preparedness competency scores, further confirming the need for more training in this area. This project further demonstrates how emergency preparedness improves over time with proper planning (Georgino et al., 2015). Goniewicz and Goniewicz conducted a pilot study in 2020, which demonstrated that disaster preparedness knowledge and skills among nurses are essential to the healthcare services during disasters and validated the need for more frequent trainings. The authors affirm the need for regular disaster drills and emergency preparedness training to prepare nurses and other healthcare team members for disaster response (Goniewicz and Goniewicz, 2020). The National Academies of Sciences, Engineering, and Medicine (2021) has called for a “fundamental and seismic change in nursing education if the profession is to keep pace with the increasing numbers of natural disasters and public health emergencies.” Langan et al. (2017) also reiterates the need for additional quality evidence-based training for the healthcare workforce in disaster readiness. This training is necessary to provide nurses who are ready to respond to disasters in a timely and effective manner (Langan et al., 2017). The use of evidence-based training for public health nurses is needed and could improve emergency preparedness competencies and disaster readiness among public health nurses in the state of Georgia.

EPIQ Tool

The EPIQ is a competency tool used in evaluating awareness of emergency preparedness after the completion of competency training. Comprised of eight competency domains and 44 questions, this tool is currently the one recognized and found in the literature that is used to measure nurses’ perceived familiarity of emergency preparedness and disaster response core competencies (Georgino, et al.,2015). A 2016 study by Tavan et al., used a similar tool to EPIQ to test the validity and reliability of the instrument. This study also stressed the importance of knowing the nurse’s baseline knowledge to gauge the need of emergency preparedness training. Chiossi et al. (2020) provide a foundation for reviewing public health emergency preparedness assessment tools. As Chiossi stressed, the scholar must suspend personal biases and influences while synthesizing data collected to ensure the validity of research findings. The method of presentation of materials to the nurses during the emergency preparedness training can directly affect learning abilities, retention, and post-training competency levels. This pilot study will use the EPIQ tool to evaluate the post-training competency levels of public health nurses.

METHODS

After obtaining IRB approval from both Georgia State University and Georgia DPH, study participants were identified as public health nurses working for the State of Georgia Department of Public Health. The Georgia Department of Public health has 159 county health departments with 18 districts (GADPH, 2021). The Georgia Department of Public Health currently employs approximately 250 nurses at the time of this study. All public health Registered nurses were asked to participate in the project, along with a select number of Licensed Practical nurses. The participating nurses were educated on the level of License Technical Diploma, Associate Degree in Nursing through the Doctor of Nursing Practice, and Philosophy Degree in Nursing. The exclusion criteria were all other staff within the Georgia Department of Public Health. The intervention utilized in this study was a 6-module online educational training for all of Georgia's public health nurses. The setting of this project took place within the auspices of the GA DPH through the department learning management system (LMS), Exceed. The nurses could complete the training asynchronously online during working hours. These modules provided educational training to include the following topics:

1. Introduction to Emergency Management for Public Health Nurses
2. Role of the Nurse in a General Population Shelter: An Overview
3. Introduction to Health Services in General Population Shelters
4. Triage and Assessment in Shelters
5. Managing Biological, Chemical, and Radiological Agents Exposures in Shelters
6. Psychological First Aid

Nurses completed a pre-assessment questionnaire using the EPIQ tool to measure baseline competence. The nurses were then asked to complete the online educational modules and attend a synchronous tabletop mass shelter workshop session for skill simulation. This workshop was led by the State Office of Nursing and DPH Office of Emergency Preparedness. The workshop gave participants the opportunity to exercise and reaffirm the skills that had been taught in the education modules in a low stress environment. After online training modules and tabletop exercise workshops were completed, the nurse completed a post-assessment using the EPIQ to measure improvement in emergency preparedness and mass sheltering competencies.

Data Collection

Before the initiation of the program, all participants voluntarily completed the EPIQ pre-survey. The survey was collected through the online platform, SurveyMonkey. To protect participants’ privacy, only the lead investigator had access to the results of this password-protected survey. No confidential information was disclosed during this survey process. The data from the EPIQ pre-survey was calculated

and baseline scores were documented. These scores were compared to the EPIQ post-survey to gauge the amount of the nurses' perceived competence in emergency preparedness and mass sheltering. The guidelines of the EPIQ research tool were used to outline the training course using each of the eight core competencies: (1) triage and basic first aid; (2) biological agents; (3) the ability to access critical resources and reporting; (4) the incident command system (ICS); (5) isolation, quarantine, & decontamination, (6) psychological issues and specialty populations; (7) epidemiology and clinical decision making; and (8) communication and connectivity (Georgino et al., 2015). To date, this tool serves as the most reliable method to assess the understanding of these emergency preparedness competencies (Georgino et al., 2015). The pre- and post-survey results were analyzed to assess participants' increase in knowledge and perceived competency in emergency preparedness and mass sheltering after the education intervention. Data were analyzed to determine potential revisions in future emergency preparedness and disaster readiness training needs for public health nurses.

RESULTS

A total of 248 nurses began the pilot study in May of 2022. All the nurses voluntarily completed the pre-course EPIQ survey. All participants completed the entire six-course online modules, participated in the virtual workshop, and completed the post-course survey. After the data were collected, pre- and post-responses to individual items in the EPIQ survey were compared using a paired samples t-test to determine if any significant change occurred ($\alpha = 0.05$). In addition, an overall familiarity score was computed as the sum of responses for each participant in the EPIQ survey (max of 90) and compared using a pre to post paired t-test to determine if there was an overall statistical change. The overall familiarity score showed a statistically significant improvement ($p < .001$; 98% confidence interval) related to emergency preparedness core competencies with an average pre-survey familiarity score of 57.78 and an average post-survey familiarity score of 70.43.

DISCUSSION

Based on the statistical analysis, public health nurses who completed this emergency preparedness training had a statistically significant increase in competencies and familiarity with emergency preparedness as defined by the EPIQ tool. The pilot study further provided valuable feedback and insight for public health leaders, nurses, and officials interested in taking positive steps in response to the Academy of Science's (2021) "Conclusion 8-1: The nation's nurses are not currently prepared for a disaster and public health emergency response." The pilot study demonstrated that public health nurses showed a significant increase in disaster and emergency preparedness competencies after completing an evidence-based education training program. According to the DPH (2016), the capacity of public health to fulfill its mission depends on the capacity of public health nurses. Part of the GA DPH mission statement includes "preparing for and responding to disasters" (DPH, 2016).

The continuation and success of this project can create additional data and opportunities for a public health nursing workforce who are well-trained in emergency preparedness competencies and ready to respond to disasters. The EPIQ model will be used for revisions to ensure the continued efficiency of the course for years to come. The post-survey results will also be used during revisions to determine the best future training methods (video, live, read & respond).

Limitations

The lack of literature to support online emergency preparedness or mass shelter training in the DPH limited the ability to create and develop such a program. This lack of research may impede buy-in from some local health department stakeholders. Many of the articles revealed the need for training in emergency preparedness and disaster response by staff designated as first responders and not public health nurses. Finally, there was no comparison group of public health nurses who had used another method of emergency preparedness training for comparison. These comparisons will be needed to measure the actual effectiveness of the education program to measure emergency preparedness competencies.

Recommendations

The education program created by this pilot study offers the DPH a structured, evidence-based program through six modules and an interactive workshop. This project validates that nurses who participated may benefit as demonstrated by increased scores in both emergency preparedness competencies and overall familiarity. This program should be further considered as an option for continued use by the DPH to improve public health emergency preparedness competencies and disaster response for all public health nurses in the state.

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