This is a Disaster!
Disaster Preparedness in Nursing Curriculum

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Acknowledgments & Disclosures

- Mackenzie Lefler was PI on this study; Alexa Hickman, BSN; Kayla Harper, BSN; Crystal Murray, BSN; Delaney Cronan, BSN; and Michaela Massey, BSN all contributed equally as co-investigators. Dr Kate Kemplin served as statistician and analyst.

- Dr Kemplin is an unpaid board member of the International Network for Doctoral Education in Nursing (INDEN), an organization partnered with Sigma for biennial pre-conferences at International Nursing Research Congresses.
Importance of the Problem

- October 2018: United Nations’ (UN) scientific panel on climate change painted a dire picture of immediate consequences of climate change, describing a world of worsening food shortages, wildfires, mass die-off of coral reefs, and of increased coastal flooding as soon as 2040, if 2.7 degrees of warming occur (Davenport, 2018).

- Hurricanes and tropical cyclones are expected to double every 10 years; a rate that implies that losses in 2050 will be 15 times greater than those in the 2000s (Freeman and Ashley, 2017).


- October 27th, 2018: active-shooter stormed into the Tree of Life Congregation Synagogue in Pittsburgh, PA, USA, killing worshipers.

- Nurses in all areas of practice will increasingly be called on to respond to disasters in community, prehospital, and inpatient settings.
Background

- Nursing as a science and profession is likely woefully unprepared to address manmade and natural disasters
- Despite these threats, to our knowledge, no formal nursing curricula prepares nurses for these threats
- Failure to institute disaster preparedness curriculum contributes to poor responses to global and local humanitarian crises
- Today, with both natural and manmade disasters on the rise, we need to adequately prepare our nurses to contend with the repercussions of these disasters
Objectives & Hypothesis

- Determine presence or absence of disaster preparation (DP) curricula in nursing education (both academic and hospital)
- Measure nurses’ and nursing students’ (collectively: nurses) disaster knowledge and/or preparedness
- $H_A$ – The lack of disaster preparedness in nursing results in DP knowledge deficits
Design & Methods

- Quantitative cross-sectional comparative design
- After institutional approval, we recruited participants through social media with link to QuestionPro survey
- Assessed participants’ disaster training based on modified Assessment For Disaster Engagement With Partners Tool (ADEPT; Cronbach's alpha: 0.71–0.88)
- American Nurses Credentialing Center (ANCC) gave permission for us to administer the National Healthcare Disaster Exam (psychometrics not found in literature)
- Demographic questions about professional status, age, and other variables
- Inclusion criteria: individuals currently or previously enrolled in an undergraduate or graduate nursing program, individuals currently employed as registered nurses, or individuals currently faculty in a nursing program
Results

- After informed consent & inclusion/exclusion criteria: 50 participants responded
- 60% were in school, 12% had an Associate Degree in Nursing (ADN), 8% had a Bachelors of Science in Nursing (BSN), 8% had a Masters of Science in Nursing (MSN) and 12% had a Doctorate in Nursing (PhD or DNP)
- 67.35% reported no prior experience or training in disaster preparedness
- Participants reported that in their primary nursing program, they did not receive experience or training in active shooter scenarios, providing care without power or in mass casualties, fire drills, tornado drills, bomb threats, or floods
- Missing data was excluded from analysis via Statistical Package for Social Sciences (SPSS)
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
<th>% answered correctly</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is an appropriate strategy for responding to an individual experiencing acute distress?</td>
<td>Have the individual state their most urgent needs</td>
<td>91.84%</td>
</tr>
<tr>
<td>In which circumstance is a change in patient confidentiality permitted?</td>
<td>Family reunification</td>
<td>79.59%</td>
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<tr>
<td>Which is an individual health consequence during an extreme high temperature condition?</td>
<td>Heat exhaustion</td>
<td>85.42%</td>
</tr>
<tr>
<td>What is an example of a natural threat?</td>
<td>Animal disease outbreak</td>
<td>89.58%</td>
</tr>
<tr>
<td>Which is an example of a health-hazard notification tool?</td>
<td>Emergency Alert System (EAS) addresses the public on short notice</td>
<td>50%</td>
</tr>
<tr>
<td>According to the Federal Emergency Management Agency (FEMA), stored food and water in a home disaster supply kit should be changed every:</td>
<td>six months</td>
<td>50%</td>
</tr>
<tr>
<td>The Strategic National Stockpile (SNS) is a national cache of?</td>
<td>medication and medical supplies</td>
<td>80.85%</td>
</tr>
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<td>Data collected through disease surveillance to help guide the response is distributed:</td>
<td>to the management chain and other stakeholders</td>
<td>16.67%</td>
</tr>
<tr>
<td>Which is characteristic of a mass casualty incident (MCI)?</td>
<td>Healthcare system is disrupted</td>
<td>81.25%</td>
</tr>
<tr>
<td>Which disaster planning target group includes the homeless and individuals with limited English-language proficiency?</td>
<td>Vulnerable populations</td>
<td>64.58%</td>
</tr>
<tr>
<td>Exposure to toxins and mold is an example of:</td>
<td>an environmental health consequence</td>
<td>97.92%</td>
</tr>
<tr>
<td>Federal assets are deployed through:</td>
<td>the Federal Emergency Management Agency (FEMA)</td>
<td>87.50%</td>
</tr>
<tr>
<td>Disaster recovery efforts include:</td>
<td>reconnecting displaced populations with essential health and social services</td>
<td>74.47%</td>
</tr>
<tr>
<td>A Continuity of Operations Plan requires:</td>
<td>the continuation of mission essential functions</td>
<td>63.83%</td>
</tr>
<tr>
<td>Which is the guiding document used to coordinate response and recovery actions?</td>
<td>Emergency Operations Plan</td>
<td>87.50%</td>
</tr>
<tr>
<td>Which activity must be completed before on-scene triage?</td>
<td>Scene safety has been assured</td>
<td>81.25%</td>
</tr>
<tr>
<td>Which is an accurate definition of individual resilience?</td>
<td>The ability to adapt to changing conditions</td>
<td>77.08%</td>
</tr>
<tr>
<td>Which method is most effective for the decontamination of individuals?</td>
<td>Soap and water</td>
<td>77.08%</td>
</tr>
<tr>
<td>During a disaster, the person responsible for leading the response effort is the Incident:</td>
<td>Commander</td>
<td>68.75%</td>
</tr>
<tr>
<td>To be in compliance with the Americans with Disabilities Act (ADA), what is a permissible question that a healthcare professional can ask about a service animal?</td>
<td>“What task has the animal been trained to perform?”</td>
<td>35.42%</td>
</tr>
<tr>
<td>What phase of emergency management includes exercises and drills?</td>
<td>Preparedness</td>
<td>91.67%</td>
</tr>
<tr>
<td>Which section of the Incident Command System (ICS) is responsible for the appropriate documentation of time, expenses, and claims?</td>
<td>Finance/Administration</td>
<td>44.68%</td>
</tr>
<tr>
<td>Which is a Medical Countermeasure (MCM)?</td>
<td>Personal Protective Equipment (PPE)</td>
<td>64.58%</td>
</tr>
<tr>
<td>What reference must be accessible at every workplace for each hazardous substance?</td>
<td>Safety Data Sheet</td>
<td>72.92%</td>
</tr>
<tr>
<td>The author of an After Action Report (AAR):</td>
<td>includes hotwash notes and participant feedback</td>
<td>44.68%</td>
</tr>
</tbody>
</table>
In nursing school, we received thorough training involving active shooter scenarios

While in nursing school, we carried out emergency exercises and drills

In nursing school, we received thorough training involving how to continue nursing practice with no power at our facility

While in nursing school, we developed or promoted educational activities, resources, or websites for emergency preparedness and disaster readiness
Chi-square tests of independence were conducted between age, disaster experience, education level, nursing role, military experience and analyzed with responses to disaster preparation questions.

No statistically significant associations presented among any categories and disaster preparation knowledge, with the exception of:

- Having disaster experience and knowledge of health consequences $\chi^2 [3] = 9.561, p = 0.031$
- Having disaster experiences and knowledge of medical countermeasures $\chi^2 [3] = 9.561, p = 0.023$
- Participants' age and knowledge of individual disaster health consequences $\chi^2 [3] = 2.345, p = 0.039$

Even in participants who reported having disaster experience, experience was only associated with significantly different responses to two test questions.

In the absence of disaster experience, most people reported almost zero preparation; even having military experience was statistically insignificant in disaster preparation knowledge.
Limitations

- Can’t accept results with confidence, as study was statistically underpowered: would need 59 more participants (N= 109) to reach 80% power with 5% alpha
- Modified ADEPT questions (to assess disaster training) Cronbach’s alpha increased to .95 from .71-.88 previously, indicating our changes made the questions too similar or perhaps participants all agreed they had no training
- Reliability for National Healthcare Disaster Exam questions in this sample was very weak at .252, possibly indicating disparate knowledge of participants or heterogeneity in the sample or topics
- Omnibus statistical testing used; did not control for confounders nor covariates
Recommendations & Conclusion

- Nursing programs lack curricula to prepare nurses for the physical and mental care of disaster victims
- Gaps in knowledge exist concerning disaster preparedness in natural and man-made disaster education in nursing
- Should incorporate innovative pedagogy within nursing education:
  - Life-saving disaster preparedness knowledge may be implemented into nursing curriculum through discussion of disaster scenarios and adding disaster preparedness lecture materials
  - Disaster simulations may be implemented into curricula
  - At least one person in nursing faculty should be responsible for disaster preparedness education for their respective school of nursing. This person should be nationally certified by an accredited program
  - Interprofessional and interagency collaboration is likely required to implement these programs and education
  - This study may bring about potentially paradigm shifting educational initiatives to better prepare nurses


