



**CRITICAL REVIEW ON THE ROLE OF NURSES IN DISASTER PREPAREDNESS AND RESPONSE IN BUILDING RESILIENCE IN HEALTHCARE SYSTEMS**

**Budur Hammad Alharthi**

Ministry of Health, Saudi Arabia, [bealharthi@moh.gov.sa](mailto:bealharthi@moh.gov.sa)

**Abdulrahman Fahad Aldawsari**

Ministry of Health, Saudi Arabia, [Abfaldawsari@moh.gov.sa](mailto:Abfaldawsari@moh.gov.sa)

**Jamela Muohamed Alshehri**

Ministry of Health, Saudi Arabia, [Jojoalshehri2015@gmail.com](mailto:Jojoalshehri2015@gmail.com)

**Mohammad khalaf alanazi**

Ministry of Health, Saudi Arabia, [M\\_911\\_2007@hotmail.com](mailto:M_911_2007@hotmail.com)

**Abdullah Abdulaziz Z Alsahli**

Ministry of Health, Saudi Arabia, Riyadh second health cluster

**Hanan Ali Hussein Hakami**

Ministry of Health, Saudi Arabia, [haalhakami@moh.gov.sa](mailto:haalhakami@moh.gov.sa)

**Ahlam Mufleh Alrashidi**

Ministry of Health, Saudi Arabia, [ahlam134689@gmail.com](mailto:ahlam134689@gmail.com)

**Mohammed Aziz Alharbi**

Ministry of Health, Saudi Arabia, [mozalharbi7@moh.gov.sa](mailto:mozalharbi7@moh.gov.sa)

**Abstract**

This critical review assesses the basic part of caregivers in catastrophe readiness and response, highlighting their significance in reinforcing well-being systems. Assessing current literature, strategies, discoveries, and talks about, this review gives knowledge into the part of nursing in decreasing the impacts of harm in healthcare offices. Most discoveries highlight the numerous commitments of nursing staff and their potential to make strides in healthcare execution. Furthermore, this review gives suggestions for future investigative headings and viable applications to reinforce nursing's part in injury, damage, and well-being management.

**Keywords:** Nurses, Disaster Preparedness, Response, Healthcare Systems, Resilience



All the articles published by Chelonian Conservation and Biology are licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/) Based on a work at <https://www.acgpublishing.com/>

## **Introduction**

Disasters, indeed normal catastrophes such as seismic tremors and typhoons, or artificial occasions such as mischances and plagues, For the worldwide well-being systems genuine issues. Amid an emergency, healthcare offices are regularly influenced by a convergence of patients requiring critical treatment, collapse of buildings, and disturbance of supplies. As cutting-edge healthcare suppliers, healthcare experts play a vital part in calamity readiness and response, and treatment plays a crucial part in moderating the effect of such events (Blanchet et., al 2020).

### ***The Role of Nurses in Disaster Preparedness and Response***

Nurses are imperative and profitable resources in disaster preparedness and response due to their assorted aptitudes, flexibility, and vicinity to influenced communities. Amid calamity readiness, restorative experts are included in an assortment of exercises, such as creating crisis plans, conducting drills and recreations, and giving preparation to the therapeutic workforce. Their skill in triage, patient care, and asset administration guarantees effective utilization of assets and arrangement of reasonable care in crises (Yazdani et., al 2021).

During a catastrophe, specialists work on the front lines giving therapeutic care to influenced individuals and frequently work in troublesome circumstances (Jolgehnejad et., al 2021). They survey patients' needs, screen them for some time recent treatment, and facilitate with other specialists to guarantee legitimate treatment. Specialists, too, play an imperative part in assembling the mental needs of casualties and giving inspiration and counseling to decrease torment and suffering (Grimes et., al 2020).

### ***Evaluation of Nursing Services***

The viability of nursing in disaster administration depends on numerous components such as arranging, coordination, and assets. Research shows that healthcare incorporates a positive impact on well-being execution, with changes in dismalness and decreased mortality rates within the field. In any case, challenges such as restricted assets, communication boundaries, and staff deficiencies can ruin the adequacy of well-being administrations and disaster prevention.

### ***Evaluation of Existing Literature***

A basic survey of existing literature on the part of medical caretakers in disaster preparedness and response gives a developing body of proof supporting the significance of medical attendants in healthcare. Investigate highlights the importance of nursing authority, collaborative collaboration, and proceeding instruction in calamity recuperation. As it may, holes remain in patient the long-term effect of injury on caregivers and the supportability of nursing care in restricted settings (Timalsina & Sanatana 2020).

## **Literature Review**

The important part of therapeutic experts in catastrophe arranging and help is broadly recognized and archived within the literature. As front-line healthcare specialists, specialists are regularly, to begin with responders in crises and give fundamental restorative care to those influenced. Their duties differ and incorporate competition, patient care, coordination, and community outreach. Furthermore, the nursing staff is doled out to calamity readiness by preparing plans, partaking in recreations, and creating crisis plans.

### ***Nursing as First Responders***

When catastrophe strikes, medical attendants consider the imperative part of being a to begin with responder, giving crisis restorative care to those harmed or influenced by the circumstance. Triage preparation guarantees the successful assignment of restricted assets, empowering them to prioritize patient treatment based on the seriousness of the harm and therapeutic needs (Bezbaruah et., al 2021). Moreover, specialists have the vital aptitudes required to supply comprehensive care in an assortment of circumstances, from minor wounds to life-threatening emergencies.

### ***Patient Care and Support***

An imperative part of medical attendants in a disaster environment is to supply care and bolster the patient. In expansion to assembly critical therapeutic needs, caregivers play a crucial part in overseeing unremitting conditions, avoiding complications, and advancing well-being and, by and large, well-being (Loke et., al 2021). Their capacity to relate and construct beliefs with their patients makes a stimulating environment conducive to mending and healing. In expansion, caregivers give bolster and counseling to people who have endured wounds or ailments, making a difference in helping them adapt to the mental impacts of the disaster.

### ***Coordination of Resources and Services***

Coordination of assets and quality administrations is fundamental for superior anticipation of catastrophes and reasonable arrangements of medical administrations. Doctors play an imperative part in the handling by planning with other doctors, crisis staff, and community organizations to mobilize assets and back patient care (Meyer et., al 2020). They direct the transportation of restorative care, counting the conveyance of therapeutic groups, dissemination of supplies, and administration of healthy offices. Beneficial experts moreover encourage communication and coordination between distinctive partners, driving a facilitated and facilitated response to disasters (Haldane et., al 2021).

### ***Community Outreach and Education***

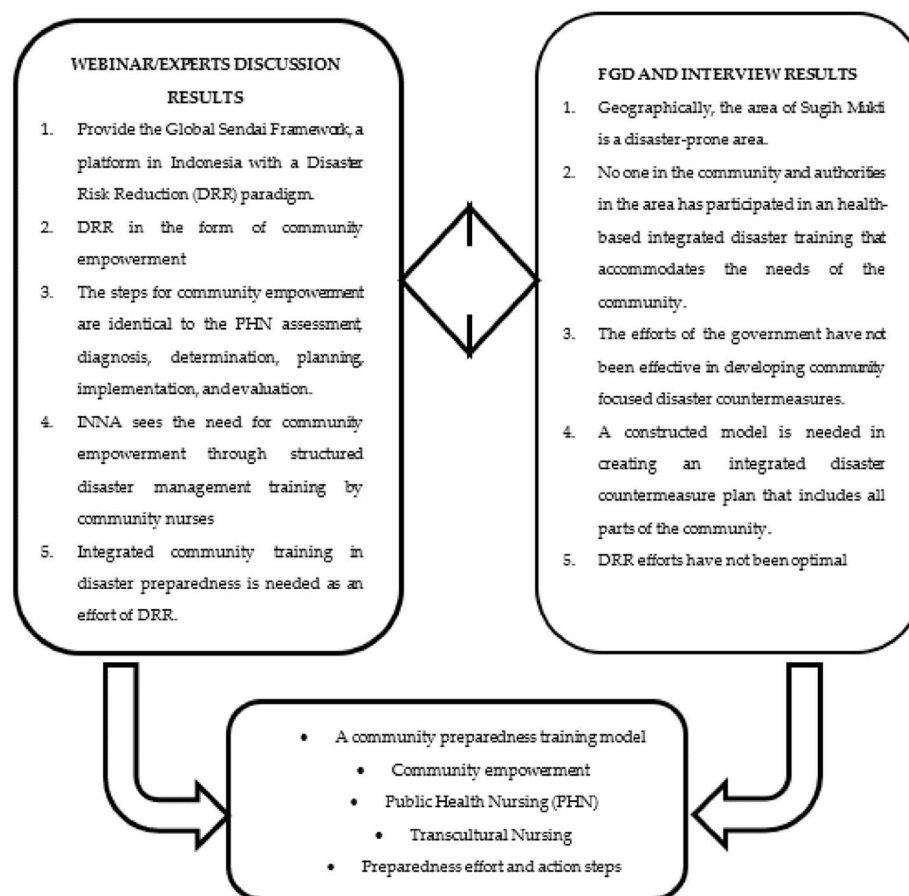
Nurses take an interest in community outreach and instruction exercises to make strides in disaster preparedness and avoidance at the grassroots level. Through instruction, preparation, and introductions, directors energize people and communities to take steps to decrease the impacts of catastrophes and react to crises. They teach open-on disaster preparedness techniques, such as

departure methods, to begin with, help methods, and the significance of emergency supplies. By advancing community flexibility and capacity building, caregivers contribute to maintaining overall health in the confront of disaster.

### *Training Programs and Emergency Protocols*

Nurses play a vital part in the advancement and usage of preparing plans and emergency protocols outlined to move forward harm and response readiness. These programs give caregivers the information, abilities, and capacities they need to respond to an assortment of crises, from common fiascos to scourges. Through a combination of preparation, recreation works out, and hands-on collaboration, doctors pick up the encounter and certainty required to reply to complex and challenging circumstances (Xue et., al 2020). Restorative experts contribute their aptitudes to the advancement of emergency methods and strategies to guarantee standard hone and great patient results when a mischance happens.

**Figure3: Thematic description of Disaster Risk Reduction (DRR) needs in community nursing.**



*(Tippong et., al 2022).*

Figure 3 outlines the discoveries of the requirement for open well-being care (PHN) hazard lessening show that centers on community association at the side levels of care and back in calamity regions (Baskin & Bartlett 2021). Topical inquiries conducted by all individuals of the community affirmed the pressing requirement for such a show and illustrated its significance in successfully reacting to disaster issues and reinforcing community control. The coordinates approach proposed by the show is based on the thought that combining hazard diminishment instruction with community strengthening is fundamental to diminish disaster hazard and advance readiness in helpless communities (Schwerdtle et., al 2020).

## Methods

This review utilized an efficient approach to recognize and analyze important literature with respect to the part of caregivers in arranging and reacting to harm. PubMed, Scopus and Web of Science databases were looked at utilizing terms such as protection, disaster preparedness, response health care, and resilience. Articles distributed between 2020 and 2024 were included in the review. Consideration criteria included visual thinks, literature reviews, and gray literature cantering on patient care in catastrophe management (Rieckert et., al 2021).

## Results and Findings

*Table 1: Methodologies Employed in the Selected Studies*

Methodology	Description
<b>Survey Research</b>	Studies conducted through surveys to gather quantitative data on nurses' roles in disaster management.
<b>Qualitative Interviews</b>	Research involving in-depth interviews with nurses to explore their experiences and perspectives in disaster settings.
<b>Simulation Exercises</b>	Studies utilizing simulation exercises to assess nurses' preparedness and response capabilities in simulated disaster scenarios (Behrens et., al 2022).
<b>Mixed-Method Approaches</b>	Research combining quantitative and qualitative methods to provide a comprehensive understanding of nurses' roles in disaster preparedness and response.

Table 1 gives an outline of the strategies utilized to investigate the part of administrators in catastrophe arranging and response by appearing the strategies used in chosen ponders. Understanding the part of inquiring about strategy (Narwal & Jain 2021). These strategies incorporate survey research, subjective interviews, recreation diversions, and blended approaches.

These distinctive things contribute to a distant better, a much better, a higher, a stronger, and an improved understanding of the different parts of caregivers in catastrophe management.

**Figure2: Key Findings: Enhancing Healthcare System Resilience During Disasters**



*(Iflaifel et., al 2020).*

Figure 2 presents the key discoveries of the review and highlights the part of nursing staff in progressing the therapeutic prepare amid a major crisis. These discoveries underscore the imperative part bosses play in all viewpoints of disaster administration, counting arranging, response, healing, and relief efforts.

1. Quick arrangement of therapeutic groups: Specialists play an imperative part in quickly dispatching therapeutic groups to catastrophe ranges and guaranteeing that influenced individuals get suitable treatment.
2. Utilize the triage systems: Medical attendants are included in the utilization of the triage systems, prioritizing the patient based on the seriousness of damage and treatment.
3. Give Mental Bolster: Caregivers address injury, despair, and mental issues in disaster zones, giving fitting mental bolster to influenced individuals.
4. Collaborative Collaboration: Nursing staff encourage collaborative and collaborative efforts among healthcare organizations, government organizations, and non-governmental organizations to progress the assignment of assets and mediation activities (Verheul & Dückers 2020).

**Table 2: Challenges Faced by Nurses in Disaster Settings**

### Challenges Faced by Nurses in Disaster Settings

<b>1. Resource Constraints</b>
- <b>Limited availability of medical supplies, equipment, and personnel</b>
<b>2. Communication Barriers</b>
- <b>Inadequate communication systems and infrastructure</b>
<b>3. Psychological Stress</b>
- <b>Exposure to traumatic events, long working hours, and high-pressure environments</b>

Table 2 shows the most challenges confronted by specialists in calamities in terms of challenges and confinements in calamity arranging and assistance (Li et., al 2021). Table 2 portrays the challenges confronted by medical experts within the catastrophe environment, highlighting the challenges and restrictions experienced amid calamity arranging and help endeavors. These challenges include:

1. Constrained assets: Constrained therapeutic supplies, hardware, and work force are a major challenge for medical attendants to supply satisfactory care to those in need.
2. Communication issues: Insufficient communication and systems prevent coordination and data sharing between suppliers and responders.
3. Mental push: There are traumatic occasions, long working hours, and an upsetting environment that can lead to mental stretch and burnout in caregivers included in a disaster (Sharma & Sharma 2020).

## **Discussion**

The comes about of this review repeat the imperative part of well-being experts in calamity alleviation. disaster planning and response with respect to their capacity to move forward well-being security measures. Be that as it may, in spite of critical commitments, numerous challenges still got to be overcome in arrange to be more productive and viable in calamity management.

### ***Importance of Nurses in Disaster Preparedness and Response***

Nurses work as cutting-edge aides in crises and encourage restorative care to influence individuals. Their assorted aptitudes, vital information, and compassionate care are profitable resources in disaster circumstances. Doctors fulfill an assortment of duties, counting backing, patient care, collaboration, and community bolster. Their nearness guarantees timely care, progresses patient results, and keeps communities calm in the confront of adversity (Sulaiman et., al 2020, December).

## **Challenges and Opportunities**

Although medical caretakers have a vital part, numerous challenges ruin their viability in disaster planning and response. He replied. One of the issues is the need to prepare strategies based on the particular needs of natural calamities. In spite of the fact that numerous crisis response faculty are prepared in disaster administration, graduate and continuing education is fundamental to prepare them with the information and aptitudes required to reply to troublesome situations.

In a catastrophe setting, communication disappointments can lead to delays, wasteful aspects, and destitute patient care. Understanding these communication issues requires a solid communication procedure that incorporates the utilization of communication channels and open lines of communication.

Gread participation between healing centers is critical for designating assets and making strides in the response. Collaborative coordination gives a facilitated approach to catastrophe administration that minimizes duplication and maximizes the viability of response endeavors. But accomplishing consistent collaboration requires overcoming organizational silos, building belief, and cultivating a culture of collaboration among stakeholders (Grimm et., al 2022).

The widespread COVID-19 has highlighted the significance of nursing authority in crises and the requirement for greater investment in nursing instruction and staff development. Specialists played a critical part in combating the scourge by appearing ability, flexibility, and advancement within the confront of the exceptional light challenge. It is basic to contribute to nursing instruction and proficient advancement to equip the nursing workforce with the information and abilities required to illuminate the well-being challenges of clean drinking for society in the future (Hung et., al 2021).

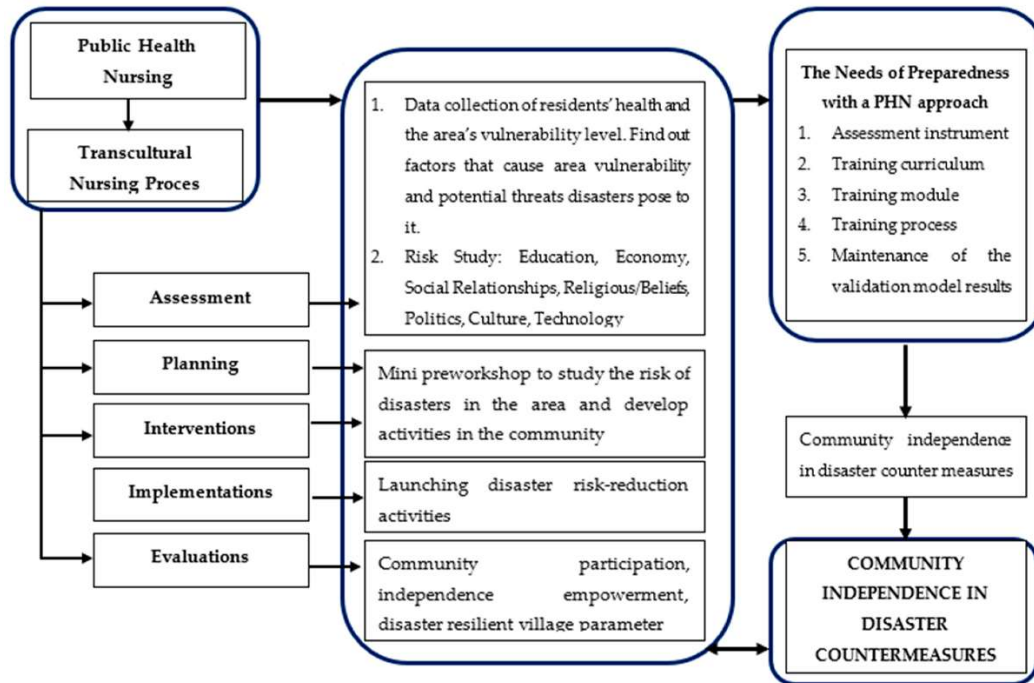
### **Future Research and Practice**

1. Create a preparing show: Contribute to creating a well-informed, professional-level preparing program centered on catastrophe readiness, response, and healing. These courses ought to incorporate abilities in drafting preparation, recreation recreations, and joint preparation to progress calamity administration capabilities.
2. Progress communication forms: Utilize clear communication forms and strategies to encourage communication between healthcare suppliers and responders. Use communication apparatuses and innovation to guarantee convenient data sharing and coordination (Fallah-Aliabadi et., al 2020).
3. Making strides in participation among well-being teachers: The government must advance participation and collaboration between well-being educators, government offices, and non-governmental organizations, making strides in the allotment of assets and responses. Advance a culture of collaboration, belief, and collaboration among stakeholders.
4. Contributing to nursing instruction and workforce improvement: Recognizing the significance of nursing in disaster administration and contributing to the nursing instruction and proficient advancement of the lion's share of representatives. Give continuous



professional advancement, preparation, and coaching openings to prepare caregivers with the information and aptitudes required to be successful in open-air emergencies (Scrimgeour et., al 2020).

**Figure 4. Constructed requirements for the Public Health Care-Based Disaster Preparedness Training integration model.**



*(Foroughi et., al 2022).*

Figure 4 shows the structure of the catastrophe hazard decrease instructing show created from the topical examination. This demonstrates consolidated components of Community Nursing (PHN) to make strides in the standard of nursing care (Munasinghe et., al 2021). The show combines community-reinforcing steps with community observing forms (e.g., evaluation, arranging, intercession, usage, and assessment). This handle gives catastrophe readiness instruction that emphasizes community support and strengthening at all levels of catastrophe management.

Nursing faculty play a vital part in disaster arranging and response, coming about in an effect on healthcare administrations. In spite of the fact that challenges stay, response techniques center on preparing guidelines, moving forward communication, moving forward collaboration, contributing to patient care, and building well-being services' staff capacity for catastrophe administration (Biddle et., al 2020). By recognizing the significance of ongoing care and contributing in supporting and making strides it, well-being systems can move forward their capacity to anticipate and react to emergencies.

## Conclusion

As a result, medical caretakers play an imperative part in catastrophe arranging and intercession and guarantee positive comes about from treatment. This basic survey highlights the significance of nursing in diminishing the effect of catastrophes and highlights the numerous parts of nursing staff in arranging, response, healing, and relief. By recognizing the esteem of healthcare suppliers and contributing to their preparation, back, and proficient advancement, well-being systems can make them strong to disaster. In the future, challenges such as progressing designing strategies, communication strategies and greater collaboration between clinics ought to be tended to. Through compelling methodologies and a maintained commitment to brilliance in care, well-being systems can make more maintainable, more grounded systems that intentionally react to the troublesome challenges of disaster and ensure the well-being and well-being of society.

### Recommendation

- ✓ Create a specialized preparing program for disaster preparedness and relief.
- ✓ Progress communication between clinics and begin with responders.
- ✓ Give satisfactory assets and bolster to cutting-edge medical attendants in emergencies.
- ✓ Advances collaborative cooperation and cooperation in calamity management.
- ✓ Contributing to investigate to degree of the viability of healthcare administrations in building quality within the treatment preparation (Said & Chiang 2020).

### Reference

- Biddle, L., Wahedi, K., & Bozorgmehr, K. (2020). Health system resilience: a literature review of empirical research. *Health policy and planning*, 35(8), 1084-1109. <https://academic.oup.com/heapol/article-abstract/35/8/1084/5856261>
- Foroughi, Z., Ebrahimi, P., Branchial, A., Maleki, M., & Yazdani, S. (2022). Toward a theory-led meta-framework for implementing health system resilience analysis studies: a systematic review and critical interpretive synthesis. *BMC Public Health*, 22(1), 287. <https://link.springer.com/article/10.1186/s12889-022-12496-3>
- Said, N. B., & Chiang, V. C. (2020). The knowledge, skill competencies, and psychological preparedness of nurses for disasters: a systematic review. *International emergency nursing*, 48, 100806. <https://www.sciencedirect.com/science/article/pii/S1755599X19300928>
- Ali, H. M., Desha, C., Ranse, J., & Roiko, A. (2021). Planning and assessment approaches towards disaster resilient hospitals: A systematic literature review. *International Journal of Disaster Risk Reduction*, 61, 102319. <https://www.sciencedirect.com/science/article/pii/S2212420921002855>
- Sulaiman, N., Abid, S. K., Nazir, U., Mahmud, N. P. N., Latib, S. K. K., Hafidz, H. F., ... & Rahim, N. A. (2020, December). Need for resilience healthcare facilities management (RHFM) in

- malaysia's public hospitals. A critical literature reviews. In *Proc Int Conf Ind Eng Oper Manag* (Vol. 59, pp. 2336-48). <http://www.ieomsociety.org/harare2020/papers/536.pdf>
- Grimm, P. Y., Oliver, S., Merten, S., Han, W. W., & Wyss, K. (2022). Enhancing the understanding of resilience in health systems of low-and middle-income countries: a qualitative evidence synthesis. *International Journal of Health Policy and Management*, 11(7), 899. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9808204/>
- Fallah-Aliabadi, S., reviews, A., Ardalan, A., Fatemi, F., Khazai, B., & Mirjalili, M. R. (2020). Towards developing a model for the evaluation of hospital disaster resilience: a systematic review. *BMC health services research*, 20(1), 1-11. <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-020-4915-2>
- Munasinghe, N. L., O'Reilly, G., & Cameron, P. (2021). Examining the experience and lessons learnt for disaster-preparedness in Sri Lankan hospitals: A scoping review. *International Journal of Disaster Risk Reduction*, 64, 102494. <https://www.sciencedirect.com/science/article/pii/S2212420921004556>
- Scrymgeour, G. C., Smith, L., Maxwell, H., & Paton, D. (2020). Nurses working in healthcare facilities during natural disasters: a qualitative enquiry. *International nursing review*, 67(3), 427-435. <https://onlinelibrary.wiley.com/doi/abs/10.1111/inr.12614>
- Hung, K. K., Mashino, S., Chan, E. Y., MacDermot, M. K., Balsari, S., Ciottone, G. R., ... & Graham, C. A. (2021). Health workforce development in health emergency and disaster risk management: The need for evidence-based recommendations. *International journal of environmental research and public health*, 18(7), 3382. <https://www.mdpi.com/1660-4601/18/7/3382>
- Li, L., Liao, S., Yuan, J., Wang, E., & She, J. (2021). Analyzing healthcare facility resilience: scientometric review and knowledge map. *Frontiers in Public Health*, 9, 764069. <https://www.frontiersin.org/articles/10.3389/fpubh.2021.764069/full>
- Schwerdtle, P. N., Connell, C. J., Lee, S., Plummer, V., Russo, P. L., Endacott, R., & Kuhn, L. (2020). Nurse expertise: a critical resource in the COVID-19 pandemic response. *Annals of Global Health*, 86(1). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7227394/>
- Meyer, D., Bishai, D., Ravi, S. J., Rashid, H., Mahmood, S. S., Toner, E., & Nuzzo, J. B. (2020). A checklist to improve health system resilience to infectious disease outbreaks and natural hazards. *BMJ global health*, 5(8), e002429. <https://gh.bmj.com/content/5/8/e002429.abstract>
- Sharma, S. K., & Sharma, N. (2020). Hospital preparedness and resilience in public health emergencies at district hospitals and community health centres. *Journal of Health*

- Management*, 22(2), 146-156.  
<https://journals.sagepub.com/doi/abs/10.1177/0972063420935539>
- Jolgehnejad, A. K., Kahnali, R. A., & Heyrani, A. (2021). Factors influencing hospital resilience. *Disaster Medicine and Public Health Preparedness*, 15(5), 661-668.  
<https://www.cambridge.org/core/journals/disaster-medicine-and-public-health-preparedness/article/factors-influencing-hospital-resilience/979E71CF6554A476FF5C5CCF9BA2E774>
- Verheul, M. L., & Dückers, M. L. (2020). Defining and operationalizing disaster preparedness in hospitals: a systematic literature review. *Prehospital and disaster medicine*, 35(1), 61-68.  
<https://www.cambridge.org/core/journals/prehospital-and-disaster-medicine/article/defining-and-operationalizing-disaster-preparedness-in-hospitals-a-systematic-literature-review/21A0554AF311EC8EFD9A8CFD08B8E087>
- Xue, C. L., Shu, Y. S., Hayter, M., & Lee, A. (2020). Experiences of nurses involved in natural disaster relief: A meta-synthesis of qualitative literature. *Journal of clinical nursing*, 29(23-24), 4514-4531.  
<https://onlinelibrary.wiley.com/doi/abs/10.1111/jocn.15476>
- Iflaifel, M., Lim, R. H., Ryan, K., & Crowley, C. (2020). Resilient health care: a systematic review of conceptualisations, study methods and factors that develop resilience. *BMC health services research*, 20, 1-21. <https://link.springer.com/article/10.1186/s12913-020-05208-3>
- Narwal, S., & Jain, S. (2021). Building resilient health systems: patient safety during COVID-19 and lessons for the future. *Journal of Health Management*, 23(1), 166-181.  
<https://journals.sagepub.com/doi/abs/10.1177/0972063421994935>
- Behrens, D. A., Rauner, M. S., & Sommersguter-Reichmann, M. (2022). Why resilience in health care systems is more than coping with disasters: implications for health care policy. *Schmalenbach Journal of Business Research*, 74(4), 465-495.  
<https://link.springer.com/article/10.1007/s41471-022-00132-0>
- Rieckert, A., Schuit, E., Bleijenberg, N., Ten Cate, D., de Lange, W., de Man-van Ginkel, J. M., ... & Trappenburg, J. C. (2021). How can we build and maintain the resilience of our health care professionals during COVID-19? Recommendations based on a scoping review. *BMJ open*, 11(1), e043718. <https://bmjopen.bmj.com/content/11/1/e043718.abstract>
- Grimes, A., Sparke, V., Rouen, C., & West, C. (2020). Preparedness and resilience of student nurses in Northern Queensland Australia for disasters. *International Journal of Disaster Risk Reduction*, 48, 101585.  
<https://www.sciencedirect.com/science/article/pii/S2212420919310805>

- Baskin, R. G., & Bartlett, R. (2021). Healthcare worker resilience during the COVID-19 pandemic: An integrative review. *Journal of nursing management*, 29(8), 2329-2342. <https://onlinelibrary.wiley.com/doi/abs/10.1111/jonm.13395>
- Tippong, D., Petrovic, S., & Akbari, V. (2022). A review of applications of operational research in healthcare coordination in disaster management. *European Journal of Operational Research*, 301(1), 1-17. <https://www.sciencedirect.com/science/article/pii/S0377221721008973>
- Haldane, V., De Foo, C., Abdalla, S. M., Jung, A. S., Tan, M., Wu, S., ... & Legido-Quigley, H. (2021). Health systems resilience in managing the COVID-19 pandemic: lessons from 28 countries. *Nature Medicine*, 27(6), 964-980. <https://www.nature.com/articles/s41591-021-01381-y>