Towards Disaster Resilient Hospitals:

Investigating Perspectives and Opportunities for Empowering Healthcare Workers and Leaders

Dr Heba Mohtady Ali
MBBS, MSc, JMHPE, MD, SFHEA
Scholar at Griffith University Australia

Supervision Team: A/Professor Jamie Ranse | PhD,
Professor Anne Roiko | PhD, Professor Cheryl Desha | PhD

ACKNOWLEDGEMENT OF COUNTRY

Griffith University acknowledges the Traditional Custodians of the land on which we are meeting and pays respect to the Elders, past and present, and extends that respect to all Aboriginal and Torres Strait Islander people.

Griffith UNIVERSITY
Queensland, Australia

Background

Globally, disasters and climate change impacts are increasing in frequency and severity.
During disasters, people expect that hospitals must always be accessible, functional, and able to meet the increased demand.

- (Albanese et al., 2008; Gian Paolo Cimellaro, Malavisi, & Mahin, 2017).

What if hospitals can't do that?

Overarching Research Question

How can hospitals improve their resilience and ensure their business continuity during disasters?

PhD Publications and Contributions to Knowledge

Publication 1
Publication 2
Publication 3
Publication 4

Publication 1: Systematic Literature Review

Contents lists available at ScienceDirect

International Journal of Disaster Risk Reduction

journal homepage: www.elsevier.com/locate/ijdrr

Review Article

Planning and assessment approaches towards disaster resilient hospitals: A systematic literature review

Heba Mohtady Ali [a,*], Cheryl Desha [b], Jamie Ranse [c], Anne Roiko [d]

[a] Cities Research Institute, Griffith University, Australia
[b] Cities Research Institute, Griffith University, Australia
[c] Menzies Health Institute Queensland, Griffith University, Australia
[d] The Hopkins Centre, Menzies Health Institute Queensland & Cities Research Institute, Griffith University, Australia

ARTICLE INFO

Keywords:
Hospital resilience
Disasters
Planning
Preparedness
Resilience engineering
Decision-support

ABSTRACT

Background: Hospitals play a critical role as a frontline agency in disasters, with staff often working within extraordinary circumstances in these facilities to deliver care. This study was inspired by the authors' inter-disciplinary experiences in health and resilience engineering. Observing increasing dialogue about how hospitals could improve their resilience to disasters we sought to understand the construct of 'hospital resilience during disasters' and how it could be improved.

Method: The study involved a systematic literature review of publications related to hospital resilience during disasters, conducted at the end of January 2020. Of the 553 articles found initially, 49 remained after applying

Griffith UNIVERSITY
Queensland, Australia

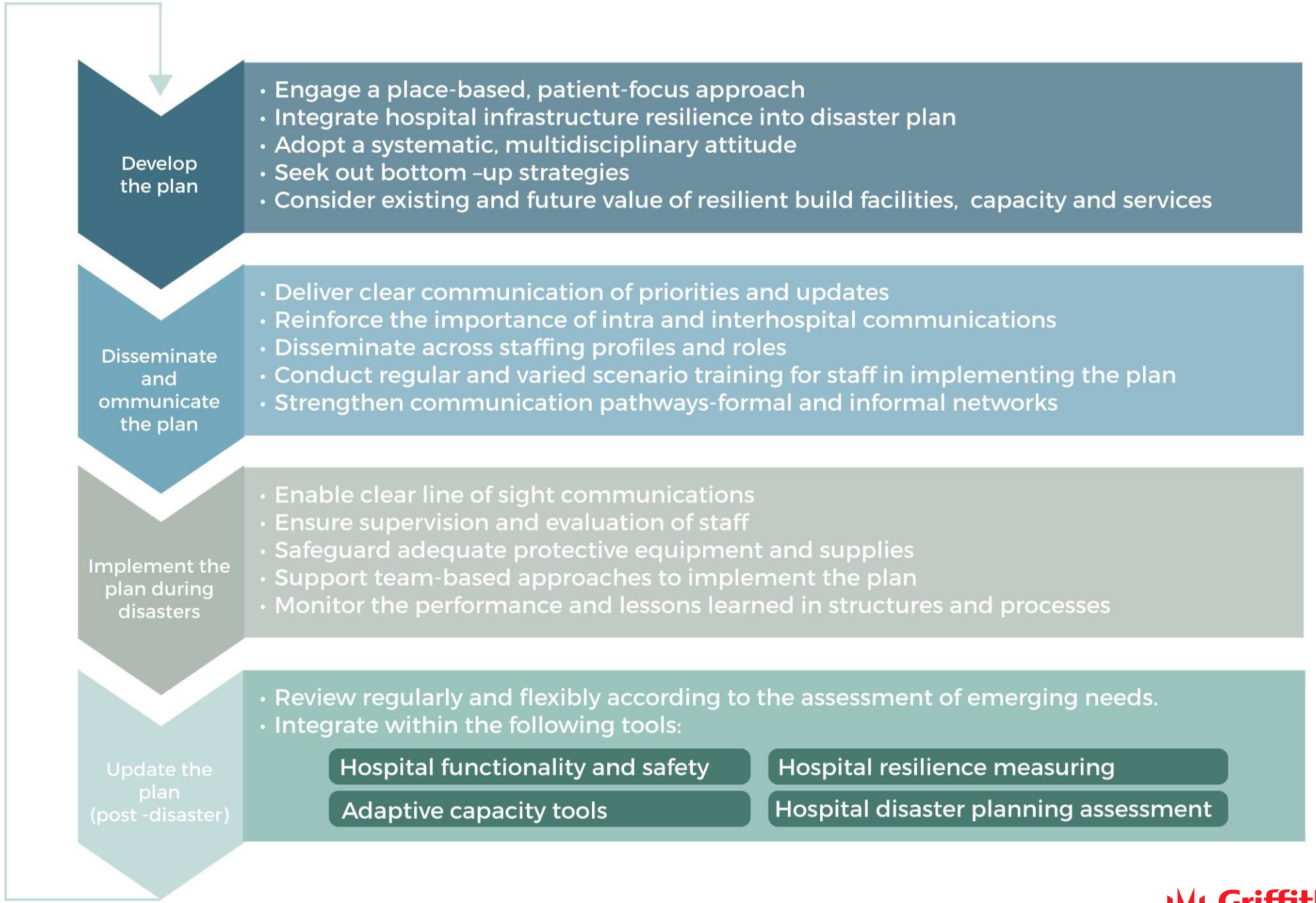


Figure 1. An Innovative decision-support model for disaster-resilient hospitals

Griffith UNIVERSITY
Queensland, Australia

Publication 2: Systematic Literature Review

SYSTEMATIC REVIEW

Investigating Organizational Learning and Adaptations for Improved Disaster Response Towards "Resilient Hospitals:" An Integrative Literature Review

Heba Mohtady Ali, MD;[1,2] Jamie Ranse, PhD;[3,4] Anne Roiko, PhD;[1,4] Cheryl Desha, PhD[1,2]

1. Cities Research Institute, Griffith University, Gold Coast, Australia
2. School of Engineering and Built Environment, Griffith University, Gold Coast, Australia
3. Department of Emergency Medicine, Gold Coast Health, Gold Coast, Queensland, Australia
4. Menzies Health Institute Queensland, Griffith University, Gold Coast, Queensland, Australia

Correspondence:

Abstract

Background: For hospitals, learning from disaster response efforts and adapting organiz tional practices can improve resilience in dealing with future disruptions. However, amid global disruptions by climate change, the coronavirus disease 2019 (COVID-19) pandemic, ar other disasters, hospitals' ability to cope continues to be highly variable. Hence, there are increa ing calls to improve hospitals' capabilities to grow and adapt towards enhanced resilience.

Aim: This study aims two-fold: (1) to characterize the current state of knowledge about ho hospitals are gaining knowledge from their responses to disasters, and (2) to explore how th knowledge can be applied to inform organizational practices for hospital resilience.

Method: This study used Preferred Reporting Items of Systematic Reviews and Met Analysis (PRISMA) guidelines for data collection and framework for data analys Covidence software, and Medical Subject Headings (MeSH) terms and keywords releva to "hospitals," "learn," "disaster response," and "resilience." The quality appraisal used adapted version of the Mixed Methods Assessment Tool (MMAT).

Griffith UNIVERSITY
Queensland, Australia

Figure 2. **Proposed nine areas for hospitals' organizational learning**

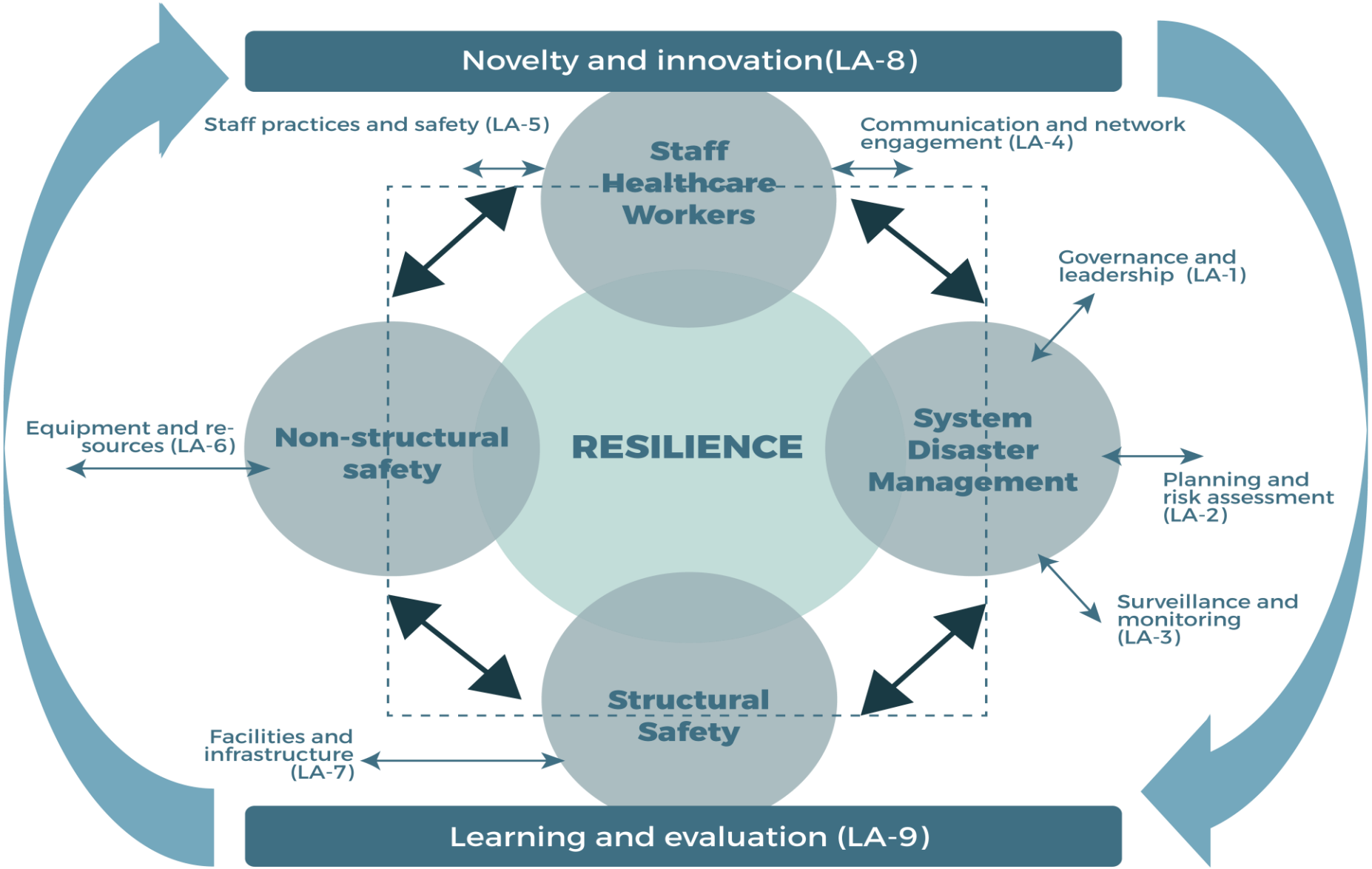


Figure 3. A Hybrid Resilience Learning Framework (HRLF) for evaluating resilience and organisational learning following disasters (Adapted from the RFPHEP and the Hybrid Method for Hospital Resilience Assessment) (Ali, Desha, Ranse, & Roiko, 2021; Khan et al., 2018).

Publication 3: Empirical Research Paper

International Journal of
Environmental Research and Public Health

MDPI

Article

Healthcare Workers' Resilience Toolkit for Disaster Management and Climate Change Adaptation

Heba Mohtady Ali [1,2,*], Jamie Ranse [3,4], Anne Roiko [1,4] and Cheryl Desha [1,2]

[1] Cities Research Institute, Griffith University, Gold Coast, QLD 4215, Australia
[2] School of Engineering and Built Environment, Griffith University, Gold Coast, QLD 4215, Australia
[3] Department of Emergency Medicine, Griffith University, Gold Coast, QLD 4215, Australia
[4] Menzies Health Institute Queensland, Griffith University, Gold Coast, QLD 4215, Australia
* Correspondence: heba.ali@griffithuni.edu.au or hebamohtady@gmail.com

Abstract: Climate change has been recognised as a multiplier of risk factors affecting public health. Disruptions caused by natural disasters and other climate-driven impacts are placing increasing demands on healthcare systems. These, in turn, impact the wellness and performance of healthcare workers (HCWs) and hinder the accessibility, functionality and safety of healthcare systems. This study explored factors influencing HCWs' disaster management capabilities with the aim of improving their resilience and adaptive capacity in the face of climate change. In-depth, semi-structured interviews were conducted with thirteen HCWs who dealt with disasters within two hospitals in Queensland, Australia. Analysis of the results identified two significant themes, HCWs' disaster education and HCWs' wellness and needs. The latter comprised five subthemes: HCWs' fear and

Griffith UNIVERSITY
Queensland, Australia

Figure 4. Healthcare Workers Resilience Toolkit

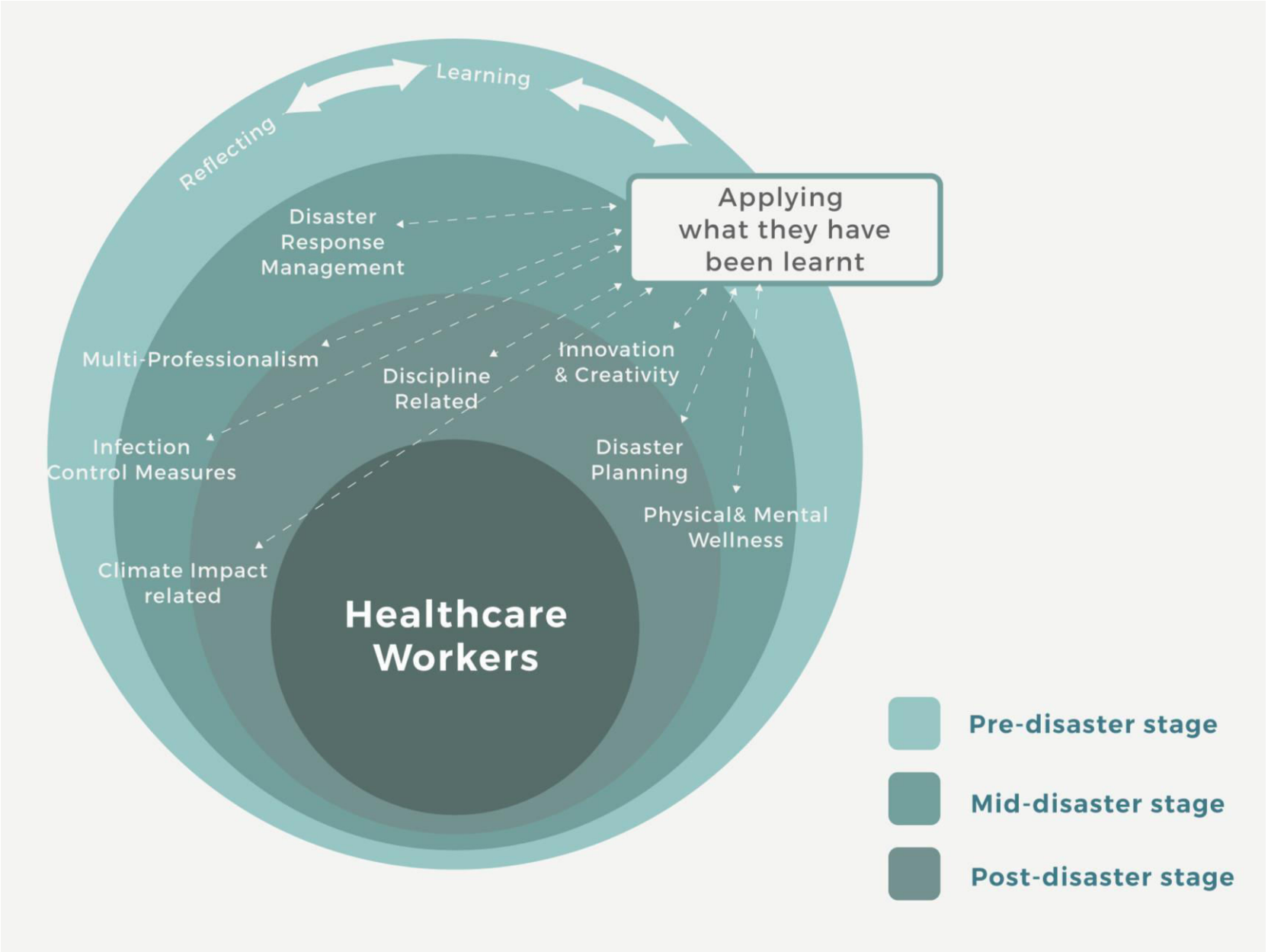


Figure 5. The ‘education’ component of the ‘Healthcare workers’ resilience toolkit’

Publication 4: Empirical Research Paper

International Journal of *Environmental Research and Public Health*

MDPI

Article

Enabling Transformational Leadership to Foster Disaster-Resilient Hospitals

Heba Mohtady Ali [1,2,*], Jamie Ranse [3,4], Anne Roiko [1,4] and Cheryl Desha [1,2]

[1] Cities Research Institute, Griffith University, Gold Coast and Brisbane, QLD 4215, Australia
[2] School of Engineering and Built Environment, Griffith University, Brisbane, QLD 4215, Australia
[3] Department of Emergency Medicine, Griffith University, Gold Coast, QLD 4215, Australia
[4] Menzies Health Institute, Queensland, Griffith University, Gold Coast, QLD 4215, Australia
* Correspondence: heba.ali@griffithuni.edu.au or hebamohtady@gmail.com

Abstract: Hospitals' operational performance during disasters varies from failing, to being responsive and resilient, to dealing with disruption and surprise. Transformational leaders enable continuously learning hospitals that are resilient in the face of disasters by adapting regeneratively and evolving beyond undertaking conventional lesson-learning after each disaster. However, learning from successful transformational leaders in healthcare is still ad hoc with a lack of guidance on how to develop such leaders. Hence, this study sought to identify key competencies of transformational leaders by exploring hospital leaders' actions in dealing with disasters, considering the disaster cy-

Griffith UNIVERSITY
Queensland, Australia

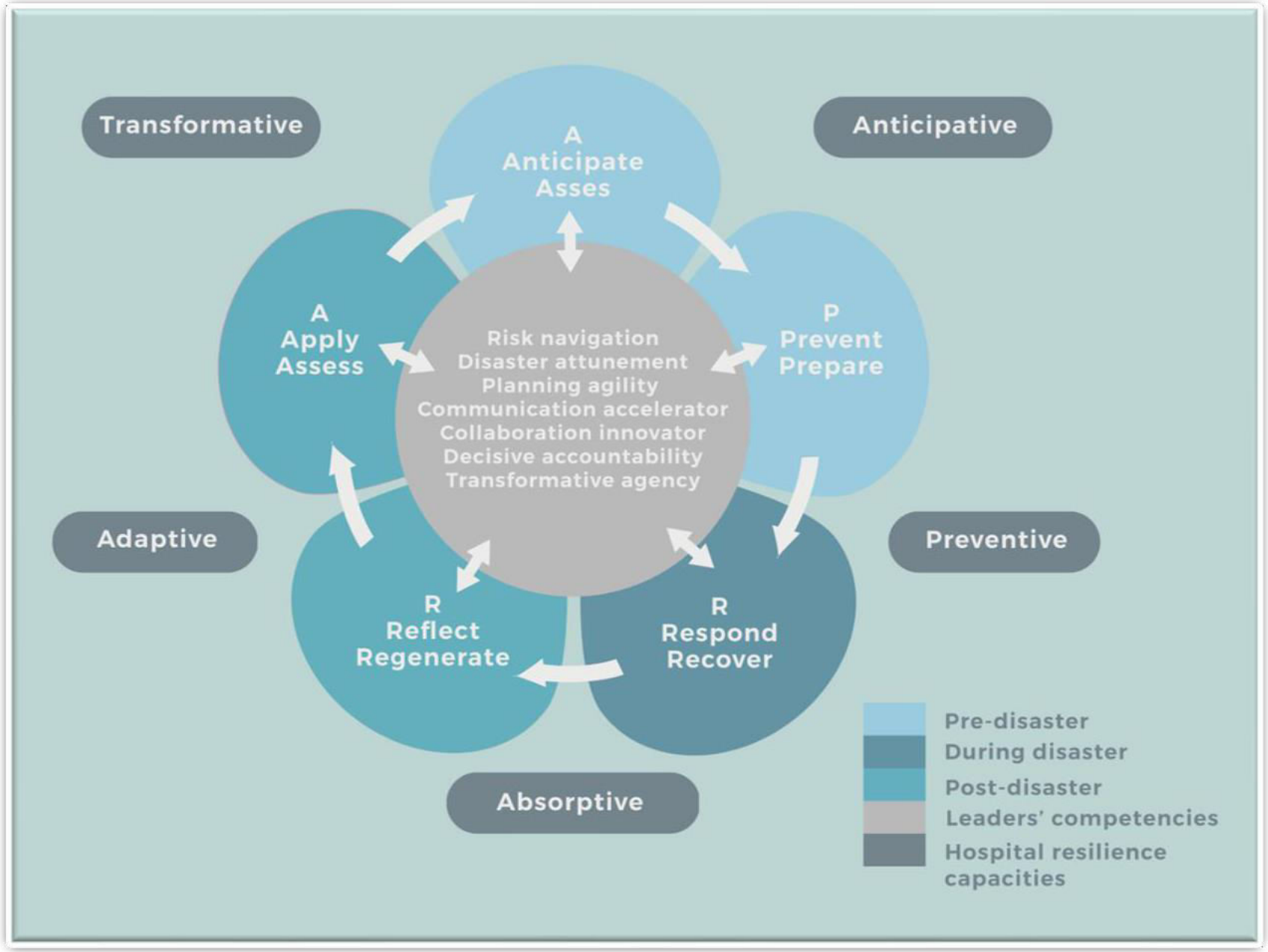


Figure 6. Transformational Leadership Model for Hospital Disaster Resilience – 'APRRA'

The research findings culminate in a holistic approach that can support hospitals in building their resilience by implementing the developed supportive tools for empowering leaders, and staff as well as enhancing the safety and system.

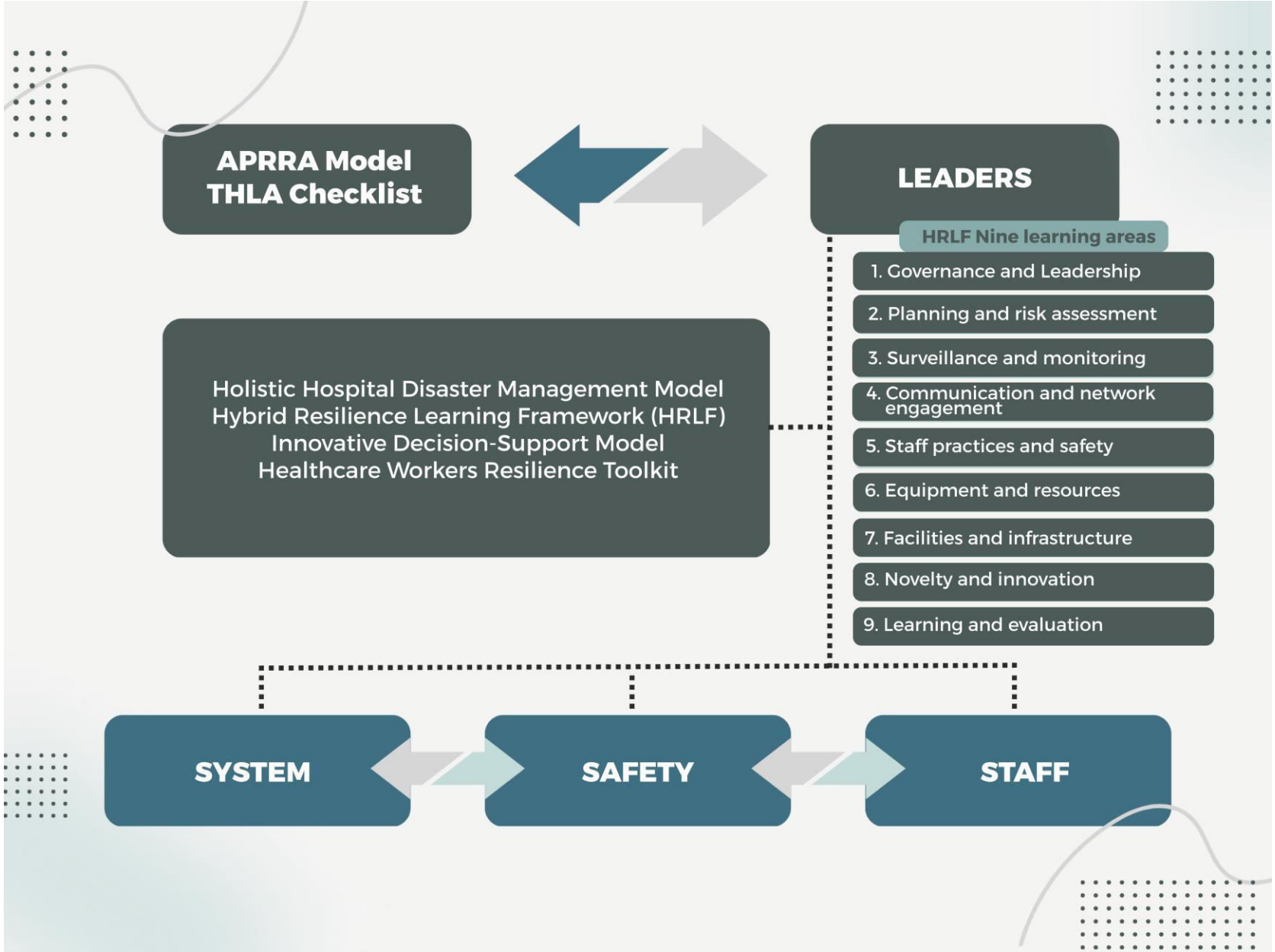


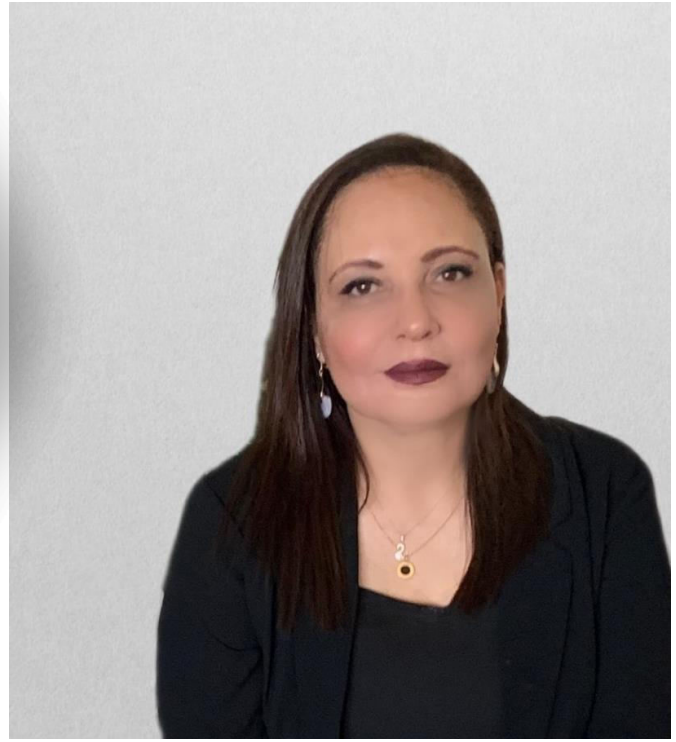
Figure 7. *'Resilient Hospitals Holistic Approach'*

Thank you

Dr Heba Mohtady Ali MBBS, MSc, JMHPE, MD, SFHEA

Email address: hebamohtady@gmail.com/
heba.ali@griffithuni.edu.au

M /0491655648 | LinkedIn linkedin.com/in/heba-mohtady-ali-md-msc-jmhpe-mbbch-sfhea-bbb2a335| ORCID Profile https://orcid.org/0000-0002-7817-6570



Griffith UNIVERSITY
Queensland, Australia