

## CRITICAL ELEMENTS OF DISASTER RESILIENT HOSPITAL DETERMINATION

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### INTRODUCTION

The complexity and critical importance of health care services in supporting the public welfare and combating the consequences of disasters is indisputable (Cimellaro et al. 2010; Achour and Price, 2011; Jolgehnejad et al. 2021). The events of recent years, such as the COVID-19 pandemic and international military conflicts, have highlighted the structural, organizational, and technological shortcomings of established and prevailing health care systems, and have shown that the future of health care provision depends on hospitals' ability to dynamically respond to unforeseen circumstances, and to operate as smoothly as possible in unfamiliar conditions. Enhancing hospital disaster resilience saves patients' lives, protects the health and wellbeing of employees, and ensures the provision of health care services in emergencies when they are most needed. **The aim is** to identify the elements of concept of a disaster-proof hospital. **The objective is** to identify the essential elements of the definition of hospital disaster resilience. **The research method** used to explore the problem is a systematic and comparative analysis of the content of relevant literature.

### The Teoretical Concept of Hospital Disaster Resilience

- Generally, the term "resilience" is defined *as the ability of a substance to return to its usual shape after being bent, stretched, or pressed*. (Dictionary.cambridge.org).
- The concept of resilience is widely applied in multiple contexts, e.g., organizational, social, financial, and structural (Pishnamazzadeh et al. 2020).
- Resilience can also be attributed to the ability of countries, communities, or individual households to manage change and maintain their current or adopt to new living standards in the event of disaster - war, global warming, pandemic - without putting their long-term goals and welfare at risk (DfID, 2011).
- Resilience is significant for critical infrastructures such as agriculture, airports, seaports, banks, telecommunications, defence, energy, drinking water, infrastructure, transport, information technology and, of course, the health care system.

**Table 1: Key definitions of the concept of hospital resilience in literature**

	Author	Definition of the concept of hospital resilience
1.	Field and Barros (2014)	The capacity of a social-ecological system to cope with a hazardous event or disturbance, responding or reorganizing in ways that maintain its essential function, identity, and structure, while also maintaining the capacity for adaptation, learning and transformation.
2.	Kruk et al. (2015)	The capacity of health actors, institutions, and populations to prepare for and effectively respond to crises; maintain core functions when a crisis hits; and, informed by lessons learned during the crisis, reorganise if conditions require it.
3.	Zhong et al. (2015)	The ability to resist, absorb, and respond to the shock of disasters while maintaining its critical health care functions, and then recover to its original state or adapt to a new one.
4.	Cimellaro et al. (2018)	Ability to absorb and recover from hazardous events, containing the effects of disasters when they occur.
5.	de Boer and Dubouloz, (2020)	Disaster resilience is composed of (1) the absorbing capacity, (2) the buffering capacity, and (3) response to the event and recovery from the damage sustained.
6.	Kamissoko et al. (2021)	The ability to absorb the impacts of perturbations, and to recover, in a minimum time, with minimum costs (financial, human, workload, etc.), a certain functioning capacity on all dimensions of its performances.

### Main findings:

Hospital resilience is the bilateral ability of a system to maintain its maximum functional capacity, to restore its functionality in the shortest time possible, to adapt the new situation in various crises and emergency situations. Two forms of resilience distinguished in literature are (Proag, 2014a)

- 1) Hard resilience is defined as the systems' ability to withstand the immediate effects disaster, which is frequently simplistically defined as the opposite of vulnerability.
- 2) Soft resilience is described as the capability to absorb shock, adapt to the after-effects of disaster, and return to pre-hazard levels of performance as quickly as possible without any lasting after-effects to the systems.

**Table 2. Elements of the concept of hospital resilience**

Elements of the concept of hospital resilience	Types of hospital resistance (Fallah-Aliabadi et al., 2020)	Hospital resistance periods (Cheng et al., 2022)	Hospital resistance levels (DfID, 2011)	Features of hospital resilience (Bruneau et al., 2003; Kruk et al., 2015)
<b>Item Content</b>	1.Constructural 2.Infrastructural 3.Administrative	1.Pre-hazard period 3.Hazard period 3.Recovery period	1.Context 2.Disturbance 3.Capacity 4.Reaction	1.Rapidity 2.Robustness 3.Redundancy 4.Resourcefulness 5.Aware 6.Diverse 7.Self-regulating 8.Integrated. 9.Adaptive

### MAIN RESULTS AND CONCLUSIONS

1. The concept of a disaster-proof hospital encompasses the bilateral ability of a hospital consisting of the provision of health services, healthcare workers, a health information management system, medical products, health financing and health management, and leadership to accomplish the following goals at minimal resource costs: maintain functionality and reduce the likelihood of shock in cases of various disasters, quickly recover from the shock/loss caused by the disaster, and restore the original level of performance, or adapt to a new one.

2. In literature research the types of characteristics of resistance are identified as structural, infrastructural, and administrative; and the levels as context, disturbance, capacity to deal with disturbance, and reactions to disturbance. The defining characteristics of hospital resistance are speed, strength, excess, ingenuity, awareness, diversity, self-regulation, unity, and adaptiveness, and can be significant at different stages of adversity - the pre-hazard, hazard, and recovery periods.