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EDITORIAL

Catastrophic Sudden-Onset Disasters Are Followed by a Surge in Rehabilitation Demand



The 2020 global challenges resulting from the novel coronavirus (COVID19) were enormous. More specifically, important variations in health and functional outcomes continue to be of particular consequence to the physical medicine and rehabilitation community as it struggles to address surging physical, mental, or cognitive rehabilitation needs among COVID19 survivors.¹ It is important to appreciate that the rehabilitation wave arising from COVID19 has contributed to already high levels of unmet global rehabilitation needs,²⁻⁴ thereby exacerbating the neoclassical economic gap between supply and demand. In any case, further frustrating high levels of unmet need^{5,6} is the deficit and unequal distribution of rehabilitation workforce supply assets,⁷ and relatively low public and private rehabilitation financial investments across high-, middle-, and low-income countries.

This rehabilitation gap is further heightened during sudden-onset disasters such as tsunamis and earthquakes.⁸⁻¹⁰ Recently, the supply and demand/need rehabilitation equation became significantly more unbalanced in Lebanon, where on the afternoon of August 4, 2020, approximately 2500 tons of ammonium nitrate detonated in Beirut creating a mass casualty emergency event.⁸ The blast, which had the power of a 3.3 magnitude earthquake, was devastating and resulted in approximately 200 deaths, 7000 injured, and hundreds of thousand internally displaced persons.⁹ In the immediate acute phase, the blast rapidly overwhelmed Beirut's hospitals and health systems, which limited an effective disaster response.¹⁰ Moreover, given that the tragic event occurred while the COVID19 pandemic was surging across the world meant there was a limited ability for the global community to deploy emergency medical teams into the disaster zone.

The blast struck Lebanon at a particularly difficult geopolitical time. There had been months of persistent political demonstrations leading to an 80% devaluation of the Lebanese Lira, which grounded the economy almost a standstill. For reasons discussed elsewhere,⁹ the blast became a proverbial last straw in a long series of events tipping the middle-income country into a precarious position. As might be predicted after a disaster of this magnitude, a surge of rehabilitation demand among survivors has now materialized across Lebanon. We reported elsewhere on the primary, secondary, tertiary, and quaternary effects from the blast,⁹ and in this editorial, we discuss the challenges stemming from structural weaknesses within the health and rehabilitation systems

and offer a viewpoint on how to leverage such tragedies as a stimulus to rebuild a more advanced and resilient rehabilitation-inclusive health system.

Disasters, emergency response, and rehabilitation

In a pivotal 2016 report known as the *Minimal Technical Standards and Recommendations for Rehabilitation*, the World Health Organization (WHO) described that after a sudden-onset disaster acute rehabilitative needs peak within the first week and regress toward pre-emergency level after a 2-month period.¹¹ The WHO correctly advocated that a minimum supply of specific and targeted emergency rehabilitation resources be made available to address the initial surge in needs and up 2 months after the disaster.

Although we fully agree with ensuring rehabilitation supply be available in the acute phase, and acknowledge that there are necessary differences between acute and postacute disaster responses, the grim reality is that rehabilitation demands after tragic events have an extensive, complex, and long-lasting effect. Given the social, political, and economic complexities in Lebanon, we suggest that rehabilitation needs may be aggravated for a number of reasons. First, many primary acute general hospitals were rendered nonoperational from the explosion, and at least 2000 physician office clinics were destroyed.¹² Given that much of the health infrastructure was either destroyed or severely damaged in Beirut, hospitals in the affected zone were forced to triage patients, which placed additional burdens on an already overstretched health infrastructure. The combined effects of the physical damage and prioritization of injured blast victims have led to lower acuity patient categories receiving lower priority and fewer services. For instance, care options among pediatric cancer patients have become limited because the overall stock of cancer drugs are being quickly depleted owing to bed capacity and limited shipping capacity into the country.¹³ Similarly, patients who would otherwise be receiving in-patient and ambulatory rehabilitation services for longer standing chronic conditions also face limited access.

Second, Lebanon is now facing a decreasing health workforce. The combined effects of long-standing political unrest alongside economic decline has resulted in escalating anxiety and tension within providers, patients, and the overall population. The tension has reached a level that many health professionals are making the difficult decision to either leave their professions, or to attempt to

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relocate elsewhere for better working and economic conditions.^{14,15} Lebanon is not likely in a position to be able to effectively withstand such health and rehabilitation workforce losses. As an example, there are currently 0.20 occupational therapists (OTs) per 10,000 population in Lebanon, which is much lower than the average of other upper middle-income countries that have 0.49 OTs per 10,000 population (with a range of 0.002-3.000 OTs per 10,000 among 24 reported countries, all of which is significantly lower than most high-income countries).¹⁶ Similar constraints exist for other rehabilitation occupations, thereby underscoring an already precarious workforce supply availability to meet increase needs.

Overall, and similar to many other disaster prone regions, the dissolving health infrastructure and worsening working conditions subsequent to catastrophic events adversely disturb rehabilitation workforce and financial supply chains. Supply-side challenges would be present in any disaster setting, but the imbalanced effects become ever more pronounced in austere environments that generally have weaker rehabilitation infrastructures such as those found in low- and middle-income countries.

A way forward: health and rehabilitation system strengthen

The imbalance that existed between supply and need for rehabilitation services has become intensified in Lebanon by the combined effect of the pandemic and the blast, and there is a clear need to *build back better*, or *build forward stronger*. The United States Agency for International Development offers a policy playbook for health system strengthening (HSS) based on key strategic outcomes of financial protection, essential services, population coverage, and responsiveness. These elements are critical and require a great deal of commitment among stakeholders to create a balance recovery scorecard. However, and despite the Rehabilitation 2030 framework which advocates rehabilitation capacity development within health system strengthening,¹⁷ the reality is that rehabilitation is rarely a significant component of HSS.

On the other hand, sudden-onset disasters can provoke evolution, if not full revolution, within health system redesign. Hence, the Lebanese rehabilitation community must continue alongside the efforts of national and international humanitarian actors to meet the rehabilitative needs, but must simultaneously advocate for greater capacity building in the rehabilitations sector to address long-term needs after the blast. One specific reform consideration could be the sustainable implementation of technological solutions to scale rehabilitation delivery, such as tele-rehabilitation, to amplify rehabilitation efforts. However, doing so will require an innovation framework that challenges well-established hierarchies and status quo. In the case of postblast Lebanon, or any other challenged or austere setting, scalable interventions that move toward population health and function are needed if the fast-growing rehabilitation needs are to be met with the reality of dwindling supply.

We signal the need for greater disruptive and innovative supply-side innovations to close the rehabilitation gap. After the second global Rehabilitation 2030 meeting, Heinemann et al^(18,p272) stated “Together, we can fulfill a responsibility to enhance population health including enhanced function.” We fully support their assertion, and suggest that for such outcomes to become reality in postdisaster settings, there is an elemental need to amplify and more

fully include rehabilitation in the context of traditional health system strengthening. Alternatively, if rehabilitation services redesign remains on the fringe of HSS, we are likely to bear witness to a growing chasm between need and supply for rehabilitation in Lebanon and other fragile environments.

Keywords

Explosion; Disasters; Rehabilitation; Supply and demand

Michel D. Landry, BScPT, MBA, PhD

School of Medicine and Duke Global Health Institute, Duke University, Durham, NC

Tiago S. Jesus, OT, PhD

Institute of Hygiene and Tropical Medicine, NOVA University of Lisbon, Portugal

Kira Battle, DPT, PT

Duke Global Neurosurgery & Neurology (DGNN), Duke University Durham, NC

Sudha R. Raman, PhD

Department of Population Health Sciences, Duke University Durham, NC

Saydeh Sassine, DPT

Lebanese German University, Jounieh, Lebanon

Corresponding author: Michel D. Landry, BScPT, MBA, PhD, School of Medicine and Duke Global Health Institute, 310 Trent Drive, Durham, NC 27710. *E-mail address:* mike.landry@duke.edu.

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