

Invited Commentary

Rehabilitation following natural disasters: Three important lessons from the 2015 earthquake in Nepal

Michel D. Landry^{a,*}, Edwin C. Salvador^b, Phillip S. Sheppard^c and Sudha R. Raman^d

^a*Physical Therapy Division, Duke University Medical Centre, Durham, NC, USA*

^b*Public Health Administrator, World Health Organization (WHO), Dhaka, Bangladesh*

^c*International Organization for Migration (IOM), Chautara, Sindhupalchok, Nepal*

^d*Duke Clinical Research Institute (DCRI), Duke University, Durham, NC, USA*

Abstract. On April 25, 2015, a 7.8 magnitude earthquake occurred in Nepal; then on the afternoon of May 12, 2015, the small Himalayan nation experienced a second 7.3 magnitude earthquake. As of the writing of this commentary, the estimate of casualties has surpassed 8,500 making it the deadliest natural disaster in Nepal over the past 80 years. Technological advances in emergency medicine and emergency preparedness have increased the likelihood of surviving a disaster. The result, however, is that populations often survive with complex disabilities that the health infrastructure struggles to accommodate in the early post-disaster period. Nepal had a relatively poor infrastructure for people with disabilities before the earthquake, and the health system will now will be challenged to meet their needs into the future. In this commentary, we argue that there were at least three main lessons learned for the rehabilitation sector following the 2015 earthquake. First, rehabilitation can facilitate earlier discharge from hospitals thereby improving the overall institutional capacity to treat a higher number of patients; second, rehabilitation can prevent secondary musculoskeletal, integumentary and pulmonary complications; and third, rehabilitation improves function so that individuals can have better access to other essential post-disaster services. While rehabilitation may not directly save ‘lives’ following a natural disaster such as an earthquake, it does save ‘life’ among the survivors. In our opinion, and given what we have learned regarding the role of rehabilitation in Nepal and other disasters, we argue that it is unethical and immoral not to integrate rehabilitation into disaster response.

Keywords: Rehabilitation, emergency response, Nepal

1. Introduction

On April 25, 2015, a massive 7.8 magnitude earthquake occurred about 80 km northwest of the Nepalese capital city of Kathmandu, and the tremors could be

felt as far away as Bangladesh, India, Tibet and China. Based on years of forecasting and predictions of such an event, the national government alongside the constellation of local and international Non Governmental Organizations (NGO) had disaster contingency plans in place [1]. However, the most severely affected earthquake areas were located in rural and remote regions in the Kathmandu Valley, where implementing disaster preparedness was most challenging before the quake, and where communities were the least able to access

*Corresponding author: Michel D. Landry, BScPT, PhD, Doctor of Physical Therapy Division, Duke University Medical Centre, Box 104002, Durham, NC 27708, USA. Tel.: +1 919 613 4520; E-mail: mike.landry@duke.edu.

health and social infrastructure after the disaster. In the days and weeks following the initial tremor, strong aftershocks forced people to live in temporary shelter in fear of collapsing buildings. Then on the afternoon of May 12, 2015, a second 7.3 magnitude earthquake occurred. As of the writing of this commentary, the estimate of casualties has surpassed 8,500, making it the deadliest natural disasters on record in Nepal in the past 80 years. Beyond the sobering number of casualties are the estimates of those who were injured that now likely to figure in the tens of thousands [2], and the numbers of internally displaced persons who number in the hundreds of thousands. During the early post earthquake period, there was a strong and refreshing presence of Nepalese medical and health professionals working within Nepali institutions providing the majority of medical care. Foreign NGO personnel provided direct care, and were also in advisory and consulting roles. There was however a predictable but small number of foreign medical teams who arrived with the goal of intervening and providing direct care, thereby created an artificial and short-termed strategy to address perceived medical needs on the ground, rather than fitting into a larger national emergency strategy. While undoubtedly good intentioned, these short term strategies at times usurped the existing medical system, thereby creating further health care disjointedness [3].

There was a predictable mismatch between supply and demand for care for the injured. A key initial objective in an emergency response is to quickly match the complex and fluid parameters of medical demands, with the available supply of people and resources to maximally reduce mortality. The challenge in the post earthquake period in Nepal was the availability of military helicopters to medically evacuate the injured from the affected zones to the triage sites mostly located in Kathmandu. There were a small number of medical teams deployed into the affected zones, however they were challenged to be effective given the high level of food, water, and shelter insecurity in these areas. Despite the imbalances of supply and demand for the injured, the heroic actions of the Nepalese and international health workforce on the ground preserved numerous lives, often at great personal risk to themselves.

Nepal is one of the poorest countries in Asia, and is a nation that has struggled with high rates of extreme poverty, unemployment and social unrest in recent decades. The health infrastructure is highly centralized in the larger cities in the country; and while Kathmandu

sustained damage, the majority of hospitals were intact and operational. Although the complete clinical profile of the large group of people injured is not yet fully known, we can to some extent predict the injury outcomes following an earthquake. Mostly as a result of falling or jumping from buildings, or by having a building or part of buildings fall onto people, common injuries in an earthquake include (but are not limited to) fractures, burns, soft tissue injuries, traumatic brain injuries, and spinal cord injuries [4]. Given technological advances in emergency medicine and widespread emergency preparedness, effectiveness in preservation of life has increased. The result, however, is that though more people are surviving disasters, they are surviving with very complex conditions that the health infrastructure struggles to accommodate, especially in the early post-disaster period. The number of newly injured people and people who now live with disabilities resulting from the earthquake will now be added to the cohort of Nepalese who lived with disabilities prior to the earthquake. Nepal had a relatively poor infrastructure for people with disabilities before the earthquake, and the health system will now will be challenged to meet their needs into the future. There is great opportunity to build back better in Nepal, but this will require a strong coordinated effort among all the stakeholders.

1.1. Rehabilitation in the early phase of an earthquake: Lessons learned

The argument supporting the role of rehabilitation providers in a disaster zone has been effectively made before the Nepal earthquake(s). Although there is a long way to go before rehabilitation services are part of mainstream emergency disasters responses, incremental changes are occurring over time towards a greater acceptance. As an example, the World Health Organization (WHO) is currently in the final stages to releasing guidelines for emergency response protocols for Foreign Medical teams (FMT) to disasters, and there will be a clear role for rehabilitation within those guidelines. These guidelines will be critical, because for instance, during the 2010 earthquake in Haiti, Merin et al. reported that part of the decision-making about allocation of scarce resources for emergency lifesaving intervention was the possibility for rehabilitation post intervention [5]. They wrote, "... we believed it would be incorrect to use our limited resources to treat patients with such a minimal chance

of ultimate rehabilitation at the expense of others whom we could help” and ignited a moral and ethical debate regarding the provision of care for injured people in natural disasters. Nevertheless, a strong role for rehabilitation providers emerged in Nepal, especially when hospitals were filled beyond capacity. In our view, the early response illuminated three critical roles for rehabilitation in the disaster.

First: *Rehabilitation can facilitate earlier discharge from hospitals thereby improving the overall institutional capacity to treat a higher number of patients.* During the emergency response, there are tremendous imbalances between supply and demand for care. In response to the need to ‘free up’ beds for incoming patients, rehabilitation providers began to facilitate the discharge process for inpatients who were medically stable. Simple strategies such as gait training or mobility safety assessment expedited discharge of patients who were occupying precious hospital beds, but who would benefit from a different level of care. It soon became evident that other providers including nurses and surgeons could also facilitate earlier discharge from hospital, and so ‘just-in-time’ educational courses about safe discharge assessment were provided to medical staff in some of the facilities.

Second: *Rehabilitation can prevent secondary musculoskeletal, integumentary and pulmonary complications.* Following injury, patients often develop system-wide secondary complications that can further contribute to the severity of the long-term disability. During disaster response, large numbers of patients are admitted to hospital with complicated conditions, and the initial focus is on the acute life-saving interventions. However, once a life has been preserved, implementing targeted and specific rehabilitation emerged as an appropriate investment to ensure that the resource intensive acute medical interventions are amplified through a continuum of care. For instance, rehabilitation for spinal cord injured patients can reduce the incident of secondary pulmonary, skin and musculoskeletal complications that can be life threatening or contribute to further disability. Ultimately rehabilitation interventions become a strategy to treat patients, while improving the efficiency of hospital operations, allowing more people to be treated and mitigating preventable permanent disability.

Third: *Rehabilitation improves function so that individuals can have better access to other essential post-disaster services.* Following the acute medical and rehabilitation phase, people with newly acquired

disability very quickly need to adapt to a new environment. While it may be true that the environment should also adapt to their new needs, especially when considering the United Nations Charter on the Rights and Freedoms of Persons with Disabilities (CRPD), the reality is that countries such as Nepal had a finite amount of resources to allocate towards a disability strategy before the earthquake. Given the likely high cost of reconstruction, the country will not be very likely to allocate sufficient resources to adapt the physical and social environment. Therefore, given the realities, maximizing function through early rehabilitation services will not only be critical for their health, but will be necessary for their survival.

The human tragedies and infrastructure damage following the Nepal earthquake(s) of 2015 will very likely persist for years in Nepal, and similar disasters are statistically likely to occur again [6]. However, the collective experience in Nepal provides valuable lessons for future disaster relief efforts. Just as was reported following the earthquake in Haiti [5, 7, 8], there is a need for ongoing quality improvement in rapid emergency response efforts post disasters. We highlight that there is also a pressing need to ensure that rehabilitation strategies and professionals including but not limited to physiatrists, occupational and physical therapists and rehabilitation nurses are included in the early phases of a disaster response. It is particularly apparent in post-disaster settings that the wisdom of providing high resource, intensive acute medical interventions without ensuring some form of continuity of rehabilitative care, results in poor and almost worse results than not treating the injured at all. While rehabilitation may not directly save ‘lives’ following a natural disaster such as an earthquake, it does save ‘life’ among the survivors. In our opinion, and given what we have learned regarding the role of rehabilitation in Nepal and other disasters settings, we argue that it is unethical and immoral not to integrate rehabilitation care into post disaster responses. Ironically and upon sad wings of destiny, we can only assess the extent to which rehabilitation will be included in post-disasters responses following events such as those that occurred in April and May 2015 in Nepal; and so we must continue to plan, strategize, and advocate. Ultimately, the question is no longer ‘if’ a disaster such as an earthquake will result in large scale rehabilitation needs; it is only a question of when and where an event will occur, and whether we have learned from our past successes and mistakes.

Conflict of interest

The authors have no conflicts of interest to disclose.

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