

## Research Article

# Delivering Spinal Rehabilitation through 3-Tier Health Service Delivery in Nepal: A 'One Stop Rehabilitation Services/OSRS\*' Approach\*

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Current statistics show that about seventeen, 500 new spinal injuries occur annually, with about fifty eight leading to complete or incomplete tetraplegia. Therefore, over 1/2 all sustained neural structure injuries (SCIs) manifest in a point of impairment of the higher limb.<sup>1</sup> Such an oversized comparative proportion of individuals with tetraplegia warrants exaggerated attention to the analysis and treatment of the higher limb. Purposeful use of the arms and hands is of predominant importance to people with tetraplegia.<sup>2–5</sup> fortuitously, new interventions and clinical trials directed at restoring higher limb operate when SCI are rising. The aim of this text is to elucidate a up to date approach to evaluating the higher limbs of individuals with cervical SCI. New interventions for restoring operate and rising recovery need additional careful examination of the motor capacities of the higher limb. Specifically, characteristics of weak and totally paralytic muscles be additional attention early when injury. <sup>2</sup> such characteristics embrace lower motor nerve fiber (LMN) integrity and also the presence of latent, or unrecognized, voluntary motor responses in muscles that ar clinically classified as paralytic. These novel characteristics ar presently not evaluated as a customary of care in higher limb assessments of individuals with tetraplegia, but info gained from such evaluations has the potential to influence interventions across the time of higher limb care.

There is reason for optimism as there ar increasing numbers of trials dedicated toward SCI recovery also as correction of effects through rehabilitative interventions. Advancements in varied potential therapeutic sand interventions embrace acute surgical decompression, neuroprotection, neural repair, cell replacement, activity-based rehabilitation, and medical devices requiring surgical implantation like neuroprosthetics, epidural stimulation, and brain machine–computer interface.<sup>6</sup> From 2012 through 2016, there was a twenty second increase in clinical trials utilizing clinical outcome assessments centered on arm or hand function<sup>7</sup> suggesting a bigger target restoration of the higher limb. in addition, there ar advancements in clinical interventions designed for rising operate within the higher limb, like nerve and connective tissue transfer procedures.<sup>8–12</sup> Consequently, it's necessary to deal with antecedently under evaluated characteristics of muscles, specifically weak or totally paralytic muscles, as potential endpoints for determinant the extent of neurologic recovery ensuing from biological or rehabilitative interventions. Researcher's regularly challenged to spot refined measures of the impact of analysis and clinical interventions.

In the context of associate degree increasing range of people living with tetraplegia combined with advancements in higher limb SCI management, it's more and more necessary that strategies of higher limb analysis evolve. this text can describe the connectedness of assessing LMN integrity and latent motor responses in folks with cervical SCI throughout acute inmate rehabilitation. These characteristics of muscle operate will be evaluated noninvasively by activity and physical therapists WHO ar consultants in striated muscle testing. Early assessment of LMN pathology and also the potential existence of latent voluntary motor responses ought to be a customary of care that contributes to mapping future interventions for full maximization of higher limb operate in people with tetraplegia.

**Introduction:** Spinal cord injury is a devastating injury, which has serious short and long term effects, not only to the individual's life but also to family, friends, and society. The objective of the study is to evaluate ongoing health condition, complications and community reintegration of spinal cord injury patients treated in our hospital and to contribute to the development of a national/Nepal rehabilitation model of care in line with WHO Rehabilitation in Health Systems agenda.

**Material and Methods:** The study was conducted at Green Pastures Hospital and Rehabilitation Center (GPHRC). Mechanism of injury, American Spinal Injury Association (ASIA) score, Thoracolumbar injury classification and severity (TLICS) score, time from injury to admission, time from admission to surgery, duration of hospital stay, modified Barthel index, accessibility within the house and community, availability and use of mobility aids were recorded. All the patient underwent surgical treatment followed by rehabilitation at the same center. Besides, a rehabilitation capacity assessment was done under six health system blocks to evaluate the feasibility of OSRS approach in GPHRC and their links to Government and other partners.

**Results:** There were 34 patients with Spine injury admitted from 1 May 2016 to 30 September 2019, two patients with cervical spine trauma referred due to lack of treatment facility, so excluded. 32 patients included. Fall from height especially from a tree was the predominant cause. In the study, 62.5% (20) had incomplete neurological (ASIA B-D) involvement, 25% (8) had complete neurological involvement (ASIA A) and 12.5% (4) had normal neurology (ASIA E) at presentation. At final follow up, 70% (14) of the incomplete neurology improved to normal neurology (ASIA E). Three cases had surgical site infection, improved with intravenous antibiotics. 75% (24) patients had re-admission for the continuation of rehabilitation. Among the wheelchair user modified Barthel index improved from 37.86 ( $\pm 16.84$ ) to 70.7 ( $\pm 20.02$ ) from discharge to final follow up ( $P < 0.011$ ). 30% of those who were using mobility aids could not access the community independently because of rough terrain. 62.5% of wheelchair user required an assistant to enter their house and for toilet accessibility due to inadequate housing. All wheelchair user required an assistant for road access to home because of the physical terrain. Secondary health problems like bed sore, urinary tract infection, chest infection, contractures were not seen. Gaps in rehabilitation services have been identified and are being addressed progressively.

**Conclusion:** With minor modification in a home for appropriate use of a wheelchair, they can have an independent productive life. The improved outcomes may be attributed to better management using standard protocols and guidelines and effective community linkages of GPHRC. Taking this forward, WHO Nepal has developed OSRS, a proof of concept approach, and is being piloted here towards delivering comprehensive rehabilitation package for all those who need it as part of universal health coverage under one roof with functional linkages to primary and secondary care including social services.