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Development of CC7-Specific Telerehabilitation Video Materials for Upper Limb Rehabilitation After Contralateral C7 Nerve Transfer in Chronic Stroke

Shi Haoting¹, Siti Ruzita Mahmud^{2*}, Nor Azlin Mohd Nordin³, Ma Li⁴

¹ PhD student, Faculty of Electrical Engineering, Universiti Teknologi Malaysia, Johor Bahru, Malaysia, 81300

² Rehabilitation Nexus Research Group (REHABNEX), Department of Biomedical Engineering and Health Sciences, Faculty of Electrical Engineering, Universiti Teknologi Malaysia, Johor Bahru, Malaysia, 81300

³ Center for Rehabilitation & Special Needs Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Selangor, Malaysia, 43600

⁴ Department of Neurosurgery, No. 904 Hospital of the PLA Joint Logistics Support Force, Wuxi, China, 214000

ABSTRACT

Background and Objectives: Contralateral C7 (CC7) nerve transfer is a surgical option for selected patients with chronic stroke and severe upper limb impairment. Successful postoperative recovery requires structured, stage-specific rehabilitation. However, prolonged hospital-based rehabilitation may be limited by travel demands, financial burden, caregiver constraints, and poor adherence to home exercise. This study aimed to develop and obtain expert review of CC7-specific telerehabilitation video materials to facilitate therapist-guided rehabilitation from postoperative month 1 to month 12. **Methods:** This pre-implementation study developed telerehabilitation video materials guided by the Fugl-Meyer Assessment of the Upper Extremity, Brunnstrom-based recovery concepts, and evidence-based neurorehabilitation approaches, including proprioceptive neuromuscular facilitation, Bobath-informed neurorehabilitation, task-oriented training, and motor relearning. Preliminary materials underwent structured expert review to evaluate safety, clarity, clinical relevance, progression, and feasibility for subsequent implementation. **Results:** More than 60 preliminary rehabilitation videos were developed, with 46 videos retained after expert review and internal screening. The materials were organized into four progressive rehabilitation phases targeting proximal movement and shoulder control, elbow movement and upper limb integration, wrist and early hand preparation, and hand function, fine motor control, and activities of daily living-related task performance. Video selection was individualized by therapists according to recovery stage, motor performance, movement quality, safety, and home-based rehabilitation needs. **Conclusion:** The developed telerehabilitation video materials provide a standardized yet individualized approach for supporting therapist-guided home rehabilitation after CC7 nerve transfer. Subsequent studies are required to examine usability, adherence, safety, intervention fidelity, and overall clinical feasibility before broader implementation in clinical practice.

Keywords: Contralateral C7 nerve transfer; chronic stroke; telerehabilitation; upper limb rehabilitation; video materials; neurorehabilitation

Corresponding Author:

Siti Ruzita binti Mahmud

Email: sruzita@biomedical.utm.my