Stroke Telerehabilitation Occupational Therapy: An Evidence-Based Model for Clinical Practice and Professional Training

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THE DUKE ENDOWMENT

Background

- Stroke is a leading cause of disability in the United States. South Carolina, situated in the "stroke belt", has a high incidence of stroke (Howard, G. & Howard, V., 2020).
- Approximately 35% of the SC population lives in a rural area (Bergeron et al., 2013).
- Approximately 50% of SC residents live more than 30 minutes from a primary stroke center (Khan et al., 2011).
- Residents in rural SC have limited access to healthcare services including specialized outpatient rehabilitation (Greenberg et al., 2021).

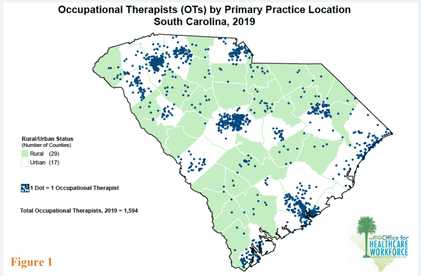


Figure 1

Figure 1 from: Greenberg, K. P., Sarrica Barefoot, B., & Gaul, K. (2021). 2021 South Carolina health professions data book. [Data set]. South Carolina Office for Healthcare Workforce, South Carolina Area Health Education Consortium. www.scahec.net/scohw

- Effectiveness of in-person stroke rehabilitation is well-established.
- Telerehabilitation is an emerging occupational therapy (OT) practice area that is *not inferior to* in-clinic therapy for improving arm motor function (Cramer et al., 2019) and performance of activities of daily living (ADL) (Saragih et al., 2021).
- Telerehabilitation can be a mechanism to deliver specialized OT services where a client lives, works, learns, and plays.
- OT outcomes may be achievable via telerehabilitation and this method of service delivery can offer valuable benefits (Cason et al., 2018).
- Telerehabilitation is a *needed* addition in the care continuum.
- As an emerging area, there are limited professional development and training opportunities specific to telerehabilitation.

Project Aims

1. To **design** an evidence-based model for stroke telerehabilitation OT service delivery.
2. To **integrate** stroke telerehabilitation OT into an existing telehealth network and outpatient clinical practice.
3. To **train** OT practitioners to become specialized stroke telerehabilitation providers.

Methods

Aim 1 Design

- Conducted a Quality Improvement (QI) project that was supported by grant funding and an interdisciplinary team.
- Led by two registered and licensed OTs with clinical experience in multiple settings of an academic hospital system.

OT Focus

Examined existing literature related to stroke telerehabilitation service delivery.

Selected evidence-based frameworks for assessments and interventions that were suitable for virtual delivery.

Designed all components of the stroke telerehabilitation OT service delivery model.

Administrative Focus

Analyzed existing procedures for in-person OT service delivery.

Identified program needs to enhance efficiency and reduce costs for telerehabilitation service delivery.

Created new telerehabilitation processes.

Aim 2 Integrate

- Analyzed OT documentation and satisfaction surveys to ascertain feasibility, efficacy, and acceptance during the project's implementation phase (January-December 2022).
- Educated providers in the stroke healthcare network.
- Trained administrative staff on new telerehabilitation-specific processes.
- Compiled patient-facing telerehabilitation educational content and digital literacy resources.
- Incorporated telerehabilitation-specific processes and documentation tools into the existing Electronic Health Record (EHR) system.
- Provided clinical OT practitioners with direct telerehabilitation training and observation opportunities.
- Distributed resources and instructional manuals for clinical practice implementation.

Aim 3 Train

- Solicited support from MUSC's Division of Occupational Therapy to sponsor a micro credential Digital Badge course, intended for post-professional OTD students and licensed OT practitioners seeking specialized telerehabilitation training.
- Received course approval from the University's Education Advisory Council & Digital Badge Committee.
- Consolidated telerehabilitation resources and educational content (derived from Aims 1 and 2) into 5 learning modules.
- Designed course content including lectures and interactive learner activities to enhance understanding.
- Created assessment criteria including pre- and post-course knowledge assessments, mini assignments, case studies, and a reflective final paper.

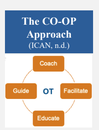
Results

The Design

Program Development

Outcome Measures
- ✓ Patient questionnaires, self-report measures, and rating scales
- ✓ Digitally administered assessments

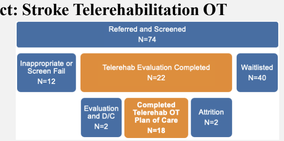
OT Intervention
- ✓ Personalized at-home task practice
- ✓ Learning approach with cognitive strategy use for problem-solving
- ✓ Client-centered metacognitive training



Telerehabilitation-Specific Processes
- ✓ Administrative workflows
- ✓ Referral management
- ✓ Patient screening
- ✓ Digital literacy training
- ✓ Documentation tools
- ✓ Emergency protocols

The Integration

QI Project: Stroke Telerehabilitation OT



Feasibility

Efficacy

77% of patients improved at least 1 full REACH category

Interpretation: Patients demonstrated increased use of paretic arm in home and community settings

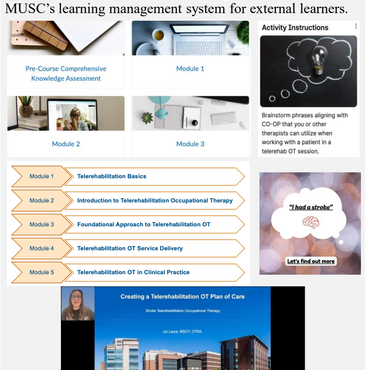
Patient Acceptance
- ✓ "I like doing this virtually, I save on gas and I get to work on things that really matter, like my laundry!"
- ✓ "I think it's just as effective as in-person therapy."
- ✓ "This was fun! I like that we get to be in our own home. It makes it more applicable."

Clinical Implementation and Hand Off

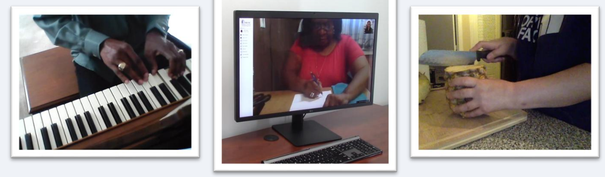
The Training

Digital Badge Course

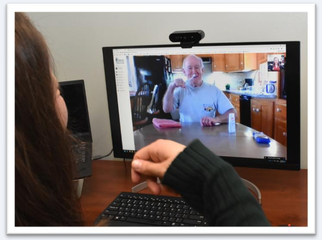
Designed all course content & learning modules in *Endeavor*, MUSC's learning management system for external learners.



Discussion



- This stroke telerehabilitation OT program is an example of proven viability for translation from research to clinical practice.
- The evidence-based model we developed may be used as a model for successful clinical implementation of a stroke telerehabilitation OT program.
- Universal sustainability aspects of this telerehabilitation program may allow for adaptation to other patient populations or diagnoses.
- Provider adoption and patient acceptance are key elements for successful telerehabilitation programs.
- A comprehensive professional training course can provide clinicians with specialized knowledge in the emerging practice area of telerehabilitation.



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