

Telerehabilitation Occupational Therapy

Enables Access to Stroke Rehabilitation: A Case Series



Julianne Laura, MSOT, OTR/L^{1,2}; Stephanie Garner, OTD, OTR/L^{1,2}; Kelly Rishe, MSOT, OTR/L^{1,2};
Patricia Finetto, MSOT, OTR/L^{1,2}; Michelle L. Woodbury, PhD, OTR/L^{1,2}
¹Division of Occupational Therapy, College of Health Professions, Medical University of South Carolina (MUSC);
²Department of Health Sciences and Research, College of Health Professions, MUSC



Background

- Access to healthcare is traditionally defined as the ability to obtain healthcare services, whereby if services exist then the opportunity to obtain healthcare also exists (Gulliford et al., 2002; University of Missouri School of Medicine, 2023).
- Defining access in this way offers a one-dimensional view that lacks understanding of the whole person and one's unique needs for how, when, and where healthcare is accessed.
- Telerehabilitation interventions are effective in improving post-stroke upper extremity motor recovery (Cramer et al., 2019) and performance in activities of daily living (Saragih et al., 2021).
- Telerehabilitation occupational therapy (OT) may offer a feasible opportunity to expand access to stroke-specific rehabilitation services for those who face unique barriers to in-person therapy.

Purpose

- To showcase the clinical experiences of stroke patients who had unique access-related barriers to traditional, in-person outpatient services and therefore selected telerehabilitation.

Methods

- 3 cases were selected from enrolled patients in a Quality Improvement (QI) project aimed at integrating stroke telerehabilitation OT into an existing statewide telehealth network.
- Patients were referred to telerehabilitation OT in response to marketing material disseminated across the state.
- Inclusion criteria included the ability to connect to a video conferencing platform, the desire to improve overall function, and sufficient cognitive capacity for participation.
- Stroke telerehabilitation OT services were provided to patients directly from their home, work, or university settings.
- Sessions were planned to accommodate patients' distinct scheduling needs (i.e., during lunch breaks at work).
- Sessions included guided participation-based practice of meaningful daily activities in each patient's selected environment.
- Treatment plans were individualized to address patient-reported barriers, goals, and functional needs in chosen personal spaces.
- Patient acceptance was assessed using qualitative data.
- Functional progress was assessed using the Patient-Specific Functional Scale (PSFS), a self-report of perceived difficulty in performing chosen activities (Stratford et al., 1995).

Case Descriptions

	Patient 1	Patient 2	Patient 3
Overview	48-year-old female 2 months s/p L hemisphere stroke - Lived with spouse in a rural community - Previously worked as a family counselor	50-year-old female 1 month s/p R frontal hemorrhagic stroke - Lived independently with elementary-aged child - Worked full-time as a teacher	22-year-old male - History of Moyamoya disease and bilateral strokes - Most recent stroke was a R hemisphere ischemic stroke - Full-time undergraduate college student
Primary Functional Complaints	- R hand weakness - Impaired coordination - Poor activity tolerance - Inability to work	- L hand weakness - Impaired coordination - Fatigue - Impaired executive function skills	- BUE weakness (L>R) - Difficulty typing and taking notes in class - Inability to verbally communicate needs with confidence due to dysarthria
Goals	- Complete tasks bimanually - Safely engage in cooking tasks - Improve activity tolerance for shopping - Return to work as a family counselor	- Maintain sufficient grasp of objects - Use L hand during daily activities - Regain thinking and planning skills for teaching - Improve activity tolerance to manage full-time work and household/family responsibilities	- Use L hand during daily activities - Improve handwriting ability - Carry backpack and school items safely - Increase efficiency with school-related tasks



Results: Patient Access

	BARRIER	CONTEXT	RESULT
	Why no OT?	What is the story?	How did telerehabilitation OT improve access?
Patient 1	 Rural Residence "In-person therapy would take me 2.5 hours to get there."	- Lived in a rural county and the nearest outpatient rehabilitation facility was over 2 hours from her home. - Closest clinic did not have a specialized stroke rehabilitation provider.	 "I like doing this virtually - I save on gas, and I get to work on things that really matter, like my laundry!"
Patient 2	 Personal Employment Needs "I had to go back to work. There was no way I would have been able to drive to and from [the clinic]."	- Worked full-time as a teacher and her work schedule did not allow time for the commute plus participation in traditional in-person therapy. - Could not afford to take time off for travel to/from a clinic during the workday.	 "With this program, we can do therapy during my lunch and my planning period – that was huge!"
Patient 3	 Social / Contextual Factors Patient's family member reported, "I think it is less likely he would go to in-person outpatient therapy. His schedule is typical of a student with a full load."	- While at college, he chose to discontinue in-person therapy due to the burden of coordinating services and transportation to/from a clinic. - He expressed a strong preference to focus on student-related daily activities without the perceived stigma of interrupting meaningful college student routines with in-person OT services.	 When asked about his satisfaction of participating in OT via telerehabilitation, he selected a rating of "10 (very satisfied)".

Results: Patient Outcomes

PSFS	Activity 1	Activity 2	Activity 3	Activity 4	Activity 5	Total Score*
Patient 1	Get pots out of cabinet	Maintain grip of items in R hand	Retrieve items off shelves at store	Pick up jewelry with R hand	Go up the stairs while carrying work bag	
Evaluation	3	2	3	3	0	2.2
Discharge	7	7	5	10	5	6.8
Patient 2	Maintain grip of items in L hand	Think of (initiate) ideas for lesson plans	Manage energy levels and fatigue	Pick up small objects with L hand	Open iced tea container using L hand	
Evaluation	1	3	2	1	1	1.6
Discharge	4	7	7	3	5	5.2
Patient 3	Open bottles or containers bimanually	Write with RUE (dystonia)	Carry things in L hand	Stabilize backpack with LUE to zip	N/A	
Evaluation	0	5	2	4		2.75
Discharge	6	8	5	9		7.0

*Total Score: sum of activity scores / number of activities
Minimum detectable change (90%CI) for average score = 2 points
Minimum detectable change (90%CI) for single activity score = 3 points

Discussion

- Telerehabilitation OT enabled access to specialized stroke rehabilitation services for each patient who otherwise would have had *limited or no access* to outpatient OT services.
- This case series showcases the need to consider a broader definition of "access" that includes a multidimensional understanding of a person's individualized barriers to care.
- Telerehabilitation OT is a flexible method to meet patients' personalized stroke rehab needs and address access-related barriers.
- By increasing access to specialized rehab services, telerehabilitation also allowed each patient to achieve functional goals.
- Future studies should explore how telerehabilitation can expand service delivery to combat complex barriers while providing quality care.
- This is a promising opportunity for future development of specialized telerehabilitation programs and research on how such offerings can impact population health initiatives.

References

- Cramer, S. C., Dodakian, L., Le, V., See, J., Augsburger, R., McKenzie, A., Zhou, R. J., Chiu, N. L., Heckhausen, J., Cassidy, J. M., Seacchi, W., Smith, M. T., Barrett, A. M., Knutson, J., Edwards, D., Putrino, D., Agrawal, K., Ngo, K., Roth, E. J., Tirschwell, D. L., ... (2019). Efficacy of home-based telerehabilitation vs in-clinic therapy for adults after stroke: A randomized clinical trial. *JAMA Neurology*, 76(9), 1079–1087. doi:10.1001/jamaneurol.2019.1604
- Gulliford, M., Figueroa-Munoz, J., Morgan, M., Hughes, D., Gibson, B., Beech, R., & Hudson, M. (2002). What does 'access to health care' mean? *Journal of Health Services Research & Policy*, 7(3), 186–188. https://doi.org/10.1258/135581902760082517
- Saragih, I. D., Tarihoran, D. E. T. A. U., Batubara, S. O., Tzeng, H. M., & Lin, C. J. (2021). Effects of telehealth interventions on performing activities of daily living and maintaining balance in stroke survivors: A systematic review and meta-analysis of randomised controlled studies. *Journal of Clinical Nursing*, 31(19–20), 2678–2690. https://doi.org/10.1111/jocn.16142
- University of Missouri School of Medicine. (2023). Healthcare Access. Center for Health Ethics. https://medicine.missouri.edu/centers-institutes-labs/health-ethics/faq/health-care-access

Acknowledgements

This project was made possible by a Duke Endowment grant (PI: ML Woodbury), South Carolina Telehealth Alliance grant (PI: ML Woodbury), and an NIH/NIGMS Institutional Development Award (IDeA), P20GM109040 (PI: S. Kautz).