



KEY POINT SUMMARY

OBJECTIVES

This multimethod study was undertaken to evaluate the how distances between spaces in rehabilitation clinics reveal barriers and impact patients' mobility.

Impact of distance on stroke inpatients' mobility in rehabilitation clinics: a shadowing study

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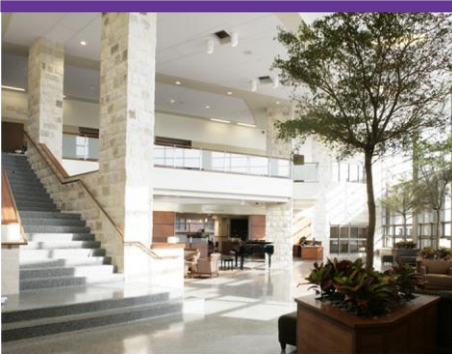
Key Concepts/Context

Failure to rehabilitate after experiencing a stroke frequently results in a patient's admission to long-term care. There is a need to understand how size and spatial configuration of rehabilitation settings can support wayfinding and help patients overcome mobility barriers. This study revealed that longer distances increased the number of encountered mobility barriers within five categories for all patients, with no significant difference between patients' mobility levels.

Methods

The researchers conducted a behavioral mapping study in Germany between 2014-2020 designed to examine the relationship between distance and patients' independent mobility in rehabilitation clinics. Seven (predominantly neurological rehabilitation) clinics with capacity ranging from 188-250 beds were selected for the study. Sites were selected to include a variety of configurations, characteristics, and ways of allocating locations accessible to patients, including patient wards, therapy rooms, diagnostic facilities, the main cafeteria, and various communal areas. Participants were identified by clinical staff within the seven sites. The final sample consisted of 70 patients who had suffered a stroke and were able to move independently with or without the use of a mobility aid. Patients with severe communication, cognitive and mobility impairments, pre-existing comorbidities, and/or orthopedic, neurological, dementia, or other conditions of consequence were excluded. All patients included in the analysis were over 60 years of age. In this study, an 'observe only' shadowing data collection method was used. Three complementary types of notes were taken on pre-prepared building floorplans during a 12-hour observation period: 1) paths taken; 2) time log of all activities; and 3) notable encounters with the built environment.

Data from floorplans and time log sheets were digitalized and analyzed for:



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- 1) daily distances covered,
- 2) relationship between distance and encountering mobility barriers or requiring assistance from staff,
- 3) comparison of path distances with and without mobility barriers or assistance,
- 4) patients' observed paths and interactions with space.

The paths were categorized according to: 1) no mobility barriers, 2) mobility barriers that could be overcome without assistance, and 3) mobility barriers that required assistance to overcome.

A supplemental questionnaire asked patients one open-ended question about the barriers they experienced within the built environment, and staff members one open-ended question about the barriers they witnessed patients encountering.

Findings

General statistical multivariate regression analysis of the digitized observational notes revealed five key mobility barrier categories ($p=0.01$): 1) wayfinding, 2) long distances, 3) corridor clearance, 4) physical obstacles, and 5) flooring. Increased distance increased the number of encountered mobility barriers in all five categories for all patients, with no significant difference between patients' mobility levels. Clinics with more complex configurations had considerably longer distances. Patients encountered mobility barriers and needed help more often on distances approximating 360' in comparison with maintaining independence on distances of 196' or less. The two most functional types of building configurations (in terms of distance) related to multistory buildings that vertically stacked patient and therapy rooms (like a hotel) and buildings that included a mix of patient and therapy rooms on the same floor, with the main therapy area separated vertically. A thematic analysis of the open-ended responses to mobility challenges revealed agreement between patients and staff who mentioned clinic long distances and inadequate visual communication (signage) most frequently.

Limitations

The representative sample within each of the seven settings was too small to compare outcomes between mobility levels. However, the total sample size of 70 patients and 840 hours of shadowing observations was sufficient to study the phenomena under question. Future research would benefit from using mixed methods to replicate the study with a larger and more diverse sample, especially during patients' free time when movement is voluntarily undertaken.



Design Implications

Built features within healthcare environments can positively influence infection control, recovery, activity levels, well-being, and overall satisfaction. This study demonstrates that the spatial needs and independent mobility of stroke patients can be improved through building layouts with short distances and carefully planned routes between destinations. The study supports limiting the length of travel distances to approximately 200' in order to promote independence and unimpeded mobility, and not to exceed approximately 350', which results in increased numbers and types of barriers to mobility.

And Also...

The authors provided the building footprints for each of the seven study sites as well as floorplan illustrations of functional destinations inside and outside the wards.

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