




## Environmental features in home and public spaces supporting life after stroke: A scoping review

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### ARTICLE INFO

#### Keywords:

Built environment  
Ecological systems theory  
Policy  
Rehabilitation  
Stroke  
Scoping review

### 1. Introduction

Disability related to stroke is a global health burden (Fan et al., 2023) and the third-leading cause of death and disability combined (Feigin et al., 2023). Many people with stroke experience significant disability for years post-discharge from the hospital, with millions of people with stroke worldwide living at home and in the community (WHO, 2022). Rehabilitation may be essential for returning to daily life and involves not only interventions aimed to enhance the recovery process but also enabling individuals to overcome (and compensate) for the challenges that disability may cause. A supportive environment that promotes independence and participation is essential to optimize the outcome and enable continued well-being and participation in society (Gingrich et al., 2023; Norlander et al., 2022). This approach aligns with the WHO definition of rehabilitation as "a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment" (WHO, 2011).

In current clinical practice, inpatient lengths of stay tend to be short, with the home and broader community settings the primary location for stroke rehabilitation (Kwakkel et al., 2023; Legg et al., 2023; Nergårdh

et al., 2018; Norrving et al., 2018; WHO, 2022). This shift towards more integrated home and community-based stroke rehabilitation models draws attention to the importance of the environment in supporting life after stroke and improving a person's health (Marcheschi et al., 2018). It is crucial to consider the environment in person-centred care (McCormack & McCance, 2006) which emphasizes and respects the individual's preferences, needs, and values. This perspective acknowledges that environmental features can influence social participation and rehabilitation outcomes by creating environmental conditions that are conducive or challenging to the individual's recovery and well-being (Obembe & Eng, 2016). Despite this, few studies have explored the interplay between stroke recovery and environmental factors in the home and surrounding community post-stroke (Della Vecchia et al., 2021; Ezekiel et al., 2019).

A supportive environment that promotes independence and participation is essential for optimizing rehabilitation outcomes. To support the rehabilitation among persons with stroke, it is recommended that more than half of their day is spent engaging in physical, cognitive, and/or social activities (Janssen et al., 2014). Studies focusing on inpatient care facilities emphasize the physical environment's significant impact

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<https://doi.org/10.1016/j.wss.2026.100370>

Received 10 February 2025; Received in revised form 5 January 2026; Accepted 15 February 2026

Available online 26 February 2026

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on stroke rehabilitation outcomes (Bernhardt et al., 2022; Bernhardt et al., 2017; Lipson-Smith et al., 2021). Factors such as the configuration of stroke units, the design of corridors and common areas, and the availability of green spaces affect not only patient activity and mobility (Kevdzija et al., 2022) but also staff and patient behaviours and interactions (Bernhardt et al., 2022; Bernhardt et al., 2017) and emotional wellbeing (Lipson-Smith et al., 2023).

Additionally, individuals accommodated in single-bed units, compared to multi-bed environments, typically spend more time in their bedrooms and demonstrate lower rates of engagement in-patient activities and social interactions (Anåker et al., 2022; Anåker et al., 2019, Anåker et al., 2017, Rosbergen et al., 2022; Shannon et al., 2020). Further, the design is decisive in the staff's ability to perform a high-quality and efficient care process (Nordin et al., 2021; Shirozhan et al., 2022). The sum of the research underscores the need for further knowledge and methodological approaches to systematically integrate environmental considerations into stroke rehabilitation (Elf et al., 2024). In addition, research examining the influence of environmental factors beyond the hospital setting remains multidisciplinary, conceptually heterogeneous and has yet to be comprehensively synthesized. Therefore, there is a pressing need to elucidate how features of the home and surrounding community environments affect long-term rehabilitation and societal participation following a stroke (Kylén et al., 2023).

In this review, the environment for people who experienced a stroke is understood across three domains: the built environment, the natural environment, and the social environment. The built environment is defined as human-made infrastructure including buildings, neighborhoods, cities, and regions (Hassler & Kohler, 2014). Natural environments include features such as trees, green and blue spaces, and animals (Wheeler et al., 2015), while the social environment includes neighborhood social structure and interpersonal relationships within and beyond the home (Hayward et al., 2015). Transitioning between different environments, such as the home, public spaces, and the surrounding community, pose distinct challenges and affordances for rehabilitation. Drawing on Bronfenbrenner's ecological systems theory, the home environment can be conceptualized as an individual's microsystem (i.e., house, family) and the community environment as their macrosystem (i.e., nature, public spaces, infrastructure, policy) (Bronfenbrenner, 1979). To optimize engagement for persons with stroke, it is necessary to understand how individuals experience both micro- and macrosystems, as well as the transition points between these environments. Such transition points may include the threshold of the home or public building (e.g., garden path, steps to front door, etc.), journey routes (e.g., footpaths, bike paths, pedestrian crossings) or waiting areas (e.g., bus stops, park benches). Ensuring that the environmental features along these transition points are accessible is essential for enhancing well-being after stroke, reducing the risks of falls, preventing hospital readmission rates (Miller et al., 2019) and enabling activities beyond home.

Although previous research has demonstrated that the design of the home environment is critical for stroke recovery (Elf et al., 2025; Marcheschi et al., 2018), there remains limited knowledge regarding how built, natural, and social environment factors influence daily life and participation post-stroke (Della Vecchia et al., 2023; Ezekiel et al., 2019). Furthermore, evidence-based stroke rehabilitation guidelines predominantly reflect therapeutic practices in clinical spaces (Platz, 2019) and have not yet been expanded to account for rehabilitation delivered at home and within community contexts. Accordingly, the aim of this scoping review is to synthesize existing literature on environmental factors beyond the hospital that support or hinder life after stroke.

The following research questions guided the review:

RQ 1: How do features of the home environment and public space support or hinder life after stroke?

RQ 2: How are home environments and public spaces modified or adapted to support life after stroke?

## 2. Methods

This scoping review was conducted based on the framework of Arksey and O'Malley (2005) and Levac et al. (2010). The review adhered to the preferred reporting items for systematic reviews and meta-analyses extension for scoping reviews (PRISMA-ScR) checklist (Appendix 1) (Tricco et al., 2018). In line with recommendations, the systematic process entailed the following phases: identification of research questions, identification of relevant articles, article selection, charting the data, and summarizing and reporting results. The review is a part of two larger projects (B-Sure and InHome), which explore built environments to support rehabilitation for people with stroke from the hospital to the home (Elf et al., 2024; Kylén et al., 2023). This review was registered through Open Science Framework: <https://osf.io/uqaxp/overview>.

### 2.1. Identifying articles and selection

The search strategy was developed in consultation with an information specialist librarian and discussions with the research team. The search strategy was initially constructed in Medline (Ovid) and then translated to the following databases: CINAHL (Ebsco), Scopus, and Embase (Elsevier). The CADTH filter was used to exclude animal studies. When all the search strategies were complete, the search strings were peer-reviewed by another librarian according to the Peer Review of Electronic Search Strategies (PRESS) 2015 Guideline Evidence-Based Checklist (McGowan et al., 2016). The final search was conducted in November 2024. An example of the search strategies, consisting of both subject headings and free text terms, can be found in Appendix 2.

All references (n=12,633) were imported to the reference manager EndNote X9 (Hupe, 2019) and screened for duplicates, which were removed according to Wichor Bramer's de-duplication method (Bramer et al., 2016). At this step, references were removed by keyword search terms that described other illnesses (i.e., cancer, dementia), conference proceedings, publications not in English, and other exclusion criteria. The remaining EndNote library was then imported into the web-based citation management software Covidence. The Covidence software allowed for a double-blinded structure for interrelated reliability. After eliminating all duplicates, 4,324 articles were available to be screened for relevance by the population, concept, and context (PCC) inclusion criteria (Table 1). After title and abstract screening, the references were all independently screened by two reviewers (JS, RLS). The authors met in smaller groups to resolve conflicts and ensure reviewers' consistency. At this step, we also excluded studies with keywords related to diseases other than stroke (including mixed patient population studies), such as Parkinson's disease, dementia, heart disease, or brain injury, plus

**Table 1**  
Inclusion and exclusion criteria.

PCC Framework	Inclusion criteria	Exclusion criteria
Population	Adults with stroke, or their caregivers or care professionals. People with aphasia, gait, etc. related to stroke. Discharged patients	A focus on persons without stroke; mixed sample populations; non-adults
Concept	Factors and characteristics supporting rehabilitation and recovery	Articles that do not discuss physical/social environment factors that can affect stroke recovery
Context	Home or public space/ neighborhood environment; Physical and natural environment; Digital environments (including games on digital platforms); Social environments	Hospital or institutional care (inc. stroke units); robotics that support the act of therapy; lab-based technologies that cannot easily be accessed in the home such as CAVE VR

articles that did not include the perspective of the person with stroke. Publications older than 10 years were excluded. We focused on a 10-year timeline, as suggested by an information specialist, to ensure that we used current and relevant knowledge (Peters et al., 2020). The total number of references screened, duplicates removed, and articles screened are illustrated in Fig. 1.

2.2. Title and Abstract Screening

Titles and abstracts were reviewed in Covidence by authors (JS, RLS, LdV, MK) to identify articles that met the population, concept, and context (PCC) (Table 1) were used to set inclusion and exclusion criteria (Peters et al., 2015; 2022). Studies were eligible for inclusion if written in English and focused on built, natural and social environmental factors and characteristics supporting the rehabilitation and recovery of adults with stroke. Two reviewers independently screened each citation. At this step, we also excluded studies that included a population other than stroke (including mixed patient population studies), such as Parkinson’s

disease, dementia, heart disease, or brain injury. Also, to align with a person-centred approach, only articles that included the perspective of the person with stroke were included. Articles that were not peer-reviewed (e.g., opinion pieces), conference proceedings, reviews, single-person case studies, or if the full article was not available for open access were excluded. Any differing opinions were discussed at meetings throughout the screening process until agreement was reached. Three authors then completed a full-text review of the selected articles and data extraction (JS, RLS, LdV).

2.4. Charting the Data

Data from each citation such as author, publication year, study location, method population, sample size, gender dynamics and study context were then extracted in Covidence and edited with Excel.

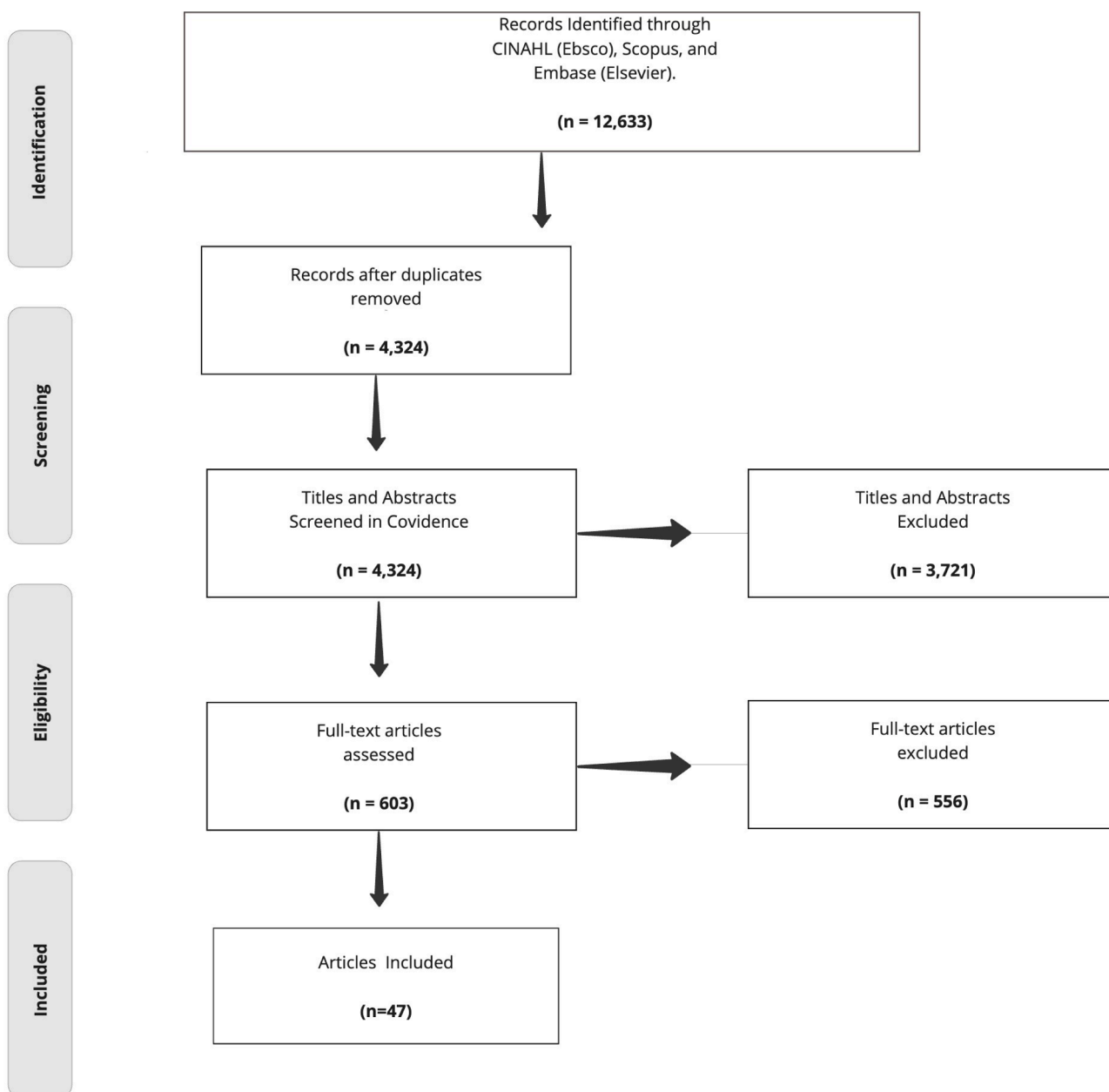


Fig. 1. PRISMA flow diagram for search strategy.

2.5. Summarizing and Reporting the Results

Article characteristics were summarised using descriptive statistics. To align with the Arksey and O'Malley (2005) scoping review framework, a descriptive basic coding of the identified key factors related to the concept was categorized instead of a synthesis utilizing a systematic thematic approach (Peters et al., 2020). The review team extracted findings from the selected studies and grouped them based on shared characteristics and common themes relevant to the research questions. The review team met online several times to discuss initial thoughts, identify distinct themes, and align these to the research questions. The identified themes and features were then mapped onto the level of either the microsystem (home) or the macrosystem (public space/-neighborhood) as described in the Ecological Systems Theory (Bronfenbrenner, 1979).

3. Results

3.1. Characteristics of Selected Articles

Forty-seven articles were included for data extraction (see Fig. 1; Table 2). A summary of the extracted data is included in Appendix 3. Almost half of the studies were conducted in Europe or the United Kingdom (19 articles, 40%), with the remainder conducted in North America (8 articles, 17%), Asia (8 articles, 17%), Australasia (5 articles, 10%), Africa (5 articles, 11%), or South America (2 articles, 5%). Most articles were qualitative (31, 63%), or included a qualitative component (8 mixed methods, 17%), and most were observational (29 articles, 84%). An experimental manipulation or intervention was included in 16% of the articles (n = 8). The number of participants ranged from four to 2,000 individuals (median = 22, IQR = 13-53). Persons with stroke were included in all the articles, with some also including their family or friends (5 articles, 14%) and/or professional staff (4 studies, 11%). The time since the participants' stroke ranged from 5 days to 22 years. Some articles focused specifically on the experiences of people with impairments or abilities post-stroke, such as persons with aphasia (2 articles, 5%) or those who were able to walk independently in the community (2 articles, 5%).

About half of the articles considered both the home environment and the surrounding public space (20 articles, 42%). The aspects of the environment that were most commonly described in the findings were: 1) variables associated with the social environment, such as the presence of family, neighbours, or a sense of community (28, 59%), 2) aspects of urban design, i.e., the arrangement, appearance and function of towns, cities, public space, and transport (27 studies, 57%), 3) the exterior or interior design of the home, including ramps, stairs, appearance, and function (44 studies, 57%). Supportive equipment, such as wheelchairs and walkers were mentioned in six studies (16%), and in-home technology, such as tablets, home assistants, and smart devices were mentioned in seven studies (14%).

3.2. Narrative Summary of Findings

This review identified four major themes, addressing the two research questions: 1) Adapting to environments; 2) Transitioning between home and public space; 3) Engaging in meaningful and everyday activities; and 4) Technology in the Home. The themes are described in detail in Table 3.

Theme 1: Adapting to Environments

Several studies highlighted that rehabilitation is supported by being in one's own familiar environment as opposed to being in an institution. For example, one study described how the participants felt that being at home in a familiar and meaningful everyday space was healing and supported practicing skills and activities (Lou et al., 2017). As described by Elf et al. (2023), Kylen et al. (2022) and Meijering et al. (2016), coming home after discharge can require psychological and practical

Table 2  
Characteristics of the included articles.

Author, Year, Country	Study method	Population	Sample size	Gender (%F; % M)	Context
Appireddy, et al., 2019, Canada	Mixed Methods	Persons with stroke	75	33; 67	Home
Atler, 2015, USA	Mixed Methods	Persons with stroke	23	35; 65	Home; Public space
Blonski, et al., 2014, Canada	Qualitative	Persons with stroke with aphasia	10	40; 60	Public space
Böttger, et al., 2022, Germany	Qualitative	Persons with stroke	5	60; 40	Public space
Bright, et al., 2024, USA	Quantitative	Persons with stroke	736	42; 58	Home; Public space
Cawood, et al., 2015, South Africa	Mixed Methods	Persons with stroke	53	45; 50	Public space
Chavda & Prakash, 2024, India	Quantitative	Persons with stroke	77	32;68	Public space
Chen, et al., 2020, USA	Qualitative	Persons with stroke	13	15; 84	Home
Chimatiro, et al., 2014, Malawi	Qualitative	Persons with stroke	7	Not reported	Home; Public space
Débora Pacheco, et al., 2019, Brazil	Quantitative	Persons with stroke with walking ability	95	36; 64	Home; Public space
Delhey, et al., 2023, USA	Quantitative	Persons with stroke	1392	47; 53	Public space
Dewilde, et al., 2020, Belgium	Quantitative	Persons with stroke	569	43; 57	Home
De Witt, et al., 2024, South Africa	Qualitative	Persons with stroke	11	36; 64	Home; Public space
Dos Santos, et al., 2022, Brazil	Quantitative	Persons with stroke	75	47; 53	Home; Public space
Elf, et al., 2023, Sweden	Quantitative	Persons with stroke	34	38; 62	Home
Fors, et al., 2019, Uganda	Qualitative	Persons with stroke; Family/friends; Staff	22	Not reported	Home; Public space
Greenhalgh, et al., 2019, UK	Mixed Methods	Persons with stroke; Staff	21	33; 67	Public space
Harrison, et al., 2022, UK & Ireland	Mixed Methods	Persons with stroke	2000	42; 58	Home; Public space
Hodson, et al., 2016, Australia	Qualitative	Persons with stroke	7	57; 43	Home; Public space
Kanai, et al., 2019, Japan	Quantitative	Persons with stroke with walking ability	61	25; 75	Public space
Kwah, et al., 2024, Singapore	Qualitative	Persons with stroke	19	47; 53	Public space
Kylén, et al., 2022, Sweden	Qualitative	Persons with stroke	14	50; 50	Home; Public space

(continued on next page)

Table 2 (continued)

Author, Year, Country	Study method	Population	Sample size	Gender (%F; % M)	Context
Le Dorze, et al., 2014, Canada	Qualitative	Persons with stroke with aphasia	17	29; 70	Public space
Lee, et al., 2024, South Korea	Quantitative	Persons with stroke	100	44; 56	Public space
Lo, et al., 2023, Hong Kong	Qualitative	Persons with stroke; Staff	51	45; 18	Home; Public space
Lou, et al., 2017, Denmark	Qualitative	Persons with stroke; Family/friends	40	55; 45	Home
Malinowksy, et al., 2020, Sweden	Quantitative	Persons with stroke	63	48; 52	Public space
Meijering, et al., 2016, The Netherlands	Qualitative	Persons with stroke; Family/friends	40	Not reported	Home
Mohd Nordin, et al., 2014, Malaysia	Qualitative	Persons with stroke; Staff	23	61; 39	Home; Public space
Nanninga, et al., 2018, The Netherlands	Qualitative	Persons with stroke	33	Not reported	Home; Public space
Nanninga, et al., 2015, The Netherlands	Qualitative	Persons with stroke	33	Not reported	Home; Public space
Narbutaitienė, et al., 2024, Estonia	Qualitative	Persons with stroke	5	60; 40	Home
Nicholson, et al., 2014, UK	Qualitative	Persons with stroke	13	62; 38	Home
Norlander, et al., 2022, Sweden	Qualitative	Persons with stroke; Family/friends	14	50; 50	Home
Norlander, et al., 2018, Sweden	Qualitative	Persons with stroke; Family/friends	14	50; 50	Home; Public space
Rennick-Egglestone, et al., 2021, UK	Qualitative	Persons with stroke	4	Not reported	Home
Reunanen, et al., 2016, Finland	Qualitative	Persons with stroke	14	36; 64	Home; Public space
Saywell, et al., 2023, New Zealand	Qualitative	Persons with stroke	21	52; 48	Home
Timothy, et al., 2016, New Zealand	Qualitative	Persons with stroke	7	29; 70	Home; Public space
Törnbohm, et al., 2019, Sweden	Qualitative	Persons with stroke	11	55; 45	Home; Public space
Tse, et al., 2022, Australia	Mixed Methods	Persons with stroke	30	20; 80	Public space
Twardzik, et al., 2022, USA	Mixed Methods	Persons with stroke	275	50; 50	Public space

Table 2 (continued)

Author, Year, Country	Study method	Population	Sample size	Gender (%F; % M)	Context
van Dongen, et al., 2020, Iceland	Qualitative	Persons with stroke	10	30; 70	Home; Public space
Visagie, et al., 2023, South Africa	Qualitative	Persons with stroke	8	50; 50	Public space
White, et al., 2015, Australia	Qualitative	Persons with stroke	12	33; 67	Home
Zhang, et al., 2016, China	Mixed Methods	Persons with stroke	818	34; 66	Home
Zhang, et al., 2018, China	Qualitative	Persons with stroke	18	22; 78	Home; Public space

adjustments in which persons with stroke must become reacquainted with their home environment. For instance, some people chose to avoid the room where the stroke occurred, or sleep in a different room than before the stroke due to accessibility issues, other chose to use a particular space in the home (i.e., the kitchen) to do all their activities (Rennick-Egglestone & Mawson, 2021). Domestic responsibilities and daily tasks such as cleaning (Norlander et al., 2022; Tse et al., 2022), taking out the garbage, or bringing groceries into the house (Kylén et al., 2022) can be burdensome for some due to the lack of modifications or supports.

Other studies showed that some people had to move to a new house due to accessibility and safety requirements, or to be closer to family or services (Kylén et al., 2022; Nanninga et al., 2015; Norlander et al., 2022; Rennick-Egglestone & Mawson, 2021; Tse et al., 2022) or having to sell their home due to financial constraints (Rennick-Egglestone & Mawson, 2021). Relocating to a new community after a stroke can be challenging as familiar social connections and community resources may be lost (Tse et al., 2022). Seven studies described people losing their employment or experiencing challenges returning to work after their stroke (Bright et al., 2024; Chimatiro & Rhoda, 2014; De Witt et al., 2024; Hodson et al., 2016; Le Dorze et al., 2014; Lo et al., 2023; Reunanen et al., 2016; Tse et al., 2022). Macrosystem factors such as the loss of employment can have financial implications resulting in not adequately being compensated by existing disability insurances (Le Dorze et al., 2014) or insufficient income for leisure activities, rent or food (Cawood & Visagie, 2015; Harrison et al., 2022; Nanninga et al., 2018; Norlander et al., 2022; Tse et al., 2022; Törnbohm et al., 2019).

Theme 2: Transitioning between Home and Public Space

Some of the included articles described how some persons living with the consequences of a stroke face barriers immediately outside the front door of their house when there are high stairs or when they encounter hills, uneven terrain including sandy or loose soil or uneven ground pavement such as potholes (Cawood & Visagie, 2015; Chimatiro & Rhoda, 2014; De Witt et al., 2024; Débora Pacheco et al., 2021; Kylén et al., 2022; Nanninga et al., 2018; Törnbohm et al., 2019; Zhang et al., 2018). These accessibility issues pose risks of falls and injuries and can significantly impact the rehabilitation process by limiting outdoor mobility and social participation opportunities. Additional factors described are heavy traffic (Böttger et al., 2022; Greenhalgh et al., 2019; Törnbohm et al., 2019), non-designated street crossings (Dos Santos et al., 2022; Twardzik et al., 2023), unclear pedestrian pathways (Böttger et al., 2022; Kanai et al., 2019; Twardzik et al., 2023), lack of parking (Mohd Nordin et al., 2014; Norlander et al., 2018), weather (Reunanen et al., 2016; van Dongen et al., 2021), noise (Dos Santos et al., 2022; Harrison et al., 2022), and crime (i.e. roaming dogs or criminals) (Cawood & Visagie, 2015) that can create barriers for people to access public space. Further, barriers such as tight spaces or the lack of accessible public toilets can make these environments difficult to access

**Table 3**  
Themes and Features of the Environment.

	Environmental Barriers	Environmental Supports / Facilitators
<b>Theme 1: Adapting to Environments</b>	<ul style="list-style-type: none"> <li>• Avoidance of certain rooms or reconfiguring routines within a single room</li> <li>• Domestic tasks burdensome when modifications/supports are lacking</li> <li>• Needing to moving house/community due to inaccessibility, safety, distance from services/family</li> <li>• Loss of employment or difficulty returning to work</li> </ul>	<ul style="list-style-type: none"> <li>• Familiar home environment</li> <li>• Relocation to be closer to family or services</li> </ul>
<b>Theme 2: Transitioning between Home and Public Space</b>	<ul style="list-style-type: none"> <li>• Barriers outside the home: high or multiple stairs; hills; uneven terrain, sandy or loose soil; potholes</li> <li>• Environmental stressors: heavy traffic, non-designated crossings, unclear pedestrian pathways, lack of parking, adverse weather, noise, crime/roaming dogs</li> <li>• Tight indoor spaces, lack of accessible toilets, and stairs in public buildings</li> <li>• Visual and cognitive demands in public spaces</li> <li>• Transport barriers: driving restrictions; limited/unsafe cycling infrastructure; unavailable, unreliable or physically difficult to access public transport</li> <li>• Anxiety using specialised transport or wheelchairs in vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Strategies for negotiating stairs and other obstacles (e.g. seeking help from bystanders, using alternative routes)</li> <li>• Access to private gardens, balconies, terraces, and greenhouses facilitates gardening, outdoor activity, and a sense of connection with society</li> <li>• Adapted cycling (tandem, electric bikes, adapted pedals) as an alternative mode of transport</li> <li>• Incorporating accessing public transport practice into rehabilitation</li> </ul>
<b>Theme 3: Meaningful and Everyday Activities</b>	<ul style="list-style-type: none"> <li>• Home barriers: stairs; inadequate lighting; unsuitable furniture; lack of handrails; inaccessible toilets and showers limiting self-care</li> <li>• Barriers in extended home environments due to stairs, uneven ground, or other obstacles                             <ul style="list-style-type: none"> <li>• Overprotective family or care networks</li> </ul> </li> <li>• Costly home modifications can be delayed, or only partially effective; structural constraints (small dwellings, poor quality housing)</li> <li>• Problems with ramps, elevators, and doors, steep ramps, out of service lifts, heavy doors without automatic opening</li> </ul>	<ul style="list-style-type: none"> <li>• Continuation of pre stroke activities where possible</li> <li>• Adapting to new venues closer to home and taking up new activities</li> <li>• Supportive social networks facilitating daily activities, appointments and social participation; peer support groups aiding meaning making and emotional support</li> <li>• Pets providing routine, motivation to go outdoors, and emotional comfort</li> <li>• Home adaptations and assistive devices</li> </ul>
<b>Theme 4: Technology in the Home</b>	<ul style="list-style-type: none"> <li>• Access to technology and necessary infrastructure (internet, electricity, devices) is uneven within and between countries; basic services such as public phones or airtime</li> </ul>	<ul style="list-style-type: none"> <li>• Home based technologies can provide access to rehabilitation, motivation, and professional support irrespective of location</li> <li>• Technology can reduce travel and parking costs</li> </ul>

**Table 3 (continued)**

	Environmental Barriers	Environmental Supports / Facilitators
	<ul style="list-style-type: none"> <li>• may be limited</li> <li>• Technical problems, limited space for exercise equipment, and difficulties adapting activities to online formats can reduce usability and engagement</li> <li>• Some individuals miss face to face contact, have privacy/security concerns, or need support to use everyday technologies</li> <li>• Technology can be hard to learn and may increase clutter in already constrained spaces</li> </ul>	<ul style="list-style-type: none"> <li>• and support social connections, a sense of safety and reminders</li> </ul>

(Böttger et al., 2022) and require preplanning and researching the amenities before visiting such places to ensure that places are not crowded, barrier-free, have accessible toilets (Blonski et al., 2014; Böttger et al., 2022; Nanninga et al., 2018) or have designated parking available (Nanninga et al., 2018). Similar to the home environment, public spaces with stairs can prevent people from accessing services, including healthcare (Böttger et al., 2022; Norlander et al., 2018).

There are also descriptions of strategies used by people with stroke to navigate stairs in public spaces (Chimatiro & Rhoda, 2014; Kwah et al., 2024; Nanninga et al., 2018). In the Cawood & Visagie (2015) study, a participant describes having to depend on help from fellow fans to get up the stairs at a football match. People with stroke not only experience physical barriers in public spaces but also visual challenges such as requiring assistance to read material such as menus or filling in paperwork (Le Dorze et al., 2014). In contrast, some articles highlight the benefits of living in a house with a balcony, garden, terrace, or a greenhouse that can enable participants to engage in gardening or connect with society (Atler, 2016; Kylan et al., 2022; Norlander et al., 2018).

After experiencing a stroke, transportation can be an issue such as driving, biking or using public transportations. For example, driving can be prohibited due to legal restrictions, or recommendations made by physicians. Such policy decisions often make the person dependent on public transportation (Harrison et al., 2022) or the availability of friends and family to drive them (Cawood & Visagie, 2015; Hodson et al., 2016; Nicholson et al., 2014; Tse et al., 2022). In several studies, biking was mentioned as an alternate mode of transportation that some people with stroke can rely on, especially when the bicycle is customized to fit their needs (i.e., tandem, electric or adapted pedals) (Greenhalgh et al., 2019; Kylan et al., 2022; Nanninga et al., 2018; Norlander et al., 2022; Tse et al., 2022).

Public transportation is not always available, affordable suitable or dependable (Blonski et al., 2014; Cawood & Visagie, 2015; Chavda & Prakash, 2024; Chimatiro & Rhoda, 2014; Malinowsky et al., 2020; Mohd Nordin et al., 2014; Norlander et al., 2018; 2022; Visagie et al., 2023; Zhang et al., 2018) and without transportation access, people can be restricted to home-based activities. (Chavda & Prakash, 2024; Nanninga et al., 2015; Zhang et al., 2018). Additionally, challenges can arise when boarding and exiting public transportation (i.e., buses, tramways); navigating stairs to underground transportation systems or dealing with impatient drivers when making requests for stops (Böttger et al., 2022; Cawood & Visagie, 2015; Visagie et al., 2023; Zhang et al., 2018). Even in circumstances where there are specialized transportation services for wheelchair users, some people can experience anxiety when they need to back out of a vehicle with a manual wheelchair (Böttger et al., 2022). Chavda & Prakash (2024) suggest that practicing accessing public transportation use is ideally a part of rehabilitation plans.

### Theme 3: Meaningful and Everyday Activities

This theme explores how environmental factors facilitate or limit the engagement of persons with stroke in activities that are significant for their rehabilitation and quality of life. Several studies described how barriers in the home environment, including stairs (Atler, 2016; Cawood & Visagie, 2015; Kylen et al., 2022; Zhang et al., 2016), inadequate lighting (Zhang et al., 2016), unsuitable furniture (i.e., seating and beds) (Zhang et al., 2016), lack of handrails (Zhang et al., 2016) and inaccessible toilet and shower areas (Cawood & Visagie, 2015; Timothy et al., 2016; Zhang et al., 2016) can be challenging and limit everyday life activities within the home. In three studies, participants described how meaningful additional extended home environments (i.e., holiday home environments) can be challenging to use after the stroke due to environmental barriers such as stairs or uneven ground (Kylen et al., 2022; Malinowsky et al., 2020; Norlander et al., 2018).

Some people with stroke continue pre-stroke activities (i.e., such as golf, gardening, dancing, poker, chess, singing or travelling (Nanninga et al., 2015; Norlander et al., 2018; Reunanen et al., 2016; van Dongen et al., 2021; Zhang et al., 2016). Some people adapt to new locations to do activities closer to their home to make participation easier (Delhey et al., 2023; Mohd Nordin et al., 2014; Norlander et al., 2022; Lee et al., 2024; Reunanen et al., 2016). Participating in new activities outside the home can be common for some people post-stroke (Norlander et al., 2018; Kwah et al., 2024), such as handicrafts, yoga or swimming, that had been initiated “thanks to the stroke” (Törnbohm et al., 2019; pp. 13)

Having a supportive social network is identified as an enabler to participate in meaningful activities beyond the home (Böttger et al., 2022; Bright et al., 2024; Delhey et al., 2023; Norlander et al., 2018; Zhang et al., 2018). Support from family, friends, or care professionals is often required for people with stroke to participate in activities of daily living including social participation or attending appointments (Cawood & Visagie, 2015; Le Dorze et al., 2014). For some individuals, attending stroke recovery meetings can be a beneficial venue for making sense of one’s experience, sharing personal experiences, and being in a place where they could receive support (Le Dorze et al., 2014). Pets can also provide social support, a sense of relaxation and a reason to get out of the house (Harrison et al., 2022; Tse et al., 2022; Törnbohm et al., 2019). However, living with a partner or a family member can influence social and leisure participation in both positive and negative ways. For instance, living with a partner can provide a sense of security (Lou et al., 2017) and link to social contact (Norlander et al., 2018). Also, even when people have family and friends in their support network, they can experience receiving little social and emotional support (Norlander et al., 2018; Törnbohm et al., 2019; Zhang et al., 2018). Further, relying on friends, family, and care staff can also hinder social activities when the social network is overprotective fearing falls or adverse events (Le Dorze et al., 2014; Kwah et al., 2024; Mohd Nordin et al., 2014; Nanninga et al., 2015).

Home adaptations and modifications of the environment can support social participation at home and assist people with stroke to participate in activities also beyond the home (Harrison et al., 2022). Some environmental barriers can be addressed through simple home modifications such as tray tables, bath boards, or adapted kitchen utensils (Cawood & Visagie, 2015). While assistive devices, such as mobility canes or wheelchairs (Böttger et al., 2022; Cawood & Visagie, 2015; Reunanen et al., 2016; Zhang et al., 2018), handrails in stairwells (Törnbohm et al., 2019) or using assistive devices can support participation within and beyond the home. However, home modifications can be expensive, and the application process can be a tedious experience with having to identify which aids and modifications are most suitable to the unique home environment (Nanninga et al., 2018; Zhang et al., 2018). Some studies described delays in the home modification application process or installation. For instance, some people must apply for an assistive equipment or devices (i.e., grab bar installation or a mobility scooter) but there is a delay in getting them (Nanninga et al., 2018) or having grab bars prescribed as part of the rehabilitation plan at home or the

devices were not yet properly installed (Böttger et al., 2022; Kylen et al., 2022). Further, the size and structure of the home (e.g. small and poor quality) (Cawood & Visagie, 2015) can result in challenges in getting repairs done. For example, despite modifying some features in the home, maneuvering a wheelchair can be challenging when the home is not designed for a wheelchair. Also, in some cases, home modifications, such as installing grab handles, only solved part of the problem (i.e., still having to take the stairs) (Nanninga et al., 2018) or despite having an elevator, experiencing challenges opening heavy doors (Reunanen et al., 2016). Similarly, installing ramps can enable mobility, but, for some, ramps can be a challenge as going up can require a lot of strength and technique (Hodson et al., 2016). For people with stroke using a wheelchair, elevators can be problematic, especially when the elevator is out of service and there is no information on alternative means of access (Böttger et al., 2022) or when buildings have a ramp but no button to open the door automatically (Le Dorze et al., 2014).

### Theme 4: Technology in the Home

This theme describes how access to technology at home can support life after stroke, rehabilitation and social participation. It also describes the complexity faced by some individual’s post-stroke. Technology in the home can enable access to rehabilitation regardless of where one lives but this access depends on the availability of the technology and necessary infrastructure (internet, electricity, etc.), and on the abilities of the person to operate the technology. Technology in the home can provide access to healthcare and rehabilitation through assistive devices (i.e., monitoring systems), smartphone applications, and video-based support through tablets and other computer devices to provide interaction and motivation to engage in rehabilitation (Appireddy et al., 2019; Cawood & Visagie, 2015; Chen et al., 2020; Dos Santos et al., 2022; Narbutaitienė et al., 2024; Saywell et al., 2023; White et al., 2015). Rehabilitation in the home provided through technology allows healthcare to be accessible, cost-saving (i.e., saving time and avoiding parking costs), and convenient, especially for persons living in rural locations (Appireddy et al., 2019). Technology can also allow for more social connections, a sense of safety, system reminders and shopping virtually (De Witt et al., 2024; Chen et al., 2020; Fors et al., 2019; Kylen et al., 2022; Narbutaitienė et al., 2024; Norlander et al., 2022; Reunanen et al., 2016; White et al., 2015). However, there can be challenges relying on technology due to technical issues and limited space in the home, for example, to be able to engage in physical rehabilitation exercises (Chen et al., 2020; Rennick-Egglestone & Mawson, 2021). Additionally, some people with stroke may have challenges adapting to an online activity that they used to do in person (i.e., playing cards) (Kylen et al., 2022), miss the face-to-face connection (Saywell et al., 2023), have privacy or security concerns (Appireddy et al., 2019) or need help to use everyday technology such as a telephone (Le Dorze et al., 2014) where pushing the right number can be challenging (Reunanen et al., 2016). Technology can also be challenging to learn, engage, and adapt to use plus it can increase ‘clutter’ (i.e. cables, charges, and displays) (Narbutaitienė et al., 2024; Rennick-Egglestone & Mawson, 2021; p7). Furthermore, in some countries, technology is not universally available or affordable. Basic communication services, such as public phones or phone airtime are limited with a low percentage of the population having computers and email (Cawood & Visagie, 2015; Fors et al., 2019).

## 4. Discussion

The shift toward home-based and community-based rehabilitation for persons with stroke represents a significant transformation in health services and reflects broader societal development that warrants deeper exploration. This scoping review identified 47 articles that examined how people post-stroke interact with home and public space environments. The results were summarized across four themes, which describe the dynamic interplay between people with stroke and microsystem (home environment, family, etc.), and the wider macrosystem

(neighborhood, surrounding community, social network, etc.). This interplay is depicted in Fig. 2, which maps the findings from the included studies onto the micro- and macrosystems. Based on the included studies, the green italicized text in Fig. 2 illustrates factors and features of the environment that support life after stroke while the red text provides examples of factors and features that may pose challenges to or complicate rehabilitation. Some of the factors and features in Fig. 2 could be supportive or challenging depending on the circumstance (e.g., weather, biking, family). Where this is the case, we have referred to the evidence provided in the included articles and depicted the factors or features accordingly. Weather, for example, was only discussed in the included articles as a challenging factor, and so has been depicted in red text in Fig. 2. Family and friends, on the other hand, were discussed primarily as supportive factors (green text), except in instances where this social network was overprotective (e.g., family or friend discouraging activity with fear the person with stroke will be injured). Such an ‘overprotective social network’ is therefore included as a separate factor,

in red text.

Together, the themes and features in Fig. 2 offer vital insights into environmental features that may support or hinder life after a stroke and participation in society, providing a foundation for prioritising policy, planning, and infrastructure changes at local and national levels. This review therefore contributes an overview of current knowledge on stroke recovery in home and community settings and highlights implications for researchers, policymakers, health professionals, people with stroke, and their caregivers. Given the challenges of universally implementing stroke guidelines across countries, the global findings can be used as a basis for contextualisation for rehabilitation specialists, urban planners and architects.

*Environmental barriers and supports in the microsystem and macrosystem*

This review indicates that widespread accessibility issues that persist across various social and physical infrastructures, may affect the continuity of care once individuals step outside the hospital to their homes. At the microsystem level, many homes are not adequately adapted to meet



Fig. 2. The resulting themes mapped according to the ecological systems theory.

the cognitive and physical demands of those recovering from stroke. Accessibility problems are common (Slaug, Granbom & Iwarsson, 2020) and may pose risks not only to persons with stroke but also to the growing share of older adults who may find their housing increasingly unmanageable over time. Healthcare providers therefore require support to identify and address obstacles in the home environment, and local and national policy need to acknowledge the importance of accessibility at home and in public spaces as a prerequisite for activity and participation. Failure to do so risks undermining rehabilitation goals and further diminishing quality of life among already vulnerable groups. At the macrosystem level, public spaces often experienced as complex and inaccessible with challenges compounded by limited or insufficient transportation infrastructure. Across the included studies, these patterns point to an urgent need for more consistent and comprehensive accessibility solutions and awareness of environmental demands early in stages of planning, design and construction to ensure seamless transitions and support for people with stroke throughout their rehabilitation trajectory.

#### *The home as a resource and constraint*

The findings demonstrate that adapting to post-stroke living environments is demanding and challenging. While the home is a familiar space, it might also present new and demanding challenges that necessitate adjustments. This dual nature of the home accentuates the crucial need for environmental modifications that address not only physical rehabilitation but also the psychological and emotional needs. Achieving the right balance between comfort and functionality in home design appears critical for effective rehabilitation, as emphasized by research Elf et al. (2023), Meijering et al. (2016), and Lou et al. (2017). However, the person undergoing rehabilitation should remain central to these decisions about environmental adaptations. Their preferences and needs are central to guide the rehabilitation planning and adaptations to the home. If there are disagreements between the healthcare provider and the person, sensitivity and dialogue are essential to the process. This person-centred approach is fundamental to successful rehabilitation in the home. Several studies describe how the home environment, often perceived as a haven for recovery, can inadvertently become a place of restriction. In contrast to hospital environments, where structured support and supervision typically encourage a certain level of risk-taking in rehabilitation efforts, home environments typically lack constant health professional oversight and may not have adequate adaptations in place. This can give rise to safety concerns that limit the continuation of rehabilitation activities and can lead to feeling powerless (Dolan, 2021; Malinowsky et al., 2020). Furthermore, skills practised in hospital, such as stair use, do not always translate smoothly to the home environment, which can lead to significant setbacks in rehabilitation progress (Nanninga et al., 2015; 2018). In hospital settings, trained medical staff guide the rehabilitation process, balancing safety with necessary risks. While at home, family members frequently assume an informal caregiver role yet lack medical training yet assume the role of rehabilitation support. They may prioritize safety excessively, leading to a protective environment that can inadvertently slow progress and increase dependence. Furthermore, this may alter family dynamics and affect everyone's emotional and psychological well-being. At the same time, health professionals working with rehabilitation at home report that they can apply a person-centred approach and involve the patient in rehabilitation planning better at home than in a hospital environment (Elf et al., 2023).

#### *Social networks, meaningful activities, and participation*

The studies synthesised under Theme 3 highlight the ambivalent role of social networks in rehabilitation. While a social network is often required for successful rehabilitation, overprotective networks may inadvertently limit rehabilitation progress when they fear failing or challenges navigating public spaces. Providing structured support, knowledge, and skill development to families and care partners may help to strike a more constructive balance and facilitate post-stroke reengagement. Plus, some adaptations that appear helpful in the short-

term, such as frequent use of a mobility scooter at home, may contribute to reducing physical activity and subsequent physical deterioration (Nanninga et al., 2018). Similarly, activities such as using stairs, often encouraged in clinical settings (van Dongen et al., 2021), are often not feasible at home due to unsuitable adaptations and environmental constraints related to safety. These discrepancies underscore the need for home environments that promote safety while also facilitating the continuation of rehabilitative activities. Maintaining autonomy in rehabilitation decisions is another recurring theme. Physical modifications are likely more successful when made in collaboration with the person and family members to maintain autonomy over their rehabilitation decisions. Such shared decision-making can bridge the gap between hospital and home care, providing a consistent and supportive rehabilitation process for a person with a stroke. Theme 3 also highlights the importance of participating in meaningful and everyday activities for persons with stroke, as these activities bring joy, fulfilment, and a sense of normalcy to their lives. Both home and public environments can either support or impede participation in these life-enriching activities. However, the design of housing and urban environments often fails to accommodate such needs. Poor transportation, heavy traffic, and complex urban layouts can limit accessibility and participation, illustrating how individual experiences intersect with broader macrosystem conditions. This observation highlights a critical intersection between the individual's experiences and the broader environmental contexts, or macrosystem, in which they live. The inability to engage in such activities can have far-reaching consequences, impacting physical but also cognitive and social rehabilitation outcomes. Constraints on participation in meaningful activities may have wide-ranging implications for physical, cognitive, and social rehabilitation. Strategic municipal planning and policy, such as timely support for adaptations and inclusive design standards for public spaces have the potential improve equitable access to the opportunities and resources necessary to engage in meaningful activities. Therefore, we can support the continuation of rehabilitation outside the hospital and enhance quality of life and overall well-being, promoting recovery and integration into society. In addition, our findings illustrate how application processes for home modifications can be challenging, is essential to improve future policy recommendations.

#### *Social and economic inequalities*

In addition to physical barriers, social and economic disparities, such as those related to income, race, ethnicity, or social demographics, can prevent people with stroke from reconnecting with their community and participating in activities outside their homes. The evidence in this scoping review is weighted towards high-income countries, but even within this context, socio-economic status will vary and the reviewed studies point to the importance of considering environmental factors together with socio-economic status in post-stroke rehabilitation planning. Effective rehabilitation plans should ensure that resources are accessible and of good quality. Financial constraints can limit the feasibility of home modifications and may also affect eligibility for services and subsidies, thereby increasing their financial burden. Within the scope of this scoping review, the evidence suggests that rehabilitation interventions should be person-centred and address community participation restrictions. Tailoring rehabilitation plans to the unique needs and circumstances of people with stroke, rehabilitation programs can support their transition to community living and improve their overall quality of life.

#### *Comparisons with other populations and implications for inclusive design*

This review is comparable to a previous review (Sturge et al., 2021) which focused on how people who live at home with dementia experience the social and built environment outside the home. In both populations, supportive social networks appear important for well-being. At the same time, public space features such as streets, traffic, and noise can cause barriers to participating in public space activities. Although people with dementia and those who experienced stroke are different populations – in terms of age and progressive symptoms – many of the

environmental challenges related to disabilities and public space infrastructure are similar. This observation is consistent with wider research on the role of the built environment and health for populations such as older adults and the limitations people experience due to environmental design. Therefore, rather than focusing narrowly on age- or dementia friendly environment, an inclusive, more comprehensive planning approaches are required to make public space and technologies more accessible for diverse populations, including people with stroke (Magnusson et al., 2018).

#### Strengths and Limitations

This scoping review synthesised peer-reviewed literature written in English and includes studies from several nations, including countries in Europe, Asia, and Africa, these findings are not exhaustive or generalizable to all contexts. Nonetheless, the findings are neither exhaustive nor generalisable to all contexts. The design, organization and accessibility of home and public environments across different countries drastically differ in terms of urban design, and policy frameworks which can significantly alter the relevance or applicability of our mapped findings. Also noteworthy, most stroke guidelines are developed in high-income settings, which may limit their applicability difficult for low-income and middle-income countries, particularly with respect to environmental adaptation and environmental modification practices (Bernhardt et al., 2020). Future research should explore this observation and underscore the need for more contextually diverse research in this area.

Also, as per the inclusion criteria, we excluded several conference papers describing the role of technology in stroke rehabilitation at home or a clinical setting. Most of these papers were excluded because they report only on the testing phase of technological products and focus less on the environment. However, in the near future, the role of technologies in stroke rehabilitation at home is likely be further developed considerable. For instance, if this review were replicated in ten years, we will likely see the effects of new medical and technological developments (e.g., advanced home monitoring, human–building interaction technologies, autonomous vehicles) that will change the built and social environments. As health care increasingly moves into the home and becomes more technology-mediated, macrosystem-level infrastructure and policy will be required to ensure equitable and reliable access, including contingency planning for internet outages or power failures. Finally, this review only included studies that exclusively included persons with stroke, up until November 2024. Future reviews or meta-analyses may draw on mixed populations studies (e.g., inclusive of people with stroke and other conditions) and thus extend and build upon this scoping study.

## 5. Conclusion

Features within the built, natural, and social environment play a critical role in rehabilitation after stroke. Stroke recovery occurs in and beyond the home and includes social engagement. To ensure people with stroke can engage in life post-stroke, understanding the transition points between the home and society provides valuable insights into what is required to allow people with stroke to recover successfully. Our theoretical contribution can inform evidence-based stroke rehabilitation guidelines for home and community settings. This approach enriches the theoretical landscape and provides practical guidelines for improving personal outcomes through a more nuanced understanding of the interplay between individual needs and environmental influences. The interdependencies between the macro- and microsystem are apparent in our findings, highlighting inequities in individuals' rehabilitation opportunities. For example, features in the home (e.g., ramps, internet availability) often depend on the policy setting, which may vary between countries and between metro and rural regions. Transitioning from the home environment to public space usually requires more than a modified environment (i.e., ramps). Still, a more supportive, structural policy understanding of the complex reliability, availability, and

accessibility of other features such as a social network, public transportation, and finances is required to support successful stroke rehabilitation in the future.

## Funding

This work was funded by the B-Sure project (Formas 2021-01455) and the InHome project Formas (Formas 2022-00584). Formas is the Swedish government research council for sustainable development.

## CRedit authorship contribution statement

**Jodi Sturge:** Writing – review & editing, Writing – original draft, Software, Methodology, Investigation, Formal analysis, Conceptualization. **Ruby Lipson-Smith:** Writing – review & editing, Visualization, Supervision, Methodology, Formal analysis, Data curation, Conceptualization. **Maya Kylén:** Writing – review & editing, Investigation, Formal analysis, Conceptualization. **Laila Vries:** Writing – review & editing, Methodology, Formal analysis, Data curation. **Hélène Pessah-Rasmussen:** Writing – review & editing, Investigation, Conceptualization. **Steven M. Schmidt:** Writing – review & editing, Methodology, Data curation. **Tony Svensson:** Writing – review & editing, Methodology, Data curation. **Marie Elf:** Writing – review & editing, Supervision, Project administration, Funding acquisition, Conceptualization.

## Declaration of competing interest

Non Declared

## Acknowledgements

The authors would like to thank Alena Lindfors, an information specialist from Dalarna University, for support developing the search strategy. Additionally, the authors acknowledge Maria Gidhagen for their support with the initial screening.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.wss.2026.100370](https://doi.org/10.1016/j.wss.2026.100370).

## References

- Anåker, A., von Koch, L., Sjöstrand, C., Bernhardt, J., Elf, M., 2017. A comparative study of patients' activities and interactions in a stroke unit before and after reconstruction—The significance of the built environment. *PLoS One* 12 (7), e0177477.
- Anåker, A., von Koch, L., Heylighen, A., Elf, M., 2019. "It's lonely": Patients' experiences of the physical environment at a newly built stroke unit. *HERD: Health Environments Research & Design Journal* 12 (3), 141–152.
- Anåker, A., Von Koch, L., Eriksson, G., Sjöstrand, C., Elf, M., 2022. The physical environment and multi-professional teamwork in three newly built stroke units. *Disability and Rehabilitation* 44 (7), 1098–1106.
- Appireddy, R., Khan, S., Leaver, C., Martin, C., Jin, A., Durafourt, B.A., Archer, S.L., 2019. Home virtual visits for outpatient follow-up stroke care: Cross-sectional study. *Journal of Medical Internet Research* 21 (10), e13734. <https://doi.org/10.2196/13734>.
- Arksey, H., O'malley, L., 2005. Scoping studies: towards a methodological framework. *International journal of social research methodology* 8 (1), 19–32. <https://doi.org/10.1080/1364557032000119616>.
- Atler, K., 2016. The experiences of everyday activities post-stroke. *Disability and Rehabilitation* 38 (8), 781–788. <https://doi.org/10.3109/09638288.2015.1061603>.
- Bernhardt, J., Hayward, K.S., Kwakkel, G., Ward, N.S., Wolf, S.L., Borschmann, K., Cramer, S.C., 2017. Agreed definitions and a shared vision for new standards in stroke recovery research: the stroke recovery and rehabilitation roundtable taskforce. *International journal of stroke* 12 (5), 444–450.
- Bernhardt, J., Urimumbenhi, G., Gandhi, D., Eng, J.J., 2020. Stroke rehabilitation in low-income and middle-income countries: a call for action. *The Lancet* 396 (10260), 1452–1462.
- Bernhardt, J., Lipson-Smith, R., Davis, A., White, M., Zeeman, H., Pitt, N., Elf, M., 2022. Why hospital design matters: A narrative review of built environments research relevant to stroke care. *International Journal of Stroke* 17 (4), 370–377.

- Blonkski, D.C., Covert, M., Gauthier, R., Monas, A., Murray, D., O'Brien, K.K., Mendelson, A.D., Huijbregts, M., 2014. Barriers to and facilitators of access and participation in community-based exercise programmes from the perspective of adults with post-stroke aphasia. *Physiotherapy Canada* 66 (4), 367–375. <https://doi.org/10.3138/ptc.2013-70>.
- Böttger, T., Dennyhardt, S., Knappe, J., Marotzki, U., 2022. Back into Life—With a Power Wheelchair: Learning from People with Severe Stroke through a Participatory Photovoice Study in a Metropolitan Area in Germany. *International Journal of Environmental Research and Public Health* 19 (17), 10465. <https://doi.org/10.3390/ijerph191710465>.
- Bramer, W.M., Giustini, D., de Jonge, G.B., Holland, L., Bekhuis, T., 2016. De-duplication of database search results for systematic reviews in EndNote. *Journal of the Medical Library Association: JMLA* 104 (3), 240. <https://doi.org/10.3163/1536-5050.104.3.014>.
- Bright, L., Baum, C.M., Roberts, P., 2024. Person and Environment Factors Supporting Self-Care Performance and Social Participation After Mild Stroke. *OTJR: Occupational Therapy Journal of Research*, 15394492241246546.
- Bronfenbrenner, U., 1979. *The ecology of human development: Experiments by nature and design*. Harvard university press.
- Cawood, J., Visagie, S., 2015. Environmental factors influencing participation of stroke survivors in a Western Cape setting. *African Journal of Disability* 4 (1), 1–9. <https://doi.org/10.4102/ajod.v4i1.198>.
- Chavda, K., Prakash, V., 2024. Transport use limitations and its association with social participation among patients with stroke living in rural India. *Disability and Rehabilitation* 46 (17), 3980–3984.
- Chen, Yu, Chen, Yunan, Zheng, K., Dodakian, L., See, J., Zhou, R., Chiu, N., Augsburger, R., McKenzie, A., Cramer, S.C., 2020. A qualitative study on user acceptance of a home-based stroke tele-rehabilitation system. In: *Topics in Stroke Rehabilitation*, 27, pp. 81–92. <https://doi.org/10.1080/10749357.2019.1683792>.
- Chimatiro, G., Rhoda, A., 2014. Environmental barriers to reintegration experienced by stroke clients post discharge from a rehabilitation centre in Malawi. *South African Journal of Physiotherapy* 70 (1), 18–23. <https://doi.org/10.4102/sajp.v70i1.260>.
- De Witt, P.A., Lindner, C., Maseko, L., Franzsen, D., 2024. Environmental facilitators and barriers to community reintegration experienced by stroke survivors in an under-resourced urban metropolitan sub-district. *South African Journal of Occupational Therapy* 54 (2), 36–45.
- Déborá Pacheco, B., Guimarães Caetano, L.C., Amorim Samora, G., Sant'Ana, R., Fuscaldi Teixeira-Salmela, L., Scianni, A.A., 2021. Perceived barriers to exercise reported by individuals with stroke, who are able to walk in the community. *Disability and Rehabilitation* 43 (3), 331–337. <https://doi.org/10.1080/09638288.2019.1624396>.
- Delhey, L.M., Shi, X., Morgenstern, L.B., Brown, D.L., Smith, M.A., Case, E.C., Lisabeth, L.D., 2023. Association of Neighborhood Recreation Centers and Poststroke Outcomes in a Population-Based Cohort. *Stroke*.
- Della Vecchia, C., Viprey, M., Haesebaert, J., Termoz, A., Giroudon, C., Dima, A., Schott, A.M., 2021. Contextual determinants of participation after stroke: a systematic review of quantitative and qualitative studies. *Disability and Rehabilitation* 43 (13), 1786–1798. <https://doi.org/10.1080/09638288.2019.1679897>.
- Della Vecchia, C., Préau, M., Haesebaert, J., Viprey, M., Rode, G., Termoz, A., Schott, A.M., 2023. Factors associated with post-stroke social participation: a quantitative study based on the ICF framework. *Annals of Physical and Rehabilitation Medicine* 66 (3), 101686. <https://doi.org/10.1016/j.rehab.2022.101686>.
- Dewilde, S., Annemans, L., Peeters, A., Hemelsoet, D., Vandermeeren, Y., Desfontaines, P., Thijs, V., 2020. The relationship between Home-time, quality of life and costs after ischemic stroke: the impact of the need for mobility aids, home and car modifications on Home-time. *Disability and Rehabilitation* 42 (3), 419–425. <https://doi.org/10.1080/09638288.2018.1501438>.
- Dolan, H.R., 2021. *The Lived Experience of Being at Risk for Falling in the Hospital among Older Adults* (Doctoral dissertation). The University of Arizona.
- Dos Santos, H.M., Pereira, G.S., Brandão, T.C.P., Ramon, F.M.V., Bazán, J.A.P., Bissoli, M.E.F., Silva, S.M., 2022. Impact of Environmental Factors on Post-Stroke Disability: An Analytical Cross-Sectional Study. *Journal of Stroke and Cerebrovascular Diseases* 31 (4), 106305. <https://doi.org/10.1016/j.jstrokecerebrovasdis.2022.106305>.
- Elf, M., Rasoal, D., Zingmark, M., Kylén, M., 2023. The importance of context—a qualitative study exploring healthcare practitioners' experiences of working with patients at home after a stroke. *BMC health services research* 23 (1), 733.
- Elf, M., Norin, L., Meijering, L., Pessah-Rasmussen, H., Subonen, R., Zingmark, M., Kylén, M., 2024. Rehabilitation at home with the development of a sustainable model placing the person's needs and environment at heart: protocol for a multimethod project. *JMIR research protocols* 13 (1), e56996.
- Elf, M., de Vries, L., Smith, F., Pessah-Rasmussen, H., Ytterberg, C., Kylén, M., 2025. Stakeholder perspectives on needs and priorities in home-based stroke rehabilitation: a concept mapping study. *Wellbeing, Space and Society*, 100335.
- Ezekiel, L., Collett, J., Mayo, N.E., Pang, L., Field, L., Dawes, H., 2019. Factors associated with participation in life situations for adults with stroke: a systematic review. *Archives of Physical Medicine and Rehabilitation* 100 (5), 945–955. <https://doi.org/10.1016/j.apmr.2018.06.017>.
- Fan, J., Li, X., Yu, X., Liu, Z., Jiang, Y., Fang, Y., Xiong, L., 2023. Global burden, risk factor analysis, and prediction study of ischemic stroke, 1990–2030. *Neurology* 101 (2), e137–e150. <https://doi.org/10.1212/WNL.000000000000207387>.
- Feigin, V.L., Owolabi, M.O., Abd-Allah, F., Akinyemi, R.O., Bhattacherjee, N.V., Brainin, M., Liebelskind, D.S., 2023. Pragmatic solutions to reduce the global burden of stroke: a World Stroke Organization–Lancet Neurology Commission. *The Lancet Neurology* 22 (12), 1160–1206. [https://doi.org/10.1016/S1474-4422\(23\)00277-6](https://doi.org/10.1016/S1474-4422(23)00277-6).
- Fors, U., Kamwesiga, J.T., Eriksson, G.M., Von Koch, L., Guidetti, S., 2019. User evaluation of a novel SMS-based reminder system for supporting post-stroke rehabilitation. *BMC Medical Informatics and Decision Making* 19 (1), 11. <https://doi.org/10.1186/s12911-019-0847-3>.
- Gingrich, N., Bosancich, J., Schmidt, J., Sakakibara, B.M., 2023. Capability, opportunity, motivation, and social participation after stroke. *Topics in Stroke Rehabilitation* 30 (5), 423–435. <https://doi.org/10.1080/10749357.2022.2070358>.
- Greenhalgh, O., McMahon, N.E., Gaskins, N., Khan, A., Frings, M., Janssen, J., Watkins, C., 2019. An exploration of stroke survivors' perspectives on cycling and the use of electric bikes. *Physiotherapy Practice and Research* 40 (2), 117–126. <https://doi.org/10.3233/PPR-190133>.
- Harrison, J., Thetford, C., Reeves, M.J., Brown, C., Joshi, M., Watkins, C., 2022. Returning to Leisure Activity Post-Stroke: Barriers and Facilitators to Engagement. *International Journal of Environmental Research and Public Health* 19 (21), 14587. <https://doi.org/10.3390/ijerph192114587>.
- Hassler, U., Kohler, N., 2014. Resilience in the built environment. *Building Research & Information* 42 (2), 119–129. <https://doi.org/10.1080/09613218.2014.873593>.
- Hayward, E., Ibe, C., Young, J.H., Potti, K., Jones, P., Pollack, C.E., Gudzone, K.A., 2015. Linking social and built environmental factors to the health of public housing residents: a focus group study. *BMC Public Health* 15, 1–8. <https://doi.org/10.1186/s12889-015-1710-9>.
- Hodson, T., Aplin, T., Gustafsson, L., 2016. Understanding the dimensions of home for people returning home post stroke rehabilitation. *British Journal of Occupational Therapy* 79 (7), 427–433. <https://doi.org/10.1177/0308022615619420>.
- Hupe, M., 2019. EndNote X9. *Journal of Electronic Resources in Medical Libraries* 16 (3–4), 117–119. <https://doi.org/10.1080/15424065.2019.1691963>.
- Janssen, H., Ada, L., Bernhardt, J., McElduff, P., Pollack, M., Nilsson, M., Spratt, N., 2014. Physical, cognitive and social activity levels of stroke patients undergoing rehabilitation within a mixed rehabilitation unit. *Clinical rehabilitation* 28 (1), 91–101.
- Kanai, M., Izawa, K.P., Kubo, H., Nozoe, M., Mase, K., Koohsari, M.J., Shimada, S., 2019. Association of perceived built environment attributes with objectively measured physical activity in community-dwelling ambulatory patients with stroke. *International Journal of Environmental Research and Public Health* 16 (20), 3908. <https://doi.org/10.3390/ijerph16203908>.
- Kevdžija, M., Bozovic-Stamenovic, R., Marquardt, G., 2022. Stroke Patients' Free-Time Activities and Spatial Preferences During Inpatient Recovery in Rehabilitation Centers. *HERD: Health Environments Research & Design Journal* 15 (4), 96–113.
- Kwah, L.K., Doshi, K., De Silva, D.A., Ng, W.M., Thilarajah, S., 2024. What influences stroke survivors with physical disabilities to be physically active? A qualitative study informed by the Theoretical Domains Framework. *Plos one* 19 (3), e0292442.
- Kwakkel, G., Stinear, C., Essers, B., Munoz-Novoa, M., Branscheidt, M., Cabanas-Valdés, G., Verheyden, G., 2023. Motor rehabilitation after stroke: European Stroke Organisation (ESO) consensus-based definition and guiding framework. *European Stroke Journal* 8 (4), 880–894. <https://doi.org/10.1177/23969873231191304>.
- Kylén, M., Sturge, J., Lipson-Smith, R., Schmidt, S.M., Pessah-Rasmussen, H., Svensson, T., Elf, M., 2023. Built environments to support rehabilitation for people with stroke from the hospital to the home (B-Sure): Protocol for a mixed method participatory co-design study. *JMIR research protocols* 12 (1), e52489.
- Kylen, M., von Koch, L., Wottrich, A.W., Elf, M., 2022. Living with the aftermaths of a stroke in the era of the COVID-19 pandemic: the significance of home and close surroundings. *Health and Place* 76, 102852.
- Le Dorze, G., Salois-Bellerose, É., Alepins, M., Croteau, C., Hallé, M.C., 2014. A description of the personal and environmental determinants of participation several years post-stroke according to the views of people who have aphasia. *Aphasiology* 28 (4), 421–439. <https://doi.org/10.1080/02687038.2013.869305>.
- Lee, J. L., Kim, Y., Huh, S., Shin, Y. I., & Ko, S. H. (2024, March). Status and barriers of physical activity and exercise in community-dwelling stroke patients in South Korea: a survey-based study. In *Healthcare* (Vol. 12, No. 6, p. 697). MDPI.
- Legg, L., Stevens, E., McKevitt, C. (Ed.), & Wolfe, C. (2023). *The unmet needs of stroke survivors in Europe: a scoping review of the literature on life after stroke: A life saved is a life worth living*. Stroke Alliance for Europe. [https://www.safestroke.eu/wp-content/uploads/2023/03/A-life-saved-is-a-life-worth-living-unmet-needs-of-stroke-survivors-in-Europe\\_lay-version\\_final.pdf](https://www.safestroke.eu/wp-content/uploads/2023/03/A-life-saved-is-a-life-worth-living-unmet-needs-of-stroke-survivors-in-Europe_lay-version_final.pdf).
- Levac, D., Colquhoun, H., O'Brien, K.K., 2010. Scoping studies: advancing the methodology. *Implementation Science* 5, 1–9. <https://doi.org/10.1186/1748-5908-5-69>.
- Lipson-Smith, R., Pflaumer, L., Elf, M., Blaschke, S.M., Davis, A., White, M., Bernhardt, J., 2021. Built environments for inpatient stroke rehabilitation services and care: a systematic literature review. *BMJ open* 11 (8), e050247.
- Lipson-Smith, R., Zeeman, H., Muns, L., Jeddí, F., Simondson, J., Bernhardt, J., 2023. The role of the physical environment in stroke recovery: Evidence-based design principles from a mixed-methods multiple case study. *PLoS One* 18 (6), e0280690.
- Lo, S.H.S., Chau, J.P.C., Lam, S.K.Y., Saran, R., 2023. Understanding the priorities in life beyond the first year after stroke: Qualitative findings and non-participant observations of stroke survivors and service providers. *Neuropsychological Rehabilitation* 33 (5), 794–820. <https://doi.org/10.1080/09602011.2022.2049827>.
- Lou, S., Carstensen, K., Møldrup, M., Shahla, S., Zakharia, E., Nielsen, C.P., 2017. Early supported discharge following mild stroke: a qualitative study of patients' and their partners' experiences of rehabilitation at home. *Scandinavian Journal of Caring Sciences* 31 (2), 302–311. <https://doi.org/10.1111/scs.12347>.
- Magnusson, C., Anastassova, M., Paneels, S., Rasmus-Gröhn, K., Rydeman, B., Randall, G., Hedvall, P.O., 2018. Stroke and universal design. *Transforming our World Through Design, Diversity and Education*. IOS Press, pp. 854–861. <https://doi.org/10.3233/978-1-61499-923-2-854>.

- Malinowsky, C., Olofsson, A., Nyman, A., Lund, M.L., 2020. Patterns of participation: Facilitating and hindering aspects related to places for activities outside the home after stroke. *Scandinavian Journal of Occupational Therapy* 27 (3), 204–212. <https://doi.org/10.1080/11038128.2019.1668958>.
- Marcheschi, E., Von Koch, L., Pessah-Rasmussen, H., Elf, M., 2018. Home setting after stroke, facilitators and barriers: A systematic literature review. *Health & social care in the community* 26 (4), e451–e459.
- McCormack, B., McCance, T.V., 2006. Development of a framework for person-centred nursing. *Journal of Advanced Nursing* 56 (5), 472–479. <https://doi.org/10.1111/j.1365-2648.2006.04042.x>.
- McGowan, J., Sampson, M., Salzwedel, D.M., Cogo, E., Foerster, V., Lefebvre, C., 2016. PRESS peer review of electronic search strategies: 2015 guideline statement. *Journal of Clinical Epidemiology* 75, 40–46. <https://doi.org/10.1016/j.jclinepi.2016.01.021>.
- Meijering, L., Nanninga, C.S., Lettinga, A.T., 2016. Home-making after stroke. A qualitative study among Dutch stroke survivors. *Health Place* 37, 35–42. <https://doi.org/10.1016/j.healthplace.2015.11.006>.
- Miller, K.K., Lin, S.H., Neville, M., 2019. From hospital to home to participation: a position paper on transition planning poststroke. *Archives of Physical Medicine and Rehabilitation* 100 (6), 1162–1175. <https://doi.org/10.1016/j.apmr.2018.10.017>.
- Mohd Nordin, N.A., Aziz, N.A.A., Abdul Aziz, A.F., Ajit Singh, D.K., Omar Othman, N.A., Sulong, S., Aljunid, S.M., 2014. Exploring views on long term rehabilitation for people with stroke in a developing country: Findings from focus group discussions. *BMC Health Services Research* 14, 1–10. <https://doi.org/10.1186/1472-6963-14-118>.
- Nanninga, C.S., Meijering, L., Schönherr, M.C., Postema, K., Lettinga, A.T., 2015. Place attachment in stroke rehabilitation: A transdisciplinary encounter between cultural geography, environmental psychology and rehabilitation medicine. *Disability and Rehabilitation* 37 (13), 1125–1134. <https://doi.org/10.3109/09638288.2014.955136>.
- Nanninga, C.S., Meijering, L., Postema, K., Schönherr, M.C., Lettinga, A.T., 2018. Unpacking community mobility: a preliminary study into the embodied experiences of stroke survivors. *Disability and Rehabilitation* 40 (17), 2015–2024. <https://doi.org/10.1080/09638288.2017.1323031>.
- Narbutaitienė, J., Björklund Carlstedt, A., Fischl, C., 2024. Stroke survivors' experiences and meaning of digital technology in daily life: a phenomenological study. *Disability and Rehabilitation: Assistive Technology* 19 (4), 1334–1342.
- Nergårdh, A., Andersson, L., Eriksson, J., Lundberg, M., Nordström, K., Lindevall, M., 2018. Stockholm, Sweden: Socialdepartementet. God och nära vård—En primärvårdsreform. <https://www.riksdagen.se/sv/dokument-och-lagar/dokument/statens-offentliga-utredningar/god-och-nara-vard—en-primarvardsreform/H6B339/html/>.
- Nicholson, S.L., Donaghy, M., Johnston, M., Sniehotta, F.F., Van Wijck, F., Johnston, D., Mead, G., 2014. A qualitative theory guided analysis of stroke survivors' perceived barriers and facilitators to physical activity. *Disability and Rehabilitation* 36 (22), 1857–1868. <https://doi.org/10.3109/09638288.2013.874506>.
- Nordin, S., Swall, A., Anåker, A., von Koch, L., Elf, M., 2021. Does the physical environment matter?—A qualitative study of healthcare professionals' experiences of newly built stroke units. *International journal of qualitative studies on health and well-being* 16 (1), 1917880.
- Norlander, A., Iwarsson, S., Jönsson, A.C., Lindgren, A., Månsson Lexell, E., 2018. Living and ageing with stroke: an exploration of conditions influencing participation in social and leisure activities over 15 years. *Brain Injury* 32 (7), 858–866. <https://doi.org/10.1080/02699052.2018.1463561>.
- Norlander, A., Iwarsson, S., Jönsson, A.C., Lindgren, A., Månsson Lexell, E., 2022. Participation in social and leisure activities while re-constructing the self: understanding strategies used by stroke survivors from a long-term perspective. *Disability and Rehabilitation* 44 (16), 4284–4292. <https://doi.org/10.1080/09638288.2021.1900418>.
- Norrving, B., Barrick, J., Davalos, A., Dichgans, M., Cordonnier, C., Guekht, A., Caso, V., 2018. Action plan for stroke in Europe 2018–2030. *European Stroke Journal* 3 (4), 309–336. <https://doi.org/10.1177/2396987318808719>.
- Obembe, A.O., Eng, J.J., 2016. Rehabilitation interventions for improving social participation after stroke: a systematic review and meta-analysis. *Neurorehabilitation and Neural Repair* 30 (4), 384–392. <https://doi.org/10.1177/1545968315597072>.
- Peters, M.D.J., Godfrey, C.M., Khalil, H., McInerney, P., Parker, D., Soares, C.B., 2015. Guidance for conducting systematic scoping reviews. *International Journal of Evidence-Based Healthcare* 13 (3), 141–146. <https://doi.org/10.1097/xeb.0000000000000050>.
- Peters, M.D., Marnie, C., Tricco, A.C., Pollock, D., Munn, Z., Alexander, L., Khalil, H., 2020. Updated methodological guidance for the conduct of scoping reviews. *JBI evidence synthesis* 18 (10), 2119–2126. <https://doi.org/10.11124/JBIES-20-00167>.
- Peters, S., Sukumar, K., Blanchard, S., Ramasamy, A., Malinowski, J., Ginex, P., Gagliardi, A., 2022. Trends in guideline implementation: an updated scoping review. *Implementation Science* 17 (1), 50. <https://doi.org/10.1186/s13012-022-01223-6>.
- Platz, T., 2019. Evidence-based guidelines and clinical pathways in stroke rehabilitation—an international perspective. *Frontiers in Neurology* 10, 438703. <https://doi.org/10.3389/fneur.2019.00200>.
- Rennick-Egglestone, S., Mawson, S., 2021. Homes of stroke survivors are a challenging environment for rehabilitation technologies. *JMIR Rehabilitation and Assistive Technologies* 8 (2), e12029. <https://doi.org/10.2196/12029>.
- Reunanen, M.A.T., Järvikoski, A., Talvitie, U., Pyöriä, O., Härkäpää, K., 2016. Individualised home-based rehabilitation after stroke in eastern Finland - the client's perspective. *Health & Social Care in the Community* 24 (1), 77–85. <https://doi.org/10.1111/hsc.12190>.
- Rosbergen, I.C., Tonello, I., Clark, R.A., Grimley, R.S., 2022. Does hospital design impact on patient activity levels and time spent alone? *Disability and Rehabilitation* 44 (13), 3173–3180. <https://doi.org/10.1080/09638288.2020.1861117>.
- Saywell, N.L., Mudge, S., Kayes, N.M., Stavric, V., Taylor, D., 2023. A six-month telerehabilitation programme delivered via readily accessible technology is acceptable to people following stroke: A qualitative study. *Physiotherapy* 120, 1–9.
- Shannon, M.M., Lipson-Smith, R., Elf, M., Olver, J., Kramer, S., Bernhardt, J., 2020. Bringing the single versus multi-patient room debate to vulnerable patient populations: a systematic review of the impact of room types on hospitalized older people and people with neurological disorders. *Intelligent Buildings International* 12 (3), 180–198.
- Shirozhan, S., Arsalani, N., Maddah, S.S.B., Mohammadi-Shahboulaghi, F., 2022. Barriers and facilitators of rehabilitation nursing care for patients with disability in the rehabilitation hospital: A qualitative study. *Frontiers in Public Health* 10, 931287. <https://doi.org/10.3389/fpubh.2022.931287>.
- Slaug, B., Granbom, M., Iwarsson, S., 2020. An aging population and an aging housing stock—housing accessibility problems in typical Swedish dwellings. *Journal of Aging and Environment* 34 (2), 156–174. <https://doi.org/10.1080/26892618.2020.1743515>.
- Sturge, J., Nordin, S., Patil, D.S., Jones, A., Légaré, F., Elf, M., Meijering, L., 2021. Features of the social and built environment that contribute to the well-being of people with dementia who live at home: A scoping review. *Health & place* 67, 102483.
- Timothy, E.K., Graham, F.P., Levack, W.M.M., 2016. Transitions in the embodied experience after stroke: Grounded theory study. *Physical Therapy* 96 (10), 1565–1575. <https://doi.org/10.2522/ptj.20150419>.
- Törnblom, K., Lundälv, J., Palstam, A., Sunnerhagen, K.S., 2019. My life after stroke through a camera lens<sup>2</sup>—A photovoice study on participation in Sweden. *PLoS ONE* 14 (9), e0222099. <https://doi.org/10.1371/journal.pone.0222099>.
- Tricco, A.C., Lillie, E., Zarin, W., O'Brien, K.K., Colquhoun, H., Levack, D., Straus, S.E., 2018. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Annals of Internal Medicine* 169 (7), 467–473. <https://doi.org/10.7326/M18-0850>.
- Tse, T., Lentini, P., Douglas, J., Carey, L.M., 2022. Understanding activity participation 3-months after stroke: a mixed methodology study. *Disability and Rehabilitation* 44 (12), 2868–2878. <https://doi.org/10.1080/09638288.2020.1849429>.
- Twardzik, E., Clarke, P.J., Lisabeth, L.D., Brown, S.H., Roth, D.L., Judd, S.E., Colabianchi, N., 2023. Enhanced street crossing features are associated with higher post-stroke physical quality of life. *Topics in Stroke Rehabilitation* 30 (6), 578–588. <https://doi.org/10.1080/10749357.2022.2108970>.
- van Dongen, L., Hafsteinsdóttir, T.B., Parker, E., Bjartmarz, I., Hjaltadóttir, I., Jónsdóttir, H., 2021. Stroke survivors' experiences with rebuilding life in the community and exercising at home: A qualitative study. *Nursing Open* 8 (5), 2567–2577. <https://doi.org/10.1002/nop.2788>.
- Visagie, W.B., Visagie, S.J., Fredericks, J.P., 2023. Community mobility: Psychosocial experiences of stroke survivors who use wheelchairs in Worcester, South Africa. *South African Journal of Occupational Therapy* 53 (1), 81–91.
- Wheeler, B.W., Lovell, R., Higgins, S.L., White, M.P., Alcock, I., Osborne, N.J., Depledge, M.H., 2015. Beyond greenspace: an ecological study of population general health and indicators of natural environment type and quality. *International Journal of Health Geographics* 14, 1–17. <https://doi.org/10.1186/s12942-015-0009-5>.
- White, J.H., Janssen, H., Jordan, L., Pollack, M., 2015. Tablet technology during stroke recovery: A survivor's perspective. *Disability and Rehabilitation* 37 (13), 1186–1192. <https://doi.org/10.3109/09638288.2014.958620>.
- World Health Organization (2011). *World Report on Disability 2011*. <https://www.who.int/teams/noncommunicable-diseases/sensory-functions-disability-and-rehabilitation/world-report-on-disability>.
- World Health Organization (2022). *Health systems resilience toolkit: a WHO global public health good to support building and strengthening of sustainable health systems resilience in countries with various contexts*. <https://www.who.int/publications/i/item/9789240048751>.
- Zhang, L., Yan, T., You, L., Li, K., Gao, Y., 2016. Social Isolation and Physical Barriers in the Houses of Stroke Survivors in Rural China. *Archives of Physical Medicine and Rehabilitation* 97 (12), 2054–2060. <https://doi.org/10.1016/j.apmr.2016.07.007>.
- Zhang, L., Yan, T., You, L., Gao, Y., Li, K., Zhang, C., 2018. Functional activities and social participation after stroke in rural China: a qualitative study of barriers and facilitators. *Clinical Rehabilitation* 32 (2), 273–283. <https://doi.org/10.1177/0269215517719486>.