Clinical Interventions in Aging

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REVIEW

Barriers and Facilitators to Older Adults Participating in Fall-Prevention Strategies After Transitioning Home from Acute Hospitalization: A Scoping Review

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Purpose: Approximately, 14% of older adults aged 65 years and over experience a fall within 1 month post-hospital discharge. Adequate self-management may minimize the impact of these falls; however, research is lacking on why some older adults engage in self-management to prevent falls while others do not.

Methods: We conducted a scoping review to identify barriers and facilitators to older adults participating in fall-prevention strategies after transitioning home from acute hospitalization. Eligibility criteria were peer-reviewed journal articles published during 2009–2019 which were written in English and contained any of the following keywords or their synonyms: "fall-prevention," "older adults," "post-discharge" and "transition care." We systematically and selectively summarized the findings of these articles using the Joanna Briggs Institute guidelines and the PRISMA-ScR reporting guidelines. Seven bibliographic databases were searched: PubMed/MEDLINE, ERIC, CINAHL, Cochrane Library, Scopus, PsycINFO, and Web of Science. We used the Capability-Opportunity-Motivation-Behavior (COM-B) model of health behavior change as a framework to guide the content, thematic analysis, and descriptive results.

Results: Seventeen articles were finally selected. The most frequently mentioned barriers and facilitators for each COM-B dimension differed. Motivation factors include such as older adults lacking inner drive and self-denial of being at risk for falls (barriers) and following-up with older adults and correcting inaccurate perceptions of falls and fall-prevention strategies (facilitators).

Conclusion: This scoping review revealed gaps and future research areas in fall prevention relative to behavioral changes. These findings may enable tailoring feasible fall-prevention interventions for older adults after transitioning home from acute hospitalization.

Keywords: falls, falls with injury, older adults, post-discharge care, transition care, patient-centered care

Introduction

In late 2019, the US Centers for Medicare & Medicaid Services[1] announced a rule related to the Medicare Post-Acute Care Transformation Act that post-acute rehabilitation service sectors must empower and engage patients to actively participate in their discharge planning. This rule is intended to reduce patients' chances of rehospitalization after transitioning home from the hospital or other post-acute rehabilitation services.[1] Post-hospital fall-related injuries are a leading diagnosis upon readmission among Medicare patients, particularly for those originally admitted with fall-related injuries or cognitive impairment.[2] Approximately 14%

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of older adults aged 65 and over have experienced a fall within 1 month post-hospital discharge,[3] and 40% of older adults have fallen within 6 months after discharge.[3–5] Older adults may require additional assistance to remain independent in their homes as they age and remain fall-free within the first month post-hospital discharge.[6]

Many factors cause falls, including impaired cognition, mobility, gait, and balance; a history of falling; and dependence in daily living activities.[7] In 2009, in the US, 31.7% of adults aged ≥65 years, who experienced a fall, had a fall-related injury.[8] Of the approximately 52 million older adults in the US (5.7%), over 3 million are treated in emergency departments for fall-related injuries annually, and over 800,000 of them are hospitalized. Over half of all post-hospital fall-related injuries lead to other injuries (eg, a fractured hip), functional decline,[4] or rehospitalization[4,5] with substantial health-care costs.[3] Recent studies have shown that adequate self-management may minimize the impact of falls in older adults.[9–16] However, research is lacking on why some older adults engage in self-management actions and behaviors to prevent falls while others do not.[15] Research is needed to explore possible barriers and facilitators to engaging older patients in preventing falls post-hospitalization.[17–19]

Study Rationale

Hospitals urgently need to assist with post-hospital transitional efforts to prevent falls to address the burden and costs of these falls.[2] Randomized controlled trials (RCTs) involving multifactorial patient-centered fall-prevention interventions in acute care settings have demonstrated reduced fall rates by tailoring patient education and care plans based on patients' fall risks.[20–23] Clinical practice guidelines recommend multifactorial interventions that assess individual risk factors, followed by specific interventions targeting those risk factors to prevent older adults from falling.[15,24]

Because of the increasing number of older adults at risk, the physical and psychological impact associated with falls, and the high associated health-care costs, additional research is warranted to design and test age-related and culturally sensitive interventions for older adults post-hospitalization.[2,25,26]

Study Objectives

This scoping review aimed to identify barriers and facilitators to older adults participating in fall-prevention activities after transitioning home from acute hospitalization. The short-term goal of this research was to use the results of the synthesized review to design patient-centered fall-prevention strategies for older adults transitioning home after hospitalization. We intend to use the framework for the study of complex mHealth interventions in diverse cultural settings by Maar et al[27] to develop fall-prevention interventions, emphasizing process evaluation to engage potential users (ie, older adults) and other stakeholders (ie, caregivers, health-care providers, and policymakers). The results may ignite future research to codevelop interventions that older adults can easily adopt to prevent falls, for example, by identifying major active components, incorporating technology to facilitate adoption, ensuring cultural congruence, and understanding the unintended consequences.[27]

Materials and Methods

We conducted a scoping review and systematically and selectively summarized the research findings of the identified articles. We used the Joanna Briggs Institute (JBI) guideline to guide the methodology,[28] which was based on an earlier methodological framework by Arksey and O'Malley.[29] We used the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) as our reporting guideline.[30] As a scoping review manuscript, the study presented in this paper does not require Institutional Review Board/Ethics Committee oversight.

Protocol and Registration

This study had no pre-published or registered protocol before its commencement.

Eligibility Criteria

The eligibility criteria included peer-reviewed journal articles in all designs that were published between 2009 and 2019, were written in English, and assessed a combination of any of the following keywords or their synonyms: "fall-prevention," "older adults," "post-discharge" and "transition care." We formed the idea of this study in mid-2019 and set the review start date as 2009. Since we included articles in all designs, including systematic review articles, we considered the review period from 2009 to 2019 as being current and practical to conduct a thorough scoping review.

Information Sources

We consulted with a librarian to assist in defining the keywords and combinations. We searched seven electronic bibliographic databases (PubMed/MEDLINE, ERIC, CINAHL, Cochrane Library, Scopus, PsycINFO, and Web of Science) and used a syntax composed of all identified keywords and their synonyms.

Search Strategy

We conducted the initial search between September 2, 2019, and September 15, 2019, and an updated search on February 5, 2020. We also hand-searched the references of the included articles and applied the "snowball phenomenon" to identify relevant peer-reviewed articles in the methodological framework. Gray literature searches were excluded from our search strategy. Box 1 lists the search syntax used in the library search for relevant journal articles.

Selection of Evidence Sources

We employed two iterative stages to identify articles. In the first stage, we screened the article titles and abstracts after collating the articles and removing duplicates. We then evaluated these articles by carefully reading the full text. In the second stage, two authors (HMT and UO) independently screened and reviewed all full-text articles and assigned a score of either 0 or 1 (0 = not relevant; 1 = relevant) to each article. The overall reviewer reliability score (kappa score) was calculated, and any disagreements were resolved by consensus. The overall kappa score was 0.837 (standard error = 0.062; $p<0.0001$). All citations were imported or manually entered using the reference manager, Endnote X9.[31]

Box 1 Keyword Search Syntax and Search Strategy for the PubMed/MEDLINE, ERIC, CINAHL, Cochrane Library, Scopus, PsycINFO, and Web of Science Databases

1. **Fall prevention/**
2. (fall adj1 prevention).ti.ab
3. (fall adj1 (control or reduction or prevention)) adj2 strateg$.ti.ab
4. (fall adj1 (control or reduction or prevention)) adj2 program$.ti.ab
5. #2 AND #3 AND #4
6. **Older adult$/**
7. Older adj1 adult$ or seniors$ or the adj2 elderly or the adj2 aged or geriatr$.ti.ab
8. **Post discharge/**
9. Post adj3 discharge or post adj3 hospital adj3 discharge or after adj3 discharge or after adj3 hospital discharge or transition$ adj3 care.ti.ab
10. #5 AND #7
11. **#9 AND #10**

Data Charting and Items

We extracted data from the final selected articles based on preidentified data items: author(s), title and date of publication, study type and design, materials and methodology, data collection methods, stage of the care continuum on which the study focused, setting, barriers or facilitators, limitations, and lessons learned. For each selected study, the authors (HMT and UO) extracted and coded the data as barriers and facilitators to fall-prevention compliance in intervention studies where fall-prevention strategies recorded the negative and positive impacts, respectively, in decreasing fall occurrences at home post-hospitalization. For example, we abstracted information regarding barriers when the intervention provided limited success in reducing falls post-discharge. All data were compiled into a spreadsheet using Microsoft Excel 2016.[32]

Critical Appraisal of Individual Evidence Sources

Given the varying study designs and methodologies used in the included studies, we appraised their characteristics and methodological quality. We assessed the methodological quality of each included article using the JBI critical appraisal tools[33] for qualitative studies, randomized clinical studies, systematic reviews, prospective studies, and cross-sectional studies. We used the methodological quality rating to verify the quality of the studies included in this scoping review. Readers may obtain a copy of the appraisal results from the corresponding author.

Synthesis of Results

We used the Capability-Opportunity-Motivation-Behavior (COM-B) model of health behavior change[34,35] to guide the content, thematic analysis, and descriptive results of the review synthesis. The COM-B model conceptualizes behavioral change strategies into three groups: capability, opportunity, and motivation. The use of this model could support intervention designs and improve the process of intervention evaluation and theory development.[34,35] We characterized the behavior change strategies related to preventing falls when older adults transitioned home after hospitalization. Fall-prevention strategies can address a patient's capability, opportunity, or motivation singly or

jointly because these three components interact to generate patients' behavioral changes.[34,35]

Two authors (HMT and UO) met ten times via video conference to discuss concerns, resolve conflicts, and review the research protocols to ensure strict adherence. The other author (EL), a behavioral scientist, joined two video conferencing calls and independently reviewed and commented on the results. Several disagreements among the three authors (HMT, UO, EL) were identified (ie, themes, subthemes, and themes being regrouped into either the capability, opportunity, or motivation category). Conflicting themes were resolved by consensus during the conference calls or e-mail communication.

Results

Selection of Evidence Sources

We identified 166 articles by searching the library databases (n=135) and by hand-searching/snowballing (n=31). Of these 166 articles, 28 were excluded as duplicates, resulting in 138 articles for screening. One author (UO) independently screened the article abstracts and titles, after which, 62 articles were excluded. Subsequently, the full text of the remaining 76 articles was screened for selection and inclusion based on relevance to the research question. Finally, 17 articles were included in this study. Studies were excluded during the final screening if they were not written in English, did not report barriers or facilitators to fall-prevention intervention, did not specify falls or fall-prevention interventions, did not specify post-discharge or transitional care, or were not journal articles (Figure 1).

All included articles were original studies or systematic reviews related to post-discharge or transitional care and fall prevention among older adults. The authors (HMT and UO) agreed to add two systematic reviews.[36,37] Although these two systematic review articles[36,37] did not fully meet the eligibility criteria for studies on post-hospitalization care, the authors (HMT and UO) concluded that both articles[36,37] provided in-depth information that elucidated fall-prevention strategies and characteristics spanning the care continuum (including post-discharge).

Characteristics of Evidence Sources

Table 1 summarizes the general and methodological characteristics of the 17 reviewed studies. Ten of the reviewed articles (58.8%) were published in 2009–2014,[5,38-46] and seven (41.2%) were published in 2015–2019.[19,36,37,47-50] Six were conducted in Australia,[5,19,41-43,45] five in the United States,[38,39,48-50]

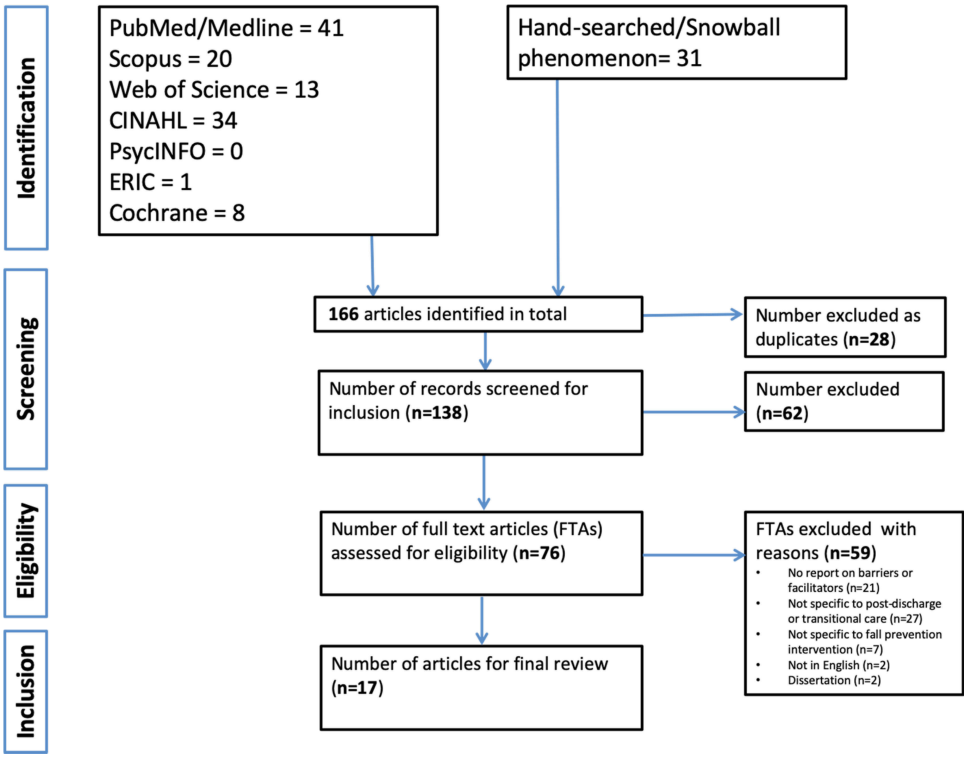

Figure 1 PRISMA flowchart showing selection of articles for scoping review.

Table 1 General and Methodological Characteristics of All Included Articles (n=17)

Publication Year	n (%)	Article Citations
2009–2014	10 (58.8)	[5,38–46]
2015–2019	7 (41.2)	[19,36,37,47–50]
Country/Setting	**n (%)**	**Article Citations**
Australia	6 (35.3)	[5,19,41–43,45]
Hong Kong	1 (5.9)	[46]
Israel	1 (5.9)	[47]
Sweden	1 (5.9)	[37]
UK	3 (17.6)	[36,40,44]
USA	5 (29.4)	[38,39,48–50]
Study Type	**n (%)**	**Article Citations**
Quantitative	5 (29.4)	[5,39,45,47,48]
Qualitative	6 (35.35)	[36,38,40,44,49,50]
Mixed methods	6 (35.3)	[19,37,41–43,46]
Study Design	**n (%)**	**Article Citations**
Case studies	2 (11.8)	[38,40]
Cross-sectional	1 (5.9)	[48]
Prospective, excluding randomized clinical trials	4 (23.5)	[39,46,49,50]
Randomized clinical trials	4 (23.5)	[5,41,42,45]
Prospective, with a nested retrospective study	1 (5.9)	[47]
Grounded theory	1 (5.9)	[44]
Systematic review	4 (23.5)	[19,36,37,43]
Data Collection Methods	**n (%)**	**Article Citations**
Structure/semi-structured interviews	4 (23.5)	[38,44,49,50]
Focus group discussions	1 (5.9)	[40]
Survey questionnaires	5 (29.4)	[5,39,45,47,48]
Mixed methods	3 (17.6)	[41,42,46]
Secondary data (eg, review studies)	4 (23.5)	[19,36,37,43]
Stage in the Continuum on Which the Study Focused	**n (%)**	**Article Citations**
After acute hospitalization, but recruited from the community	3 (17.6)	[38,40,48]
Post-hospital discharge for up to 8 days	1 (5.9)	[49]
Post-hospital discharge for up to 1 month	5 (29.4)	[5,39,43,47,50]
Post-hospital discharge for up to 3 months	1 (5.9)	[44]
Post-hospital discharge for up to 6 months	3 (17.6)	[19,41,42]
Post-hospital discharge for up to 12 months	2 (11.8)	[45,46]
Not applicable (eg, review studies)	2 (11.8)	[36,37]
Point of Patient Recruitment to Study	**n (%)**	**Article Citations**
Prior to hospitalization	0 (0)	–
In hospital prior to discharge	10 (58.8)	[5,19,39,41–44,47,49,50]
Within a week after discharge following recent acute hospitalization	1 (5.9)	[45]
From the community, more than 1 month to a year following hospital discharge for previous fall-related hospitalization	4 (23.5)	[38,40,46,48]
Not applicable (eg, review studies)	2 (11.8)	[36,37]
Primary Person Who Delivered the Fall-prevention Intervention	**n (%)**	**Article Citations**
Physicians	0 (0)	
Hospital nurses	0 (0)	
Medical assistants	0 (0)	–
Physical therapist	3 (17.6)	[5,38,48]
Occupational therapist	0 (0)	–
Personal trainer	0 (0)	–
Community health workers	0 (0)	–
Interdisciplinary team (clinicians, health professionals, and researchers)	10 (58.8)	[39–42,44–47,49,50]
Not applicable (eg, review studies)	4 (23.5)	[19,36,37,43]
Person Receiving the Fall-Prevention Intervention	**n (%)**	**Article Citations**
Patient only	13 (76.5)	[5,38–42,44–50]
Patient and family member or caregiver	0 (0)	–
Family member or caregiver only	0 (0)	–
Not applicable (eg, review studies)	4 (23.5)	[19,36,37,43]
Mode of the Fall-Prevention Intervention	**n (%)***	**Article Citations**
Group-based intervention	5 (29.4)	[5,41,42,45,47]

Table 1 (Continued).

Publication Year	n (%)	Article Citations
Individual-based intervention	7 (41.2)	[38–40,44,48–50]
Follow-up events (by telephone, mail, e-mail)	9 (52.9)	[5,38,39,41,42,46,47,49,50]
Social network (eg, Facebook)	0 (0)	–
Self-monitoring devices (eg, Smartphone, Fitbit, Apple Watch)	0 (0)	–
Home technologies or internet-of-things (eg, blood pressure cuff, weight scale)	0 (0)	–
Not applicable (eg, review studies)	4 (23.5)	[19,36,37,43]

Notes: *Multiple modes of fall-prevention overlap for cited studies. The frequency is the number of cited articles per category. The percentage is the percentage of the 17 articles included in the review.

and three in the United Kingdom.[36,40,44] Six (35.3%) used qualitative methods,[36,38,40,44,49,50] six (35.3%) used mixed methods,[19,37,41-43,46] and five (29.4%) used quantitative methods.[5,39,45,47,48] Five (29.4%) targeted post-hospital discharge for up to 1 month,[5,39,43,47,50] and three (17.6%) targeted post-hospital discharge for up to 6 months.[19,41,42]

Ten studies (58.8%) recruited patients during hospital stays;[5,19,39,41-44,47,49,50] four (23.5%) recruited patients from the community.[38,40,46,48] In ten studies (58.8%), an interdisciplinary team delivered the fall-prevention intervention.[39–42,44–47,49,50] Thirteen studies (76.5%) included only patients as the fall-prevention intervention recipients.[5,38-42,44–50] Four studies were review studies.[19,36,37,43] For the intervention, nine studies (52.9%) included follow-up events by phone, mail or e-mail.[5,38,39,41,42,46,47,49,50] Seven studies (41.2%) used individual-based interventions,[38–40,44,48-50] and five (29.4%) used group-based interventions.[5,41,42,45,47]

Individual Evidence Sources

Table 2 summarizes the characteristics of the included studies.

Synthesis of the Results

Table 3 presents the barriers to older adults participating in fall-prevention strategies post-hospital discharge, and Table 4 presents the facilitators. Barriers and facilitators were categorized by frequency of occurrence. Results (themes) in Tables 3 and 4 were coded with identifiers corresponding to the COM-B framework,[34,35] where "C" refers to capability, "O", opportunity and "M", motivation for the respective barriers and facilitators. Subthemes were similarly categorized under major themes using the same coding strategy.

Barriers

Four themes were identified as capability-related barriers: frailty due to advancing age,[36,39,43,46,51] language and communication,[40,41,43,46] education/literacy levels,[43,46] and health-related problems (Table 3).[36,37,40,42,46,47,49] Physical health[37,42,46] and general health issues[36,40,47,49] were the most frequently mentioned capability-related barriers limiting participation in fall-prevention interventions (7 studies, 41.2%).[36,37,40,42,46,47,49]

Four themes were identified as opportunity-related barriers: lack of institutional support,[37,38,40-43,46,49] lack of social and community support,[37] fall-prevention strategies requiring additional designs,[19,41,42,49] and lack of access to intervention.[36,40,48,49] Eight studies[37,38,40-43,46,49] (47.1%) implied lack of institutional support for fall-prevention programs as the most common opportunity-related barrier; five of these studies[37,38,40,42,49] mentioned that health staff were disinterested in promoting fall-prevention interventions due to heavy clinical workload[37,38,52] and lack of understanding the program.[37,40,42]

Four themes were identified as motivation-related barriers: lack of motivation to carry out or sustain involvement in the fall-prevention intervention post-hospital discharge or during hospitalization,[36,37,41-44,48,49] self-denial of risk for falls,[36,50] difficulty transitioning between daily living activities and fall-prevention strategies,[36] and enthusiasm fatigue.[37] The most frequently mentioned motivation-related barrier was lack of motivation[36,37,41-44,48,49] (8 articles, 47.1%), which included lack of motivation to participate because of emotional/mental-related issues,[43,49] lacking the will to join because of spiritual beliefs conflicting with fall-prevention practice (eg, practicing Tai-Chi may interfere with spiritual beliefs),[37] behavior and attitudes towards fall-prevention hindering participation (eg, over-confident in their ability to prevent falls)[36,37,41,42,44,48] and older adults lacking confidence to prevent falls.[48,49]

Facilitators

Four themes were identified and categorized as capability-related facilitators: being younger older adults (because

Table 2 Characteristics of the Included Studies (n=17)

Article	Aim/Study Outcome	Participants/ Inclusion Criteria	Methods	Findings
Agmon et al, 2016[47]	To determine the association between pre-diagnosed anxiety during hospitalization and falls 1-month post-discharge.	Older adults aged ≥70 years pre-diagnosed with anxiety, no loss of cognitive function and no disabling diagnosis (N=556).	Post-discharge data collected retrospectively by telephone interviews/surveys. Data analyzed using logistic regression studies.	Older adults ≥70 years with prediagnosed anxiety were twice as likely to fall 30 days post-discharge after acute hospitalization than were older adults without prehospitalization anxiety (adjusted odds ratio=1.89; 95% CI: 1.04–3.48).
Calhoun et al, 2011[38]	To investigate barriers and facilitators to participating in fall-risk assessment programs among older adults who had fallen.	Older adults aged ≥75 years recruited from a list of fall-risk assessment programs (N=39).	Interview guide with open-ended questions to stimulate conversations around facilitators and barriers to participation. Data analyzed using thematic analysis.	Study findings under facilitators and barriers to participation included: 1) Perception of need: differentiated between participators and non-participators. Participants expressed that they "needed" the program, while nonparticipants expressed a lack of need for the fall-prevention programs because they prevented falling themselves by being more careful. 2) Transportation: Lack of transportation was a barrier to participating as it affected older adults who were assigned to programs in community clinics.
Davenport et al, 2009[39]	To investigate the fall rate of in-hospital fallers post-discharge and explore their risk factors for falling during the period immediately after hospital discharge.	Younger and older adults who had fallen during hospitalization, English-speaking, had not been to a nursing home before hospitalization, would not be discharged to a nursing home, life expectancy ≥3 months, discharged home, had a phone, and were cognitive to give consent (N=65).	Data regarding fall frequency and factors enabling falls at home were collected 4 weeks post-discharge through telephone surveys and analyzed quantitatively and qualitatively.	Self or caregiver reported falls at home 4 weeks post-discharge; 19 participants suffered 38 falls with a fall rate estimated as 25.4/1000 person-days (95% CI= 17.3–33.4) for adult participants aged 22–97 years (mean 65.5 years ± 13). However, fall rates between age groups <64 years and ≥65 years were 25.5 falls/1000 person-days and 25.2 falls/1000 person-days, respectively. The study also recorded 3 mortalities and 4 nursing home referrals for rehabilitation therapy. Risk factors for falls post-discharge did not statistically significantly differ between fallers and non-fallers controlled for all categories (age, use of mobility aids, previous hospitalizations, previous fall histories, fall injuries during hospitalization, and duration of hospitalization). However, after controlling for sex, fall rates post-discharge were higher among adults who fell more than once during hospitalization (p=0.001).
Dickinson et al, 2011[40]	To investigate older adults' perceptions of facilitators and barriers to participating in fall-prevention interventions	Older adults aged ≥60 years living within a community setting and had experienced at least one fall-prevention intervention (eg, fall clinics, postural stability classes, Tai-Chi, and exercise classes). Participants were recruited by letters and personal invitations (N=187).	Seventeen focus groups with 122 participants and individual interviews for the rest (n=65). Data were analyzed for content and themes.	Major findings included: 1. Health professional response: Participants felt health professionals lacked interest in talking about falls; therefore, they failed to refer them to the right interventions. 2. Inadequate assessment from health-care professionals who failed to assess the extent of older adult fall risks and fall injuries, only to be picked up at a later date from complications in other body systems. 3. Poor access to healthcare when needed: lack of doctors in the community when patients had emergencies. 4. Doctors acting as barriers by showing disinterest and delinquency. 5. Language barriers: Some non-English-speaking doctors deterred patients because of poor communication.

(*Continued*)

Table 2 (Continued).

Article	Aim/Study Outcome	Participants/ Inclusion Criteria	Methods	Findings
Finnegan et al, 2019[36]	A systematic review of qualitative studies to explore the barriers and facilitators to continued participation in fall-prevention exercise programs	Community-dwelling older adults aged ≥65 years who had participated in a fall-prevention exercise program.	Data extracted from identified articles included aim, participant characteristics, method of data collection, methodology, and analysis. All data extracted were thematically analyzed and used to integrate findings.	Barriers to continued participation in fall-prevention exercises were summarized under the following themes: 1. Denial of being at risk to fall: Older adults who had a history of falling did not identify themselves as 'fallers' and did not think they needed to continue exercising. 2. Increasing age: Increasing age was a risk factor for falling, yet some participants denied acknowledging themselves as old. Conversely, others did not think of age as a barrier to ongoing exercise but expressed that their population was not the intervention target. 3. Perceived value of the exercise: Older adults chose to participate or not based on perceived benefits. 4. Health issues: such as dizziness, feeling shaky, pain, drowsiness, reduced strength-endurance, and depression. 5. Lack of time: conflicting schedules, and time pressures resulting from caring responsibilities. 6. Perception of self-attainment/self-efficacy: Participants felt that they were already doing enough to prevent falls, and additional fall-prevention exercise programs were unnecessary. 7. Transitioning: Participants expressed difficulty in transitioning from one exercise format to another, which was a barrier to participating in exercises. Facilitators identified were summarized under the following themes: 1. Improved strength, balance and confidence: Perceived benefits such as independence, maintaining health status and improving balance and strength facilitated participants to keep exercising. 2. Health benefits perception: Maintaining health and preventing deterioration of health. 3. Social interaction: Participants saw the social benefits of participating in group exercise as a facilitator to continued participation. 4. Family support as well as encouragement from their exercise instructors: older adults described support and encouragement from others (family members, peers, and instructors) as facilitators to ongoing. 5. Nature of intervention (group vs individual): For some older adults, being part of a group was a facilitator to continue exercising. For other older adults, they preferred individual exercise programs describing that the group events made them feel uncomfortable and uneasy. 6. Signposting: Providing appropriate, up-to-date, and relevant information about other groups or new exercise opportunities when transitioning from one exercise to another.

(*Continued*)

Table 2 (Continued).

Article	Aim/Study Outcome	Participants/ Inclusion Criteria	Methods	Findings
Hill et al, 2011[41]	RCT to examine whether older adults were ready to engage in fall-prevention strategies following hospital discharge The study outcome was to identify what fall-prevention strategy participants perceived would reduce their risk for in the first 6 months following discharge.	Older adults aged ≥60 years discharged following acute hospitalization or subacute rehabilitation for conditions such as orthopedic, pulmonary, stroke, and cardiac conditions. Participants (N=333) were randomized into 3 groups. Two groups received a multimedia package containing fall-prevention education specific to their condition, and the control group received standard care.	Semi-structured interviews were administered 48 hours before discharge. Data analyzed for descriptive outcomes and themes.	Findings were described under the following thematic headings: 1. Behavioral: Participants described behavioral strategies to reduce falls. Quotations included, "being careful", "getting help" and "not taking risks." 2. Support while mobilizing: Using supportive equipment or items to remain upright. 3. Approach to movement: Considered movement concepts that cause falls such moving too fast or turning too quickly. 4. Physical environment: Modification of physical home environments such as removing clutter and obstacles. 5. Visual: Being alert about one's immediate environment (eg, looking where one is going or watching for different surfaces). 6. Medical: Medical suggestions older adult thought might reduce their fall risks. For example, "checking for dizziness and being aware of medication side effects on balance." 7. Activity and exercise: Participants' suggestions for improving physical capability such as, "going for walks," and "doing strength and balance building exercises."
Hill et al, 2011[42]	RCT to identify factors associated with older adults' exercising 6 months after hospital discharge. Study outcomes were: 1) older adults' attitudes and beliefs about falls, 2) older adults' engagement in structured exercises (ie, exercise that increased balance and strength), and 3) Perceived barriers to engaging in structured exercise after discharge.	Older adults ≥60 years old recently discharged from 4 participating wards (medical, surgical, stroke, or rehabilitation wards) in a general hospital. Of these, 343 consented to participate and were randomized to 2 groups. One group received fall-prevention education, and the control group received standard care.	Data were collected 48 hours before discharge. Follow-up data came from semi-structured telephone interviews at 6 months	Barriers to engaging in exercise post-discharge included: 1) attitudes toward exercise, including low self-efficacy, believing that exercise was unnecessary, safety concerns while exercising, insufficient motivation, dislike for exercise, no need for exercise, no cue to actions during exercise, and being fearful of engaging in exercise, 2) medical barriers to exercise: pain from first attempts at exercising extending up to 6 months post-discharge, shortness of breath on exertion, feeling unwell, 3) reduced mobility from surgery, and 4) exercise program delivery, for example, not being assigned to an exercise program, not being able to get to the class, or abrupt exercise therapy cessation.

(*Continued*)

Table 2 (Continued).

Article	Aim/Study Outcome	Participants/ Inclusion Criteria	Methods	Findings
Hill et al, 2013[5]	RCT pilot study to evaluate the effects of providing tailored fall-prevention education in hospital on engaging in fall-prevention strategies 1 month after discharge. The study outcomes were a measure of 1) older adults' engagement in fall-prevention strategies 1 month after discharge and 2) perceived risk about falls and fall-prevention strategies to engage in after discharge.	Hospital older adult patients aged ≥60 years scheduled to be discharged from stroke or rehabilitation wards to home (N=50). Participants were randomized into an intervention group with a tailored multimedia fall-prevention education package, follow-up and additional care, and a control group with usual care.	Data were collected 24 hours prior to discharge and at 1-month post-discharge via telephone using semi-structured survey tools.	The intervention group was significantly more likely to safely restart functional activities (adjusted odds ratio 3.80, 95% CI [1.07, 13.52], p=0.04) and more likely to complete targeted fall preventive behaviors (adjusted odds ratio 2.76, 95% CI [0.72, 10.50], p=0.14) than the control group. The intervention group was significantly more knowledgeable, confident, and motivated to engage in fall-prevention strategies post-education intervention compared with the control group.
Kiami et al, 2019[48]	To identify factors that increase the likelihood of enrolling in fall-prevention programs among community-dwelling older adults.	Older adults aged ≥60 years, residing in the community who could read and write English.	Semi-structured survey questionnaires used to collect data. Data analyzed using chi-square tests and logistic regression analysis.	Four barriers were associated with less likelihood to enroll in fall-prevention programs: 1) belief will not fall, 2) lack of time, 3) transportation, 4) will not prevent falling, and 5) not offered nearby. Seven facilitators were associated with more likely to enroll in fall-prevention programs: 1) offered near home, 2) free vision screening, 3) friendly leader, 4) coffee hour to socialize, 5) no cost, 6) group exercise, and 7) safe space/place
Lee et al, 2013[43]	Systematic review and meta-analyses to assess the effectiveness of patient education in reducing falls, promoting behavioral change, and taking up fall-prevention activities during and after hospitalization. Primary outcome: Proportion of older adults who were hospital or post-hospital fallers. Secondary outcome: Awareness of fall and fall-prevention strategies.	Studies with older adults aged ≥60 years involved in patient education as a single or multifactorial intervention in hospital or post-discharge.	Data were collated from identified library databases, screened for inclusion, and thematically analyzed for facilitators and barriers to fall prevention.	Barriers identified included 1) lack of fall-prevention education, 2) perceiving falls as unpreventable, 3) cluttered environment, 4) chronic diseases, 5) unavailability of walking aids, 6) advancing age, 7) lower educational or literacy levels, 8) lack of social support, and 9) cognitive and communication problems. Facilitators identified included 1) patient education on falls, 2) cues to action: recommendations made by health professionals, 3) self-efficacy using visual learning aids, and 4) location and prolonged engagement: attitudes and beliefs regarding falls and prevention influenced positively by location (eg, hospital-based studies demonstrated positive attitudes to change following fall education due to the intensity of the education provided).

(*Continued*)

Table 2 (Continued).

Article	Aim/Study Outcome	Participants/ Inclusion Criteria	Methods	Findings
McMillan et al, 2014[44]	Used grounded theory to explore the post-discharge concerns of older adults after fall-induced hip fractures.	Older adults aged ≥65 years living at home who had been discharged for up to 3 months (N=19).	Data collected using semi-structured qualitative interview guides and analyzed using a constant comparison method of the Glaserian method.	A theory of 'taking control' was developed to explain the coping mechanisms employed after falls post-discharge. The key strategy to this theory was 'Balancing risk,' which older adults said helped them take control after discharge. This strategy was explained by key quotes like "protective guarding" and "following orders."
Naseri et al, 2018[19]	Systematic review to synthesize evidence for fall-prevention interventions in older adults discharged from hospital and followed for 6 months.	1) Studies involving older adults aged ≥60 years, 2) studies where older adults were hospitalized and then discharged home or to a community, 30 studies where interventions were delivered in a hospital or within 1 month post-discharge, and studies published globally in English between January 1990 and June 2017.	Data were extracted from identified library databases, appraised for quality using the JBI critical appraisal tool and pooled for meta-analyses using RevMan review manager. Synthesized studies were evaluated and categorized using the summary of evidence.	Selected studies reported synthesized evidence for the following fall interventions shown to reduce falls post-discharge: 1) Home hazard modification (1 study; low-grade evidence), 2) Home exercise (3 studies, moderate GRADE evidence), and 3) Short-term nutritional supplementation (1 study; low-grade evidence).
Sandlund et al, 2017[37]	Systematic review to explore underlying gender perspectives or interpretations of older adults' preferences regarding uptake and adherence to exercise to prevent falls.	Qualitative, quantitative, or mixed-method studies involving older adults aged ≥60 years, community-dwelling or living in residential homes, presenting views on fall-prevention exercise strategies.	Data were collated from identified library databases, screened for inclusion, and analyzed using constant comparison to create themes for facilitators and barriers to fall-prevention.	Barriers to participating in fall-prevention exercise were categorized into six themes: 1) practical issues (transportation, lack of time, bad weather, and lack of a suitable place to exercise at home); 2) concerns about exercise (lack of confidence to exercise, fear of adverse effects, not being able to keep up, dislike for group exercise); 3) unawareness (lack of knowledge about the benefits of exercise to fall prevention, perception of being active enough to need exercise, and denial of fall risk); 4) reduced health status (eg, pain and fatigue); 5) lack of support; and 6) lack of interest (for group versus individual exercise programs). Facilitators included 1) support from professionals or family; 2) social interaction; 3) perceived benefits, 4) supportive exercise context; 5) feelings of commitment; and 6) having fun.

(*Continued*)

Table 2 (Continued).

Article	Aim/Study Outcome	Participants/ Inclusion Criteria	Methods	Findings
Shuman et al, 2016[49]	To describe hospitalized older adults' perceptions about 1) their fall risks while hospitalized; 2) interventions they received to prevent falls while hospitalized; and 3) the instructions received at discharge to prevent falls at home.	Older adults aged ≥60 years, hospitalized in the study unit for at least 48 hours, classified as at-risk-for-falls patients based on Morse fall score, have a phone number, English-speaking, and medically stable (N=18).	Data collected in-hospital and post-discharge interviews by telephone. Data analyzed using constant comparative methods to delineate and resolve conflicting themes.	Barriers identified in the thematic analysis were 1) fear of falling for those at risk of falling, 2) misunderstanding or non-acknowledgment of fall-prevention procedures by healthcare staff causing patients not to pay attention to their fall risk or adopt/comply with interventions, 3) generalized fall-prevention interventions not fitting for outlying patients, 4) perception of fall-related discharge instructions (some forget they were told what to do post-discharge), and 5) mobility issues and compliance especially for those using walking aids without support or assistance. Facilitators identified included 1) tailored fall-prevention interventions, 2) satisfaction with fall-prevention interventions, 3) reminders of fall-prevention interventions, 4) family support and assistance, 5) effectiveness of fall prevention (as defined by research evidence) of the fall-prevention intervention, and 6) verbal and written discharge prescriptions
Shuman et al, 2019[50]	To describe 1) the risks for falls, factors contributing to fall risks and actions to prevent falls at home, 2) information received at discharge to prevent falls at home; and 3) awareness and perceptions regarding the usefulness of CDC STEADI fall-prevention brochures in recently hospitalized older adults	a) Older adults aged ≥60 years, b) identified as moderate-to-high risk for falls by Morse fall score, during recent hospitalization, c) discharged home after acute hospitalization, d) English-speaking, and e) able to participate in interview 4 weeks post-hospital discharge (N=9).	Data were collected via face-to-face interviews lasting 45–60 minutes 4 weeks after discharge. Audio was recorded and analyzed using inductive thematic analysis for the key question: 'What can you do to prevent falls?' Data analyzed using constant comparative methods.	Findings summarized in five major themes included 1) sedentary behaviors and limited functioning, 2) prioritization of social involvement, 3) low perceived fall risk and attribution of risk to external factors, 4) avoidance and caution as fall-prevention and 5) limited fall-prevention information when transitioning home from hospitalization.
Vogler et al, 2009[45]	RCT to compare the efficacy of seated exercises compared with weighted exercises and social visits, on fall-risk factors in older people recently discharged from hospital. Study outcome: Physiological profile assessment (PPA) composite fall risk score and test of ability to lean or stand.	Older adults aged ≥65 years, not cognitively impaired and with no contraindications to exercise Participants (N=180) were randomized into 3 groups; seated exercises (n=60); weight-bearing exercises (n=60) and social visits (n=60).	Data collected a few days after participants reached home and completed 3 months post-discharge, using self-reported questionnaires.	Participants in the weight-bearing group had significantly better performance than did the social visit group for PPA score, coordinated stability, maximal balance range body sway on the floor with eyes closed, and finger-press reaction time. Similarly, the seated exercise group scored significantly better than did the social visit group on PPA score only. Conversely, the seated group had the highest rate of musculoskeletal soreness.

(*Continued*)

Table 2 (Continued).

Article	Aim/Study Outcome	Participants/ Inclusion Criteria	Methods	Findings
Wong et al, 2011[46]	To evaluate the uptake rate of a fall-prevention exercise program among older fallers discharged more than 12 months from acute hospitalization due to related falls.	Older adults aged ≥60 years hospitalized in accident and emergency regional hospital in Hong Kong for fall-related events between August 2006 and August 2007.	Data were collected by telephone from all previous fallers using a structured telephone survey tool. Data were analyzed using logistic regression to examine relationships between the associated factors and participation in the fall exercise program.	Barriers included 1) lack of fall-prevention education, 2) perceiving falls as being unpreventable, 3) cluttered environment, 4) presence of chronic diseases, 5) unavailability of walking aids, 6) advancing age, 7) lower educational or literacy levels, and 8) lack of social support. Facilitators were considered the reverse of the barriers identified in this study.

they considered themselves fit and more inclined to participate),[46] use of language and communication aids (eg, interpreters and audiovisual tools),[36,41,43,46,49] nature of the fall-prevention strategy and personal preference,[5,48] and adaptation and resiliency to new strategies aiding mobility (Table 4).[41,46,50] Use of language and communication aides was the most mentioned theme (5 articles, 29.5%).[36,41,43,46,49]

We identified 12 themes for opportunity-related facilitators (Table 4). The first most mentioned theme was institutional and organizational support in assisting in fall-prevention programs (8 articles, 47.1%)[36,37,40-43,49,50] such as providing funding and facility for the programs,[37,42] providing financial incentives for health staff who educate older adults on participating in these programs,[40] making available mobility support for older adults to move freely without difficulty (eg, wheelchair ramps, visual aids for slippery surfaces),[42,46] and providing communication aids to facilitate comprehension.[36,43,49,50] The second most mentioned theme was encouragement and social support for older adults (8 articles, 47%),[5,36,37,41,44,46,48,49] such as support and empathy from family members,[5,36,37,46,49] fall-prevention program facilitators,[36,37,48] healthcare providers,[37,41,48] community,[36,37] and peer-to-peer support.[37,44] The third most mentioned theme was prolonged community engagement and relationship building with older adults to learn how to mitigate barriers to participation (4 articles, 23.5%).[5,36,41,48] This theme included two subthemes: (1) engaging older adults in designing fall-prevention programs collaboratively and inclusively (ie, listening to them to know what they want and learning how to meet their needs regarding preventing falls),[5,41] and (2) engaging older adults respectfully and with sensitivity (eg, in considering their time/schedules, physical limitations).[36,48]

Three themes were identified for motivation-related facilitators: (1) following up with older adults to clarify their understanding of the fall-prevention program (2 articles, 11.8%),[49,50] (2) changing inaccurate perceptions of falls and fall-prevention strategies (5 articles, 29.4%)[36–38,46,50] such as the perception of the need for fall-prevention programs (1 article, 5.9%),[38] and perception of the benefits of fall-prevention programs (4 articles, 23.5%),[36,37,46,50] and (3) seeing personal gain, benefits and improvements in gait and balance (1 article, 5.9%).[36]

Discussion

This scoping review synthesized evidence regarding barriers and facilitators to older adults participating in fall-prevention strategies after transitioning home from acute hospitalization. We used the COM-B framework to categorize the barriers and facilitators in the context of behavior modifications. The success of a behavior modification involved elements of an individual's capability (physical or psychological factors), opportunities (physical, social, or institutional factors), and/or motivation (impulsive or reflective factors),[35] and the findings were summarized under these three factors.

Capability factors in the COM-B framework included personal characteristics (eg, age) or intrinsic factors among

Table 3 Barriers to Older Adults Participating in Fall-Prevention Strategies After Transitioning Home from Hospitalization (n=17 Articles)

Capability-Related Themes	**Frequency (%)***	**Article Citation**
C1: Frailty due to advanced age	**4 (23.5)**	[36,39,43,46]
C2: Language and communication barriers	**4 (23.5)**	[40,41,43,46]
C2.1: Not understanding the fall-prevention program due to limitations in reading, speaking or comprehension of English	1 (5.9)	[40]
C2.2: Lack of communicative channels such as visual aids, pamphlets, and reminders	1 (5.9)	[41]
C2.3: Use of medical jargon during communication	2 (11.8)	[43,46]
C3: Literacy or educational levels associated with poor comprehension	**2 (11.8)**	[43,46]
C4: Health-related issues limiting participation	**7 (41.2)**	[36,37,40,42,46,47,49]
C4.1: Physical health issues (eg, joint pain, chest pain on exertion, vision)	3 (17.6)	[37,42,46]
C4.2: Health issues (physical, mental, psychosocial, etc.) limiting participation	4 (23.5)	[36,40,47,49]
Opportunity-Related Themes	**Frequency (%)***	**Article Citation**
O1: Lack of institutional support (eg, health, medical, and social service systems) for fall-prevention program	**8 (47.1)**	[37,38,40–43,46,49]
O1.1: Disinterest/discouragement from health staff (ie, physicians, nurses, and healthcare systems) due to heavy clinical workload, not understanding the program, or other reasons	5 (29.4)	[37,38,40,42,49]
O1.2: Lack of financial incentives for nurses, doctors or fall-prevention educators to encourage active delivery and sustainability of fall-prevention programs	1 (5.9)	[38]
O1.3: Poor organization and resources to carry out the planned activities (eg, fall-prevention programs not implemented consistently to continue to engage patients in outpatient settings)	3 (17.6)	[38,42,43]
O1.4: Lack of patient safety equipment (glides, floor anti-slip mats), mobility adaptation (ramps for wheelchair mobility) and mobility aids (crutches, walkers, strollers) needed to participate in fall-prevention programs	3 (17.6)	[41,46,49]
O2: Lack of social support from community, family, spouse, and peers to support fall prevention (eg, older adults in the community not participating in the group exercise programs discourages other older adults from participating)	**1 (5.9)**	[37]
O3: Fall-prevention program requires additional design (eg, more engaging in including older adults, having older adults buy in; more encompassing for all ages, genders and older adults with chronic disease or disabilities)	**4 (23.5)**	[19,41,42,49]
O3.1: Fall-prevention programs are not comprehensive or inclusive (eg, older adults felt the interventions were not patient-centered; researchers should consider older adults' preferences in types of fall-prevention activities).	1 (5.9)	[49]
O3.2: Program incompatible with older adults because it was too complex to execute (eg, virtual reality exercise games)	2 (11.8)	[41,42]
O3.3: Program lacking in organization, delivery and technical support (eg, programs lacked contacts to provide support or answer questions when needed)	2 (11.8)	[41,42]
O3.4: Program did not send reminders, follow-up or visual aids (eg, pamphlets)	2 (11.8)	[19,50]
O4: Lack of access to intervention deters willingness to participate	**4 (23.5)**	[36,40,48,49]
O4.1: Transport unavailable (eg, no roads to that area, no access to transport to the venue)	2 (11.8)	[48,49]
O4.2: Long distance (eg, too long a distance or commute makes older adults too tired to participate)	2 (11.8)	[48,49]
O4.3: Cost (personal financial cost and time cost)	2 (11.8)	[36,48]
O4.4: Difficulty in accessing healthcare directions or technical support (eg, older adults cannot access technical support for virtual reality exercises)	1 (5.9)	[40]

(*Continued*)

Table 3 (Continued).

Capability-Related Themes	Frequency (%)*	Article Citation
Motivation-Related Themes	**Frequency (%)***	**Article Citation**
M1: Lack of motivation to carry out or sustain fall-prevention intervention following hospital discharge or during hospitalization	**8 (47.1)**	[36,37,41–44,48,49]
M1.1: Lack of motivation to participate because of emotional/mental-related issues (eg, sad or not in the mood to participate)	2 (11.8)	[43,49]
M1.2: Unwilling to participate because of spiritual beliefs conflicting with fall-prevention practice (eg, practicing Tai-Chi may interfere with spiritual beliefs)	1 (5.9)	[37]
M1.3: Behavior and attitudes towards fall-prevention hindering participation (eg, overconfident in their own ability to prevent falls)	6 (35.2)	[36,37,41,42,44,48]
M1.4: Older adults lacking confidence to prevent falls	2 (11.8)	[48,49]
M2: Self-denial of being at risk for falls	**2 (11.8)**	[36,50]
M3: Difficulty transitioning between activities of daily living and fall-prevention interventions	**1 (5.9)**	[36]
M4: Enthusiasm fatigue	**1 (5.9)**	[37]

Notes: *The frequency is the number of cited articles per category. The percentage is the percent out of the 17 articles included in the review. Bold font denotes a main theme.

older adults.[34] Regarding capability factors, physical health[37,42,46] and general health issues[36,40,47,49] were the major capability-related barriers limiting participation in fall-prevention interventions. Use of language and communication aides was found to be the most helpful.[36,41,43,46,49]

Opportunity factors in the COM-B framework included extrinsic or environmental factors among older adults that enabled or prompted their participation.[34] Lack of institutional support for fall-prevention programs was the key opportunity-related barrier.[37,38,40-43,46,49] Several studies[37,38,40,42,49] found that health staff often lacked a good understanding of fall-prevention programs[37,40,42] or were disinterested in promoting fall-prevention interventions due to heavy clinical workloads.[37,38,52] In contrast, the top three opportunity-related facilitators were institutional and organizational support in assisting fall-prevention programs,[36,37,40-43,49,50] encouragement and social support for older adults,[5,36,37,41,44,46,48,49] and engaging older adults to mitigate barriers to participating in fall-prevention solutions.[5,36,41,48]

Motivational factors in the COM-B framework involved the reflexive and impulsive processes that guide conscious decision-making.[34] These included a lack of inner drive to carry out or continue involvement in fall-prevention interventions after hospital discharge or during hospitalization,[36,37,41-44,48,49] self-denial of being at risk for falls,[36,50] having difficulty transitioning between daily living activities and fall-prevention strategies,[36] and enthusiasm fatigue.[37]

The three main motivation-related facilitators were following up with older adults,[49,50] identifying and correcting inaccurate perceptions of falls and fall-prevention strategies,[36–38,46,50] such as the need for[38] and benefits of these programs,[36,37,46,50] and ensuring that older adults realize the personal gain, benefits, and improvements in gait and balance.[36]

In summary, we examined barriers and facilitators to fall-prevention compliance among older adults and how these barriers and facilitator guide behavioral changes following discharge from acute care. Using the innovative approach of the COM-B model of health behavior change[34,35] to guide this thematic analysis elicited essential insights. The most frequently mentioned barriers and facilitators in each COM-B dimension differed greatly (Tables 3 and 4). The identified gaps could shed light on future fall-prevention intervention designs focusing on behavioral changes in older adults.

Practical Implications

This scoping review provided a practical understanding of fall prevention relative to behavioral changes and revealed gaps and future research areas in fall prevention. The findings may help guide researchers when co-developing and co-evaluating fall-prevention interventions "with" older adults "for" older adults to avoid preventable falls and fall-related injuries after transitioning home from

Table 4 Facilitators to Older Adults Participating in Fall-Prevention Strategies After Transitioning Home from Hospitalization (n=17 Articles)

Capability-Related Themes	**Frequency (%)***	**Article Citation**
C1: Younger older adults more inclined to participate in fall-prevention because they consider themselves fit	**1 (5.9)**	[46]
C2: Language and communication aids (eg, language interpreter, visual aids, pamphlets, audiovisual tools help better communicate program aims to older adults)	**5 (29.4)**	[36,41,43,46,49]
C3: Personal preferences and nature of the fall-prevention intervention (eg, one-on-one, or group-based intervention)	**2 (11.8)**	[5,48]
C4: Adopting a different approach to mobilize (adapting to new norm after a spinal injury or paralysis, eg, resiliency in an adverse situation)	**3 (17.6)**	[41,46,50]
Opportunity-Related Themes	**Frequency (%)***	**Article Citation**
O1: Organizational/institutional support in assisting with fall-prevention programs	**8 (47.1)**	[36,37,40–43,49,50]
O1.1: Providing funding and organizational structure for fall-prevention programs	2 (11.8)	[37,42]
O1.2: Providing financial or other incentives for health staff (doctors, nurses, occupational therapists, exercise facilitators) who educate older adults on participating in fall prevention	1 (5.9)	[40]
O1.3: Making mobility supports available (eg, ramps for wheelchairs, clutches, non-slip bathroom mats, gliders, visual aids for slippery surfaces)	2 (11.8)	[41,46]
O1.4: Providing communication aids (eg, translators, signposts, visual aids, pamphlets) to facilitate understanding/comprehension when consulting with patients about falls and how to prevent them	4 (23.5)	[36,43,49,50]
O2: Prolonged community engagement by health care practitioners and health institutions, and relationship building with older adults to learn to mitigate barriers to participation	**4 (23.5)**	[5,36,41,48]
O2.1: Engaging older adults in designing fall-prevention programs collaboratively and inclusively (ie, listening to them to determine needs and learning how to meet their needs regarding preventing falls)	2 (11.8)	[5,41]
O2.2: Engaging older adults respectfully and with sensitivity (eg, considering their time/ schedules, physical limitations)	2 (11.8)	[36,48]
O3: Improving access to fall-prevention programs	**3 (17.6)**	[40,48,50]
O3.1: Bringing fall-prevention programs closer to participants' homes (eg, through home visits, consistent follow-up programs post-discharge, using centralized, accessible venues closer to older participants)	2 (11.8)	[48,50]
O3.2: Creating free/reasonable cost for fall programs	1 (5.9)	[48]
O3.3: Experts (eg, health care professionals/fall experts) knowledgeable about fall programs	1 (5.9)	[40]
O4: Feasibility and practicability of fall-prevention strategy	**1 (5.9)**	[49]
O5: Adapting the physical environment to facilitate mobility	**1 (5.9)**	[41]
O6: Encouragement and social support	**8 (47.0)**	[5,36,37,41,44,46,48,49]
O6.1: Family support	5 (29.4)	[5,36,37,46,49]
O6.2: Community support	2 (11.8)	[36,37]
O6.3: Peer-to-peer support	2 (11.8)	[37,44]
O6.4: Healthcare provider support and empathy	3 (17.6)	[37,41,48]
O6.5: Fall-prevention program facilitator support	3 (17.6)	[36,37,48]
O7: Eye exams and vision screening tests	**1 (5.9)**	[48]
O8: Incentivizing fall-prevention programs with opportunities for social participation and fun	**2 (11.8)**	[37,48]
O9: Creating a safe and inclusive agenda in fall-prevention strategies	**3 (17.6)**	[37,46,48]
O10: Tailoring fall-prevention strategies to participants' needs	**2 (11.8)**	[48,49]
O11: Creating fall-prevention strategies that are participatory, educational and empowering	**1 (5.9)**	[43]
O12: Creating fall-prevention strategies that consider personal time conflicts	**2 (11.8)**	[41,50]

(*Continued*)

Table 4 (Continued).

Capability-Related Themes	Frequency (%)*	Article Citation
Motivation-Related Themes	**Frequency (%)***	**Article Citation**
M1: Following up with older adults (eg, by phone, e-mail or mail) to clarify their understanding of the fall-prevention program via pamphlets or communicated during hospitalization	**2 (11.8)**	[49,50]
M2: Changing inaccurate perceptions of falls and fall-prevention programs **M2.1**: Perception of need for fall-prevention program **M2.2**: Perception of benefits of a fall-prevention program	**5 (29.4)** 1 (5.9) 4 (23.5)	[36–38,46,50] [38] [36,37,46,50]
M3: Seeing personal gain, benefits, and improvements in gait and balance	**1 (5.9)**	[36]

Notes: *The frequency is the number of cited articles per category. The percentage is the percent out of the 17 articles included in the review. Bold font denotes a main theme.

acute hospitalization. Two studies[5,41] suggested engaging older adults in co-designing fall-prevention interventions as a strategy to develop sustainable programs that older adults can easily adopt.

Study Limitations

We identified two study limitations. First, the varied periods of care transition in each study (eg, from post-hospital discharge up to 8 days to up to 12 months) and the diverse locations for patient recruitment (eg, during hospitalization or from the community) may have contributed to selection bias of the reviewed articles. For example, two reviewed studies[36,37] addressed fall prevention across the care continuum. Second, appraisal of the risk of bias indicated potential bias in the measurement approaches. Methodological limitations of some included studies could have affected the evidence.

Additionally, this study took an innovative approach to follow the COM-B model of health behavior change as a framework to identify the barrier and facilitator themes; by using this framework, we hope to facilitate future systematic development of falls prevention interventions. The Behavior Change Wheel program planning model provides guidance for matching intervention components to specific theoretical components of the COM-B model. Future research may build on the findings of this scoping review to rigorously and systematically develop patient-centered fall-prevention strategies for behavioral change and hospitals' fall-prevention policies. For example, clinicians in the hospital settings and health researchers could use the results of this review to help them refine hospital policies related to fall prevention to facilitate transition home after an acute hospitalization (eg, increasing mobility).

Conclusion

This scoping review used the COM-B model of health behavior change[34,35] as a framework to identify barriers and facilitators to older adults participating in activities to prevent falls after transitioning home from acute hospitalization. The critical barriers and key facilitators in each COM-B dimension differed greatly. The findings of this review may help tailor feasible fall-prevention interventions for older adults after transitioning home from acute hospitalization.

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Disclosure

The authors have no conflicts of interest to declare.

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