

Experiences of Older Adults After Hip Fracture: An Integrative Review

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Abstract

Purpose: The aim of the study was to identify and synthesize scientific evidence on older adults' experience after hip fracture in relation to their physical and mental health, functional performance, and participation and to determine which personal or social factors influence functional capacity after hip fracture.

Design: Integrative review.

Methods: Eleven qualitative or quantitative papers published between 2001 and 2015 were analyzed using integrative review methodology as described by Whittemore and Knaf.

Results: Older adults experienced pain and decline in personal and instrumental activities of daily living and used adaptation strategies to cope with the hip fracture.

Conclusion: Hip fracture affected the older adults' mobility, body image, mental health, and capacity for participation.

Clinical Relevance: Pain measurement tools focusing on various perspectives of health as well as rehabilitation programs focusing on changes in body function and body image and increased awareness of vulnerability in older adults may promote functional capacity after hip fracture.

Keywords: Hip fracture; ICF; integrative review.

Introduction

Hip fracture is a common fracture in adults aged 65 years and older due to weakened bone quality (Cummings-Vaughn & Gammack, 2011) and has a lifetime risk of 12.1% in women and 4.6% in men (Cummings-Vaughn & Gammack, 2011; Hopkins et al., 2012). The annual worldwide incidence of hip fracture is estimated to be 1.7 million, but an increase in the number of older adults in the industrialized countries and socioeconomic changes in Asia will result in an increase of up to 6.26 million by 2050 (Dhanwal et al., 2011). The estimated mortality

rate 6 months postfracture is approximately 36%, whereas the mortality rate 1 year postfracture is 47% (Neuman et al., 2014). Up to 50% of older adults surviving hip fracture will have reduced functional performance and will be poorer at managing daily activities than older adults without a hip fracture (Flikweert, Izaks, Reininga, Wendt, & Stevens, 2013). As a consequence, more than 10% of these older adults will be unable to return to their own home postdischarge, and one in four will need long-term follow-up (Roche, Wenn, Sahota, & Moran, 2005). Thus, the high incidence of hip fractures will increase rehabilitation needs (Safer, Tasci, & Safer, 2014).

Studies show that physical rehabilitation techniques and outcomes for older adults with hip fracture are most commonly investigated from the perspectives of health professionals and that hip fracture rehabilitation interventions are primarily designed to improve functional recovery, improve strength and balance recovery, and increase fall self-efficacy (Chudyk, Jutai, Petrella, & Speechley, 2009; Crotty et al., 2010; Kronborg, Bandholm, Kahlet, & Kristensen, 2015). However, physical recovery is only one important aspect of hip fracture rehabilitation, and there is consensus that activity, participation in daily activities, environmental factors, and personal factors also have an impact on older adults' functioning and disability (Rehabilitation Forum Denmark & Marselisborg Center,

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2004). By including physical, psychological, and social factors, it is possible to develop comprehensive, person-centered rehabilitation services and programs that are not solely directed at the older adults' physical functions but also take into account their mental functions, level of activity, and capacity for participation (Rehabilitation Forum Denmark & Marselisborg Center, 2004; World Health Organization [WHO], 2011). Development of such rehabilitation services and programs requires more knowledge regarding how older adults with hip fracture assess their own functioning and rehabilitation grounded in qualitative and quantitative approaches (Pearson, Wiechula, Court, & Lockwood, 2005).

The aim of this integrative review is therefore to identify and synthesize scientific evidence on older adults' experiences after hip fracture in relation to their physical and mental health, functional performance, and participation in daily activities and to determine which personal or social factors influence older adults' functional capacity after hip fracture. The International Classification of Functioning, Disability and Health (ICF) model published by the WHO in 2001 (WHO, 2001) was used as a theoretical framework, because it is able to encompass the complexity of the study aim, as the framework integrates and classifies health, functioning, and personal context based on qualitative and quantitative information into one unified and coherent view (Dean, Siebert, & Taylor, 2012).

Methods

Design

An integrative review was performed according to the methodology described by Whittemore and Knafl (2005). This approach allowed for inclusion of studies with

qualitative and quantitative methodologies in the same review (Joanna Briggs Institute [JBI], 2014; Whittemore & Knafl, 2005). The integrative review was conducted in the following five phases: (1) problem identification, (2) literature search, (3) data evaluation, (4) data analysis, and (5) presentation of the results (Whittemore & Knafl, 2005).

1. Problem Identification

Older adults surviving hip fracture have reduced functional performance and difficulty in managing daily activities, which may result in change of residential status and long-term follow-up (Flikweert et al., 2013; Roche et al., 2005). Although the physical recovery of these older adults has been investigated thoroughly and from the perspectives of health professionals, knowledge on other aspects of rehabilitation like activity, participation, environmental factors, and personal factors is sparse (Rehabilitation Forum Denmark & Marselisborg Center, 2004). Knowledge based on the older adults' own assessment of their functioning and rehabilitation after hip fracture grounded in both qualitative and quantitative approaches may contribute to the development of comprehensive, person-centered rehabilitation services and programs (Pearson et al., 2005).

2. Literature Search

The search strategy was developed in cooperation with a health librarian from Aarhus University Library, Denmark and, based on the Patient-Intervention-Comparison-Outcome (PICO) framework, incorporating the three elements of "participants," "phenomena of interest," and "context" (Davies, 2011; JBI, 2014). Inclusion and

Table 1 Characteristics of papers and PICO framework (inclusion and exclusion criteria)

Characteristics of the papers	Inclusion: Qualitative and quantitative studies addressing older adults' own assessment of their physical and mental health, functional performance, participation, and context between 1 week and 24 months after hip fracture. Qualitative interview studies. Experimental study designs (randomized/nonrandomized controlled trials and quasiexperimental studies). Prospective cohort studies. Original peer-reviewed studies. Data collected after January 2001 to accommodate the theoretical framework (International Classification of Functioning, Disability and Health model). Written in Danish, Swedish, Norwegian, German, or English. Focus on men and women. Hip fracture refers to femoral neck fractures, pertrochanteric fractures, and subtrochanteric fractures. Exclusion: Systematic reviews and meta-analyses, pilot and feasibility studies. Studies that only reported on men or women. Studies addressing the International Classification of Impairments, Disabilities and Handicaps (WHO, 1998). Questionnaires completed by professionals and statements from professionals.
Participants	Inclusion: Older adults, men, women, elderly people, aged persons, patients, age 65+, hip fracture, hip fractures, hip fracture surgery, after hip fracture surgery, therapy, nursing, complications. Exclusion: Hip replacement.
Phenomena of interest	Inclusion: Functioning, disability, rehabilitation, International Classification of Functioning, Disability and Health (activities of daily living, daily life activity, recovery of function, functional assessment, functional status, geriatric functional assessment, patient assessment). Exclusion: Main focus on impairment. Prefracture mobility. Professionals' and health professionals' perspective.
Context	Inclusion: The homes of the older adults (community-dwelling)—older adults living in their own homes or together with relatives. Institutional settings (hospital, nursing homes, senior housing, and rehabilitation centers).

exclusion criteria concerning these elements are presented in Table 1.

A systematic literature search was conducted between May 1, 2015, and June 18, 2015, in eight electronic databases (Bibliotek.dk, SveMed+, PubMed, CINAHL, Embase, Scopus, Web of Science, and the Cochrane Library) to identify peer-reviewed and published research papers. The following key words were used: “hip fracture” (“hip fractures” or “hip fracture surgery” or “after hip fracture surgery” or “therapy” or “nursing” or “complications”) and “older adults” (“men” and “women” or “elderly” or “aged persons” or “patients” or “age 65+”) and “functioning” and “disability” and “rehabilitation” and “International Classification of Functioning, Disability and Health” (“activities of daily living” or “daily life activity” or “recovery of function” or “functional assessment” or “functional status” or “geriatric functional assessment” or “patient assessment”) and “community-dwelling” and “institutional setting” (“own homes” or “living with relatives” or “hospital” or “nursing homes” or “senior housing” or “rehabilitation centers”). The search was performed by the first author in cooperation with a science librarian from Aarhus University Library, Denmark, and limited to literature published from January 2001 to June 2015. This limitation was chosen in order to focus on the current understanding of rehabilitation incorporated in the ICF model published by WHO in 2001 (WHO, 2001). The literature search was performed in three steps: (1) Keywords were identified based on knowledge of the field and through a literature search in the Cochrane Library, PubMed, and CINAHL. In addition, keywords were derived from relevant titles and abstracts. (2) Specific database searches were performed after consulting the thesaurus of each database. (3) The reference lists of all papers were scanned to identify additional studies.

3. Data Evaluation

The papers were evaluated in a four-step process to secure a thorough appraisal of their methodological quality. First, a template was generated from the inclusion and exclusion criteria to ensure that irrelevant papers were excluded. Second, the first author scanned the titles and abstracts ($n = 740$) for relevance. Third, the remaining papers ($n = 32$) were read in full text by the first author, and studies were excluded if they did not meet the inclusion criteria. Fourth, the remaining studies ($n = 30$) were appraised using the critical appraisal instruments from the JBI (2014) because these instruments are more sensitive to validity and more coherent because of their focus on congruity compared to the Appraisal Skills program (CASP) and the Evaluation Tool for Qualitative Studies (ETQS; Hannes, Lockwood, & Pearson, 2010). In this

step, the qualitative papers were assessed independently by the first author and the third author on the basis of the Qualitative Assessment and Review Instrument (JBI-QARI), and papers were included if they met 7 of the 10 criteria on this checklist. The quantitative papers were assessed independently by the first author and the second author on the basis of the Meta-analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) checklist for Comparable Cohort and Case Control Studies and JBI-MAStARI checklist for Randomized Clinical Trials (RCTs; JBI, 2014). In this process, papers were included if they met six of the nine criteria on the JBI-MAStARI checklist for Comparable Cohort and Case Control Studies and 7 of the 10 criteria on the JBI-MAStARI checklist for RCTs. A total of 17 papers were excluded because of these assessments. The setting, geography, culture, phenomenon of interest, intervention, bias, participants, and conclusions of the remaining papers ($n = 13$) were subsequently appraised using the JBI Data Extraction Instruments for Qualitative and Quantitative Research (JBI, 2015). In this final appraisal, two papers were excluded because of an inadequate description of the study settings. Findings from the included 11 papers were hereafter extracted by the first author and organized into extraction templates to document findings (see Table 2). The identification, screening, eligibility, and inclusion of papers are illustrated in Figure 1.

Table 2 Example of documentation of findings

Findings	Illustrations
How do older adults characterize and experience their physical and mental function after hip fracture?	
Paper 1, Qualitative Aware of pain postfracture that hinders mobility (Åberg et al., 2005).	Paper 1, Qualitative I feel pain all the time... when I walk, sit in my chair, sleep... I cannot do what I used to do (Åberg et al., 2005).
Paper 5, Quantitative Low balance confidence after hip fracture, but at 6 and 12 months the home rehabilitation group had a significantly higher degree of confidence in performing activities without falling, including self-care, stairs, and instrumental activities, than the conventional care participants. Total balance confidence on all follow-up occasions better among home rehabilitation patients than conventional care patients (Zidén et al., 2010).	

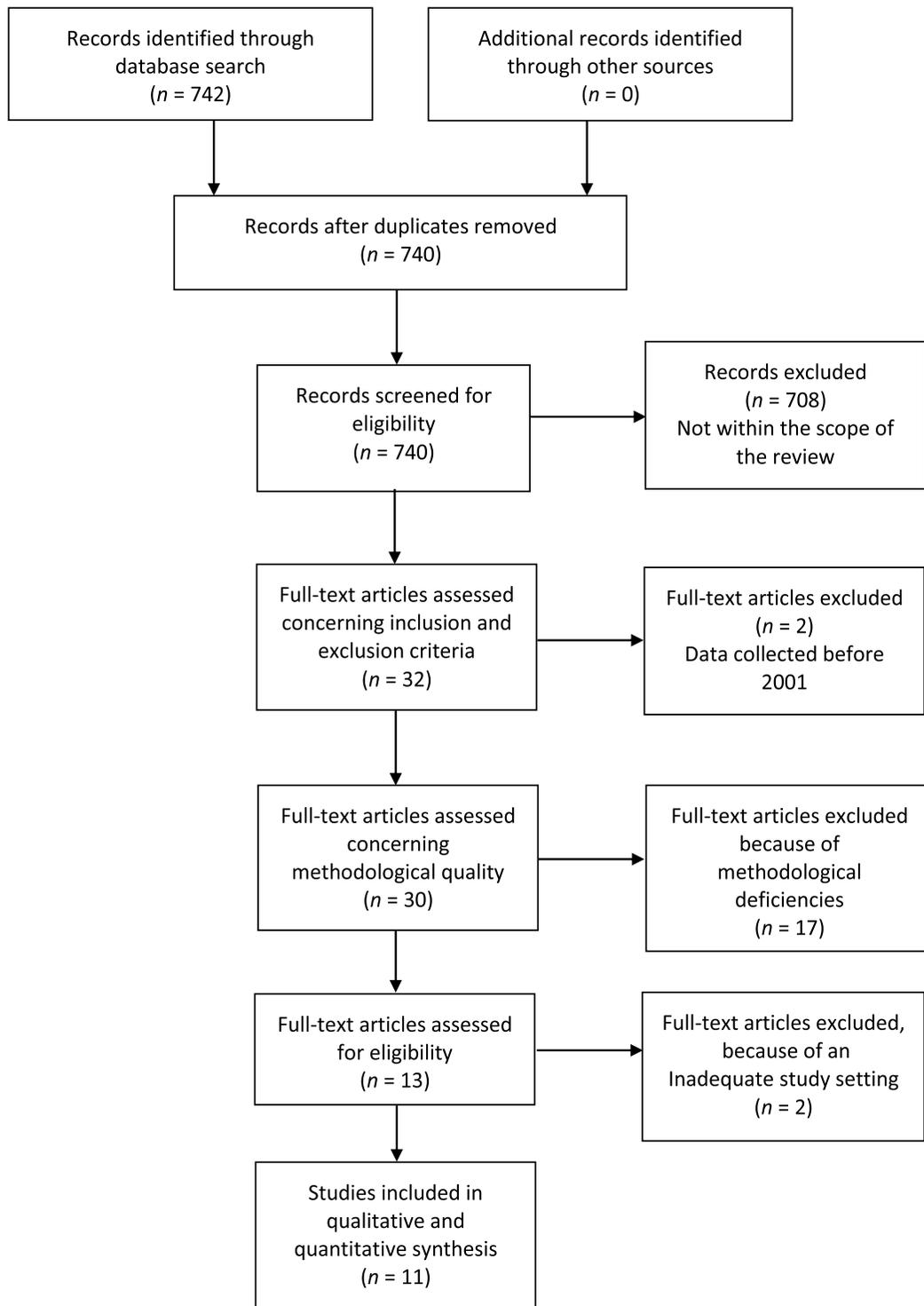


Figure 1. Identification, screening, eligibility, and inclusion of papers.

4. Data Analysis

Deductive contents analysis (Dey, 1993; Elo & Kyngäs, 2008; Kondracki, Wellman, & Amundson, 2002; Krippendorff, 2004; Schreier, 2012) was used to extract findings from the included papers. The analysis was performed in the following four stages by all authors. First, the included papers were reread several times to allow the

authors to become immersed in the data. Second, findings were categorized using the ICF model. In this process, the qualitative and quantitative findings were coded separately, manually, and systematically with the questions outlined in Table 3. Third, an approach based on equality between qualitative and quantitative data was used (JBI, 2014). The coded meaning units were analyzed and examined, and

Table 3 Research questions developed from the theoretical framework based on Dean et al. (2012)

Parts of ICF	Components of ICF	Definition	Questions
Health condition	Health condition	Disease (acute and chronic), disorder, injury, or trauma	- How do older adults characterize and experience their health condition after hip fracture?
Functioning and disability	Body functions and structures	Physiological and mental functions of body systems and anatomical parts of the body	- How do older adults characterize and experience their physical and mental function after hip fracture?
	Activity	Execution of a task or action by an individual	- What tasks and activities are older adults able to perform after hip fracture? - What tasks and activities do older adults experience that they can perform after hip fracture?
	Participation	Involvement in life situation	- How does the fracture affect older adults' participation? - In what way do older adults experience that the fracture has affected their participation?
Contextual factors	Environmental factors	Physical, social, and attitudinal environment in which people live and conduct their lives	- What physical, social, and attitudinal factors inhibit or promote older adults' functional capacity after hip fracture?
	Personal factors	Comprises features that are not part of a health condition or health state. The background of an individual's life and living.	- Do race, gender, age, life, habits, and life experiences inhibit or promote older adults' functional ability after hip fracture?

Note. ICF = International Classification of Functioning, Disability and Health.

meaningful syntheses were deduced to describe findings in accordance with the aim of the study. Fourth, a comparative analysis embracing the various syntheses was performed that could explain the main questions of this integrative review.

5. Presentation of the Results

Eleven of 740 papers were included (see Table 4). The studies all met 75%–100% of the criteria on the JBI-QARI and JBI-MASARI Critical Appraisal Checklists (JBI, 2014), respectively (see Table 5). The analysis included a total of 4,794 participants. The mean sample size was $n = 436$, with a range from 15 to 2,134 participants. Studies were conducted in Europe (Åberg, Sidenvall, Hepworth, O'Reilly, & Lithell, 2005; Ariza-Vega, Jiménez-Moleón, & Kristensen, 2014; Dasch et al., 2008; Samuelsson et al., 2009; Vochteloo et al., 2013; Young & Resnick, 2009; Zidén, Kreuter, & Frändin, 2010), the United States (Givens, Sanft, & Marcantonio, 2008; McMillan, Booth, Currie, & Howe, 2012; Young, Xiong, & Pruzek, 2011), and Australia (Åberg, 2008). The participants in the studies were either admitted to hospital, undergoing geriatric rehabilitation at a geriatric clinic, or home-dwelling and living by themselves with family members or with cohabitant partners. In addition, the participants assessed their own physical and mental health, functional performance, participation in daily life, and context on the basis of face-to-face interviews, telephone interviews, or self-completed questionnaires (see Table 4).

Five descriptive syntheses were derived from the included papers because of the analysis and examination of the coded meaning units: (1) mobility; (2) personal activities of daily living (PADL) and instrumental activities of daily living (IADL); (3) interaction with friends, family, and professionals; (4) residential status; and (5) adaptation strategies.

1. Mobility

On the basis of the findings, the older adults experienced reduced mobility related to fatigue, pain, weakness, depression, and delirium postfracture (Åberg, 2008; Dasch et al., 2008; Givens et al., 2008; Samuelsson et al., 2009; Young & Resnick, 2009). Pain, in particular, affected the mobility of older adults at rest and during movement on admission, the day after surgery, and the day before discharge (Åberg, 2008). In addition, severe pain increased the risk of physical inactivity 3.5-fold compared to older adults with less or no pain (Dasch et al., 2008). Thus, 20% of all older adults became immobile postfracture (Vochteloo et al., 2013). The level of mobility, including fear of falling, affected the older adults' opportunities to make free choices regarding participation in cultural and social life, for example, going to church, joining study groups, or playing golf, and their ability to run errands, go shopping, and meet people without the assistance of other persons (Åberg, 2008; Åberg et al., 2005). Several studies suggest that the older adults were aware of their functional limitations but felt incapable or floundered in response to their loss of control. However,

Table 4 Summary of included papers

Study	Methodology	Methods	Participants	Purpose/Phenomenon of Interest
McMillan et al., 2012, United States	Grounded theory described by Glaser.	Semistructured interviews.	19 participants living alone or with family members or a partner, aged between 67 and 89 years.	Postdischarge concerns of older adults after repair of fall-induced hip fracture were explored. A new understanding could increase awareness of issues that may impact on recovery and rehabilitation.
Young & Resnick, 2009, Scotland	Qualitative research approach.	Open-ended questions, content analysis.	62 community-dwelling older adults aged 65+ (average age was 78 years).	Factors that facilitate functional recovery from the patients' perspective were examined 1 year following postacute rehabilitation.
Åberg et al., 2005, Sweden	Qualitative research approach. Analytical induction described by Hammersley and Atkinson.	Semistructured interviews.	15 participants aged 80–94 years were interviewed while in hospital and after discharge.	The relation between General Motor Function and housing arrangements after discharge from hospital was investigated.
Åberg, 2008, Australia	Qualitative research approach. Symbolic interactionism.	Semistructured interviews.	15 participants aged 80–94 years undergoing geriatric rehabilitation at a geriatric clinic and postdischarge were interviewed.	The preferences of elderly care recipients regarding activity-related life space and life satisfaction were investigated.
Ariza-Vega et al., 2014, Southern Spain	Prospective cohort study.	Interviews, telephone interview, and questionnaire.	159 participants aged 65 and older.	The recovery of patients in terms of 18 activities of daily living and change of residence within the year following a hip fracture was studied.
Dasch et al., 2008, Germany	Prospective cohort study.	Telephone interviews and questionnaires.	1,541 participants 65 and older.	Pain intensity, pain-related disability, and severity of chronic pain were measured using the Graded Chronic Pain Scale.
Givens et al., 2008, the United States	Prospective cohort study.	Interviews, questionnaires.	126 participants aged 65 and older.	The prevalence of depressive symptoms, cognitive impairment, and delirium was measured to estimate the effect of these factors on functional recovery, institutionalization, and death postsurgery.
Samuelsson et al., 2009, Sweden	Prospective cohort study.	Face-to-face interviews, telephone interviews or postal questionnaires.	2,134 patients.	Gender differences in residence, walking ability, and activity of daily living were analyzed in patients with and without intact cognitive function.
Vochteloo et al., 2013, The Netherlands	Prospective cohort study.	Questionnaires.	390 patients 65 and older.	Measurement of functional recovery and determination of risk factors for the failure to return to prefracture level of mobility 1 year postsurgery.
Young et al., 2011, the United States.	Prospective cohort study.	Interviews and measurement by The Functional Independence Measure (FIM).	231 community-dwelling adults 65 and older.	Functional recovery patterns of cognitively impaired and nonimpaired older adults were compared postsurgery.
Zidén et al., 2010, Sweden	Randomized controlled study (RCT).	Questionnaires.	102 participants aged 65 and older.	Measurements of functional independence, instrumental activities of daily living, personal activities of daily living, mobility, health-related quality of life, mood, and depression after hip fracture

Table 5 Appraisal of the included papers by the JBI-QARI and MASTARI critical appraisal checklists

	1	2	3	4	5	6	7	8	9	10	Points
McMillan et al., 2012	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Young & Resnick, 2009	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Åberg et al., 2005	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	9/10
Åberg, 2008	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	9/10

1–10 = Questions from the QARI tool for QARI (Y = yes, N = no, U = unclear):

1. Congruity between the philosophical perspective and the research methodology
2. Congruity between the research methodology and the research question
3. Congruity between the research methodology and the data collection methods
4. Congruity between the research methodology and the data analysis
5. Congruity between the research methodology and the interpretation of results
6. The cultural or the theoretical location of the researcher
7. The researchers' influence on the research, and vice versa
8. Adequate representation of the participants
9. Ethical considerations or evidence of ethical approval
10. Conclusions drawn from the analysis or data interpretation

	1	2	3	4	5	6	7	8	9	Points
Ariza-Vega et al., 2014	Y	Y	Y	Y	Y	Y	U	Y	Y	8/9
Dasch et al., 2008	Y	Y	U	Y	U	Y	Y	Y	Y	7/9
Givens et al., 2008	Y	Y	Y	Y	Y	Y	U	Y	Y	7/9
Samuelsson et al., 2009	Y	Y	U	Y	Y	Y	N	Y	Y	7/9
Vochteloo et al., 2013	Y	Y	N	Y	Y	Y	Y	Y	Y	8/9
Young et al., 2011	U	Y	Y	Y	Y	Y	Y	Y	Y	8/9

1–9 = Questions from the MASTARI tool for Comparable Cohort/Case Control Studies (Y = yes, N = no, U = unclear):

1. Representative sample size
2. Participants at the same course of their condition
3. Minimization of selection bias
4. Identification and strategies concerning confounding factors
5. Objective outcome criteria
6. Follow-up over a sufficient time period
7. Inclusion of outcomes of participants withdrawing from the study
8. Reliable outcome measures
9. Appropriate statistical analysis

	1	2	3	4	5	6	7	8	9	10	Points
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Zidén et al., 2010

1–10 = Questions from the MASTARI tool for RCTs (Y = yes, N = no, U = unclear):

1. Random assignment to treatment groups
2. Blinded treatment allocation
3. Concealed allocation from the allocator
4. Inclusion of outcomes of participants withdrawing from the study
5. Blinded treatment allocation
6. Comparable control and treatment groups at entry
7. Identically treatment for the nonintervention group
8. Identical outcome measures for all groups
9. Reliable outcome measures
10. Appropriate statistical analysis

Note. JBI = Joanna Briggs Institute; QARI = Qualitative Assessment and Review Instrument; MASTARI = Meta-analysis of Statistics Assessment and Review Instrument.

older adults tried, nevertheless, to preserve their self-image and independence by keeping up hobbies, interests, and contacts with acquaintances, relatives, and friends (Åberg, 2008; Åberg et al., 2005; Young & Resnick, 2009). Limitations in physical capacity forced the older adults to rely on family members when going to medical appointments, shopping centers, and for leisure activities (Åberg, 2008). These older adults also received visitors and used the telephone more frequently because of functional limitations (Åberg, 2008). Similarly, it was demonstrated that reduced mobility transformed activities like washing, toileting, dressing, and eating into complex skills and behaviors (Zidén et al., 2010). Nevertheless, a better general functioning of the body and limbs during the recovery process made the older adults regain their feeling of control, confidence, and independence of others (Åberg, 2008; Åberg et al., 2005; Young & Resnick, 2009).

2. PADL and IADL

Older adults experienced limitations in self-care, television watching when sitting down, tidying up, gardening, helping spouses or cohabitant partners with meals, or going to their summer cottages because of pain and reduced locomotion, especially up to 3 months postfracture (Dasch et al., 2008; Vochteloo et al., 2013; Zidén et al., 2010). Nearly 50% of older adults with hip fracture were dependent on others in order to engage in PADL 1 month postfracture, and more than 25% had a decline in this engagement at 6 months (Givens et al., 2008). Similarly, the number of independent older adults, from prefracture to 1 year postfracture, dropped from 55% to 33% with regard to bathing and showering, from 73% to 42% for dressing the lower body, and from 85% to 67% for toileting (Ariza-Vega et al., 2014). Evidence was found that stepwise addition of depressive symptoms, cognitive impairment, or delirium was associated with a decline in PADL (Ariza-Vega et al., 2014) and that a decline in PADL together with the occurrence of delirium was the most important independent risk factor for not regaining the prefracture level of mobility between 3 and 12 months postfracture (Vochteloo et al., 2013). Åberg found that even though older adults wanted to continue performing personal care irrespective of their degree of outside help, dependence, or physical capacity, this was not always possible (Åberg, 2008). As a result, the older adults felt embarrassed, which was associated with a risk of diminishing dignity and integrity of the self, especially if they were dependent on help with toileting, personal care, and changing of clothes and sheets after wetting the bed (Åberg et al., 2005). The reduction in performance of PADL also made older adults feel lazy or frustrated, which, in turn, affected their activity, participation,

and independence of others (Åberg, 2008). Person-centered home rehabilitation helped the older adults receive a higher degree of independence in self-care and locomotion postdischarge because of individual goal setting, motivation, and home visits by physiotherapists and occupational therapists (Zidén et al., 2010).

3. Interaction With Friends, Family, and Professionals

Verbal encouragement from others, an optimistic attitude, support from family and friends, spirituality, and belief in a supreme being helped the older adults maintain their focus on recovery (Åberg, 2008; McMillan et al., 2012). Communication and a positive attitude on the part of the professional providers, including advice and goal setting by medical professionals on physical activities, also motivated the older adults to regain their independence from others (McMillan et al., 2012).

4. Residential Status

Four studies suggested that a proportion of older adults had difficulty returning to independent living after hip fracture because of functional limitations or cognitive impairment (Ariza-Vega et al., 2014; Samuelsson et al., 2009; Vochteloo et al., 2013; Young et al., 2011). Thus, cognitively impaired and nonimpaired older adults seemed to recover better with respect to self-care, locomotion, transfers, and sphincter control 2 months postfracture if their environment was structured and included support and care from health professionals (Young et al., 2011). Similarly, living in institutionalized care and own home before the hip fracture increased the risk of not regaining prefracture level of mobility due to difficulty in sustaining the rehabilitation gains by way of help from family and similar social support (Vochteloo et al., 2013).

5. Adaptation Strategies

The older adults had difficulties accepting both new circumstances and limitations of activity and geographical sphere because of the fracture and their changed role in the family (Åberg, 2008; Åberg et al., 2005). These older adults felt uncomfortable and anxious and refused to follow orders given by health professionals (McMillan et al., 2012; Young & Resnick, 2009). In addition, women, in particular, found it difficult to depend on practical support from relatives (McMillan et al., 2012; Young & Resnick, 2009). Older adults developed and used psychological factors like adaption strategies, related to their level of functional limitation, as a result of their dependence (Åberg et al., 2005; McMillan et al., 2012; Young & Resnick, 2009). Whereas older adults with few functional limitations reorganized their lives by using transport services, meals-on-wheels services, or by moving to a new

home in order to maintain habitual activities (Åberg et al., 2005), older adults with severe functional limitations or damaged confidence and older adults who were living alone were helped and guided, “kept afloat,” by others in order to regain independence and control, “gain ground,” in the rehabilitation process (Åberg et al., 2005; Young & Resnick, 2009). Mental adaptation strategies like happy memories of early life or holidays and future holidays also helped the older adults to pass the time and escape from current difficulties in the rehabilitation process. Eating healthy food, engaging in regular exercise, and taking appropriate medication and vitamins were also used by older adults to adapt to changes within their health condition (Åberg et al., 2005; McMillan et al., 2012).

Discussion

The transversal comparative analysis of the five descriptive syntheses revealed the following two explanatory themes that could answer the main questions of the study: (1) change in body functions, functional performance, and participation and (2) factors influencing functional capacity after hip fracture.

Previous reviews have focused on interventions directed at functional recovery as a parameter for positive outcome of hip fracture rehabilitation (Chudyk et al., 2009; Crotty et al., 2010; Handoll, Sherrington, & Mak, 2011). Thus, the present integrative review challenges this unilateral perspective on rehabilitation by focusing on various dimensions of the older adults' health postfracture, dimensions, which ought to be taken into account in the development of comprehensive, person-centered rehabilitation services and programs (Dean et al., 2012).

Change in Body Functions, Functional Performance, and Participation

Evidence suggests that pain affects the older adults' mobility postfracture (Åberg, 2008; Dasch et al., 2008; Givens et al., 2008; Samuelsson et al., 2009; Vochteloo et al., 2013; Young & Resnick, 2009). Similarly, studies show that pain hinders early mobilization and that postoperative pain management is crucial for hip fracture rehabilitation of older adults (Bech, Lauritsen, Ovesen, & Overgaard, 2015; Chin, Ho, & Cheung, 2013). In line with these studies, a comparative effectiveness review conclude that patient-defined or proxy-reported pain measurement tools can be used to assess pain if gender, age, race, comorbidities, body mass index, prefracture functional status, marital status, and family distress, which might influence such measurements, are considered (Abou-Setta et al., 2011). Pain assessment tools that reflect various perspectives of the older adults' health

should be used by nurses working within and across settings of hospital-based and home-based care to permit early mobilization and further rehabilitation.

Hence, evidence was found that pain-related limitations in mobility also affected the older adults' mental health and capacity for participation (Åberg, 2008; Åberg et al., 2005; Young & Resnick, 2009; Zidén et al., 2010). In cohort studies, older adults have reported a significant deterioration in their general health and psychological well-being as a result of their impaired physical and social functions (Randell et al., 2000). This deterioration reflects a changed self-image and decreased dependence on others due to decline in body functions, and this contributes to increased social isolation and lower self-esteem. This also seemed to be the case in our study (Randell et al., 2000). Similarly, a cohort study has shown that older adults have a poorer perception of their body image after hip fracture, triggering isolation and reducing their desire to be seen in public (Peel, McClure, & Hendrikz, 2007). Such perspectives may explain why the participants in our integrative review felt embarrassed and frustrated as a result of their dependence on others and received visitors instead of participating in their social environment. Knowledge on change in body functions and body image as a result of hip fracture should be included by nurses when person-centered rehabilitation services and programs are developed and carried out. In the present integrative review, adaption strategies were used because of a decline in PADL, limitations in physical capacity and functions including decreased ability to perform tasks and activities (Åberg, 2008; Åberg et al., 2005; Dasch et al., 2008; McMillan et al., 2012; Vochteloo et al., 2013; Zidén et al., 2010). Similarly, previous studies have demonstrated that psychological distress and exposure to recent adverse life events, such as having a hip fracture, result in use of proactive coping strategies like self-determination and self-efficacy including social support like tangible aid, care, and empathy from friends, spouses, and other family members, because they help older adults cope with their fracture (Peel et al., 2007; Roberto, 1992). An overview of the scientific literature shows that knowledge of older adults' use of adaption strategies postfracture is sparse. The present review suggests that the choice of adaption strategy is not gender-specific but based on the level of functional limitation and dependence (Åberg et al., 2005). However, the present integrative review also suggests that women have more difficulty than men being dependent on relatives (McMillan et al., 2012), which is in line with a study by Roberto (1992). However, gender-specific use of adaption strategies was not clearly investigated in the included studies of the integrative review.

Further research on how men and women select and use adaption strategies postfracture should therefore be conducted.

Factors Influencing Functional Capacity After Hip Fracture

Functional capacity was influenced by interaction with friends and family (Åberg, 2008; McMillan et al., 2012). This was to some extent due to the older adults' decline in PADL, activity, and participation. Prospective cohort studies show that frequent contact with friends and family is a marker for health and recovery of older adults' prefracture level of function and walking ability (Mortimore et al., 2008; Mutran, Reitzes, Mossey, & Fernandez, 1995). However, in the present review, evidence was found that family caregiving not necessarily helped the older adults recover compared to a structured environment with support and care from health professionals (Vochteloo et al., 2013; Young et al., 2011). A Taiwanese study on factors affecting recovery postfracture documents a need for caregiver-related healthcare information, support groups, and social services, because such actions could have an impact on the functioning of older adults (Shyu, Chen, Wu, & Cheng, 2010; Wallace & Ellington, 2014). Future research is, however, needed to investigate this correlation in Western cultures.

The importance of goal setting by health professionals was stressed (McMillan et al., 2012; Zidén et al., 2010). Evidence-based literature suggests that short-term and long-term goals involve communication about the hopes, intentions, and expectations of all people involved, including a negotiation of the direction that the rehabilitation process should take (Dean et al., 2012). However, nurses working within and across settings of hospital-based and home-based care must recognize that not all older adults have a clear understanding of what goals they want to pursue. Studies have shown that postsurgery delirium or mild to moderate cognitive impairment is associated with decreased functional recovery and change in residential status (Givens et al., 2008; Schaller et al., 2012). These older adults will need support from professionals, including nurses, and approaches to retrain their self-regulation skills in order to set realistic goals (Dean et al., 2012). In addition, these professionals should consider inclusion of cognitive function assessment in post-hip fracture care to identify individuals lacking self-regulation skills.

Strengths and Limitations

A strength was that the included studies all met 75%–100% of the criteria on the JBI-QARI and MASTARI Critical Appraisal Checklists (JBI, 2014). One limitation was that the researchers' influence on the research and vice versa was not addressed in two interview studies (Åberg, 2008; Åberg et al., 2005). Another limitation

was that participants' dropout was not explained in two cohort studies (Dasch et al., 2008; Samuelsson et al., 2009). In addition, representativeness was not discussed in a study by Givens et al. (2008). In this study, older adults were included only from one academic tertiary medical center, and it was unclear whether or not outcomes were assessed using objective criteria and if dropouts were described and included in the analysis.

The systematic and critical approach adopted throughout the review process is a strength. The systematic, librarian-assisted, literature search in eight databases was comprehensive and resulted in a final inclusion of 11 studies. The ICF model as theoretical framework was found useful to enhance the conceptual understanding of the physical, mental, and social perspectives, including the environmental and personal context of older adults. By using the ICF model as a theoretical framework, the authors were able to describe different aspects of functioning and the environment based on various methods because the ICF as a classification defines what to measure and how to organize assessments of qualitative and quantitative information (Dean et al., 2012).

The included studies used a variety of methods, and therefore, caution should be used when generalizing the findings. Conversely, strong reviews often draw on findings of qualitative and quantitative studies because they enable readers to access the findings of a wider range of research than would otherwise be the case (Harden & Thomas, 2005). According to Whittemore and Knafl (2005), the combination of diverse methodologies can contribute to a lack of rigor, inaccuracy, and bias. To protect against bias and improve the accuracy of the conclusions, we used explicit and systematic methods, including a structured extraction matrix for transparency in the analytical process.

To achieve an overall picture of older adults' experiences after hip fracture, gender-specific literature was excluded. The findings showed, however, that women found it more difficult to depend on practical support from relatives than did men. This difference should be investigated further through studies of gender informants. Academic literature not formally published and articles in languages other than Danish, Swedish, Norwegian, German, and English were not included. The selected studies included participants from five European countries (Scotland, Sweden, Germany, The Netherlands, and southern Spain), the United States, and Australia and reflect the fact that the topic has been considered important and debated in different health communities. It is nevertheless important to stress that the healthcare systems and the rehabilitation services following hip fracture differs in these countries, which may influence the functional recovery and independence of the older adults. As an example, the residential

status and thus the rehabilitation services in southern Spain differs from northern Europe because of different family structures and cultural influences. The participants included in the studies assessed their physical and mental health, their functional performance, participation in daily activities, and personal context by interviews or questionnaires. A possible weakness of this inclusion criterion was that some of the studies provided no information on the older adults' literacy, visual health, capacity to concentrate, or the task, time, and complexity involved in being interviewed or answering questionnaires. Another possible weakness is that the analysis of the studies does not include control for frailty as the findings are not differentiated by setting of care or age.

Conclusion

The review indicates an interaction between pain and mobility, mental health, and capacity for participation including change in body functions and body image postfracture. This integrative review also indicates that the use of adaptation strategies helped older adults cope with their fracture, but further research is needed to determine how men and women select and use adaptation strategies. Interaction with family and friends is not necessarily a marker for health, and further research is needed to investigate the contribution of caregivers in the rehabilitation process. Older adults with delirium or mild to moderate cognitive impairment may not have the ability to set realistic goals postfracture. Support approaches from professionals, including nurses, to retrain self-regulation skills including cognitive function assessments could improve this ability.

Clinical Relevance

The findings of this integrative review can be used to develop person-centered and comprehensive rehabilitation services and programs that focus on various perspectives of the health of older adults after hip fracture:

- Assessment of pain that also includes knowledge of the older adults' health, body functions and structures, activity, and personal context to permit early mobilization and further rehabilitation.
- Knowledge on change of body functions and body image implemented through nursing interventions, group discussions between health professionals, and education of the older adults to prevent deterioration in the older adults' general health and psychological well-being.
- Cognitive function assessments to identify vulnerable older adults unable to set goals themselves, including the use of approaches to retrain self-regulation skills in these older adults.

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Key Practice Points

- The older adults' mobility; personal activities of daily living; instrumental activities of daily living; interaction with friends, family, and professionals; and their residential status changed because of the hip fracture. In addition, the older adults used various adaption strategies to gain ground in the rehabilitation process.
- An interaction between pain and mobility and between mental health and capacity for participation including change in body functions and body image postfracture was found.
- Interaction with family and friends was not found to be a marker of health, but further research is needed to determine the role of caregivers in the rehabilitation process.
- Older adults with delirium or mild to moderate cognitive impairment need professional support to retain self-regulation skills in order to set realistic goals postfracture.

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