

Patient perspectives on treatment, care and rehabilitation after hip fracture: A meta-aggregative systematic review

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Abstract

Background: Hip fracture surgery is a distressing and life-changing event for patients. The treatment, care and rehabilitation of hip fracture patients governed by evidence-based recommendations, the patients' preferences are often not represented. The aim of this systematic review is to identify elderly hip fracture patients' priorities during their care trajectory.

Methods: A meta-aggregative approach was applied to present findings on patient perspectives. Data were extracted from the findings in the Results section of each study, categorized by similarity in meaning by both authors as either "health-related outcomes" or "healthcare-related experiences". The quality of the presented evidence was evaluated, and all studies were assessed using the Critical Appraisal Skills Programme (CASP) checklist.

Results: Sixteen qualitative studies met the inclusion criteria. The health-related outcomes category included: 1) symptoms and complications, 2) physical health, 3) mental health and 4) social relationships and 5) personal goals. Healthcare-related experiences revolved around: 1) waiting time, 2) information, 3) being treated with respect, 4) participation and 5) discharge.

Conclusions: This systematic review provides an overview of hip fracture patients' perspectives on important aspects of care, treatment and training during their trajectory, thereby contributing to the development of a patient-derived measure of hip fracture.

Background

The consequences of a hip fracture can be considerable. Mortality rates of up to 10% during admission [1] and 20–36% after 12 months [2, 3] are documented. Between 40 and 60% of hip fracture survivors recover their pre-fracture functional level while 40–70% regain their level of independence for basic activities of daily living [4, 5]. Impaired mobility alongside reduced social independence affects quality of life [6–8].

Several continental and national orthopaedic associations have published evidence-based recommendations for the treatment, care and rehabilitation of hip fracture patients, including recommendations on mobilization strategies, the timing of surgery, pain management, post-operative prevention, rehabilitation programmes and patient information [9, 10]. Patient's preferences are not represented in the guidelines, even though this issue is central to evidence-based practice [11]. Furthermore, healthcare professionals' perceptions of quality of care and quality of life may differ from patients' perceptions [12], as the former tend to focus on clinical factors whereas the latter focus on the impact on their lives [13].

A systematic inclusion of the patient perspective in patient pathways could be secured by implementing patient-reported outcome instruments (PROM). However, for PROM instruments to reflect the patients' perspectives, it is essential to develop and use patient-derived instruments [14, 15]. Where PROM instruments truly reflect patient perspectives, they have been shown to improve patient—provider communication and patient satisfaction [16–18]. There is also growing evidence that well-implemented PROM instruments improve the monitoring of treatment response and enhance the detection of unrecognized problems [16].

Despite much work on hip fracture, this is the first systematic overview of research on the patient perspective to be published. The aim of this paper was to identify the factors considered essential by elderly hip fracture patients. Its core topics – treatment, care and rehabilitation – emerged from the context.

Methods

The protocol was registered exclusively with PROSPERO (ID CRD42018091981), which is accessible at www.crd.york.ac.uk/PROSPERO.

Meta-aggregative approach

Using a meta-aggregative approach, we strove for a reliable representation of the authors' findings. A reinterpretation of the findings was not our aim as the meta-aggregative approach is pragmatic, aiming for immediate usability of findings [19].

Search strategy

An information specialist was consulted for the design of our search strategy and the identification of databases and keywords.

The following electronic bibliographic databases were searched by the first author (C.A.) on April 10, 2018: MEDLINE via PubMed, PsycINFO, EMBASE and CINAHL, using block building strategy as well as searching grey literature in PsycEXTRA, OpenSIGLE and HMIC database. Pearl growing strategy was subsequently used to examine the reference lists of relevant studies, dissertations and conference abstracts.

Search terms were structured using the SPIDER framework. However, its design and evaluation aspects were deselected due to highly restricted searches. Table 1 exemplifies the search strategy for Cinahl.

Inclusion criteria

Study selection

Retrieved studies were imported into Endnote (<https://endnote.com/>). Doublets were removed, both prior to importation to the web-based reference programme Covidence (www.covidence.org) and in Covidence. In Covidence, both reviewers (C.A. and B.N.) independently screened and identified studies meeting the inclusion criteria. Any disagreement between the reviewers concerning the eligibility of studies was resolved through a joint survey to reach consensus. Studies that met the inclusion criteria were retrieved for full text analysis. The process is shown in Figure 1.

Data extraction

Study characteristics were extracted by the first author, including bibliographic information (author, year and country), study aim, data collection methods, time and place of interview, sampling strategy, inclusion and exclusion criteria, participant characteristics and data analysis techniques (Table 2). Data on patients' perspectives were extracted by both authors as first-order constructs (participants' citations) and second-order constructs (researcher interpretation, including themes, subthemes and statements) [20].

Quality appraisal

The quality assessment was based on the Critical Appraisal Skills Programme (CASP) checklist for qualitative studies [21] and user guidelines as described by Butler et al., 2016 [22]. In the scoring, 1 point was allocated for *Yes*, 0.5 points for *Can't tell* (unsure) and 0 points for *No*. To ensure a rigorous and fair assessment, we considered all italicized prompts listed under each question in the checklist, giving particular emphasis to Question 3 (the presence of a justification of research design), Question 7 (clear statements concerning the researchers' detailed explanations of the research to participants) and to Question 8 (the presence of in-depth description of the analysis process).

All articles were assessed independently by both authors. Disagreement occurred only concerning unclear criteria fulfilment, which was discussed until consensus was reached. Data are shown in Table 2.

Analysis

Data were analysed by both authors, using a meta-aggregative approach. The analytical strategy included the extraction of findings from the Results section of each study, in terms of citations, statements, categories and themes described by the authors of the primary-level studies. Based on the recommendations of Pearson et al. (2004), each finding was assigned a level of evidence according to its quality (Table 4 in Supplementary). The data extraction was initially approached in an open and explorative fashion (inductively). The data were subsequently categorized according to similarity of meaning, as judged by both authors and grouped for final synthesis as either health-related outcomes or healthcare-related experiences.

Results

We identified 2045 articles: CINAHL (n=446), EMBASE (n=1087), PubMed (n=379), PsycINFO (n=125) and PsycEXTRA, OpenSIGLE and HMIC database (n=7). A search of reference lists and abstracts of the included studies identified a single study. In Endnote and Covidence, 427 and 183 duplicates, respectively, were excluded. A total of 1436 articles were retrieved and assessed for eligibility; 1326 articles were excluded after a review of their titles and abstracts, leaving 110 studies for full-text reading. Sixteen studies met the inclusion criteria (Figure 1).

Study characteristics

Six studies had been conducted in Sweden, three in the UK, two in Canada; the remaining five in Denmark, Norway, New Zealand, Australia or the USA. The studies covered data gathered at admission [23, 24], two weeks [25], one month [26], two to four months [27-30] or six to 12 months after discharge from hospital [31-33]. One study had a time frame from three months to 22 years after fracture [34]; the remaining four studies gave no indication of the time of interviewing [35-38]. In total, 286 participants were interviewed, 211 females and 59 males aged 65-99 years (Table 2).

Various techniques were employed for data collection: semi-structured, in-depth and telephone interviewing. The data analysis techniques appeared to be heterogeneous; the most frequently used were phenomenological approaches, content or thematic analysis.

Quality assessment

With CASP quality scores of 6.5–9.5, the quality of the studies ranged from low (below 7.5), to moderate (7.5–9) to high (9–10) [22]. Methodological shortcomings mainly concerned the omission of considerations on the researcher–participants relationship and ethical issues (CASP, Questions 6 and 7). Several studies provided no clear justification of methodological choices, in which case *Can't tell* was assigned. Details are presented in Table 3.

That hip fracture patients find important

Health-related outcomes

Health-related outcomes included 1) symptoms and complications, 2) physical health, 3) mental health and 4) social relationships and 5) personal goals.

1) Symptoms and complications

Mentioned in several studies [23, 26, 30-33, 35-37], pain provided the core theme of two studies [35, 37]. Pain occurred immediately after the injury [37], and for some continued to be a problem 6–12 months after the injury [26, 31, 33] {1997 #1449}. Patients described their pain in various ways, e.g. as intense or stabbing, in the hip, radiating towards the groin, numbness of the leg [35]; however, it was typically described simply as extreme and intense. Patients perceived the hip pain to be worst during movement; when they laid still, the pain disappeared except initially in the hospital stay, when it was constant [35]. Pain was cited as one of the main reasons for avoiding exercise, thus hindering recovery.

Unexpected postoperative medical or surgical complications were among the other symptoms and complications mentioned by patients as major barriers to recovery [31, 33]. Complications also included hallucinating, sleeping problems, constipation, a lack of appetite and low blood count [35, 36], fatigue and tiredness [26, 28, 32, 33] and subsequent falls [31].

When addressing leg-specific symptoms and complications, swelling [35], stiffness [26], reduced leg length [28] and problems with balance, strength and speed were pinpointed [28, 32, 33]. The patients saw these factors, or pre-existing health issues, combined with hip fracture, as impediments to recovery [31, 38].

2) Physical health

The patients' mobility was reduced, and they felt restricted by both the fracture and the physical symptoms and complications listed above [26, 28, 32, 35, 37].

Mobilization in particular was found to be difficult and harrowing during the first few days [35]. Everyday functions that had earlier been taken for granted, such as walking freely, had suddenly become difficult. The patients were thus wary of performing common daily activities, such as using a low armchair, worrying that they might not be able to rise from it, or cleaning, doing the laundry, shopping, going for a walk outdoors, driving a car or using public transportation [26, 28, 38]. Overall, the unreliability of their body and their sense of fragility left them feeling vulnerable [23, 26, 27, 29, 30, 37].

For some patients, the physical consequences of the hip fracture persevered 12 months after the injury [32].

3) Mental health

Patients described the hip fracture as a shocking, or even life-shattering event that had put their life on hold [23, 26, 28, 29]. They addressed their new situation very differently, however; some were able to stay active or seek others' help in trying to remain in control of their life, while others felt resignation, hesitant and unable to actively take control and plan for the future [23, 26-28, 30, 33, 38]. Regaining control was perceived crucial to recovery.

Physical limitations caused insecurity, confidence loss and mistrust of own physical ability. Many reported worries about falling again [26-28, 30, 32, 35, 37]. They were also anxious about relapse [30] and treatment [36], adverse events and overmedication [35]. Concern was also expressed about further complications [38], their future ability to walk [23], dependency [23, 27, 38], the discharge and return to the home [23, 25, 27, 35] and the future in general [26, 29, 38].

Some patients' mood was negatively affected by the changed life situation brought about by the limitations in agility and their increased insecurity and fear [32]. They felt a sense of meaninglessness and had lost hope for the future [26, 32]. Some reported being depressed [29] or losing "the spark of life" [26, 32].

Patients saw it as essential to maintain a positive attitude and engage fully in the recommended rehabilitation activities [25, 31].

4) Social relationships

After hip fracture, patients spoke of a more restricted everyday life and being prevented from performing normal activities, such as cooking, washing, cleaning, shopping and gardening, which caused periodic

feelings of dependence on others [26, 37]. For those living with a spouse or other family members, family was described as being instrumental for support with daily activities and encouragement to engage in rehabilitative exercises [33]. Many singles enjoyed support from neighbours [35]. Some spoke of their belief that their recovery process had been facilitated by others' actions [29, 31]. Yet, they found it difficult to balance between their need and expectations for help and not burdening their family [28, 30, 32, 34, 35, 38].

As they became housebound, the physical limitations had led to an isolated everyday life for some patients [26, 28, 32, 37], and the lack of energy made them abstain from inviting or visiting neighbours and friends [28]. Overall, their life had suffered from the diminished social contact [32].

5) Personal goals

The patients' goals included returning home, regaining independence, getting well and being able to walk again. These goals were perceived useful to facilitate the recovery process [31]. Hip fracture patients, regardless of health status or ability, expressed a strong desire to recuperate [23, 32]. However, patients admitted from and returning to their own homes were especially determined to regain their independence [25, 28-31, 37] and return to normality [27, 29, 30, 34].

Patients described a need for information on what to expect, including time to recover and train and to keep on fighting to achieve their goals [25, 29]. Unrealistic expectations would increase the risk of disappointment and dissatisfaction, some said [33].

Most patients expected a return to life as it was before the injury, although some spoke of having had to gradually lower their expectations and adjust to life with disability [26, 32, 34].

Healthcare-related experiences

Several studies mention patients' experiences in relation to waiting time [35], information [23-25, 30, 32, 33, 35, 36, 38], being treated with respect [25], participation [24, 25, 34, 36] and discharge [23-25, 31, 35, 38].

1) Waiting time

Waiting times was a core theme of one study, which reported that elderly patients with hip fracture found the waiting time for surgery protracted and stressful. It is noted, however, that when it was time for surgery, many patients still did not feel mentally prepared because they felt that "everything happened very quickly"[35].

2) Information

Eight studies indicated as especially important various aspects of information, such as the need for it [24, 38], the lack of it [33] as well as information content [23-25, 27, 32, 35, 38] and method [27].

Patients indicated their interest in information on a range of issues, such as hip fracture [23, 27, 35], surgery [35], current and potential complications [35, 38], rehabilitation and training [23, 32, 35], care decisions [24] and discharge [25]. Being informed also covered feedback, advice or reassurance from healthcare professionals regarding progress [27]. Overall, there was a strong desire to be able to know what to expect during the course of treatment [25].

However, hip fracture patients differed in their conceptions of their need for information [23]. Some were aware of the importance of information and requested it. Others appreciated and were grateful for any information offered, but made no requests for elaboration, although they seemed to want this [23]. The causes of their reluctance are unknown, although the authors conjecture this could stem from not knowing what to ask about [33]. Others showed no interest in receiving or discussing potentially useful information [23].

Patients frequently reported the need for more information about their condition, about what to do and how to act, [23, 30, 38]. Among the oldest persons, many were made to feel cognitively floundering, disempowered, a lack of confidence and anxious about their capabilities as a result of not being informed or not recalling being informed, or being unable to understand the information provided [30]. Yet, some patients were satisfied with the given information and experienced its calming effect [35].

Overall, patients expressed a wish for sufficient information at the right time [32]. Mentioning e.g. verbal and written information, weekly information sessions on the ward about hip fracture, they requested it be given from various sources, and employing different modes [35].

3) Being treated with respect

The patients' sense of well-being appeared to depend on dialogue and their experience of empathy [36]. One informant expressed her humiliation at not being treated humanely [25].

4) Participation

Four of the included studies referred to participation and involvement as important issues. Participation was requested with regard to processes during hospitalization and discharge planning [25] and in relation to own healthcare [24]. Overall, many patients perceived their participation as lacking [24, 25, 36]. The younger among the patients, and those living independently prior to the hip fracture, were more likely to insist on being involved [34].

5) Discharge

Returning home was considered a main goal by the informants [31], but several felt insecure or even anticipated discharge with anxiety [23, 25, 35]. In a study in which being "ready or not" was a core theme, an informant vividly described the rushed nature of her discharge and her feeling of being unprepared [24].

Patients' sense of insecurity was aggravated by limited information about the pathway and what to expect after discharge. This left them unable to image their situation on returning home [25]. There was a widespread desire to be involved in discharge plans [25].

Level of evidence

As recommended by Pearson et al. (2004), each finding was assigned a level to indicate the quality of evidence. Three levels were used: (a) *Unequivocal* ("evidence is beyond reasonable doubt and includes findings that are factual, directly reported/observed and not open to challenge"); (b) *Credible* (evidence, while interpretative, is plausible in light of the data and theoretical framework; conclusions can be logically inferred from the data but, because the findings are essentially interpretative, these conclusions are open to challenge"); and (c) *Unsupported* ("findings are not supported by the data and none of the other level descriptors apply") [39].

A total of 140 findings were made. The majority (88) were categorized as level a evidence; of those, 51 justified inclusion as core themes or subthemes, while 37 were included as citations. Level b evidence was also well represented (42), whereas level c evidence was relatively scarce (10). Level a evidence was represented in both PRO and PREM categories; however, the majority of level a (72) and level b (35) findings related to PRO. Details on evidence levels are shown in Table 4 (supplementary).

Discussion

This review reports patient perspectives that were collected from a time immediately following hip fracture to weeks, months or even years later. Despite the diversity of types of healthcare settings and location across the world, including in-hospital and rehabilitation trajectories, we identified a number of shared themes of importance to hip fracture patients.

Using an open and explorative approach, the themes were categorized as either 1) health-related outcomes or 2) healthcare-related experiences.

Health-related outcomes

Hip fracture patients were found to prioritize outcome domains related to 1) symptoms and complications, 2) physical health, 3) mental health and 4) quality of life, including personal goals and social relationships. All four domains were strongly represented by the themes and sub-themes of the primary studies.

We found that hip fracture patients focus primarily on regaining physical functioning, mobility and independence. The physical symptoms and complications, pre-existing health issues, combined with hip fracture, cause patients to feel restricted in their ability to move, thus hindering recovery. This leads to physical immobility and dependency on others. Another important factor affecting recovery is the patient's mental condition; while some are able to retain a hopeful attitude and overcome obstacles, others lose hope and manage recovery less well. Patients' ability to "take control" and handle their fear of falling and anxiety

about the future are crucial to recovery. Recovery is facilitated also by social support, whether from a spouse, family, friends or neighbours, as they help with daily activities and encourage engagement with rehabilitation exercises. Recovery likewise depends on the individual's expectations and personal goals, such as preferred activities in future everyday life and whether returning to normality or independence is a primary goal.

Our findings corroborate those of a previous study, which found that hip fracture patients' evaluation of their recovery emphasize factors such as pain and leg-shortening outcomes, mobility, mental well-being, fear of falling, the ability to perform day-to-day activities, self-care and level of independence (37). Griffith et al. (2015) has admonished that fracture be viewed in the context of age-related decline and that its impact cannot be disentangled from the impact of other health issues. Furthermore, that recovery is influenced by the patients' pre-fracture state and their ability to adapt during recovery. It thus appears that age, pre-fracture conditions and personal goals are conditions of life that should be recognized as important in hip fracture patients' recovery.

The diversity of factors that hip fracture patients find important calls for individualized approaches and solutions according to the patient's physical, mental and social conditions, as well as their different expectations and goals. Staff and significant others play a substantial role in rehabilitation [40]. Sensitivity to the patient's experience of worries and obstacles is vital in healthcare professionals' support of older people who strive to recover after hip fracture. By encouraging the patients to plan and set goals based on their own wishes for the future, healthcare professionals can further support the patient in regaining functional ability and independence [40].

Healthcare-related experiences

Experiences in relation to healthcare concern a number of aspects, such as access and waiting time, confidence and trust in health professionals, information and communication, involvement in treatment decisions, availability of staff, being treated with dignity and respect, food, physical environments and overall satisfaction [41]. These aspects relate to patients' experiences and to the *process* of care rather than its effect (PREM). In our review, we established that patients typically report on waiting time, information, being treated with respect, participation and discharge; four aspects that are generally recognized as important. Hip fracture patients are, however, particularly preoccupied with experiences in relation to discharge.

Implications for clinical practice

Data on patient experience and outcomes are susceptible to both qualitative and quantitative analysis. The qualitative methods used for some of the studies included here contribute to an in-depth understanding of matters of particular concern to hip fracture patients. Where patterns and trends are to be described and compared from large data samples, structured quantitative methods based by questionnaires eliciting patient experience (PREM) and health outcomes (PROM) are common [41].

Generic and domain-specific PROM tools, such as the SF-36, the EQ-5D and the Barthel index, are used to evaluate quality of life and health in several patient categories, including hip fracture patients [14]. Whereas

generic and domain-specific PROM tools are relevant for assessing a range of general health issues, they are not specific to elderly hip fracture patients. Our findings provide a systematic overview of hip fracture patients' perspectives on important aspects of care, treatment and rehabilitation and contribute to the development of patient-derived hip fracture-specific PROM and PREM tools that are based on patients' perspectives.

Strength and limitations

The immediate applicability of its results are among the benefits of the meta-aggregative approach [19]. It is furthermore relatively insensitive to the widely different analytical frameworks of the included studies. A third benefit is the quality control conducted at the findings level (unequivocal, credible and unsupported).

This systematic review was based on a review protocol and was conducted independently by two researchers with no preferences towards its outcomes. It nonetheless entails the same potential weaknesses as similar reviews, including uncertainty whether all relevant articles were retrieved. However, the consultation of information specialist expertise supports the thoroughness and adequacy of our search.

Conclusion

This systematic review provides an overview of hip fracture patients' perspectives on important aspects of care, treatment and training during their trajectory, thereby contributing to the development of a patient-derived measure of hip fracture. Above all, hip fracture patients give priority to regaining physical functioning, mobility and independence. Their social network, a surplus of mental resources and the reduction of pain and complications are seen as vital. They concede that recovery likewise depends on their commitment to realizing their own expectations and personal goals.

Declarations

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable

Availability of data and materials

Not applicable

Competing interest

The authors declare that they have no competing of interests.

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Authors contributions

Both authors (CA & BN) are responsible for concept and design, analysis and interpretation of data and preparation of manuscript. All authors have read and approved the manuscript.

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Abbreviations

CASP: Critical appraisal skills programme

PRO: patient-reported outcomes

PROM: patient-reported outcome measures

PREM: patient-reported experience measures

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Tables

Table 1. Example of search strategy in CINAHL

S Sample		P Phenomenon of interest		D Design		E Evaluation		R Research type
Elderly 65 years or above	AND	Hip fracture						Qualitative studies
(frail* or sarcopeni* or elder* or senior* or gerontolog* or geriatric* or veteran* or old* or patient*) OR (MH "Aged+" or MH "Frail Elderly" or MH "Geriatrics")		(MH "Hip Fractures+") OR (fractured hip or hip fracture*) OR ((fracture* or broke or broken) and (hip or hips))	AND					(MH "Qualitative Studies+") OR (MH "Interviews+") OR (qualitative or Interview*)

A rerun of searches on January 31, 2019, added no studies.

Table 2. Study characteristics

Author, location and year of publication	Aim	Design/data collection method	Inclusion and exclusion criteria	Time and place of interview	Sampling strategy	Participants' characteristics -Sex -Age -Living	Data analysis techniques
Archibald, G. UK 2003 [37]	Explore participants' experiences to gain insight into how to improve nursing care of people after hip fracture	In-depth interviewing	Patients undergoing rehabilitation after hip fracture repair over 65 years, with subacute care needs. No cognitive impairment	Not documented	Purposeful sampling	5 participants 4 females, 1 male	Phenomenological approach
Olsson, L et al. Sweden 2007 [23]	Describe patients' perception of their situation and views on own responsibilities in rehabilitation process	Interviewing	Patients aged 70 years or older, non-institutional residence and acute surgery for hip fracture. Excluded if severe illness, cognitive impairment or dementia, or pathological fracture	As soon after operation as informants felt strong enough. In patients' room or in a secluded area of ward	Strategical sampling	13 participants 11 females, 2 males Age 71-93 years (mean age 81 years)	Phenomenological approach
Zidén, L et al. Sweden 2008 [26]	Explore and describe consequences of acute hip fracture as experienced by home-dwelling elderly people immediately on discharge	Semistructured interviewing	Acute hip fracture including people aged 65 or older living in own home, no cognitive impairment and able to understand and speak Swedish	1 month after discharge In their own homes	Purposeful selection	18 participants 16 female, 2 males Age 65-99 years (mean age 80.6 years)	A phenomenological method
Wykes, C et al. Australia 2009 [38]	Explore impact of fractured neck of femur on independent women's lives and identify their concerns	In-depth interviewing	Inpatient rehabilitation following fractured neck of femur, aged 60-85 years, living alone and independently before injury, converse fluently in English and cognitively intact	Not documented	Recruited by a senior nurse if meeting inclusion criteria	5 participants 5 females Independent prior to hip fracture	Thematic analysis
Young, Y and Resnick, B	Explore perceptions of older adults	In-person interviewing, using a	Age 65 years or older with hip fracture,	1 year post hip fracture	Convenience sampling	62 participants 76 % female	Content analysis

USA 2009 [31]	about their functional recovery	thematic survey	community-dwelling	Place of interview not documented		Age 65-91 years 45% cohabiting	
Zidén, L et al. Sweden 2010 [32]	Explore experienced long-term consequences of a hip fracture and the conceptions of what influences recovery	Semistructured interviewing	Hip fracture, 65 years or older, community-dwelling at time of injury, no life-threatening disease or severe cognitive impairment, able to understand and speak Swedish	1 year after discharge In their own homes	Purposeful selection	15 participants 13 female, 2 males Age 66-93 years (mean age 80 years)	A phenomenological method
Booth, J et al. UK 2012 [30]	Explore post discharge concerns of older people after fall-induced hip fracture repair	Semistructured interviewing	Sustaining a fall-induced hip fracture, discharge within previous 3 months	Between 2 and 12 weeks after discharge In participants' own homes	Purposive sampling	19 participants 15 female, 4 males 67 - 89 years (mean age 79 years) 10 lived alone, 9 cohabiting	Constant comparative method
Hommel, A et al. Sweden 2012 [35]	Illuminate patients' view of nursing care during hip fracture treatment	Semistructured interviewing	Hospitalized for hip fracture, proficient in Swedish, admission through new pathway, passed cognitive function test (SPMSQ)	Time of interview not documented At a separate room at hospital ward	Convenience sampling	10 participants 9 female, 1 male Mean age 78 years	Content analysis
Toscan, J et al. Canada 2013 [24]	Explore single hip fracture patients' experience of transitional care over complete care trajectory	Semistructured interviewing (plus current literature and participant observation)	Being a hip fracture patient, expected to undergo multiple transitions in care, over age of 65 years and proficient in written and spoken English	From admission to home care (4 different settings) – several interviews over a period of 3.5 months	Purposive sampling	1 participant Female In her 80s Living alone	Inductive approach
McMillan, L et al. UK 2014 [27]	Explore concerns of older people following surgical intervention for fall-induced hip fracture	Semistructured interviewing	Fall-induced hip fracture, discharge within previous 3 months	Between 2 and 3 months after discharge	Purposive sampling	19 participants 15 female, 4 males	Constant comparative method

	to enhance understanding and awareness of issues that may impact recovery and rehabilitation			In participants' own homes		Age 67 - 89 years (mean age 79 years) 10 lived alone, 9 cohabiting	
Aronsson, K et al. Sweden 2014 [36]	Describe and interpret older patients' lived experiences of prehospital emergency care in cases of suspected hip fracture after falling	In-depth interviewing	Suspected hip fracture after falling, prehospital emergency care by ICP (age 65 years or older), private residence, no dementia or other disorientation conditions	Time of interview not documented In participants' own homes	Participants were selected in EMS electronic patient care record system for a period of three months	10 participants 7 female, 3 males Age 68-91 years (mean age 80)	Analysed for meanings
Gesar, B et al. Sweden 2017 [28]	Describe adaptation to daily life of previously healthy persons 65 years or older, four months after hip fracture	Semistructured interviewing	Independent life before fracture, aged 65 years or older, previously healthy (none or mild systemic disease), no cognitive impairment, able to speak and understand Swedish	4 months after hip fracture In their homes or at a café	Sampling strategy not documented	25 participants 22 female, 3 males 17 were aged 80 years or older	Inductive content analysis
Healee, D et al. New Zealand 2017 [34]	Generate theory to explain recovery from hip fracture, specifically from perspective of older adults	Semistructured interviewing	Hip fracture	Hip fracture just over 3 months ago up to 22 years Place of interview not documented	Recruitment through informal networking, notices in relevant centres, intermediaries and through rehabilitation units of a local hospital	16 participants Age 70-92 years Half were in a partnership Half had co-existing health conditions	Constant comparative analysis
Jensen, CM et al. Denmark 2017 [25]	Describe hip fracture patients' experiences and explore if they felt empowered and able to perform self-care in short-time hospital stay pathways (STSH)	Interviewing and telephone interviewing	Discharged to own home, independent prior to hip fracture (able to walk and perform everyday life without significant assistance from municipality), hip	2 weeks after discharge and 3-5 months after primary interview Place of interview not	Patients with different working experience, different ages and sex.	10 participants 8 female, 2 males Age 67-92 years Independent prior to hip	A phenomenological approach

			fracture was a fragile fracture	documented		fracture	
Sims-Gould, J et al. Canada 2017 [33]	Examine hip fracture patients' experiences, focusing on their perceptions of recovery period and engagement in rehabilitation	Telephone interviewing	Community-dwelling older adults aged 65 years and older with hip fracture	6 months and 12 months after hip fracture Interview location not disclosed	Participants in RCT study	50 participants 32 female,18 male 21 living alone,29 cohabiting	A deductive approach followed by an inductive approach
Bruun-Olsen, V et al. Norway 2018 [29]	Explore experience of recovery process in elderly hip fracture patients enrolled in ongoing RCT - issues related to experience of facilitators and barriers	Semistructured interviewing	Home-dwelling prior to hip fracture, and competent to give informed consent	3-4 months after fracture In home	Strategically according to age, sex, and participation in rehabilitation	8 participants 6 female, 2 males Age 69 - 91 years	Systematic text condensation

Table 3. Quality assessment using CASP

Clear statement of aim	Qualitative methodology appropriate	Research design appropriate	Recruitment strategy appropriate	Data collection addressed research issue	Researcher-participant relationship adequately considered	Ethical issues taken into consideration	Data analysis sufficiently rigorous	Clear statement of findings	Valuable research	Score
Yes	Yes	Can't tell	Can't tell	Can't tell	No	Yes	Yes	Yes	Yes	7.5
Yes	Yes	Yes	Yes	Yes	Can't tell	Yes	Yes	Yes	Yes	9.5
Yes	Yes	Can't tell	Yes	Yes	Can't tell	Yes	Yes	Yes	Can't tell	8.5
Yes	Yes	Yes	Yes	Yes	Yes	no	Yes	Yes	Yes	9.0
Yes	Yes	Can't tell	Can't tell	Yes	Can't tell	no	Yes	Yes	Can't tell	7.0
Yes	Yes	Can't tell	Yes	Yes	Can't tell	Can't tell	Yes	Yes	Can't tell	8.0
Yes	Yes	Can't tell	Yes	Yes	No	Can't tell	Yes	Yes	Yes	8.0
Yes	Yes	Can't tell	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Can't tell	8.0
Yes	Yes	Yes	Yes	Yes	Yes	Can't tell	Yes	Yes	Yes	9.5
Yes	Yes	Yes	Yes	Yes	no	Can't tell	Yes	Yes	Yes	8.5
Yes	Yes	Yes	Yes	Can't tell	Yes	Yes	Yes	Yes	Yes	9.5
Yes	Yes	Can't tell	Can't tell	Yes	no	Yes	Can't tell	Yes	Yes	7.5

Yes	Yes	Yes	Can't tell	Can't tell	no	Can't tell	Can't tell	Yes	Can't tell	6.5
Yes	Yes	Yes	Yes	Yes	Can't tell	Can't tell	Can't tell	Yes	Can't tell	8.0
Yes	Yes	Can't tell	Can't tell	Yes	no	Can't tell	Can't tell	Yes	Can't tell	6.5
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Can't tell	9.5

Figures

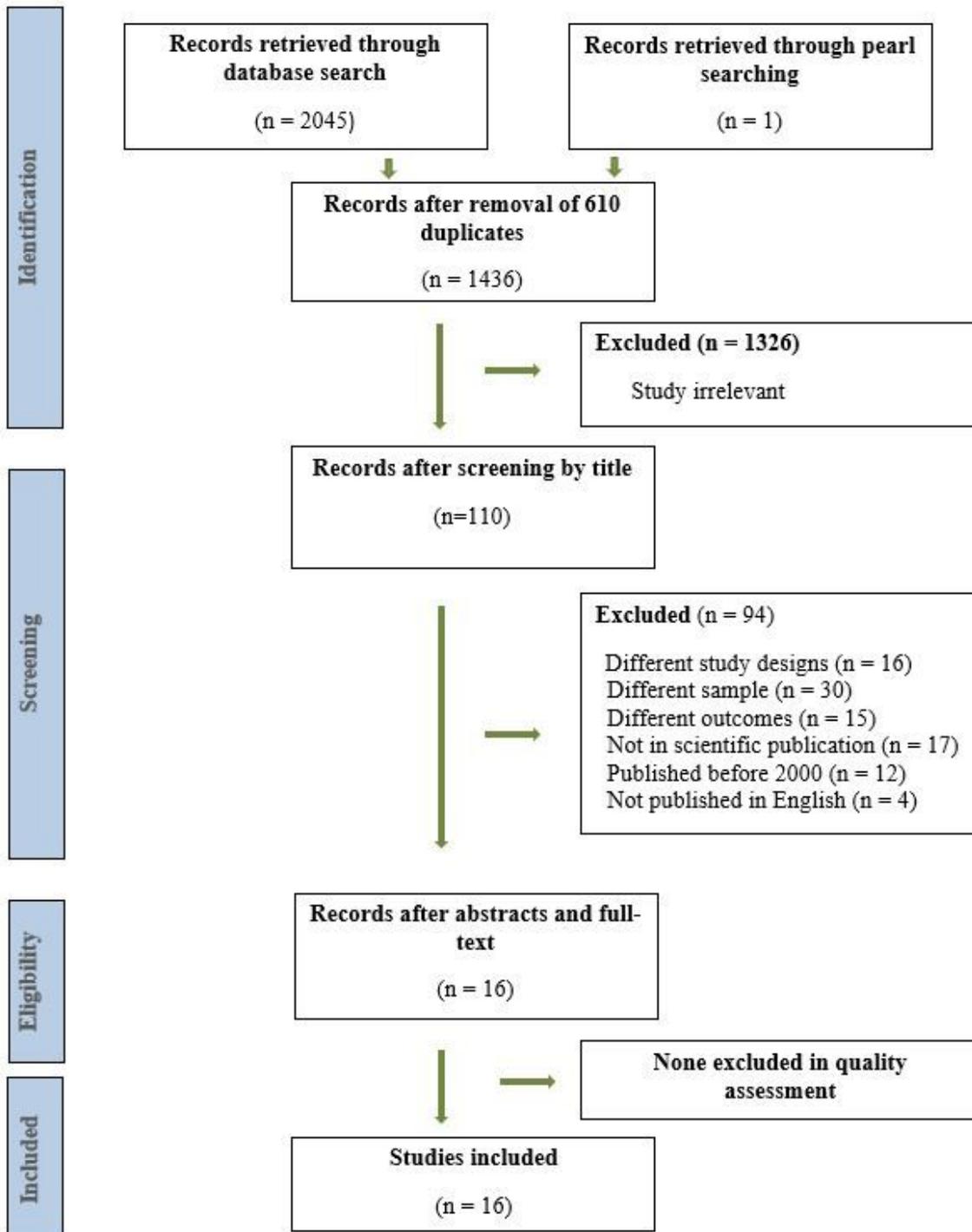


Figure 1

PRISMA flow chart

Supplementary Files

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- [SupplementaryTable4.docx](#)