

Silent slips, trips and broken hips in the under 60s: a review of the literature

JANES, Gillian, SERRANT, Laura <<http://orcid.org/0000-0002-9382-9859>> and SQUE, Magi

Available from Sheffield Hallam University Research Archive (SHURA) at:

<http://shura.shu.ac.uk/21525/>

This document is the author deposited version. You are advised to consult the publisher's version if you wish to cite from it.

Published version

JANES, Gillian, SERRANT, Laura and SQUE, Magi (2018). Silent slips, trips and broken hips in the under 60s: a review of the literature. *International journal of orthopaedic and trauma nursing*, 30, 23-30.

Copyright and re-use policy

See <http://shura.shu.ac.uk/information.html>

Fragility hip fracture in the under 60s: a review of the literature

Gillian Janes, Laura Serrant, Magi Sque

International Journal of Orthopaedic and Trauma Nursing (in press) published online February 2018 <https://doi.org/10.1016/j.ijotn.2018.02.006>

Abstract

This critical review of the literature regarding the recovery experiences and healthcare needs of people under 60 following a fragility hip fracture seeks to identify the associated implications for nursing practice and inform care delivery. Forty papers were included following a structured database, citation and grey literature search and filtering of results in line with specified inclusion criteria.

Hip fracture is a common, serious and complex injury and an important cause of morbidity, mortality and rising healthcare costs worldwide. This review indicates that although commonly associated with the elderly, incidence and impact in the under 60s has been under-explored. Current health policy, professional and social norms almost exclusively focus on the elderly, surgical interventions and short-term outcomes, rendering the under 60s an inadvertently marginalised, relatively 'silent' sub-set of the hip fracture population.

Nurses must be aware however of the different recovery needs of this younger group. The limited evidence available indicates these include work related needs and long term physical and psychosocial limitations in this socially and economically active group. Priorities are identified for research to inform policy and practice meanwhile nurses can address the needs of this group by listening to and involving them and their families as healthcare partners.

Main text

INTRODUCTION

This paper explores the healthcare experiences and recovery needs of people under 60 years of age with fragility hip fracture within the context of the broader hip fracture population and the associated implications for nursing. It suggests that young fragility hip fracture patients are inadvertently marginalised as a result of academic, policy and professional discourses that focus on the elderly and short-term outcomes. It argues that nurses need greater awareness of the incidence, causation and impact of fragility hip fracture in younger patients to ensure their holistic needs are met and long-term recovery maximised.

Background

Hip fracture is a common, well-defined condition that threatens function and creates vulnerability (Proctor et al. 2008). The term includes all fractures of the proximal femur (Archibald 2003). This sudden, traumatic (Proctor et al. 2008), serious injury (van Balen et al. 2003) and threat to life (Olsson et al. 2007) is:

'...a catastrophic sentinel event causing major secondary prevention implications.' (Partridge & Marsh 2007, p122).

It requires a complex recovery (& Hutchinson 2005) and often involves a long hospital stay (Visschedijk et al. 2010). Fragility hip fractures predominantly occur in later life, average age 83 years (Healthcare Quality Improvement Partnership (HQIP), 2014) from low-energy injuries like a fall from standing height (Chesser et al. 2011). Associated with increased healthcare consumption (Leigheb et al. 2013,) and

significant burden on services (Holt et al. 2009), fragility hip fracture represents one of the biggest challenges this century (Parsons et al. 2014), costing the UK alone approximately £2billion annually (National Institute of Clinical Excellence, 2011).

Policy context

Trauma is already the commonest cause of death in the under 40s in England and Wales and life years lost through premature death and disability following injury is predicted to be the 2nd highest globally by 2020 (Trauma Audit and Research Network, 2016). Perhaps not surprisingly the recently established Trauma Audit and Research Network (TARN UK) addresses the most seriously injured individuals, with multiple, life threatening injuries. Young adults with fragility hip fracture, being more likely to survive and generally need less complex interventions are therefore not its focus. Further, economic recession following the global financial markets collapse of 2008 and an estimated £30 billion funding shortfall (Department of Health, 2014), means already overstretched services striving to deliver safe and effective care to more expectant patients, public and Government, with fewer resources (Mitchell et al, 2010).

Acknowledging the value of patient views has however resulted in strategies designed to enhance patients' ability to inform policy-making. This is crucial because empowered patients recover better (Department of Health, 2001). Yet despite increasing demand for research taking account of the patient perspective (Gregory

2010) still few studies explore the patient perspective on fragility hip fracture (Clancy et al, 2015).

National Institute for Clinical Excellence (National Institute for Clinical Excellence) (2011) guidance covers all ages however the National Hip Fracture Database (for England, Wales, Northern Ireland and the Channel Islands), the largest prospective National Hip Fracture Database in the world (Gunasekera et al., 2010) only records fractures in people aged 60 and over. The database was established due to the public health threat osteoporosis and fragility fractures present for older people (Partridge & Marsh, 2007); and assumptions that hip fractures in the under 60s were mainly due to high impact injury, underlying bone or other predisposing health conditions (Plant, 2010). There are however no international criteria for recording hip fracture with considerable variation in recording between nations worldwide.

Although the UK has one of the highest hip fracture rates in Europe (Mitchell et al. 2010), fragility hip fracture is a relatively rare injury in young adults who represent a small subset of all hip fractures. Many years ago however, Boden et al (1990) argued the significance of hip fracture in this working-age group may be underestimated despite potentially profound social and economic implications, at societal and individual level (Holt et al. 2008a).

AIM AND SCOPE OF THE REVIEW

The aim of this review was to examine the literature on the recovery experiences and healthcare needs of the under 60s following fragility hip fracture to inform future care delivery.

Search strategy/method

Electronic database, citation (Garrard 2014) and grey literature (Higgins & Green 2011) searching was undertaken. Major healthcare databases covering an appropriate range of journals, topics and concepts i.e. Medline, Cinahl, AMED, ASSIA, PsychInfo and Embase and the British Library PhD thesis database were searched. Search criteria are presented in Table 1 and the key words used included: hip fracture surgery/internal fixation, falls, low velocity injury, patient stories, patient experience and outcome assessment, rehabilitation and recovery, quality of life, quality of care, middle age (45-64 years), care pathways, post-traumatic stress disorder and self-concept. Using Boolean operators, truncation and 'wildcard' symbols maximised retrieval of relevant papers.

Table 1: Search criteria

Inclusion criteria	Exclusion criteria
Low energy injury/fall	Planned hip replacement
Isolated hip fracture	Major trauma/multiple injuries
Surgical treatment – includes internal fixation and joint replacement	Conservative treatment
Under 65 years	Over 65s
Patient experience/recovery	Surgical prostheses/method comparisons
	Pathological fracture

Only papers published in English were included. Initial searches were limited to the last 10 years and the under 60s but yielded so little material these were extended to include the over 60s and papers published from 1970s to December 2016. Grey

literature searching included: Department of Health, NHS England, NHS Improving Quality, King's Fund and World Health Organisation publications. This provided policy and contextual information published outside the research literature. Citation searching continued until no new papers were identified and familiarity with the research field or 'owning the literature' (Garrard 2014) was achieved. Duplicates were deleted then results filtered to remove irrelevant papers based on reading the title, abstract and/or full text. All those addressing one or more of the search terms, over 4100 results, were screened.

Sources addressing any of the inclusion criteria were included as so little material was found specifically addressing the under 60s. Where clarity was lacking on the scope of papers, for example regarding age related criteria, or no comparable information was published specifically addressing the under 60s, these papers were included to maximise retrieval of all potentially relevant material. Although the surgical aim for young hip fracture patients is generally internal fixation rather than hip replacement (Thuan and Swiontkowski, 2008), emergency joint replacement is sometimes necessary. For this reason, studies addressing patient experience of emergency hip replacement were included and those concerning scheduled hip replacement excluded.

RESULTS

The 40 papers meeting the selection criteria and on which the following discussion is based are summarised in Table 2.

Table 2: Summary of papers included in the review

KEY: √ = criteria met,; x= criteria not met; ?= unclear from the paper whether or not criteria was met

Inclusion criteria								
Author(s)	Year	Title	Under 65s	Low velocity injury/fall	Isolated hip fracture	Surgical treatment	Patient experience/recovery	Long term outcomes
Al-Ani et al	2013	Risk factors for osteoporosis are common in young and middle-aged patients with femoral neck fractures regardless of trauma mechanism	√	√	√	√	√	√
Banks et al	2009	Hip fracture incidence in relation to age, menopausal status and age at menopause: prospective analysis	√	√	√	√	x	√
Bertram et al	2011	Review of the long-term disability associated with hip fractures	?	√	√	√	√	√

Boden et al	1990	Hip fractures in young people: is this early osteoporosis?	√	√	√	?	x	√
Castellini et al	2015	The determinants of costs and length of stay for hip fracture patients	√	√	√	√	x	x
Coughlin et al	2016	Outcomes in young hip fracture patients	√	√	√	√	x	√
Court-Brown and Caesar	2006	Epidemiology of hip fractures	√	√	√	√	x	x
Eastwood et al	2002	Patients with hip fracture: subgroups and their outcomes	√	√	√	√	x	√
Foss et al	2009	Postoperative pain after hip fracture is procedure specific	√	√	√	√	x	x
Gjertsen et al	2011	Clinical outcome after undisplaced femoral neck fractures	√	?	√	√	x	√
Griffiths et al	2015	Evaluating recovery following hip fracture: a qualitative interview study of what is important to	?	?	√	?	√	√

		patients						
Hansson et al	2015	Complications and pt reported outcome after hip #:A consecutive annual cohort study of 664 pts	√	√	√	√	x	√
Holt et al	2008	Epidemiology and outcome after hip fracture in a the under 65s – evidence from the Scottish Hip Fracture Audit	√	√	√	√	x	√
Holt et al	2008	Gender differences in epidemiology and b outcomes after hip fracture	√	√	√	√	x	√
Holt et al	2009	Changes in population demographics and the future incidence of hip fracture	√	√	√	√	x	√
Janes	2016	Slips, trips and broken hips: the recovery experiences of young adults following an isolated fracture of the proximal femur	√	√	√	√	√	√
Karantana et al	2011	Epidemiology and outcome of fracture of the hip in women aged 65 years and under: A cohort	√	√	√	√	x	√

		study.						
Karlsson et al	2012	'Is that my leg?' Patients' experiences of being awake during regional anaesthesia and surgery	√	?	?	√	√	x
Leavy et al	2013	When why and where do hip fractures occur? A population-based study	√	√	√	√	x	x
Martin-Martin et al	2014	Effect of occupational therapy on functional and emotional outcomes after hip fracture treatment: a randomized controlled trial	√	?	?	?	x	√
Montin et al	2002	The experiences of patients undergoing total hip replacement	√	x	x	√	√	x
Moppett et al	2012	The Nottingham Hip Fracture Score as a predictor of early discharge following fractured neck of femur	√	?	√	√	x	x
Morse and O'Brien	1995	Preserving self: from victim, to patient, to disabled person	√	√	√	?	√	?

Nieves et al	2010	Fragility fractures of the hip and femur: incidence and patient characteristics	√	?	√	x	x	x
Oberg et al	2005	Functional capacity after hip arthroplasty: a comparison between evaluation with three standard instruments and a personal interview	√	x	x	√	√	√
Oetgen et al	2009	Evaluation of bone mineral density and metabolic abnormalities associated with low-energy hip fractures	?	√	√	√	x	?
Parsons et al	2014	Outcome assessment after hip fracture: is EQ-5D the answer?	x	√	√	√	x	√
Pownall	2004	Using a patient narrative to influence orthopaedic nursing care in fractured hips	√	√	√	√	√	x
Proctor et al	2008	The impact of psychological factors in recovery following surgery for hip fracture	?	√	√	?	√	?
Protzman and	1976	Femoral-neck fractures in young adults	√	x	?	√	x	√

Burkhalter								
Robinson et al	1995	Hip fractures in adults younger than 50 years of age – epidemiology and results.	√	√	√	?	√	√
Roding Jet al	2003	Frustrated and invisible – younger stroke pts' experiences of the rehab process	√	x	x	x	√	?
Rohde et al	2008	Is global QoL reduced before # in pts with low-energy wrist or hip #? A comparison with matched controls	√	√	√	?	x	x
Santamaria et al	2003	Clinical pathways for fractured neck of femur: a cohort study of health related quality of life, patient satisfaction and clinical outcome.	?	√	√	√	x	x
Schiller et al	2015	Words of wisdom – patient perspectives to guide recovery for older adults after hip fracture: a qualitative study	√	√	√	?	√	√
Swiontowski et al	1984	Fractures of the femoral neck in patients between the ages of twelve and forty-nine years	√	x	√	√	√	√

Thuan and Swiontkowski	2008	Treatment of Femoral neck fractures in young adults	√	√	√	√	x	x
Verattas et al	2002	Fractures of the proximal part of the femur in patients under 50 years of age	√	√	√	√	x	√
Vilardo and Shah	2011	Chronic pain after hip and knee replacement	?	x	x	√	?	√
Visschedijk et al	2010	Fear of falling after hip fracture: a systematic review of measurement instruments, prevalence, interventions and related factors	√	√	√	√	x	?

DISCUSSION

Two themes emerged. The first: causative factors, comprised three sub-themes: age-related incidence, underlying health and lifestyle factors and injury velocity. The second theme: outcome evaluation comprised four sub-themes: differentiated evaluation by patient sub-group, impact on mobility, psychosocial impact and recovery enabling factors. The review findings will therefore be discussed using these headings.

Theme 1: Causative factors

Age-related incidence

There is consensus that hip fracture risk and increasing age are positively correlated. However, whilst most research uses 18 or 20 years of age as the lower limit, the upper age used to define 'young' or 'early' hip fracture varies considerably. 60 or 65 years of ages is commonly used as the upper parameter for study inclusion/exclusion purposes e.g. Karantana et al. (2011); although some (Nieves et al., 2010; Leavy et al., 2013) used 50 years and over when studying fragility fracture in younger people. Al-Ani et al. (2013) differentiated between younger groups, defining 50-69 years as middle age and 20-49 years of age as young, but this is rare. Age 50 however is an arbitrary dividing line after which fractures in women particularly may be attributable to post-menopausal osteoporosis (Verettas et al., 2002). In one of few studies specifically addressing hip fracture in young people, Protzman & Burkhalter (1976) justified their 20-40 years of age inclusion criteria based on the femur being physiologically mature but without physiological atrophy

between these ages. Nevertheless, the varied age-related parameters used in empirical studies to define young hip fracture, make direct comparison extremely difficult.

Underlying health and lifestyle factors

Nieves et al. (2010) reported an exponential increase in fragility fracture with increasing age in the over 50s. This predominantly affected women and was therefore often associated with osteoporosis. However, statistical analysis of over half a million women (Banks et al., 2009) could not make valid pre and post-menopausal comparisons due to too few participants of pre-menopausal age. Researchers (Al – Ani et al., 2013; Karantana et al. 2011; Rohde *et al.* 2008; Swiontkowski et al. 1984) agree that lifestyle factors like smoking and high alcohol intake increase the incidence of 'early' hip fracture.

Based on an almost three times greater incidence of osteoporosis, lower bone mass index, and more frequent co-morbidities than controls, Rohde et al. (2008) large matched control study of the over 50s characterised hip fracture patients as older with complex underlying conditions. Further Karantana et al. (2011) reported that fractures in working age (under 65 years) women following a minor fall were pathophysiological. This confirmed findings by Holt et al. (2008a) and the consensus that isolated hip fractures in the under 65s were mainly osteoporotic (National Institute for Clinical Excellence 2011).

Court-Brown & Caesar (2006) suggested hip fracture epidemiology is changing rapidly though with considerably more osteoporotic fractures than previously thought. Karantana et al. (2011) found the first significant increase in age-related hip fracture in women at 45 years of age, five years before osteoporosis screening commonly begins, with mortality in younger women with hip fracture 46 times that of the female population. To put this in perspective, the 13million women aged over 45 years of age in the UK represent one fifth of the total population (British Menopause Council 2011). Bone density appraisal is recommended post fracture (National Institute for Clinical Excellence 2011) but Oetgen et al. (2009) argued that endocrine assessment should be added because metabolic abnormalities correlated poorly with bone density. Thus, reliance on bone density measurements may contribute to under-estimation of fracture risk for some patients (Aspray 2013). Even this recommendation though focuses on post-fracture treatment and secondary prevention, limiting the potential for reduction in preventable fractures using primary prevention interventions.

Whilst fragility fracture often signals underlying ill health (Chesser et al. 2011), Al – Ani et al. (2013) contradicts this in finding most of their 185 participants under 50 years were in good health. Thus, although evidence in the under 60s is very limited, there is some indication that current accepted norms regarding the underlying causes of fragility hip fracture in younger people warrant further investigation.

Injury velocity

The few studies specifically focusing on young adults with isolated hip fracture that have been undertaken consistently reported high velocity trauma resulting in multiple injuries and poor prognosis (Protzman & Burkhalter 1976; Swiontkowski et al. 1984; Thuan & Swiontkowski 2008). Robinson *et al.* (1995) concur, reporting hip fracture in people 20-40 years of age most commonly occurred in men following high-energy trauma and this was further confirmed in the under 50s by Verettas et al. (2002).

Verettas et al. (2002) however also reported that approximately a third of fractures followed low velocity trauma such as a minor fall but potential causes for these fragility fractures in this younger group were not explored. Al-Ani et al. (2013) further highlighted the impact of low energy trauma in the under 50s, reporting that 80% of all fractures at this age were caused by low energy trauma like a fall from the same level, cycling or ice-skating. These two studies therefore specifically challenge the accepted norm that hip fracture in the under 50s is mostly the result of high velocity injury or underlying illness.

Theme 2: Outcome evaluation

Differentiated evaluation

The heterogeneity of the hip fracture population, complex recovery pathway and contextual nature of impact, have created calls for evaluation of outcomes to be differentiated between sub-groups within the broader hip fracture population.

Differentiation factors such as: mode of injury, surgical procedure and context/quality

of life issues post fracture have been proposed to enable the development of more effective, targeted interventions (Eastwood et al. 2002; Montin et al. 2002).

Epidemiologic and outcome studies have enhanced understanding of hip fracture outcomes and recovery. However many such studies focus on the over 65s (see for example Ariza Vega et al. 2014; Kondo et al. 2014) meaning outcomes for the under 60s are less often explored. In addition, functional and physiological evaluations remain commonest (Bertram et al. 2011; Santamaria et al. 2003). Even studies that do include the under 65s, use primary evaluation measures of: mortality (Australia and New Zealand Hip Fracture Registry 2012; Eastwood et al. 2002; Holt et al. 2008a; Holt et al. 2008b; Holt et al. 2009); post injury institutionalisation or place of residence (Australia and New Zealand Hip Fracture Registry 2012; Castellini et al. 2015; Eastwood et al. 2002; Holt et al. 2008a, Holt et al. 2008b); length of hospital stay (Australia and New Zealand Hip Fracture Registry 2012; Castellini et al. 2015; Holt et al. 2008a; Holt et al. 2008b; Holt et al. 2009); further falls (Australia and New Zealand Hip Fracture Registry 2012; Hansson et al. 2015); mobility (Eastwood et al. 2002; Griffiths et al. 2015; Hansson et al. 2015, Holt et al. 2008a, Holt et al. 2008b) and re-operation rates (Gjertsen et al. 2011).

Whilst these are important measures they may not best reflect holistic outcome for the young fragility hip fracture population who are less likely to experience these sequelae because of generally higher levels of pre-injury health and self-efficacy. In addition, this group are more likely to experience other challenges associated with

their relative youth, such as returning to work or caring responsibilities, that are not currently evaluated.

Foss et al. (2009) recommended future fragility hip fracture outcome studies should also stratify individuals by surgical procedure, as pain levels were highest following internal fixation. This is the treatment of choice in the under 50s. Hip replacement is avoided in this younger group wherever possible due to their higher activity levels and longer need of the replacement joint (Thuan & Swiontkowski 2008) despite higher incidence of femoral head necrosis and non-union (Verettas et al. 2002). However, although involving only elderly participants, a randomised study of 450 patients over 10 years (Leonardsson et al. 2010) found internal fixation did not give better function or pain control than hip replacement, further supporting calls for outcome evaluation by treatment and age sub-group by Foss et al. (2009) and Coughlin et al. (2016). These studies also reinforce previous findings in the over 60s by Gjertsen et al. (2008) who recommended research exploring issues like pain and quality of life in different sub-groups of the hip fracture population to improve treatment quality. This in turn, reflects the earlier recommendation by Swiontkowski et al. (1984) regarding separate evaluation of femoral neck fractures associated with multiple trauma in young people.

Impact on mobility

Substantial, sometimes permanent reduction in mobility is often reported in the elderly but its impact in younger people is equally important as mobility is closely

connected with pain and maintaining independence at any age. Bertram et al. (2011) reported that 42% of participants in the 25 studies they reviewed had not regained pre-fracture mobility a year post injury, illustrating the extended impact of hip fracture on mobility even for young people. Although ability to walk was important (Griffiths et al., 2015), restricted leg movements hampering other activities such as gardening or using transport, also impacted negatively on daily activities (Bertram et al., 2011).

Pain is a very commonly reported patient outcome post hip fracture although much of the literature addresses the over 65s. For example, Archibald (2003) found this focused on acute pain immediately post injury and in the trauma unit. Olsson et al. (2007) confirmed this, although Vilaro & Shah (2011) reported unexplained, chronic pain following hip replacement, which is the treatment of choice for some younger hip fracture patients, is as an overlooked issue causing distress, substantial loss of function and societal productivity. In addition, a survey across two hospitals, of patients averaging two-years post-surgery, reported pain was one of the greatest difficulties following sub-acute care in the over 65s (Kondo et al. 2014). In a rare study involving young hip fracture patients, Swiontkowski et al. (1984) however also reported participants experiencing mild to moderate pain and loss of function up to three-years post-surgery. Furthermore, an extensive literature review across the age continuum (Bertram et al. 2011) found enduring pain; with 47% of hip fracture patients reporting pain one or more years post fracture, of which 26% was moderate to severe.

The literature also predominantly focuses on short-term outcomes in the elderly (see for example: Ziden et al. 2008; Kondo et al. 2014; Chung et al. 2009). This is partially driven by government policy. For example, of six financially incentivised quality measures for hip fracture care in the UK, all but two concern acute care and relatively short-term metrics concerning walking ability at 30 and 120 days (Department of Health, 2014). Long-term disability post hip fracture is grossly underestimated (Bertram et al., 2011). These authors estimated 29% of hip fractures result in long-term disability but found determining this complex. No single Patient Reported Outcome Measure (PROM) could evaluate care quality for all hip fracture patients (Griffiths et al. 2015; Moppett et al. 2012). The commonly used Oxford Hip Score (OHS) was designed to quantify disability from degenerative joint disease rather than traumatic injury and EQ-5D is a generic quality of life measure covering health domains that hip fracture patients consider important (Parsons et al. 2014) but there is little evidence of response to Parker's (2004) call over a decade ago for more unconventional outcome measures.

The under 60s represent working age adults who commonly have other responsibilities so the potential economic and social implications of fragility hip fracture in this group are profound (Holt et al. 2008a). Bertram et al.'s (2011) claim regarding underestimation of the long-term disability associated with hip fracture supported previous findings in the under 50s (Verettas et al. 2002). Their participants reported long term absence from work and disability due to reduced joint function, although isolated examples of the fracture prompting return to positive roles and activities were found by Montin et al. (2002). Janes (2016) findings supported both these previous findings whilst emphasising the importance of personal context for

successful rehabilitation and the need to move beyond the traditional focus on visible impairments to psychological and social aspects of illness and disability as emphasised in the World Health Organisation (WHO) ICID-2 definition of disability (Wade 2000).

Psycho-social impact

Historically the success or failure of orthopaedic interventions was determined and reported by surgeons not patients (Ashby et al, 2009). Further, a recent randomised controlled trial involving 122 hip fracture patients (Martin-Martin 2014) reported that self-perception and quality of life impact are less explored. Adopting a bio- psychosocial model of care could enhance patient care and should routinely include PROMs for psychological and social factors not traditionally addressed (Vilardo & Shah, 2011). Lerner (2005) argued however that the psychological challenges faced by patients with new disability or recovering from major illness were considered vague or difficult and were therefore neglected by medical approaches. Similarly, Proctor et al. (2008) claimed little is known of the impact of psychological factors on hip fracture recovery and rehabilitation.

A recent qualitative study aiming to address the current gap in the literature regarding the recovery experiences and impact of fragility hip fracture in the under 60s reported long term psycho-social impact up to 10 years post fracture (Janes 2016). This supported previous findings by Karlsson et al. (2012) that the early post fracture phase meant having to come to terms with loss of control and an unfamiliar

environment. Janes (2016) also found Fear of Falling (FOF) was common. Chung et al. (2009) reported evidence that FOF, which they found in a substantial minority of elderly hip fracture participants, and Post-Traumatic Stress Disorder (PTSD) are overlapping concepts. This suggests some patients with FOF may actually be exhibiting PTSD. A systematic review (Visschedijk et al. 2010) has since indicated that 50% or more of all hip fracture patients suffer FOF, illustrating the potential scale of this issue across the age range, although adequate measures have not been validated for hip fracture patients. These studies reflect previous findings in the over 65s, such as Ziden et al. (2008) description of hip fracture as a *'life-breaking event'* because of the multidimensional consequences and profound psychological and social impact it had on their participants:

'...the fracture seemed not only to break the bone but also to cause social and existential cracks...' (p801)

which were not sufficiently taken into account.

The importance of acknowledging the hip fracture's impact from the patient's perspective for the under 60s was acknowledged by Janes (2016). This supported previous findings by Leonardsson et al. (2010) in respect of the over 70s. Both studies highlighting the particular importance of evaluating longer-term quality of life and functional outcomes. This was despite the difficulty of isolating the impact of health conditions developed post fracture from that of the fracture itself in longer-term studies noted by Bertram et al. (2011).

Knowing what patients themselves consider the most important aspects of care was also found to be crucial in a study of total hip replacement patients aged between 22 and 79 years (Montin et al. 2002) and was further supported by Janes (2016) study of the under 60s who had primarily undergone internal fixation. Janes (2016) also reported positive outcomes of having their recovery story heard for hip fracture patients. This also confirmed previous work with major trauma survivors (Morse & O'Brien 1995) which uncovered the therapeutic effect that reflecting on their experiences had on participants, in redefining self as a disabled person. This finding was further confirmed in 2007 when Olsson et al highlighted the benefits for older patients of being listened to. This can enable patients to support service improvement as illustrated by a narrative case study presenting a 60-year old lady's experience of fragility hip fracture in her own voice to support service improvement (Pownall 2004). Oberg et al. (2005) continued to urge listening to patients because this can provide key information not captured using quantitative methods. Similarly, a small study in the over 65s found that professionals need to listen to patient perspectives to enable person centred care (Mauleon et al. 2007).

Factors enabling recovery

Physical and psychosocial enablers of recovery have been reported. With the exception of Janes (2016) these almost exclusively focus on the over 60s and hip replacement rather than internal fixation, the commonest treatment of choice for under 65s. Key aspects of Janes (2016) findings mirror those of previous studies with older patients. These include the need for intensive rehabilitation to enable return to pre-injury quality of life (Pownall 2004), despite the overly mechanistic

emphasis on visible impairments, function, patient behaviour and activities, rather than individual's psychological needs suggested by Wade (2000). Similarly Young & Resnick (2009) also found that over 65s take account of professional advice, are positive about recovery and resilient. This, together with seeking help (Schiller et al. 2015) and determination and maintaining perspective (Young & Resnick 2009) were found to support recovery in older patients as well as the under 60s in Janes' (2016) study.

Janes (2016) also found however that rehabilitation adjustment for young patients with different needs was lacking. This mirrored similar findings by Roding et al. (2003) regarding young stroke survivors. In addition, Eastwood et al. (2002) called for research focusing on post discharge and longer-term recovery as some younger hip fracture patients had poorer outcomes at six-months. The need for more social support and physiotherapy was identified by Hansson et al. (2015) in an annual cohort study of 664 hip fracture patients and was further supported by Janes' (2016) findings in the under 60s. These two studies reflected similar findings in the over 65s by Young & Resnick (2009).

Reflecting similar findings in the over 65s by Young & Resnick (2009), Janes (2016) reported that support from family and friends was important for recovery in the under 60s and that members of their networks found recovery challenging, not always understanding less visible sequelae like fatigue. These results support those of Schiller et al (2015) in respect of hip fracture patients over 60 years and Roding et al. (2003) concerning young stroke survivors who also called for more involvement of families in the rehabilitation process because of its impact on them. These issues are

of particular importance for the under 60s as Janes (2016) found evidence they can have an impact on social and work relationships with individuals not necessarily able to return to social and work roles as soon as members of their social networks expect.

LIMITATIONS OF THE REVIEW

As a result of the extremely limited evidence specific to the under 60s and their experience of fragility hip fracture and recovery and a lack of consistency in the focus or reporting of relevant studies, for example in terms of age related inclusion/exclusion criteria, this was a pragmatic, exploratory review. It therefore drew on studies meeting any of the inclusion criteria to identify potentially transferable evidence. As a result, its conclusions are tentative and the need for further more specific work on fragility hip fracture in the under 60s is recognised. In addition, whilst drawing on the international literature, the review was also limited to papers published in English after 1970. Some of the evidence reviewed is dated but illustrates the still limited contemporary evidence in respect of fragility hip fracture in the under 60s despite calls for further exploration going back many years.

CONCLUSION AND IMPLICATIONS FOR PRACTICE

Not surprisingly, the rising incidence of osteoporosis and considerable burden of fragility hip fracture in the elderly mean these issues receive significant attention. However, despite a large body of knowledge regarding the causes, treatment and clinical outcomes of fragility hip fracture, little is known of the long term outcomes or

patient experience in the under 60s. This paper argues young adults with fragility hip fracture are an under-represented, relatively 'silent' subset of the hip fracture population. The characteristics of this patient group: relatively small numbers; youth and general absence of co-morbidities and less complicated recovery as gauged by commonly used short term outcome measures, position fragility hip fracture in the under 60s outside accepted norms with their specific recovery needs minimally addressed. Nurses must be aware of the different recovery needs of this younger group to enable effective care delivery. The limited evidence available indicates these include work-related issues and long-term physical, psychological and social limitations.

This paper therefore provides the justification for:

- further research exploring the recovery experiences and needs of the under 60s following a fragility hip fracture;
- raising healthcare staff and policy makers' awareness of fragility hip fracture in the under 60s and developing policy and practice to address this;
- reviewing the appropriateness of current hip fracture outcome measures for the under 60s;
- reviewing current healthcare policy and service delivery to prevent further marginalisation or 'silencing' of this client group.

Meanwhile, listening to and involving patients and their families as part of the healthcare team could help nurses to ensure their needs are more effectively addressed.

References

Al-Ani A.N., Neander G., Samuelsson B., Blomfeldt R., Ekstrom W. & Hedstrom M., 2013 Risk factors for osteoporosis are common in young and middle-aged patients with femoral neck fractures regardless of trauma mechanism. *Acta Orthopaedica* 84 (1): 54-59

Ariza-Vega P., Jimenez-Moleon J.J., Kristensen M.T., 2014 Change of residence and functional status within 3 months and one year following hip fracture surgery. *Disability and Rehabilitation* 36 (8): 685-690.

Archibald G., 2003 Patients' experiences of hip fracture. *Journal of Advanced Nursing* 44 (4): 385-392.

Ashby, E., Grocott, M.P.W., Haddad, F.S. 2009 Hip outcome measures. *Orthopaedics and Trauma*, 23(1): 40-45.

Aspray T.J., 2013 New horizons in fracture risk assessment. *Age and Ageing* 42 (5): 548-554

Australia and New Zealand Hip Fracture Registry, 2012 Towards a National Hip Fracture Registry. Australia: Australia and New Zealand Hip Fracture Registry. http://www.anzona.net/documents/2012_jan_newsletter%20.pdf

Banks E., Reeves G.K., Beral V., Balkwill A. & Liu B., 2009 Hip Fracture Incidence in Relation to Age, Menopausal Status, and Age at Menopause: Prospective Analysis. *PLoS Medicine* 6, e1000181. doi:10.1371/journal.pmed.1000181

Bertram M., Norman R., Kemp L. & Vos, T., 2011 Review of the long-term disability associated with hip fractures. *Injury Prevention* 17 (6): 365-370

British Menopause Council (BMC), 2011 Modernising the NHS: observations and recommendations from the British Menopause Society. *Menopause International* 0 (0): 1-3

Boden S.D., Labropoulos P. & Saunders R., 1990 Hip fractures in young patients: is this early osteoporosis? *Calcified Tissue International* 46(2): 65-72

Castellini A., Daidone S., Jacobs R., Kasteridis P. & Street A.D., 2015 The determinants of costs and length of stay for hip fracture patients. *PLoS One* 10, e0133545. doi: 10.1371/journal.pone.0133545

Chesser T.J.S., Handley R. & Swift, C., 2011 New National Institute for Clinical Excellence (NICE) guideline to improve outcomes for hip fracture patients. *Injury* 42(8): 727-729

Chung, M.C., McKee, K.J., Austin, C., Barkby, H., Brown, H., Cash, S., Ellingford, J., Hanger, L., Pais, T. (2009) Posttraumatic stress disorder in older people after a fall. *International Journal of Geriatric Psychiatry*, 24(9): 955-964.

Clancy, A., Balteskard, B., Perander, B., Mahler, M. 2015 Older persons' narrations on falls and falling – stories of courage and endurance. *International Journal of Qualitative Studies in Health and Well-being*, 10: 26123.

Coughlin T.A., Janes G., Nightingale J., Moran C.G., Forward D. & Ollivere B.J., 2016 Outcomes in young hip fracture patients. Paper presented at the annual meeting Orthopaedic Trauma Association. Maryland, ML.

Court-Brown C.M. & Caesar B., 2006 Epidemiology of hip fractures: a review. *Injury* 37(8): 691-697

Currie C.T. & Hutchinson J.D., 2005 Audit, guidelines and standards: Clinical governance for hip fracture care in Scotland. *Disability and Rehabilitation* 27(18): 1099-1105

Department of Health (DH), 2001 *The Expert Patient: a new approach to chronic disease management for the 21st Century*. London: The Stationery Office.

Department of Health (DH), 2014 *The NHS Outcomes Framework 2014/15*. London: Crown.

Eastwood E.A., Magaziner J., Wang J., Silberzweig S.B., Hannan E.L., Strauss E. & Siu A.L., 2002 Patients with hip fracture: subgroups and their outcomes. *Journal of the American Geriatrics Society* 50(7):1240-1249

Foss N.B., Kristensen M.T., Palm H. & Kehlet, H., 2009 Postoperative pain after hip fracture is procedure specific. *British Journal of Anaesthesia* 102(1): 111-116

Garrard J., 2014 *Health Sciences Literature Review Made Easy: The Matrix Method* (4th ed). Burlington: Jones and Bartlett.

Gjertsen J.E., Engesaeter L.B., Furnes O., Havelin L.I., Steindal K., Vinje T. & Fevang J.M., 2008 The Norwegian Hip Fracture Register. *Acta Orthopaedica* 79(5): 583-593

Gjertsen, J.E, Fevang, J.M., Matre, K., Vinje, T. & Engesaeter, L.B., 2011 Clinical outcome after undisplaced femoral neck fractures. *Acta Orthopaedica* 82(3): 268-274

Gregory, S., 2010 Narrative approaches to healthcare research. *International Journal of Therapy and Rehabilitation* 17(12): 630-636

Griffiths F., Mason V., Boardman F., Dennick K., Haywood K., Achten J. & Costa M., 2015 Evaluating recovery following hip fracture: a qualitative interview study of what is important to patients. *BMJ Open* 5(1): e005406

Gunasekera N., Boulton C., Morris C. & Moran C., 2010 Hip fracture audit: the Nottingham experience. *Osteoporosis International* 21(Suppl 4) S:647-S653

Hansson S., Rolfson O., Akesson K., Nemes S., Leonardsson O. & Rogmark C., 2015 Complications and patient-reported outcome after hip fracture. A consecutive annual cohort study of 664 patients. *Injury* 46(11): 2206-2211

Healthcare Quality Improvement Partnership (HQIP) 2014 National Hip Fracture Database: Anaesthesia Sprint Audit of Practice (ASAP). Royal College of Physicians, London.

Higgins J.P.T. & Green S., (Eds) 2011 Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 The Cochrane Collaboration.

<http://handbook.cochrane.org/>

Holt G., Smith R., Duncan K., Hutchison J.D.& Gregori A., 2008a Epidemiology and outcome after hip fracture in the under 65s – evidence from the Scottish hip fracture audit. *Injury* 39(10):1175-1181

Holt G., Smith R., Duncan K., Hutchison J.D.& Gregori A., 2008b Gender differences in epidemiology and outcomes after hip fracture. *Journal of Bone and Joint Surgery [Br]*, 90-B: 480-483.

Holt G., Smith R., Duncan K., Hutchison J.D. & Reid D., 2009 Changes in population demographics and the future incidence of hip fracture. *Injury* 40(7): 722-726

Janes, G., 2016 Slips trips and broken hips: the recovery experiences of young adults following an isolated fracture of the proximal femur. Unpublished PhD thesis. University of Wolverhampton

Karantana, A., Boulton, C., Bouliotis, C., Shan Shan Shu, K., Scammell, B.E. & Moran, C.G., 2011 Epidemiology and outcome of fracture of the hip in women aged 65yrs and under: A cohort study. *The Journal of Bone and Joint Surgery* 93B: 658-664

Karlsson, A.C., Ekebergh, M., Larsson-Mauleon, A., Alerud-Osterberg, S. 2012 'Is that my leg?' Patients' experiences of being awake during regional anaesthesia and surgery. [*Journal of Peri-Anaesthesia Nursing* 27\(3\):155-164](#)

Kondo A., Sada K., Ito Y., Yamaguchi C., Horii N., Adachi H. & Fujimoto E., 2014 Difficulties in life after hip fracture and expected hospital supports for patients and their families. *International Journal of Orthopaedic and Trauma Nursing* 18(4):191-204

Larner S., 2005 Common psychological challenges for patients with newly acquired disability. *Nursing Standard* 19(28): 33-39

Leavy B., Aberg A.C., Melhus H., Mallmin H., Michaelsson K. & Byberg L., 2013 When why and where do hip fractures occur? A population-based study. *Osteoporosis International* 24(9): 2387-2396

Leigheb F., Vanhaecht K., Sermeus W., Lodewijckx C., Deneckere S., Boonen S. & Panella M., 2013 The effect of care pathways for hip fractures: a systematic overview of secondary studies. *European Journal of Orthopaedic Surgery and Traumatology* 23(7): 737-745

Leonardsson O., Sernbo I., Carlsson A., Akesson K. & Rogmark C., 2010 Long-term follow up of replacement compared with internal fixation for displaced femoral neck fractures. *Journal of Bone and Joint Surgery* 92(b:3):406-412

Martin-Martin L.M., Valenza-Demet G., Jimenez-Moleon J.J., Cabrera-Martos I., Revelles-Moyano F.J. & Valenza M.C., 2014 Effect of occupational therapy on function and emotional outcomes after hip fracture treatment: a randomized controlled trial. *Clinical Rehabilitation* 28(6): 541-551.

Mauleon A.L., Palo-Bengtsson L. & Ekman S.L., 2007 Patients experiencing local anaesthesia and hip surgery. *Journal of Clinical Nursing* 16(5): 892-899

Mitchell P., Dolan L., Sahota O., Cooper A., Elliot M., McQuillian C. & Mullan K., 2010 Osteoporosis in the UK at Breaking Point: A report on the current management of postmenopausal women with osteoporosis in the UK. http://www.ilcuk.org.uk/images/uploads/publication-pdfs/pdf_pdf_143.pdf (accessed 15.2.18)

Montin L., Suominen T. & Leino-Kilpi H., 2002 The experiences of patients undergoing total hip replacement. *Journal of Orthopaedic Nursing* 6(1): 23-29

Moppett I.K., Wiles M.D., Moran C.G. & Sahota O., 2012 The Nottingham Hip Fracture Score as a predictor of early discharge following fractured neck of femur. *Age and Ageing* 41(3): 322-326

Morse J.M. & O'Brien B., 1995 Preserving self: from victim to patient, to disabled person. *Journal of Advanced Nursing* 21(5): 886-896

National Institute of Clinical Excellence (NICE), 2011 *The Management of Hip Fracture in Adults (CG124)*. London: Crown

Nieves J.W., Bilezikian J.P., Lane J.M., Einhorn T.A., Wang Y., Steinnbuch M. & Cosman F., 2010 Fragility fractures of the hip and femur: incidence and patient characteristics. *Osteoporosis International* 21(3):399-408

Oberg T., Oberb U., Sviden G. & Persson A.N., 2005 Functional capacity after hip arthroplasty: a comparison between evaluation of three standard instruments and a personal interview. *Scandinavian Journal of Occupational Therapy* 12(1):18-28

Oetgen M.E., Miki R.A., Smart L.R. & Lindskog D.M., 2009 Evaluation of bone mineral density and metabolic abnormalities associated with low-energy hip fractures. *Current Orthopaedic Practice* 20(6): 674-68

Olsson L.E., Nystrom A.E.M., Karlsson J. & Ekman I., 2007 Admitted with a hip fracture: patient perceptions of rehabilitation. *Journal of Clinical Nursing* 16(5): 853-859

Parker M.J., 2004 Care pathways for hip fractures: a useful tool or passing fashion? *Age and Ageing* 33(2): 93-94

Parsons N., Griffin X.L., Achten J. & Costa M.L., 2014 Outcome assessment after hip fracture: is EQ-5D the answer? *Bone and Joint Research* 3(3): 69-75.

Partridge M. and Marsh D., 2007 A UK national hip fracture database. *Journal of Orthopaedic Nursing* 11(2): 122-123

Plant F. (2010) *Personal Communication* Project Co-ordinator, NHFD (National Hip Fracture Database for England, Wales, NI and the Channel Islands).

Pownall E., 2004 Using a patient narrative to influence orthopaedic nursing care in fractured hips. *Journal of Orthopaedic Nursing* 8(3): 151-159

Proctor R., Wade R., Woodward Y., Pendleton N., Baldwin R., Tarrier N. & Burns A., 2008 The impact of psychological factors in recovery following surgery for hip fracture. *Disability and Rehabilitation* 30(9): 716-722

Protzman R.R. & Burkhalter W.E., 1976 Femoral-neck fractures in young adults. *Journal of Bone and Joint Surgery* 55a(5): 689-695

Robinson C.M., Court-Brown C.M., McQueen M.M. & Christie J., 1995 Hip fractures in adults younger than 50 years of age – epidemiology and results. *Clinical Orthopaedic Related Research* 312: 238-246

Roding J., Lindstron B., Malm J. & Ohman A., 2003 Frustrated and invisible – younger stroke patients' experiences of the rehabilitation process. *Disability and Rehabilitation* 25(15): 867-874

Rohde G., Haugeberg G., Mengshoel A.M., Moum T. & Wahl A.K., 2008 Is global quality of life reduced before fracture in patients with low-energy wrist or hip fracture? A comparison with matched controls. *Health Quality of Life Outcomes* 6: 90, doi: 10.1186/1477-7525-6-90

Santamaria N., Houghton L., Kimmel L. & Graham A., 2003 Clinical pathways for fractured neck of femur: a cohort study of health related quality of life, patient satisfaction and clinical outcome. *Australian Journal of Advanced Nursing* 20 (3): 24-29

Schiller C., Franke T., Belle J., Sims-Gould J., Sale J. & Ashe M.C., 2015 Words of wisdom - patient perspectives to guide recovery for older adults after hip fracture: a qualitative study. *Patient Preference and Adherence* 9: 57-63

Swiontkowski M.F., Winqvist R.A. & Hansen S.T., 1984 Fractures of the femoral neck in patients between the ages of twelve and forty-nine years. *Journal of Bone and Joint Surgery* 66A(6): 837-846.

Thuan V.L. & Swiotkowski M.F., 2008 Treatment of femoral neck fractures in young adults. *Journal of Bone and Joint Surgery* 90a(10): 2254-2266

Trauma Audit and Research Network (TARN), 2016 Trauma Care

<https://www.tarn.ac.uk/Content.aspx?ca=2> (accessed 15.2.18)

van Balen R., Essink-Bot M., Steyerberg E.W., Cools H.J.M. & Habbema J.D., 2003 Quality of life after hip fracture: A comparison of four health status measures in 208 patients. *Disability and Rehabilitation* 25(10): 507-519

Verettas D.A.J., Galanis B., Kazakos K., Hatziyiannakis A. & Kotsios E., 2002 Fractures of the proximal part of the femur in patients under 50 years of age. *Injury* 33(1): 41-45

Vilardo L. & Shah M., 2011 Chronic pain after hip and knee replacement. *Techniques in Regional Anaesthesia and Pain Management* 15(3):110-115

Visschedijk J., Achterberg W., van Balen R. & Hertogh C., 2010 Fear of falling after hip fracture: A systematic review of measurement instruments, prevalence, interventions and related factors. *Journal of the American Geriatrics Society* 58(9): 1739-1748

Wade D.T., 2000 Personal context as a focus for rehabilitation. *Clinical Rehabilitation* 14(2):115-116

World Health Organisation (WHO), 2003 The burden of musculoskeletal conditions at the start of the new millennium. Report of a WHO Scientific Group. Geneva: World Health Organisation.

Young Y. & Resnick B., 2009 Don't worry, be positive: improving functional recovery 1 year after hip fracture. *Rehabilitation Nursing* 34(3): 110-117

Ziden L., Wenestam C.G. & Hansson-Scherman M., 2008 A life-breaking event: early experiences of the consequences of a hip fracture for elderly people. *Clinical Rehabilitation* 22(9): 801-811