

Hip Fracture Incidence – Using the National Hip Fracture Database (NHFD) to Examine Trends in Women and Men in the UK

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SUMMARY

We compare the numbers of hip fractures presenting in England, Wales and Northern Ireland in 2012 and 2018. Between these years the age-adjusted annual incidence of hip fracture fell by 4.7% in women, but increased by 1.9% in men. This may reflect the success of fracture prevention in women, but highlights the need for strategies focused on men.

ABSTRACT

Purpose: We set out to examine temporal trends in hip fracture incidence and in the age and sex of patients, using data on presentations with hip fracture recorded by the National Hip Fracture Database (NHFD).

Methods: We analysed NHFD data on all over-60 year old people who presented with hip fracture in England, Wales and Northern Ireland in the calendar years 2012 and 2018, and compared these with Office of National Statistics figures for the population of these three countries over the same time period.

Results: Between 2012 and 2018 the over-60 year old population of these three countries increased by 9.5%; women by 8.2% and men by 11.1%. The total number of people presenting with hip fracture increased by 7.1%; an increase of just 2.6% in women contrasting with an increase of 19.6% for men.

Conclusion: The proportion of all hip fractures affecting men rose from 26.3% in 2012 to 29.4% in 2018, demonstrating the need for greater focus on the prevention and treatment of hip fractures in men.

KEY POINTS

Between 2012 and 2018 the age-adjusted incidence of hip fracture fell by 4.7% in over-60 year old women, in contrast to an increase of 1.9% in men. Improving public awareness of the impact of osteoporosis in women may have contributed to reduced hip fracture incidence. These data suggest that greater attention should be paid to hip fracture prevention in men.

INTRODUCTION

Hip fractures are well recognised as predominantly affecting those in the oldest age groups; the age groups which are growing most rapidly with recent demographic trends. In previous decades many, including this article's first author [1], predicted that this could lead to dramatic increases in the total numbers of hip fractures that health

services would need to manage. Fortunately, more recent analyses of international data failed to demonstrate the predicted increase and in doing so they highlighted that the temporal trend in age-specific incidence of hip fracture may follow a different gradient in women and men [2]. More recent papers in *Osteoporosis International* have suggested that risk is converging in the two sexes [3], and have highlighted the need for better evidence on which to base fracture prevention strategies focused on the needs of men [4].

We set out to examine recent trends in total numbers, and the incidence of hip fractures among women and men in England, Wales and Northern Ireland; using data recorded by the National Hip Fracture Database (NHFD) for all over-60 year old people presenting with this injury in these countries.

METHODS

This study used data that had been collected by the national clinical audit of hip fracture; the National Hip Fracture Database. The NHFD captures data on over 90% of all people aged over-60 years who present with hip fracture to all 174 trauma units in England, Wales and Northern Ireland [5]. These patients' demographic data, fracture type, assessment, medical and surgical care and outcomes are collected and submitted by the clinical staff who provide their care. The NHFD is a quality improvement platform commissioned by the Healthcare Quality Improvement Programme (HQIP). It provides a portfolio of local and benchmarking data to clinical teams and health service managers through a website www.nhfd.co.uk, developed by Crown Informatics. The open access website includes a number of run-charts which allow individual hospitals, regions and countries to monitor the impact of local service improvements. The detailed, anonymised data based on hundreds of thousands of patients that underpin these charts are freely available to download in the form of Excel or CSV spreadsheets from the NHFD website. The NHFD has been collecting data since 2007, but in this study we confined our analysis to NHFD data submitted since January 2012, since this was the time point at which case ascertainment first achieved its current figure of over 90% of all over-60 year olds presenting with hip fracture in these countries.

We compared data for 2012 with equivalent data from 2018; the most recent year for which both NHFD and Office of National Statistics (ONS) figures for the population of these

three countries were available [6]. Analysis of administrative data by the NHFD is in line with Governance Arrangements for Research Ethics Committee (GAfREC) guidance [7]. Further research ethics committee approval was not necessary since our study only analysed data that had already been published on the NHFD website.

RESULTS

Data from the National Hip Fracture Database showed that the total number of over-60 year olds presenting with hip fracture only increased by 7.1% between 2012 and 2018. In contrast, Office of National Statistics data record that the combined over-60 year old population of England, Wales and Northern Ireland increased by 9.5% over the same time period. We found very different pictures in the two sexes (Figure 1). The number of women in this age range increased by 589,047 (8.2%), and the number of men by 670,212 (11.1%). The proportion of all hip fractures which affected men rose from 26.3% in 2012, to 29.4% in 2018.

In 2012 a total of 45,817 women and 16,361 men sustained a hip fracture; with higher figures of 47,002 and 19,572 in 2018 that equated with increases of 2.6% and 19.6% respectively. Across the whole of the over-60 year old population, the age-adjusted annual incidence of hip fracture fell by 4.7% in women, from 640 to 609 per 100,000/year ($p < 0.001$), which contrasts with a 1.9% rise from 270 to 276 per 100,000/year in men ($p < 0.001$).

The incidence of hip fracture fell among women aged over 70 and men aged over 75. This might suggest that the incidence of hip fracture may have been affected by general improvements in the health of older people during this time period. However, this encouraging trend was not observed in younger age groups (Table 1). We found that the incidence of hip fracture increased by 9.2% among women aged less than 70 years, and by 12.6% among men aged less than 80, though hip fracture remains relatively uncommon in these age groups, which each contributed only 6% to the total number of 66,547 hip fractures recorded by the NHFD in 2018.

Table 1: Total numbers of people and hip fractures in England, Wales and Northern Ireland in 2012 and 2018.

Age group	Women						Men					
	2012			2018			2012			2018		
	Total population	Annual hip fractures	Incidence /100,000	Total population	Annual hip fractures	Incidence /100,000	Total population	Annual hip fractures	Incidence /100,000	Total population	Annual hip fractures	Incidence /100,000
60-64	1,683,372	1,263	75	1,700,312	1,394	82	1,618,410	760	47	1,636,491	849	52
65-69	1,570,623	2,155	137	1,596,301	2,389	150	1,488,698	1,161	78	1,499,721	1,381	92
70-74	1,185,882	3,442	290	1,553,131	4,346	280	1,068,533	1,554	145	1,427,500	2,173	152
75-79	1,015,927	6,198	610	1,098,513	6,273	571	550,361	2,421	285	945,956	2,872	304
80-84	818,421	10,177	1,243	860,123	9,718	1,130	586,609	3,701	631	673,082	4,170	620
85+	888,090	22,582	2,543	942,982	22,882	2,427	442,061	6,764	1,530	542,134	8,127	1,499
All	7,162,315	45,817	640	7,751,362	47,002	606	6,054,672	16,361	270	6,724,884	19,572	291

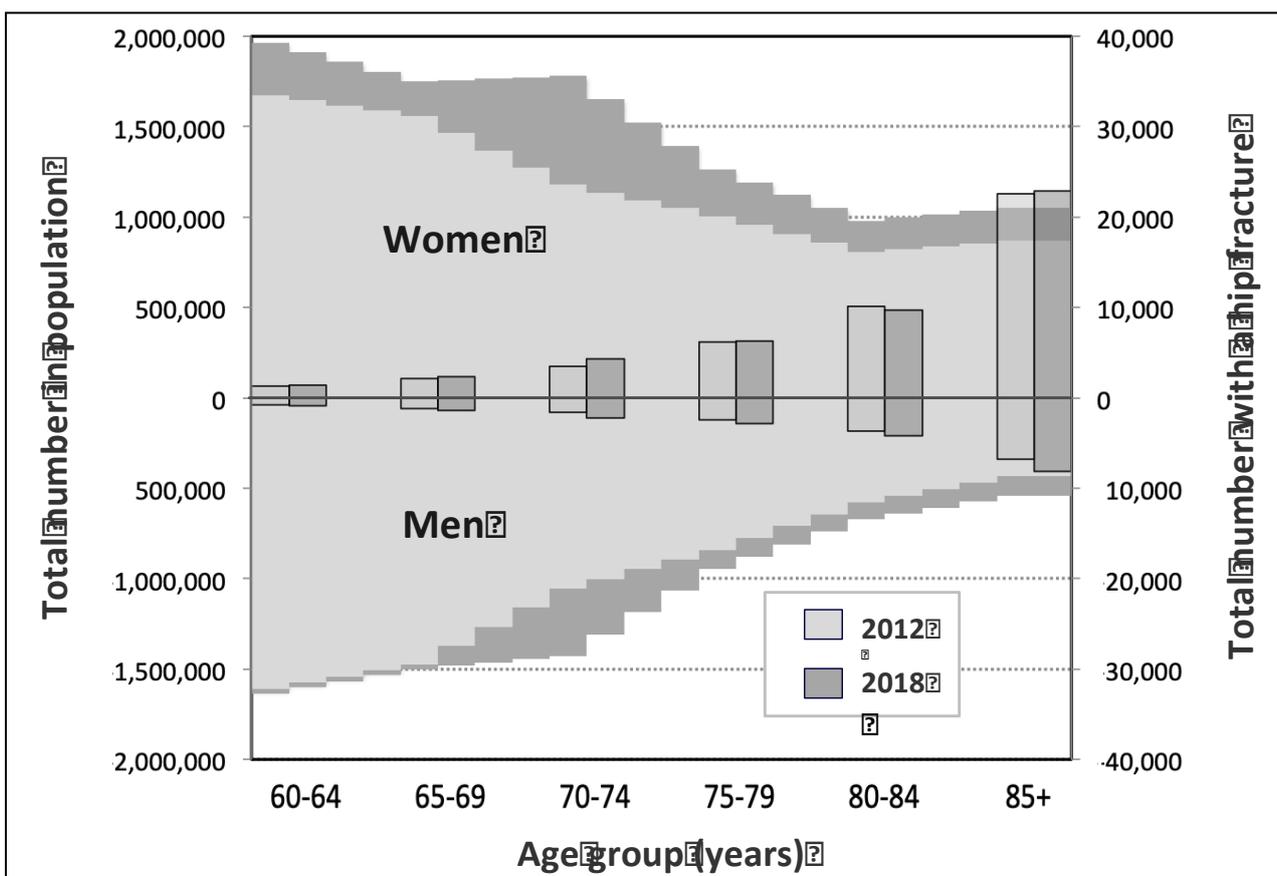


Figure 1: Total hip fracture numbers in different age groups, set against the age and sex distribution of the population in 2012 and 2018.

DISCUSSION

The population of over-60 year old adults in the UK increased by about 1.6% per year over this study period, but contrary to some predictions this was accompanied by a much more modest increase in the number of hip fractures, and only a small increase in the total number of women sustaining this injury. Our findings are consistent with trends reported elsewhere in Europe. In Spain, a study comparing data from 1997 with 2010 reported that hip fracture rates increased by 3.7% in men, but decreased by 1.9% in women [8]. Work in Portugal between 2000 and 2010 suggested a more modest reduction in hip fracture in men than was seen in women; the authors suggesting this may be due to a greater focus on the treatment of osteoporosis in women rather than in men [9]. In Denmark between 1995 and 2010 there was a 31% fall in hip fracture incidence among women, yet only a 19% fall in men [10]. Data from France between 2012 and 2013 is again, consistent with our findings; reporting a 14% decrease in the incidence of hip fracture in women, yet only a 1% decrease in men [11].

However, the worldwide picture is inconsistent. In Japan there was no significant change in age-adjusted incidence in either sex between 1992 and 2017 [12]. In Canada age-adjusted hip fracture incidence fell by 2.4% per year from 1996 to 2005, with similar changes in women and men [13], and in the USA a decreasing trend from 2007 to 2013 was again observed in both women and men [14]. A number of explanations have been offered for the fall in the age-specific incidence of hip fracture. General improvements in nutrition, home environment, healthcare, and better preservation of physical function into older years [15] are likely to have played a part. However, the difference in the trends we and others have demonstrated in women and men suggests that improvements are being more effectively delivered to women. In particular this may reflect targeting of resources towards the prevention and treatment of osteoporosis [16] and prevention of falls [8] among women.

Hip fractures in men should not be overlooked. A multicentre study analysing hip fractures in men in the United States found that hip fracture incidence increased with age, as did comorbidities, and that men over-80 with three or more comorbidities were those most likely to suffer a hip fracture [17]. Despite advances in peri-operative orthogeriatric care,

and improvements in anaesthesia and surgery for hip fracture, mortality remains significantly higher for men than for women [18]. In 2018 the NHFD recorded that 10.5% of men died during their hospital admission, a figure nearly twice the 5.7% figure recorded for women [19].

To date, the majority of hip fracture research has focused on women, reflecting an awareness that women aged over 50 are twice as likely to sustain a hip fracture as their male counterparts [20] and clinicians' daily experience that the majority of their hip fracture patients are women. However, this gap is closing and highlights the need for improvements in the prevention and care offered to men [3].

CONCLUSIONS

Improving public awareness of the impact of osteoporosis in women may have contributed to the very different temporal trend in hip fracture numbers we have shown in the two sexes.

This public health success does not appear to extend to younger patient groups, and our results suggests that greater attention should be paid to ensuring that men, and particularly younger men, benefit from similar improvements; both in hip fracture prevention and in the care they receive following this injury.

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CONFLICTS OF INTEREST

Antony Johansen and Dominic Inman are clinical leads for the NHFD, but they and Bethan Edwards declare that they have no conflict of interest in this work.

AVAILABILITY OF DATA AND MATERIAL

NHFD data freely accessible via www.nhfd.co.uk

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