

# Hip fracture in the elderly in Spain

## Incidence 1977-88 in the province of Salamanca

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We recorded the incidence of fractures of the proximal end of the femur in the province of Salamanca, Spain, 1977-88. Based on age-specific survival estimates, the probability of suffering a hip fracture after

50 years of age in women was 7 percent and in men 2 percent, i.e., substantially lower than in Northern Europe or U.S.A.

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We have calculated the incidence of fractures of the proximal end of the femur in the province of Salamanca, Spain, in relation to age and sex. Taking into account the demographic characteristics of the province, we determined the probability of a person living in the area suffering a hip fracture in his/her remaining years of life.

### Patients and methods

The study is based on the cases of hip fracture that occurred in the province of Salamanca 1977-1988 who on admission were 50 years or older. During the 12-year catchment period, there were 1,908 cases. The total number of cases was divided into four age groups: 50-64, 65-74, 75-84 and > 84 (Table 1). In 1977, the total population of the province was 356,543 with 109,886 50 years or older. In 1988, the population had increased to 359,285 and 126,176, respectively (Spanish National Institute of Statistics).

During the investigation, the yearly incidence of fractures per 100,000 residents was 195 for women and 73 for men. The incidence increased exponentially with advancing age and was always higher for women (Table 1). The probability of admission to hospital for hip fracture in the elderly was calculated on incidence rates and survival estimates specific for the age of the residents of the province of Salamanca (Table 2).

### Results

After the age of 50, 7 percent of the women and 2 percent of the men in our province will be admitted to hospital for a hip fracture at least once in their lives. At 85, every sixteenth woman and every thirty-fifth man will be admitted for such injury before they die (Table 3).

The probability of eventually suffering a hip fracture is very similar in all the age groups studied, since the younger individuals have more remaining years at risk.

### Discussion

All authors agree on the high incidence of hip fractures, although there are differences between countries (2, 5, 6, 7, 10). Attempts have been made to explain these by considering differences in race, diet, geography, climate, life-style, etc. (1, 3, 4, 13, 14, 15, 16). In recent years, there has been an important and progressive increase in the number of cases (1, 7, 8).

Our series of patients shows a lower incidence for both sexes in all age groups than those of other European countries and the United States (Table 4). For example, a study in California showed that about 12 percent of women over 50 will suffer hip fractures (12). Other authors (4) report a probability of 15 percent in women and 5 percent in men. Also, our incidence was lower than in a series from Alicante (10), another region in Spain.

Table 1. Incidence of hip fracture by age and sex in the province of Salamanca 1977-1988

Age groups	Yearly cohorts in thousands			Fractures/year		/100,000 and year	
	Total	Women	Men	Women	Men	Women	Men
50-64	62	32	30	12	9	38	29
65-74	32	17	15	23	8	133	53
75-84	17	9.4	8.0	51	15	535	185
85-	4.2	2.7	1.4	34	8	1,245	568
Total	116	61	54	120	40	195	73

Table 2. Estimated probability of fracture for both sexes in cases 50 years or older

A	B	C	D	E	F	G	H	I
50-64	62	1	6.4	3.2	59	34	50	296
65-74	55	2	12	6.5	49	96	96	468
75-84	43	5	22	11	32	375	375	1188
85-	20	15	20	9.8	9.8	1010	1010	989
Sum of fractures in all the intervals								2941

A	Age groups	F	Number of residents at risk in thousands (B-E)
B	Residents alive at the beginning of the interval in thousands	G	Incidence of hip fracture per 100,000 and year in the age group
C	Probability of death per year in percent	H	Incidence per million inhabitants during the interval
D	Deaths in the age groups in thousands	I	Number of fractures per interval
E	Average number of deaths during the interval in thousands (D/2)		

Table 3. Percent probability of hip fracture in the province of Salamanca

Age	Average	Women	Men
50	4.7	7.3	2.2
65	4.8	7.3	2.1
75	5.1	7.4	2.3
85	5.0	6.2	2.8

Table 4. Comparative incidence of hip fractures according to age and sex in various countries

	50-64 years		65-74 years		75-84 years		> 84 years	
	Women	Men	Women	Men	Women	Men	Women	Men
Oslo, Norway (11)	239	134	1,057	483	2,782	1,454	4,789	3,090
Stockholm, Sweden (7)	107	102	431	295	1,633	860	4,386	3,532
Odense, Denmark (5)	113	57	407	172	1,405	574	3,784	1,741
Rochester, U.S.A. (6)	153	58	482	143	1,342	740	2,249	1,302
Oxford, England (2)	61	52	216	116	1,118	531	3,223	1,316
Alicante, Spain (10)	44	48	331	160	1,052	466	3,115	2,563
Salamanca, Spain	38	29	133	53	535	185	1,245	568

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