

Age and sex patterns of hip fracture – changes in 30 years

The age- and sex-specific incidence of hip fractures was studied over a period of 30 years. There was a continuous increase in incidence over the years. The trend was most obvious in the oldest age groups and in men.

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Over the last 30 years the number of hip fractures in the city of Malmö has increased by a factor of six or more. In 1950, 62 cases were treated in the Department of Orthopedic Surgery, compared to 422 in 1981.

Similar observations of a rapidly increasing rate of hip fractures in recent years have been made in various parts of Scandinavia (Falch & Ilebekk 1978, Zetterberg & Andersson 1982, Swanson & Murdoch 1983, Frandsen & Kruse 1983, Zain Elabdien et al. 1984).

The objective of the present study was to examine possible changes in the age and sex distribution of hip fractures in our aging population.

Material and methods

The population of the city of Malmö in Southern Sweden is at present approximately 230 000. Over the last 30 years it has increased only 25 per cent, whereas the number of individuals over the age of 50 has doubled during the same period. This is due to the high rate of surviving children born at the turn of the century and, to a lesser extent, to a somewhat improved life expectancy, at least during the first part of the 30 years under study.

Analysis of the population data demonstrates the changes with time in the population of elderly. A hump on the population curve is entering the age when hip fracture becomes increasingly more common (Figure 1).

The data on hip fractures were collected in the Department of Diagnostic Radiology. During the time period 1950–1981, the method of registration of fractures in the Department has not changed and

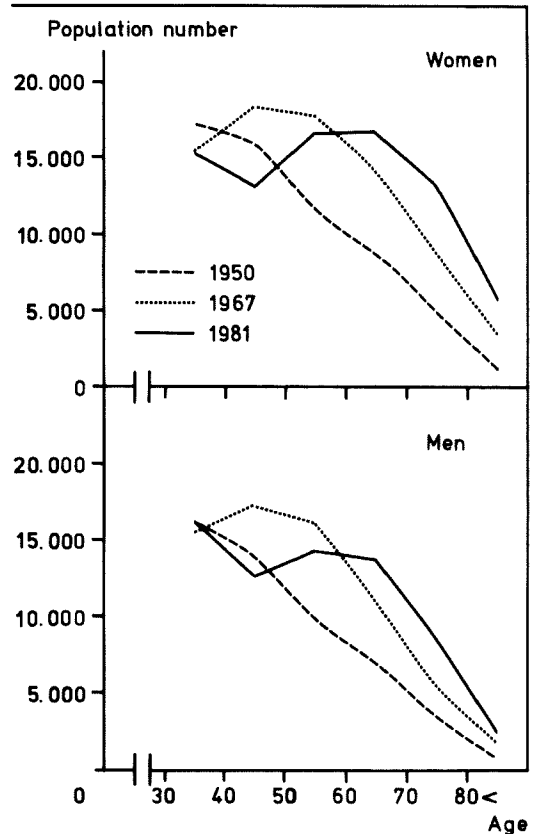


Figure 1. Population of the city of Malmö: changes over the last three decades.

therefore the roentgen registration was used throughout the study rather than the clinical registers of a later date. For the first period under study, the data of Alffram (1964) were used. Later, 2-year samples – 1967–1968 and 1974–1975 – were added (Nilsson & Obrant 1978) and, finally, those fractures

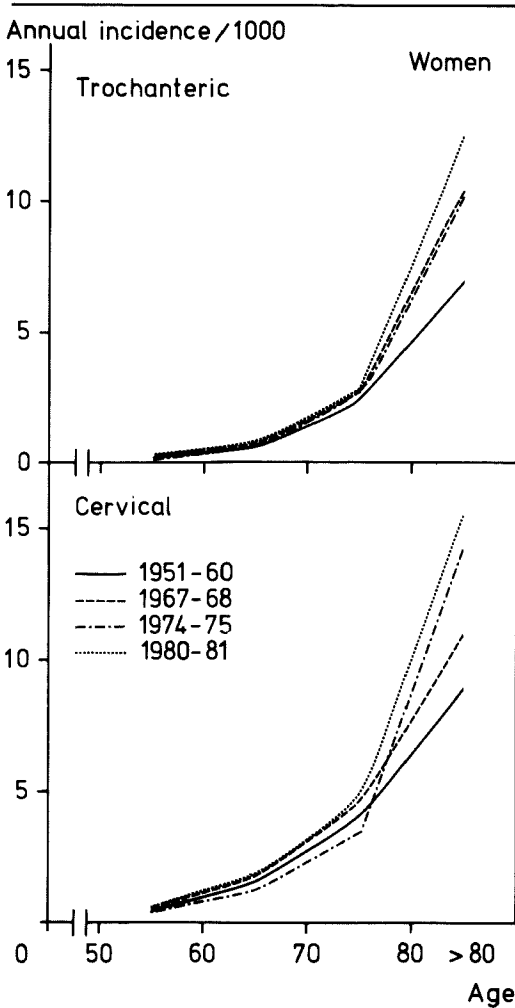


Figure 2. Age- and sex-specific incidence of hip fracture – changes over three decades in women.

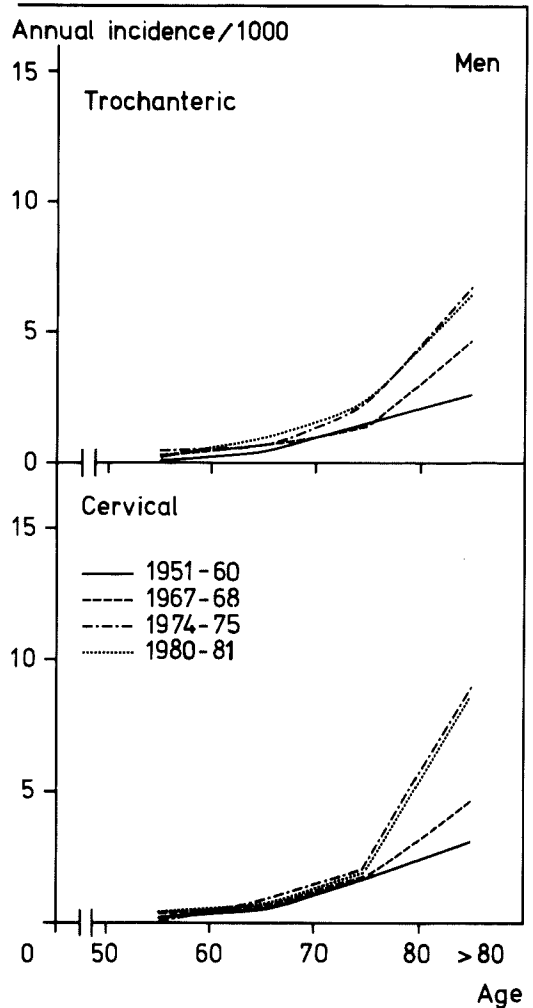


Figure 3. Age- and sex-specific incidence of hip fracture – changes over three decades in men.

which had occurred in 1980–1981 were included (Table 1). In the first part of the time period covered by the study, the population at risk was defined from census numbers produced every 5 years. For the samples after 1967, annual population data were available.

Table 1. Source of observations

Number of hip fractures (per year)	Time	Source
1664 (128)	1949–61	Alffram 1964
512 (256)	1967–68	Nilsson & Obrant 1978
642 (321)	1974–75	Nilsson & Obrant 1978
817 (409)	1980–81	New data

The fractures were classified as trochanteric or cervical; trochanteric avulsion fractures and sub-trochanteric fractures were not included. Only patients over the age of 50 were included.

Results

Calculation of the age- and sex-specific incidence (Figure 2) demonstrated obvious changes with time. There was little change in total risk during the 5th and 6th decades, whereas in octogenarians the risk seems almost to have doubled in the last 30 years.

In men, the relative change was even greater than in women. The risk of fracture in the oldest men, trochanteric and cervical, is

now of the same magnitude as in women 30 years ago. Today, men run a risk of hip fracture about half that of women.

Discussion

Already in the fifties the risk of fracture increased in the city of Malmö (Alffram 1964). In a previous study (Nilsson & Obrant 1978), it was concluded that the increasing risk of fracture at that time seemed to have reached a plateau value in women (but not in men), so that we would now be able to calculate with some confidence the future needs for treatment of hip fractures. However, this confidence was not justified; in women we have now seen a further increase above the expected level. Figure 2 shows that trochanteric fractures in women did not change much in 1967–1975. The incidence of cervical fractures in old women did change during those years but, for some reason, the fracture risk in younger women was somewhat less in 1974–1975.

Although men still contribute much less than women to hip fractures, the increase has been spectacular in old men. This increase happened before 1975; during the last period of the study no further increase could be demonstrated. Whatever factors have caused this change – alcoholism may be one (Nilsson 1970) – the harmful influence does not seem to have increased further.

Although there may be differences in the absolute incidence, similar changes over the decades, particularly in octogenarians, have been clearly demonstrated in Gothenburg (Zetterberg & Andersson 1982), in Uppsala (Zain Elabdien et al. 1984), in Denmark (Frandsen & Kruse 1983), in Dundee (Swanson & Murdoch 1983) and in Nottingham (Wallace 1983).

Obviously, there are several explanations of the tremendous increase in the number of fractures in the city. First, there is a large cohort of people moving up in age. However, there must be other factors at work since those who today reach a high age run a higher risk of fracture than in the past.

In conclusion, in the city of Malmö we have confirmed changes in the risk of hip fractures similar to those which have been observed in

other areas of Scandinavia and in the United Kingdom. In our study the increase in incidence was greatest in octogenarians and over the years the change has been more rapid in men than in women.

Acknowledgements

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References

- Alffram, P. A. (1964) An epidemiologic study of cervical and trochanteric fractures of the femur in an urban population. *Acta Orthop. Scand.*, Suppl. 65.
- Falch, J. & Ilebeek, A. (1978) Fractures of the proximal end of the femur. Prevalence and incidence in Oslo, 1950–1975. *Tidskr. Nor. Laegerforen.* 14, 738–739.
- Frandsen, P. A. & Kruse, T. (1983) Hip fractures in the county of Funen, Denmark. *Acta Orthop. Scand.* 54, 681–686.
- Nilsson, B. E. (1970) Conditions contributing to fracture of the femoral neck. *Acta Chir. Scand.* 136, 383–384.
- Nilsson, B. E. & Obrant, K. J. (1978) Secular tendencies of the incidence of fracture of the upper end of the femur. *Acta Orthop. Scand.* 49, 389–391.
- Swanson, A. J. G. & Murdoch, G. (1983) Fractured neck of femur. Pattern of incidence and implications. *Acta Orthop. Scand.* 54, 348–355.
- Wallace, W. A. (1983) The increasing incidence of fractures of the proximal femur: An orthopaedic epidemic. *Lancet* i, 1413–1414.
- Zain Elabdien, B. S., Olerud, S., Karlström, G. & Smedby, B. (1984) Incidence of hip fracture in Uppsala County 1965–1980. *Acta Orthop. Scand.* 55, 284–289.
- Zetterberg, C. & Andersson, G. B. J. (1982) Fractures of the proximal end of the femur in Göteborg, Sweden, 1940–1979. *Acta Orthop. Scand.* 53, 419–426.