

# 50 Years Ago in CORR

## Epidemiology of Fracture in Aged Persons: A Preliminary Investigation in Fracture Etiology

Göran C. H. Bauer CORR 1960;17:219–225

This month’s symposium is devoted to various musculo-skeletal issues related to gender. Perhaps the earliest recognized distinction between the genders in orthopaedic surgery was that for certain fracture rates in the aged. Bauer, whose article we highlight this month, comments on the early work of Bruns [2]: “Thus, in 1882, the general pattern of the age and the sex specific incidence of various types of fractures was formulated clearly by Bruns in an impressive review of fracture epidemiology.” Despite some recognition of gender disparities, substantial data were not available likely because the largest discrepancies occur in the aged and there were relatively few aged persons at that time. Worldwide the average life expectancy in the early 20th century was 30–45 years [5], while in the US it was 47.3 years in 1900 and 68.2 years in 1950 [6]. Thus, for those injuries with the greatest disparities a large aged population was required. Two of the earlier studies with clear data arise from the Classic we reproduce this month by Iskrant [4] and an article published eight years earlier by Bauer in CORR [1].

Bauer reported findings from an epidemiological survey begun in the late 1940s in the city of Malmö. He commented,

“Fracture of the neck of the femur occurs predominantly in

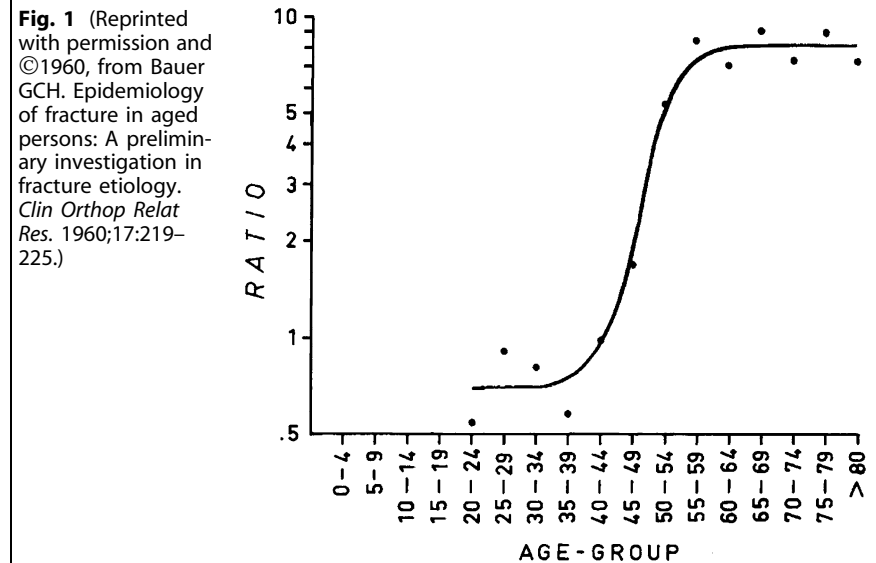
the aged, requires long periods of bed rest in hospitals or nursing homes and has a high rate of complications. As the proportion

of aged people in the population continues to increase, fracture of the neck of the femur becomes a major problem...”

**Table 2** Fracture of neck of femur in Malmö 1949–1958

Health prior to fracture	Men		Total	Women		Total
	Degree of trauma			Degree of trauma		
	Slight	Severe	Slight	Severe		
Good	45 (3)	81 (2)	126 (5)	355 (32)	59 (4)	414 (36)
Poor	59 (15)	22 (1)	81 (16)	271 (50)	42 (4)	313 (54)
Unknown	2 (0)	2 (0)	4 (0)	16 (2)	2 (0)	18 (2)
<i>Total</i>	106 (18)	105 (3)	211 (21)	642 (84)	103 (8)	745 (92)

The figures in parentheses represent the number of deaths within 3 months of fracture. (Reprinted with permission and ©1960, from Bauer GCH. Epidemiology of fracture in aged persons: A preliminary investigation in fracture etiology. *Clin Orthop Relat Res.* 1960;17:219–225.)



**Fig. 1** (Reprinted with permission and ©1960, from Bauer GCH. Epidemiology of fracture in aged persons: A preliminary investigation in fracture etiology. *Clin Orthop Relat Res.* 1960;17:219–225.)

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He cited several studies suggesting an estimated 50% increase in number of cases from 1952 to 1975 in Scotland and an incidence of fracture of the neck of the femur 5 times higher between ages 70 and 79 than between 50 and 59 in the Oxford, England region. One can easily understand such data required a large number of patients living long enough to see these trends that became apparent by the mid 20th century.

The ratio of women to men in Malmö ranged from 1.09 from ages 20–24, to 1.48 over age 80. That rough parity made the distinctions on hip fracture rates astonishing: from 1949–1958 there were 211 fractures in men, while 642 in women (Table 2). The data are all the more remarkable when considering only fractures from slight trauma: 106 in men and 642 in women. The disparity was undeniable. Bauer also reported the discrepancy in the rate of fractures of the lower end of the forearm: the ratio of such fractures in female to male ranged from about 0.6 ages 20–24, to nearly 9 by aged 55–60 (Fig. 1).

On exploring the possible causes of these disparities in young and old, Bauer noted a number of factors: “...failing eyesight, impaired co-ordination, diminished muscle strength and other common defects in the aged.”

However, he further commented, “For several reasons a change in the quality of the skeleton seems to be the dominating factor in fracture of the neck of the femur” and “The dramatic rise at the age of the menopause in the female as compared with male incidence of fracture at the distal end of the forearm...at the same age suggest strongly that endogenous rather than dietary factors are the chief cause of the progressive skeletal fragility.”

While today these issues are well understood by all doctors, we remain deficient in putting our knowledge into practice given the low rates at which patients with early fragility fractures are diagnosed and treated for the underlying disease and therefore miss the opportunity to prevent future fractures, morbidity, and mortality [3, 7].

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## References

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