Incidence of Childhood Distal Forearm Fractures Over 30 Years
A Population-Based Study


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FROM ABSTRACT

Context
The incidence of distal forearm fractures in children peaks around the time of the pubertal growth spurt, possibly because physical activity increases at the time of a transient deficit in cortical bone mass due to the increased calcium demand during maximal skeletal growth.

Changes in physical activity or diet may therefore influence risk of forearm fracture.

Objective
To determine whether there has been a change in the incidence of distal forearm fractures in children in recent years.

Design, Setting and Patients

Main Outcome Measure
Estimated incidence of distal forearm fractures in 4 time periods.

Results
Age-adjusted incidence rates per 100,000 were 32% greater among male residents in 1999-2001 compared with 1969-1971 and 56% greater among female residents in the same time periods.

The peak incidence and greatest increase occurred between ages 11 and 14 years in boys and 8 and 11 years in girls.

Conclusions
There has been a statistically significant increase in the incidence of distal forearm fractures in children and adolescents.
THESE AUTHORS ALSO NOTE

“Previous studies have shown that the incidence of distal forearm fractures in children peaks during early adolescence around the time of the pubertal growth spurt.”

“Adolescence is also characterized by the increase in physical activity necessary to maximize skeletal mass.”

Thus, forearm fractures in adolescence are an inescapable consequence of an appropriate level of physical activity that must be used in order to maximize bone accumulation during growth and minimize fracture risk in old age.

RESULTS

“Overall, comparably age and sex-adjusted annual incidence rates were 42% greater in 1999-2001 compared with 1969-1971.”

The fracture rates were 32% greater among male residents in 1999-2001 compared with 1969-1971 and 56% greater among female residents.

COMMENT

“These results demonstrate a significant increase in the incidence of distal forearm fractures among children.”

“Although the increase could be partly due to more aggressive treatment of these injuries in recent years, this is unlikely to account for an overall increase in distal forearm fractures of 56% in female and 32% in male residents.”

A Sweden study documented an increase in distal forearm fractures of roughly 60% in girls and 35% in boys between 1950 and 1979.

“Generalized deficits in bone density have been reported for girls with distal forearm fractures.”

This study suggests that acquisition of bone mass is being impaired.

“These data also raise concerns about whether acquisition of bone mass may be impaired in the later time periods, perhaps related to changing dietary habits.”

“Over the past 20 years, there has been a dramatic increase in the consumption of carbonated soft drinks, with a corresponding decline in milk consumption.”
“Among girls aged 12 to 19 years, for example, consumption of soft drinks increased from 207 to 396 g per day between 1977-1978 and 1994-1996.” (From about 7 oz to 14 oz per day)

“Distal forearm fractures are a harbinger of additional osteoporotic fractures.”

“A quarter of the bone mass in adult women and men is accumulated during the adolescent growth spurt and it is essential that adequate nutrition in childhood be ensured.”

KEY POINTS FROM DAN MURPHY

1) In the past 30 years, the rate of adolescent forearm fractures increased 32% in boys and 56% in girls.

2) This trend suggests that the acquisition of bone mass is being impaired.

3) Over the past 20 years, there has been a dramatic increase in the consumption of carbonated soft drinks, [which significantly contributes to osteoporosis].

4) Among girls, the consumption of soft drinks averages 396 g per day (about 14 oz).