Clinically significant fracture incidence in Czech children: a population-based study.

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Objective and hypotheses:
The aim was to describe the incidence of clinically significant fractures (extremity long bone and vertebral fractures) in healthy Czech population aged 0-20 years and thus establish a control data for comparison of fracture incidence in chronically ill children.

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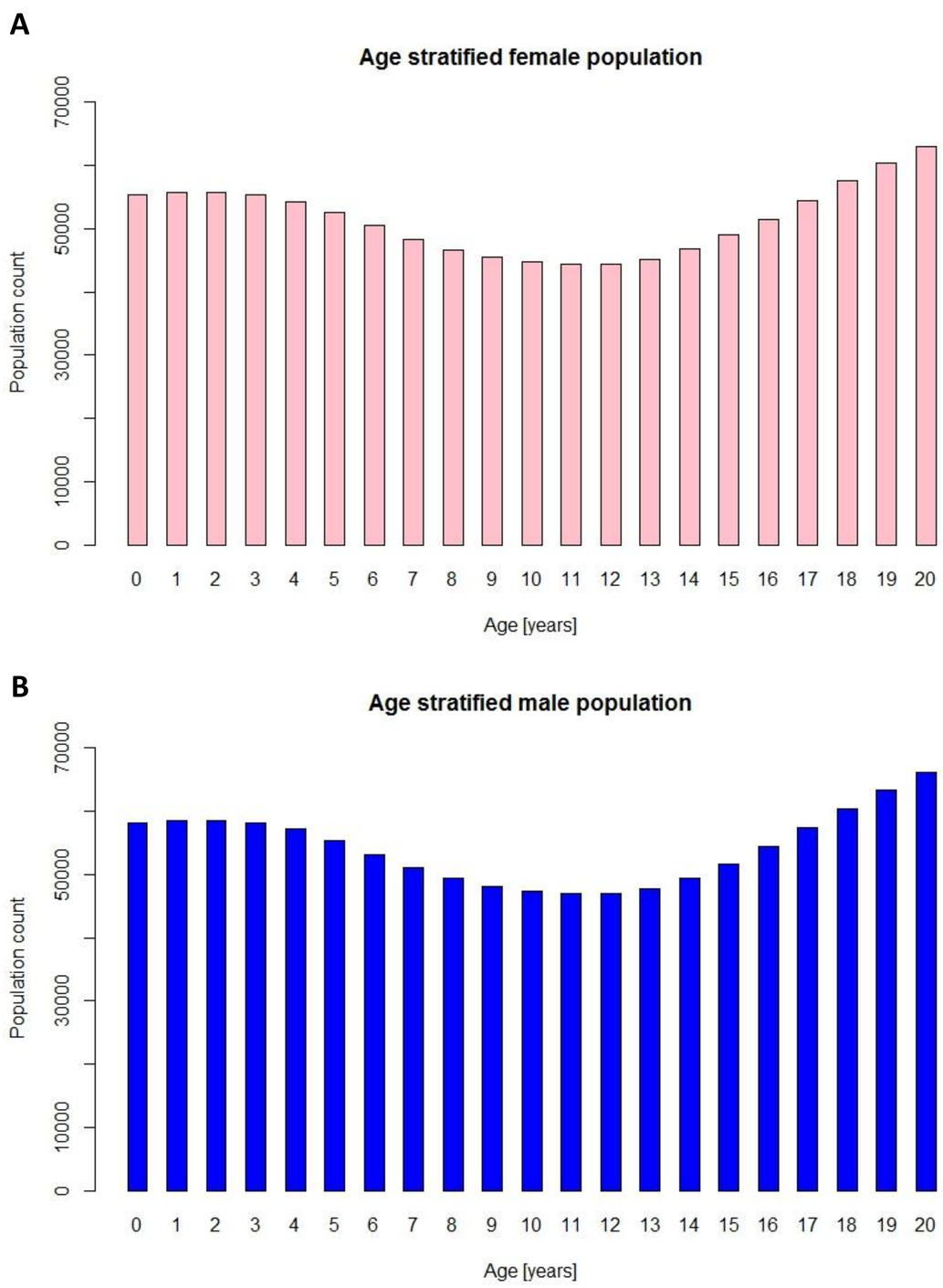
Background:
Before reaching adulthood, **every second boy and every third girl will sustain fracture**. This growth spurt-related bone fragility is partially caused by a quick longitudinal growth and a relatively slower increase in bone width. However, **no study has focused particularly on clinically significant fractures**, a criterion for osteoporosis diagnostics.

Figure 1. Number of girls (A) and boys (B) in Czech Republic.



The population count is the mean over the years 2008 through 2014.

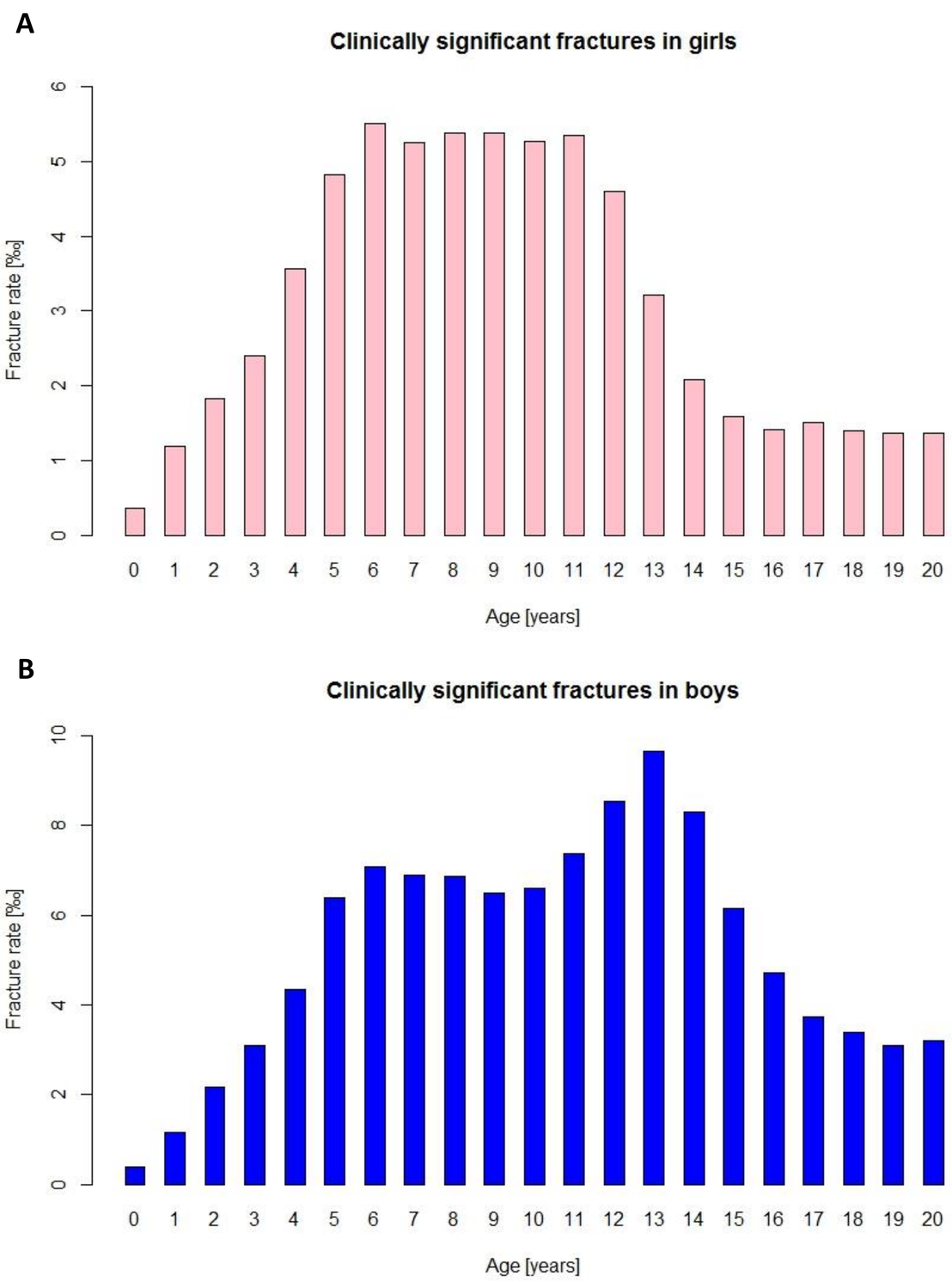
Methods

The **extremity long bone** and **vertebral fractures** (identified by the International Classification of Diseases, version 10) were **recorded from the National Registry of Hospitalised Patients** and the **demographic data** were **obtained from the Institute of Health Information and Statistics**. Number of fractures per age- and gender-specific population count was calculated. Data from years 2008-2014 were averaged.

Results

The median fracture incidence was 2.4‰ in girls and 6.2‰ in boys. Whereas there was no clear peak but a plateau between the ages 6 and 11 years in girls, with a fracture incidence around 5.5‰, there were two peaks of fracture incidence occurring at the ages of 6 (7.1‰) and 13 (9.7‰) years in boys. The fracture incidence was similar in the first three years of age between the sexes (0.4-2.0‰), but from the fourth year the incidence was consistently higher in boys and remained more than two times higher at the age of 20 years (3.2‰ vs. 1.4‰, $p<0.001$).

Figure 2. The incidence of clinically significant fractures in girls (A) and boys (B).



Conclusions

The **incidence of fractures important for osteoporosis diagnostics is higher in boys than in girls** and increases until the early puberty in girls and mid-puberty in boys.
The role of bone quality and physical behaviour on fracture incidence remains to be elucidated.

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