

Mid-life structural jawbone changes may signal women's subsequent height loss

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Midlife structural changes to the jawbone may signal subsequent height loss in women, suggests research published in the open access journal *BMJ Open*.

Dentists, who are likely to spot these on mouth X-rays during routine check-ups, should collaborate with patients' doctors as this may open up opportunities for prevention, suggest the researchers.

Height loss in [women](#) tends to speed up over the age of 75 and is associated with increased risks of ill health and death, say the researchers.

Various explanations have been mooted for this loss, including progressive skeletal deformation, fallen arches in the feet and altered posture, and/or degenerative processes including osteoporosis, compressed or lost disks in the spine, and vertebral fractures.

The researchers wanted to find out if the jawbone contains sufficient information about the general condition of the skeleton to predict future height loss.

They therefore assessed whether the condition of two proxies for general [bone](#) health (mineral density)—cortical erosion (loss of the outer layer of the bone) and trabecular sparseness (thinning of the rods in the inner 'honeycomb' interior) in the jawbone—might signal subsequent height loss in middle aged women.

They drew on participants in the Prospective Population Study of Women in Gothenburg, Sweden, an ongoing long term study which began in 1968 in women aged 38, 46, 50, 54 or 60 at the time. Each participant had health and dental check-ups at least twice.

The current study included 933 women who were aged 38 (born in 1930), 46 (born in 1922), and 54 (born in 1914) in 1968, and who had had health—to include measurements of height and weight—and dental check-ups at least twice during the monitoring [period](#).

Height loss was calculated over three periods of 12–13 years: 1968–80; 1980–92; and 1992–2005. During the second period, the women were aged 62, 70, and 78; and during the third they were aged 75 and 83.

Average annual height loss amounted to 0.075 cm, 0.08 cm, and 0.18 cm, respectively, over the 3 observation intervals, adding up to 0.9 cm, 1 cm, and 2.4 cm in total for all 3 periods.

The proportion of women with severe cortical erosion rose from just over 3% in 1968–80 to just over 11% in 1980–92, and just short of 50% in 1992–2005. Similarly, the prevalence of sparse trabeculation increased from 20+% in 1968–80, to 33.5% in 1980–92, and up to nearly 42% in 1992–2005.

In each period, height loss was greatest in those with severe cortical erosion and those with sparse trabeculation. Cortical erosion in 1968, 1980, and 1992 significantly predicted height loss 12 years later. Similarly, sparse trabeculation at all 3 time points also predicted significant bone shrinkage over the next 12 or 13 years.

Further analyses, adjusting for potentially influential factors, such as height, birth year, physical activity levels, smoking, weight (BMI) and education, yielded the same findings, with the exception of cortical erosion in the first of the 3 monitoring periods (1968–80).

This is an observational study, and as such, no firm conclusions about cause and effect can be drawn. The researchers also acknowledge that height loss could reflect various conditions, and that participants dropped out in the later years of the study, both of which might have affected the findings.

The structural bone changes seen in the jawbones of the study participants likely resemble those of the vertebrae which would, in turn,

explain the potential height reduction. These changes are key to height loss as well as osteoporosis, point out the researchers.

"They may therefore serve as proxy indicators when screening in the early phases of bone degenerative pathogenesis, signaling the ongoing bone remodeling and the need for further clinical attention to [older women](#) at risk of height loss," they suggest.

"Since most individuals visit their dentist at least every 2 years and radiographs are taken, a collaboration between dentists and physicians may open opportunities for predicting future risk of height loss," they conclude.

More information: Nivetha Natarajan Gavriilidou et al, Does mandibular bone structure predict subsequent height loss? A longitudinal cohort study of women in Gothenburg, Sweden, *BMJ Open* (2023). [DOI: 10.1136/bmjopen-2022-066844](https://doi.org/10.1136/bmjopen-2022-066844)

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