

- 3 Hotta O, Taguma Y, Yusa N, Ooyama M. Analysis of mononuclear cells in urine using flow cytometry in glomerular diseases. *Kidney Int* 1994; **46** (suppl 47): 117–21.
- 4 Tenenbaum J, Urowitz MB, Keystone EC, et al. Leucapheresis in severe rheumatoid arthritis. *Ann Rheum Dis* 1979; **38**: 40–44.

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A tooth per child?

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“A child, a tooth” is how a common proverb (in German [*ein Kind, ein Zahn*], Danish [*et barn, en tand*], Russian, and Japanese) quantifies the cost to mothers of childbearing. We used the Longitudinal Study of Ageing Danish Twins (LSADT) to test whether the number of children a woman has is related to the number of teeth she ends up losing.

The LSADT comprises twins aged 73 or older in the nationwide Danish Twin Registry. In 1995 and 1997, 2978 individuals—77% of the twins—were interviewed.¹ Information on teeth, fertility, and social status was obtained for 97% of them. Twins and their spouses were assigned to one of five social classes,² with responders being assigned to the social status of their spouse (alive or deceased) if it was higher than their own. The distribution of tooth loss was similar in the two highest social classes and in the three lowest, but there was a clear distinction between these two groups. Hence, we used two levels of social status in the analysis. The number of teeth was assessed as a categorical variable: none, 1–9, 10–19, 20 or more. We estimated the average number of teeth for each category of social class, sex, and fertility by means of cubic splines to fit cumulative probability distributions to the data on number of teeth. Participants included 367 women and 180 men of high social status and 1454 women and 877 men of low social status. Mean ages ranged from 79.3 to 80.1 years for these four groups, with standard deviations of 4.6 to 5.3 years. Age is associated with poorer dental status but in our sample age was not positively correlated with number of children.

For women, regardless of social status, the number of teeth is negatively correlated with number of children (figure). For men, the correlation is negligible. Women of low social status lost about one additional tooth per child, whereas women of high social status lost about one additional tooth per two children: linear-regression estimates are 0.77 ($p < 0.001$) and 0.42 ($p < 0.001$) for the two social groups. Regardless of how many children they had, men and women of high status had about seven to nine more teeth on average than men and women of low status. Two smaller Swedish studies report findings that are similar but less clear.^{3,4}

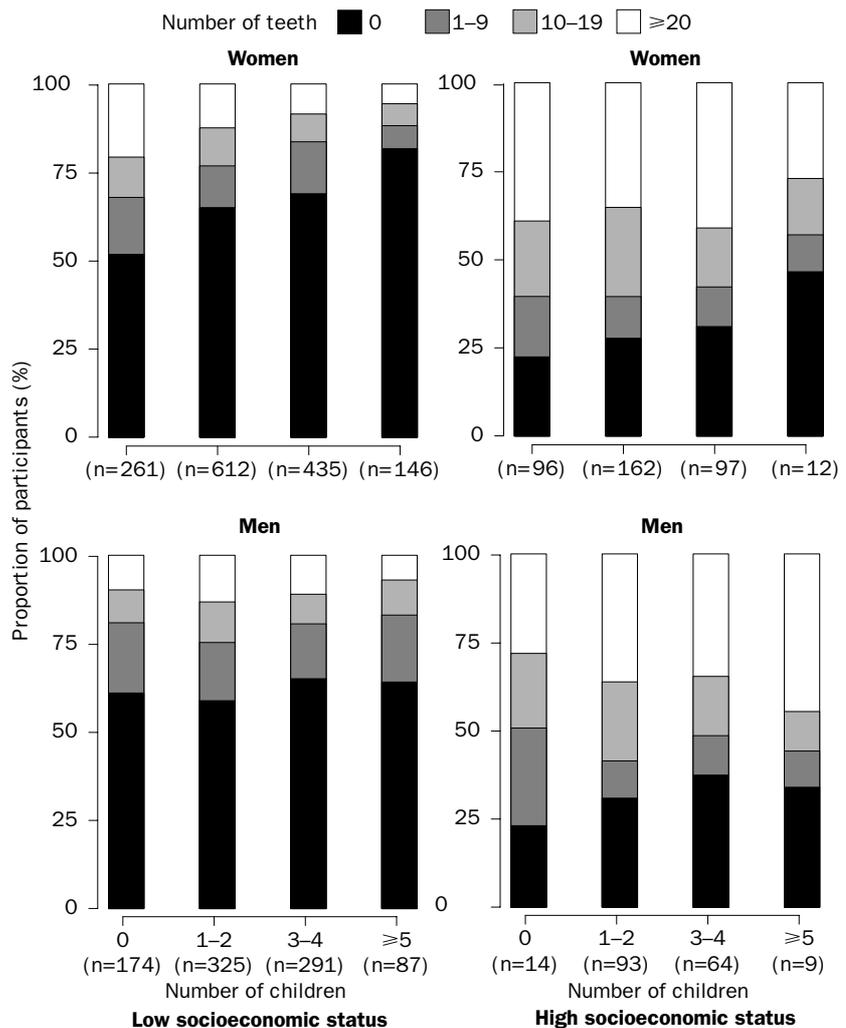
Our sample included 34 pairs of identical female twins who shared the

same social status but who had different numbers of children and who fell into different dental categories. In 28 of these pairs, the twin with more children had fewer teeth ($p < 0.001$). No such relationship was found for male twin pairs. In historic and prehistoric populations, caries and loss of teeth increased the risk of death.⁵ The long-term costs of childbearing on women’s health may have been substantial and they may still be significant.

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- 1 McGue M, Christensen K. Genetic and environmental contributions to depression symptomatology: evidence from Danish twins 75 years of age and older. *J Abnorm Psychol* 1997; **106**: 439–48.
- 2 Hansen EJ. Socialgrupper i Danmark. Copenhagen: Socialforskningsinstituttet, 1984.
- 3 Rundgren A, Osterberg T. Dental health and parity in three 70-year-old cohorts. *Community Dent Oral Epidemiol* 1987; **15**: 134–36.
- 4 Halling A, Bengtsson C. The number of children, use of oral contraceptives and menopausal status in relation to the number of remaining teeth and the periodontal bone height. *Community Dent Health* 1989; **6**: 39–45.
- 5 Paine R. Integrating archaeological demography: multidisciplinary approaches to prehistoric population. Illinois: Southern Illinois University, USA, 1997.

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Distribution of number of teeth by number of children among Danish twins born 1893–1923