

Scientific release
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Periodontology

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Study:



Which life course model better explains the association between socioeconomic position and periodontal health?

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Relevant
background
to study:

Socio-economic position (SEP) has a direct relationship to periodontal health in adults. Furthermore, it appears that changes in SEP at different stages across the life course affect oral health. Various life-course models have been employed to assess such a relationship. The “Critical Period model” focuses on the importance of an independent effect of social exposure during a specifically sensitive period in life that affects the

structure or function of organs, tissues or bodily systems. These changes are not significantly modified in any way by later experience and therefore may have lasting effects on adult health. The “Social Mobility model” hypothesizes that intra- and inter-generational social mobility across the life course affects adult health. Only a few studies have attempted to evaluate which SEP life-course models are most applicable to periodontitis.

Study aims:

To assess whether the relationship between “socio-economic” position and periodontal health is best explained by the Critical Period or the Social Mobility life-course model.

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Methods:

The study population was derived from the Fourth Korean National Health and Nutrition Examination Survey (KNHANES IV) conducted from 2007 to 2009. A stratified multi-stage clustered probability sampling design was used to select representative samples of the Korean population aged 1 year and older. Only people from 30 to 59 years were included, being the age groups most likely to have periodontal diseases. Overall, data on 5,570 subjects who were representative of the economically active Korean population aged 30–59 years were analysed. Subjects were grouped by gender and into 10-year age groups.

The Critical Period and Social Mobility life-course models were tested. The Critical Period model assessed the association between periodontal health status and SEP in childhood and adulthood, irrespective of other time periods. The Social Mobility model was tested based on occupational mobility, from the father's occupation during each person's childhood to their own occupation in adulthood.

Father's occupational class (manual, non-manual) and subject educational level were used as childhood socio-economic variables.

Own occupational class and household income were employed as socio-economic variables of adulthood. Educational attainment and monthly household income (adjusted for household size) were categorized into three and two categories respectively. Clinical oral examinations were performed by 47 trained dentists. The mean kappa value between dental examiners and the reference examiner ranged between 0.45–0.64 across the study period. Periodontal pocket depth was measured at six sites on teeth 1.1, 1.6, 1.7, 2.6, 2.7, 3.1, 3.6, 3.7, 4.6 and 4.7; and periodontal status was assessed using the Community Periodontal Index.

Prevalence of subjects with periodontal pockets ≥ 4 mm within socioeconomic variables was assessed and presented as percentages. To assess the independent effects of socioeconomic differences for childhood, adulthood and the transitional period from child to adult in periodontal health, log-binomial regression models adjusting for adulthood or childhood socio-economic variables were used.

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Results:

- The periodontal status of men (in terms of the presence of pockets ≥ 4 mm) was worse when compared with women, and increased with age. The higher prevalence of periodontal disease (periodontitis) in adults was associated with signs of socioeconomic disadvantage, such as low household income level, low education level and manual occupation class.
- The Critical Period Model revealed that adulthood SEP was more reliable than childhood SEP as a predictor of periodontal disease status. For childhood SEP, the father's occupational status during the subject's childhood was related to periodontal status as an adult only for women between 30-39 years (Prevalence ratio, PR = 1.88). For adulthood SEP, household income (PR men = 1.39; PR women = 1.61) and own occupational class (PR men = 1.21; PR women = 1.64) were related to periodontal status at ages 30-49 and 40-49 respectively, for both men and women.
- The Social Mobility Model revealed a significant association between periodontitis and occupational mobility only for women, and not for men, in the age ranges of 30-39 and 40-49 years. There was a tendency towards poorer periodontal status in stable non-manual, upwardly mobile, stable manual and downwardly mobile groups, in that order.

**Limitations,
conclusions
and impact:****Limitations:**

- In the Social Mobility Model, some mobility cells had insufficient subject numbers to draw reliable results.
- The use of the Community Periodontal Index for disease definition may underestimate the real prevalence level of periodontitis within the sample, especially considering that only periodontal pocket depth was measured and clinical attachment level was not estimated.
- The use of the subject's own educational status as the proxy for childhood SEP is unlikely to fully represent educational attainment in adulthood and may be subject to parental influence.
- The cross-sectional design of the study allows only hypothesis generation and the demonstration of associations between SEP and periodontal status – but cause-and-effect relationships can not be derived.
- The female sub-sample in this study was not fully representative of the whole female Korean population, because of the fact that most were economically inactive and were therefore excluded from the study.

Conclusions:

- Adult socio-economic indicators (household income and subject's occupation) were better predictors of periodontal status than SEP during childhood (level of education or father's occupation).
- Occupational mobility was related to periodontal status only in women, with the worst periodontal status affecting those women in the stable manual and downwardly mobile groups.

Impact:**What can we learn as practitioners?**

- Adult subjects in socio-economically disadvantaged situations are expected to present poorer periodontal status, irrespective of their childhood background. This may be explained by the fact that mild forms of disease are usually found in adolescents, while the advanced stages of periodontitis arise more frequently during adulthood.
- Preventive and health care action cannot be limited to childhood, and should continue during adulthood when subjects are more prone to develop advanced forms of periodontitis.

*In this review "periodontal disease" was interpreted as meaning "periodontitis".