



Socioeconomic variation in periodontitis among Australian adults 2004–06

This report provides information on periodontitis (inflammation of the tissues surrounding the teeth) among Australian adults in 2004–06, and examines how periodontitis varies by socioeconomic status before and after adjusting for the confounding effects of age and sex.

Main findings

- Moderate and severe periodontitis was found in nearly one-quarter (24.2%) of Australian adults aged 18 years and older. Periodontitis is strongly age related, with prevalence increasing from 2.8% in 18–24 year olds to 60.8% in those aged 75 years and older. Periodontitis was more prevalent in males (28.1%) than females (20.2%).
- Periodontitis showed a social gradient against household income, decreasing from a prevalence of 42.6% in the lowest income category to 15.0% in the highest income category, with a rate ratio of 2.8:1 between the highest and lowest categories.
- When the prevalence of periodontitis was examined by household income after standardising for age and sex, the slope of the social gradient was reduced. The adjusted prevalence of periodontitis ranged from 33.5% in the lowest income category to 18.1% in the highest income category, with a rate ratio of 1.9:1 between the highest and lowest categories.
- The question of why the periodontal health of adults from lower income households is poorer requires further research.

Contents

Main findings.....	1
Data collection.....	2
Periodontitis.....	2
Prevalence of periodontitis in Australian adults	3
Prevalence of periodontitis by socioeconomic status.....	4
Association among age, sex and household income	5
Prevalence of periodontitis by household income, adjusted for age and sex.....	6
Discussion.....	6
Conclusions.....	6
Data collection methods and response	7
References.....	7
Acknowledgments	8

Data collection

Findings presented in this publication are based on data collected on a random sample of persons in Australia from the National Survey of Adult Oral Health in 2004–06 (Slade et al. 2007). See the back of the report for further details on participation and methods.

Periodontitis

Periodontitis affects both the superficial gingivae and the deeper supporting periodontal tissues, including attachment between teeth and bone. The loss of attachment between teeth and bone can result in the formation of periodontal pockets that harbour dental plaque, which is difficult for people to clean at home. Professional treatment can clean periodontal pockets, and interventions are available to reduce the depth of pockets and their progression to destruction of deeper tissues. Cycles of inflammation in the gingival and periodontal tissues, and their resolution, are associated with destruction of, and shrinking or recession of, the periodontal tissues, thus exposing the root surfaces of the teeth.

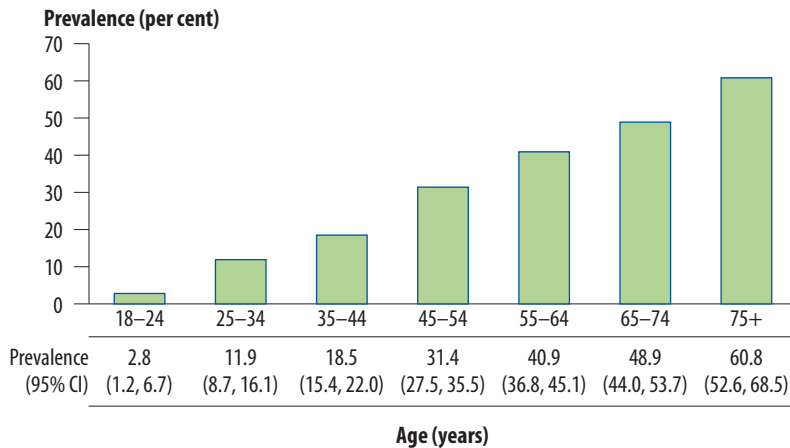
Formation of periodontal pockets and/or recession of periodontal tissues can occur in all such tissues of teeth present in the mouth. However, such progression of periodontitis is frequently more pronounced at only a limited number of sites around a limited number of teeth. For this reason, while observations are made of changes in periodontal tissues at numerous sites in a mouth, a classification of how severe the periodontal disease might be is established through a case definition. A commonly used case definition is:

the presence of either two sites between adjacent teeth where the periodontal tissues have lost attachment for 4 mm or more, or at least two such sites that have pockets of 5 mm or more.

This definition was developed by the US Centers for Disease Control and Prevention and the American Academy of Periodontology to describe moderate and severe periodontitis.

Prevalence of periodontitis in Australian adults

The overall prevalence of periodontitis from the National Survey of Adult Oral Health in 2004–06 was 24.2%. However, periodontitis was strongly age related, as shown in Figure 1.

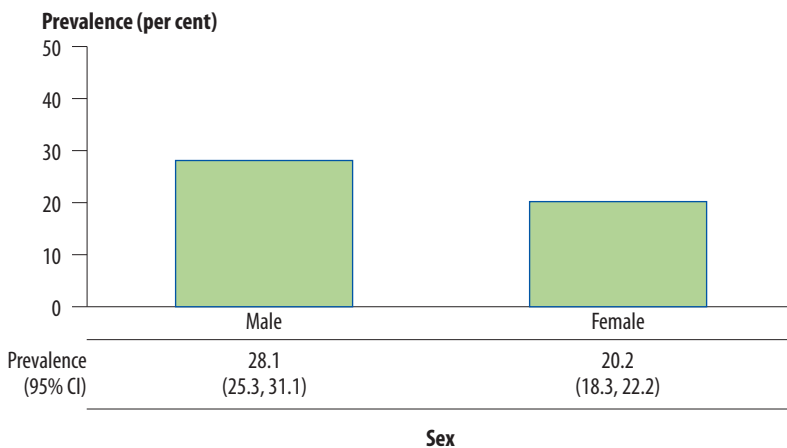


Source: National Survey of Adult Oral Health 2004–06

Figure 1: Prevalence of periodontitis by age in the adult Australian population

The prevalence of periodontitis increased from 2.8% in 18–24 year olds to 60.8% in those aged 75 years and older. The increase was linear across the age range.

Moderate and severe periodontitis also varied between men and women. Figure 2 shows that there was a higher prevalence of males with periodontitis than females.



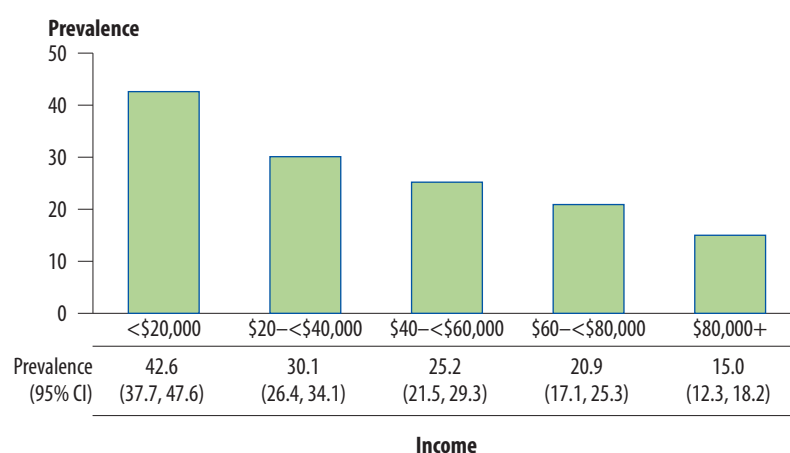
Source: National Survey of Adult Oral Health 2004–06

Figure 2: Prevalence of periodontitis by sex in the Australian adult population

Prevalence of periodontitis by socioeconomic status

For this report, household income was chosen as a measure of socioeconomic status. Household income has been categorised by \$20,000 bands, roughly equivalent to quintiles of the population, but with a lower percentage of adults in the lowest household income category and a higher percentage in the highest income category.

The prevalence of moderate or severe periodontitis varied markedly across the household income categories, as presented in Figure 3.



Source: National Survey of Adult Oral Health 2004–06

Figure 3: Prevalence of periodontitis by household income

The prevalence of periodontitis was highest in the lowest income category (42.6%), and in the highest income category, the prevalence was markedly lower (15.0%).

The socioeconomic gradient in periodontitis was reasonably linear across the household income categories. The rate ratio in the prevalence of periodontitis was 2.8:1 between the highest and lowest income categories.

The association of periodontitis with household income was varied by both age and sex as shown in Figures 1 and 2. Household income is also related to the age and sex of the adult occupants.

Association among age, sex and household income

Table 1 presents the Australian household income distribution by age and sex groups. Among older age groups, a higher percentage of persons were observed in low income households.

Table 1: Household income and distribution of the adult dentate population by age and sex

	Household income				
	<\$20,000	\$20,000–<40,000	\$40,000–<60,000	\$60,000–<80,000	\$80,000+
All	14.6	21.2	19.0	16.2	29.1
Age (years)					
18–24	4.7	17.8	16.6	20.1	40.9
25–34	7.1	18.6	19.8	20.9	33.6
35–44	8.9	16.9	23.9	19.8	30.5
45–54	8.0	17.1	19.1	17.4	38.3
55–64	21.5	26.3	19.6	9.9	22.7
65–74	41.2	37.2	10.7	5.8	5.0
75+	52.2	32.7	11.4	2.9	0.7
Sex					
Male	12.6	18.5	18.8	17.8	32.4
Female	16.7	24.0	19.3	14.5	25.5

Source: National Survey of Adult Oral Health 2004–06

Conversely, the percentage of adults in the highest income households remained high until the 65–74 year old and 75 years and older age groups, where it was markedly lower.

Similarly, a higher percentage of females were in lower income households and a higher percentage of males in higher income households.

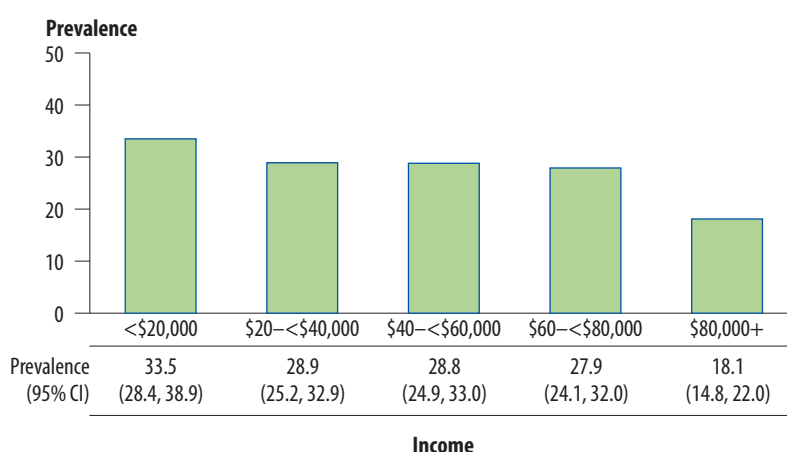
Prevalence of periodontitis by household income, adjusted for age and sex

The prevalence of periodontitis by household income was re-examined after directly standardising for age and sex.

The age- and sex-adjusted prevalence of periodontitis was highest in the lowest income category (33.5%) and lowest in the highest income category (18.1%) (Figure 4).

The socioeconomic gradient in prevalence of periodontitis was somewhat attenuated when controlling for age and sex. However, there remained a rate ratio of 1.9:1 between the highest and lowest household income categories.

While there was still a socioeconomic gradient in the prevalence of periodontitis, the gradient was not linear—there was a step up at the lowest income category and a step down at the highest income category (i.e. the three middle income groups were similar).



Source: National Survey of Adult Oral Health 2004–06

Figure 4: Prevalence of periodontitis by household income—age and sex adjusted

Discussion

What makes adults from lower income households ‘sicker’ in terms of periodontitis?

The commonly identified risk factors might include oral hygiene practices, smoking and access to dental care. However, such behavioural risk factors frequently explain only a limited proportion of the socioeconomic gradient in chronic diseases such as periodontitis. Other contextual and individual determinants associated with the social environment, work, and psychological resistance and vulnerability may influence the immune response and pathophysiological changes that manifest as periodontitis.

Conclusions

Periodontitis is a prevalent chronic disease in Australia, affecting just less than one-quarter of adults. However, the prevalence of periodontitis shows a socioeconomic gradient, being almost twice as great in lower income than higher income households

after adjusting for age and sex. Why the periodontal health of adults from lower income households is poorer requires research, but the putative factors include individual and contextual determinants.

While the Indigenous status of the client was collected during the survey, the quality of these data was not sufficient to enable their analysis and reporting in a way which would contribute to our understanding of the dental health of Indigenous Australians.

Data collection methods and response

The 2004–06 National Survey of Adult Oral Health (NSAOH) involved a three-stage, stratified clustered sampling design to select a sample of Australians aged 15 years and older from households with listed telephone numbers in an ‘electronic white pages’ database.

From this sampling frame 15 strata were chosen, with population proportional to size selection. The strata comprised metropolitan and non-metropolitan areas of the seven states and the Northern Territory, and the single stratum of the Australian Capital Territory. Postcode comprised the primary sampling unit, with household being the secondary sampling unit.

The sample participants were approached to participate in a computer-assisted telephone interview (CATI) followed by an oral epidemiological examination and a mailed questionnaire.

In the 2004–06 NSAOH a total of $n=14,123$ adults responded to the CATI (49% response rate) and $n=5,505$ were examined (44% of interviewed people who were invited to the examination).

The assessment of periodontal tissues was based on the US National Health and Nutrition Examination Survey (NHANES) methods. Assessments were made of periodontal pocket depth and gingival recession, both recorded in millimetres, at three sites around all teeth present, except third molars. All fractional measurements were rounded down. The accuracy of survey examiners was assessed by comparison with the survey’s principal examiner.

Data were weighted by state/territory, metropolitan/non-metropolitan location, age and sex. To account for design effects associated with the complex sample design, data were analysed using survey procedures that adjusted for strata and primary sampling units.

During data analysis the observations on periodontal pocket depth and gingival recession were used to derive a diagnosis of periodontitis using the case definition (see page 2).

References

Slade GD, Spencer AJ & Roberts-Thomson KF 2007. Australia’s dental generations: the National Survey of Adult Oral Health 2004–06. Cat. no. DEN 165. Canberra: Australian Institute of Health and Welfare (Dental Statistics and Research Series No. 34).

Acknowledgments

Data collection for NSAOH was supported by the National Health and Medical Research Council, Australian Institute of Health and Welfare, Australian Government Department of Health and Ageing, Colgate Oral Care, Australian Dental Association, US Centers for Disease Control and Prevention, and Australian state/territory health departments.



The AIHW Dental Statistics and Research Unit (DSRU) is a collaborating unit of the Australian Institute of Health and Welfare established in 1988 at The University of Adelaide, located in the Australian Research Centre for Population Oral Health (ARCPH), School of Dentistry, The University of Adelaide. DSRU aims to improve the oral health of Australians through the collection, analysis and reporting of information on oral health and access to dental care, the practice of dentistry and the dental labour force in Australia.

Suggested citation

Australian Institute of Health and Welfare 2010. Socioeconomic variation in periodontitis among Australian adults 2004–06. Research report series no. 50 . Cat. no. DEN 207. Canberra: AIHW.

Prepared by:

AIHW Dental Statistics and Research Unit
ARCPH, School of Dentistry
The University of Adelaide
SOUTH AUSTRALIA 5005

Email: arcph@adelaide.edu.au
Phone: 61 8/(08) 8303 4051
Fax: 61 8/(08) 8303 4858

<www.arcph.adelaide.edu.au>

Further information can be obtained from Professor AJ Spencer by email john.spencer@adelaide.edu.au, or phone (08) 8303 5438.

© Australian Institute of Health and Welfare 2010

ISSN 1445-775X (online)
ISBN 978-1-74249-087-8

Published by the Australian Institute of Health and Welfare