

Review finds that severe periodontitis affects 11% of the world population

Abstracted from

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Global Burden of Severe Periodontitis in 1990-2010: A Systematic Review and Meta-regression. *J Dent Res* 2014; pii: 0022034514552491. [Epub ahead of print] Review. PubMed PMID: 25261053.

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Question: What is the global prevalence and incidence of severe periodontitis (SP)?

Data sources Medline, Embase and LILACS. Chief Dental Officers worldwide were contacted to request conference reports, theses, government reports and unpublished survey data.

Study selection Selection was carried out independently by two reviewers. Longitudinal or crossover studies based on random samples representing national, subnational or community populations with SP defined as; a community periodontal index of treatment needs (CPITN) score of four, a clinical attachment loss (AL) more than 6 mm, or a gingival PD more than 5 mm.

Data extraction and synthesis Data extraction and synthesis followed Global Burden of Disease (GBD) 2010 standards and modeled using a Bayesian meta-regression tool developed for the GBD 2010. Countries were grouped in 21 regions and seven super-regions by geographical proximity and mean age of death.

Results Seventy two studies involving 291,170 patients were included. The majority of these (65) were prevalence studies. In 2010, SP was the sixth-most prevalent condition, affecting 10.8% (95% uncertainty interval [UI]: 10.1%-11.6%) or 743 million people worldwide. Between 1990 and 2010 the global age-standardised prevalence of SP in the entire population was static at 11.2% (95% UI: 10.4%-11.9% in 1990 and 10.5%-12.0% in 2010) a non-significant increase from the 1990 incidence of SP. The age-standardised incidence of SP in 2010 was 701 cases per 100,000 person-years (95% uncertainty interval: 599-823), a non-significant increase from the 1990 incidence of SP. Prevalence increased gradually with age, showing a steep increase between the third and fourth decades of life that was driven by a peak in incidence at around 38 years of age.

Conclusions Policy makers need to be aware of a predictable increasing burden of SP due to the growing world population associated with an increasing life expectancy and a massive decrease in the prevalence of tooth loss throughout the world from 1990 to 2010. These changes underscore the enormous public health challenge posed by SP and are a microcosm of the epidemiologic transition to non-communicable diseases occurring in many countries.

Commentary

This review of observational data used a good search strategy and a meta-regression tool developed for the GBD 2010 study. They also imposed some disease specific limits to reflect the known

Table 1. Age standardised prevalence of severe periodontitis 2010

Location		Prevalence per 100 population	95% uncertainty intervals
Global		11.2	(10.5-12.0)
Asia Pacific, high income		8.0	(6.6-10.4)
Asia			
	Central	13.8	(10.0-19.3)
	East	10.4	(8.8-12.2)
	South	10.2	(9.1-11.8)
	Southeast	13.1	(11.3-15.1)
Australasia		14.9	(13.3-16.5)
Caribbean		8.6	(5.7-12.5)
Europe			
	Central	12.1	(8.8-16.7)
	Eastern	14.0	(8.0-24.0)
	Western	9.4	(8.6-10.3)
Latin America			
	Andean	15.2	(9.2-22.7)
	Central	15.1	(9.6-22.4)
	Southern	20.4	(12.3-31.4)
	Tropical	18.5	(17.5-19.6)
North Africa/Middle East		10.4	(8.4-13.0)
North America, high income		7.2	(6.4-8.1)
Oceania		4.2	(2.4-7.2)
Sub-Saharan Africa			
	Central	13.3	(7.7-21.5)
	East	20.1	(16.1-25.0)
	Southern	9.2	(5.0-15.4)
	West	9.3	(6.6-14.0)

epidemiology of SP and made other adjustments to fit the observed natural history of SP. Additional adjustments were made to account for the systematic bias that would result from only assessing dentate people.

The 72 studies included data from 37 countries providing data from 16 of the 21 regions and all seven of the super-regions. As the majority were prevalence studies a summary of the calculated prevalence data for 2010 from the study is shown in Table 1. This demonstrates geographical differences between the regions ranging from 4.2% - 20.4%.

Only two incidence studies could be included in the review and using these studies together with indirect data from the other included studies, incidence of 701 cases per 100,000 person-years (95% uncertainty interval: 599-823) with a peak incidence at about 38 years of age was calculated.

While this review pulls together the best available observational evidence and has applied a good methodological approach to data gathering and analysis there still remain challenges in defining and identifying periodontal disease. A systematic review by Savage *et al.*¹ concluded that epidemiological studies of periodontal diseases are complicated by the diversity of definitions and measurements used to describe and quantify them, and there is a lack of consensus on a uniform definition and classification of periodontal disease. For

example Savage *et al.* noted that in 15 studies the threshold for a diagnosis of periodontitis when AL was the criterion ranged from 2 to ≥ 6 mm and when PPD was used, from 3 to ≥ 6 mm. In this current review this variation has been mitigated by employing a clear case definition however, as with some of the other decisions taken by the reviewers in this publication not all will agree.

While this review does highlight the ongoing public health challenge of severe periodontal disease the broader challenge of the wider family of periodontal diseases is also a significant challenge, as the 2009 Adult Dental Health survey in the UK² showed, only 17% of adults had healthy gums, 66% had visible plaque and 65% bleeding gums.

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2. The Health and Social Care Information Centre. The Adult Dental Health Survey 2009. Available from <http://www.hscic.gov.uk/catalogue/PUB01086>

Evidence-Based Dentistry (2014) **15**, 70-71. doi:10.1038/sj.ebd.6401037