

**Expert Commentary
Have 1.8 Million Years Made A Difference?**

Yasmin Grewal¹, Rahul Datta²

Grewal Y, Datta R. **Have 1.8 million years made a difference?** J Periodontal Med Clin Pract 2014;01: 6-9

¹Reader & Head, Department of Public Health Dentistry, Rayat Bahra Dental College & Hospital, Mohali, Punjab.

²Vice Principal, Prof. & Head, Department of Oral & Maxillofacial Surgery, Rayat Bahra Dental College & Hospital, Mohali, Punjab.

“Those who don't know history are destined to repeat it”

Edmond Burke (1729-1797)

From the dawn of existence, about 1.8 million years ago, our ancestor, Paranthropus Robustus existed in the Swartkrans caves near modern Johannesburg (South Africa). A skull found in 1938 and reviewed in 1990 for dental pathology revealed that he had the same periodontal disease pattern as is present in Homo Sapiens today.^[1] Has civilization actually progressed in terms of oral health and hygiene?

From the Pleistocene Era (1.8-1.5 million years ago) through the emergence of civilization and the existence of modern man, periodontal problems have been found in almost every population studied. Over the last two decades, numerous studies have been conducted on the evaluation of periodontal disease existence in ancient skulls starting from the Pleistocene Era (1.8 million years ago) to Neolithic man (12,000 years ago) and more recent civilizations such as the Late Antique and Early Medieval Age (2000 to 1000 years ago). (Figure 1) The single greatest oral health problem in the ancient age was dental attrition followed by periodontal disease. Infact, in some of the ancient

jaw bones, the calculus deposits were so extensive that they held the teeth in their place for almost 2000 years.^[1] Dental caries was, however, far less frequently seen amongst ancient civilizations than among the populations today. Periodontal disease has been known to be a multifactorial disease that is related to environment, diet, oral health awareness, oral hygiene and its aids, dental care facilities and reflects the overall quality of life of an individual. A shift from the hunter-gatherer society towards farm culture has been observed to be linked with a swing towards reduction of attrition and increase in caries incidence, with periodontal disease associated with bone loss being most marked in those societies with the greatest reliance on agriculture.^[2,3]

Paleoanthropologists from all over the world, have reviewed ancient skulls/fragments of jaws and associated teeth for parameters such as: calculus, alveolar bone resorption, fenestration and dehiscence.^[2] Apart from the obvious evidence of periodontal disease in the form of bone loss, they also commented on the presence of dental calculus as a predisposing factor to periodontitis but not necessarily an indicator of periodontal disease. It was interesting to note that a clear relationship between progression of periodontal disease and increase in severity with age has been observed among the ancient skulls.^[2,3] Intriguingly, a similar pattern of periodontitis prevalence is evident among

Figure 1

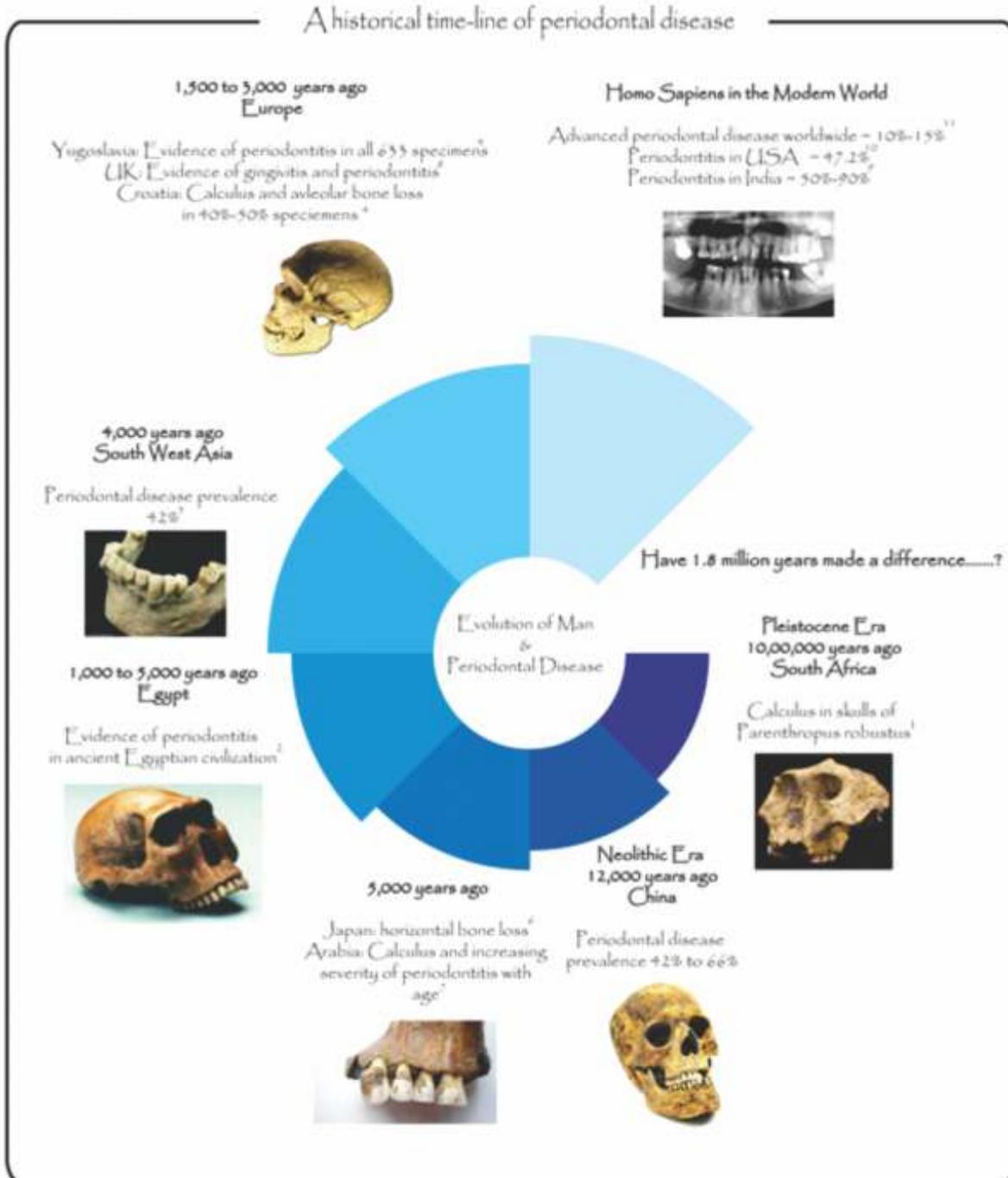


Image Credits (Left to Right):

- La Ferrassie: Smithsonian Institution's Human Origins Program, 2010.
- Christina Wainner: <http://christinawainner.com/image-gallery/>
- LiveScience.com: <http://www.cbsnews.com/news/cavemen-bones-yield-oldest-modern-human-dna/>
- University of York, Centre for chronic diseases and disorders: <http://www.york.ac.uk/c2d2/projects/yr2/speller-periodontal/>
- <http://www.dreamstime.com/stock-images-skull-bones-neolithic-age-image15958114>
- Science Magazine: <http://news.softpedia.com/newsImage/Early-Humans-Had-Harems-of-Females-2.jpg/>
- Hirsch R: <http://maustralianprescriber.com/magazine/27/2/36/8>

living populations as in the archaeological material. In summary, it is seen that despite the tremendous time frame and geographical distribution of various prehistoric specimens, periodontal disease prevalence ranging from 40% to 65% has been observed consistently across the ancient globe.^[2-8]

Correlating the prevalence profile of periodontal disease with socioeconomic and cultural advances in civilization has revealed that prevalence rate of periodontal diseases in the ancient times was higher in regions that had a backward economy as opposed to developed regions.^[3] An analogous review of modern data also reveals a significant difference in periodontal disease prevalence between advanced nations (47.2%) and underdeveloped nations (50-90%) with advanced periodontal disease affecting 10%-15% of all adults worldwide today.^[9-11]

A comparison of prevalence and severity of periodontal disease trends illustrates that there appears to be no change in prevalence patterns of periodontal disease between our ancestors and the modern man. Despite the evolution of dentistry as a science, with all the technological advancements, oral health care aids and awareness of the pathophysiology of the disease, it is evident that our periodontal health has remained consistent over the millennia.

Have we really evolved dentally?

References

1. Grine FE, Gwinnett AJ, Oaks JH. Early hominid

dental pathology: interproximal caries in 1.5 million-year-old *Paranthropus Robustus* from Swartkrans. *Arch Oral Biol.* 1990;35:381-6.

2. Zhang X, Dai J, Han YX, Shao JL. Prevalence profile of oral disease in ancient population. *The Open Anthropology Journal.* 2010;3:12-15.

3. Marin Vodanovic, Kristina Peros, Amila Zukanovic, Marjana Knezevic, Mario Novak, Mario Slaus, Hrvoje Brkic. Periodontal diseases at the transition from the late antique to the early mediaeval period in Croatia. *Archives of oral biology.* 2012; 57:1362-1376.

4. Mucic D. Periodontal disease on Yugoslav soil during the past two millennia (in Croatian). *Stomatol Glas Srb.* 1991;37:469-79.

5. Neiburger EJ. The evolution of human occlusion-ancient clinical tips for modern dentists. *Gen Dent.* 2002;50:44-9.

6. Inagaki K, Suzuki M, Nozaki K et al. A human skeleton from the Ohguruwa remains. *Aichi Gakuin Dent Sci.* 1991;4:53-64.

7. Littleton J, Frohlich B. Fish-eaters and farmers: dental pathology in the Arabian Gulf. *Am J Phys Anthropol.* 1993;92:427-47.

8. Kerr NW. The prevalence and natural history of periodontal disease in Britain from prehistoric to modern times. *Br Dent J.* 1998;185:527-35.

9. Jacob P, Shaju, Zade RM, Das M. Prevalence of periodontitis in the Indian population: A literature review. *J Indian Soc Periodontol.* 2011 Jan-Mar; 15(1): 29-34.

10. Thornton-Evans G, Eke P, Wei L, Palmer A, Moety R, Hutchins S, Borrell LN. Periodontitis among adults aged ≥ 30 years-United States, 2009-2010. *Morbidity and mortality weekly report (CDC)*

supplements. 2013 Nov 22;62(03);129-135.

11. Petersen PE and Ogawa H. Strengthening the prevention of periodontal disease: The WHO approach. J Periodontol. 2005 Dec;76(12):2187-2193.



Competing interest / Conflict of interest The author(s) have no competing interests for financial support, publication of this research, patents and royalties through this collaborative research. All authors were equally involved in discussed research work. There is no financial conflict with the subject matter discussed in the manuscript.
Source of support: NIL

Copyright © 2014 JPMCP. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.