

Title: Using a Dental Data Repository to Test the Relationship between Periodontal Disease and Heart Attack: A Comparison of Data from NHANES and Big Mouth

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Abstract:

Aims: To test whether the association between periodontal attachment loss and self-reported history of heart attack, which was demonstrated in the National Health and Nutrition Examination Survey (NHANES) III, is also found in NHANES 2009-10 and in the Consortium for Oral Health Research and Informatics' data repository called Big Mouth (BM), which holds electronic health records (EHRs) from four dentals schools' clinics.

Methods: Data from NHANES III and NHANES 2009-10 were downloaded and analyzed, replicating the 1999 Journal of Dental Research paper by Arbes, et al. Data from BM were downloaded, and variables cleaned and recoded to be consistent with NHANES. Periodontitis was defined as the percent of sites with attachment loss (AL) ≥ 3 mm. Logistic regression models were constructed with self-reported heart attack as the outcome. All analyses were performed using SAS 9.2.

Results: Periodontitis was statistically significantly associated with having experienced a heart attack in the NHANES III data ($p < 0.01$) but not for BM or NHANES 2009-10 ($p=0.58$ and 0.32 , respectively). BM data had the highest proportion of periodontal disease (95.6%); NHANES III had the lowest (68.6%); NHANES 09-10 had 91.3% prevalence. Those who experienced a heart attack and had periodontal disease represented a very small proportion of the population in all 3 data sets (BM: 2.2%, NHANES III: 8.4%, NHANES 09-10: 5.3%).

Conclusion: Care should be taken in concluding the relationship between periodontal disease and heart attack. BM data showed the highest prevalence of periodontitis, even with its partial mouth measure. Whereas a partial mouth periodontal assessment may underestimate prevalence of disease in a general population, a higher prevalence in a partial mouth assessment indicates the unique population seeking care at these university dental clinics.