

Title: Oral and dental pathology in Native Americans from the Late Mississippian period

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This presentation examines the prevalence and patterning of dental caries and enamel hypoplasia among the prehistoric Averbuch people, a Late Mississippian period population from middle Tennessee dating from 1200-1450 A.D. Converging lines of archaeological and osteological evidence reveal the profile of an unusually disadvantaged people who experienced episodes of chronic stress throughout the duration of site occupation. Research has posited multi-causal catastrophic agents as potential explanations for the poor health and collapse of this culture, chief among them epidemic disease, warfare, nutritional stress, and depletion of natural resources (Buikstra 1992; Eisenberg 1991; Klippel and Bass 1984a, 1984b).

This research examines cultural collapse via oral health in the permanent dentition of 304 adults from Averbuch. In order to understand the environmental and physiological stressors affecting this population, caries and enamel hypoplasia rates are assessed, functioning as proxies for overall levels of health and disease in populations (Hillson 1996). Caries is the progressive destruction of the tooth surface by microbial agents including *Lactobacillus acidophilus* and *Streptococcus mutans*. It is known that foods high in carbohydrates and soft in texture (such as maize) are very cariogenic in nature, so assessment of caries can provide information regarding subsistence and cultural practices. Enamel hypoplasias are developmental defects in enamel thickness resulting from disruptions in ameloblast activity due to systemic stressors such as malnutrition and infectious disease (Goodman et al. 1980). Hypoplastic defects are useful because they reflect the health status of the individual during early development, since metabolic growth rates are theoretically known (Goodman and Rose 1990). Thus, it is possible to observe on the permanent adult dentition a record of juvenile morbidity.

Results of the analysis on the Averbuch dental material reveal high prevalence in both categories, with 77% of the total population having one or more caries lesions, and 87% of the population manifesting enamel hypoplasias. These rates are the highest recorded among other geographically and temporally contemporaneous populations. They point to underlying biological and social stressors affecting this atypical Late Mississippian site, including over-reliance on maize as an agricultural staple, increased disease loads, and escalating violence and regional hostilities. The implications of these dental health conditions are discussed in relationship to broader regional events, including warfare, interpersonal violence, and the mysterious large-scale abandonment of the entire Middle Mississippian region by 1450 A.D.

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