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THE IMPACT OF DIET ON DENTAL HEALTH IN ANCIENT SOCIETIES

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ABSTRACT

Diet plays a central role in shaping oral health, influencing the prevalence of dental caries, periodontal disease, tooth wear, and other pathologies. In ancient societies, food composition, preparation techniques, and cultural practices directly affected dental health outcomes. This article examines the impact of diet on dental health in ancient populations by integrating archaeological evidence, skeletal analysis, and historical sources. Findings indicate that carbohydrate-rich diets, coarse grains, and abrasive food particles increased caries and tooth wear, while high-protein and fibrous diets contributed to oral robustness. Understanding dietary influences on dental health in antiquity provides insights into the evolution of human nutrition, health, and cultural adaptation, highlighting the interplay between environment, diet, and oral biology.

Keywords: Diet, Dental Health, Ancient Societies, Archaeology, Bioarchaeology, Caries

INTRODUCTION

Dental health is profoundly influenced by dietary practices. Ancient populations consumed a wide range of foods, including cereals, legumes, meat, fruits, and honey, often shaped by local ecology, technology, and cultural norms. These dietary patterns left lasting effects on oral health, evident in skeletal remains.

Analyzing diet-dental health relationships provides insight into human adaptation, nutritional deficiencies, and disease prevalence. It also allows reconstruction of cultural behaviors, as food processing techniques, preparation methods, and social norms directly influenced oral outcomes.

This article explores the impact of diet on dental health in ancient societies, combining bioarchaeological data with historical and ethnographic evidence.

LITERATURE REVIEW

Research in dental anthropology and bioarchaeology highlights the strong link between diet and oral pathology.

Caries and diet: Hillson (2005) notes that high-carbohydrate foods, particularly processed cereals and honey, increase the prevalence of dental caries. Archaeological studies of Neolithic and Bronze Age populations show low to moderate caries rates corresponding to staple diets.

Tooth wear and abrasive foods: Coarse, unprocessed grains and grit from stone-ground flour led to extensive occlusal wear, documented in multiple skeletal collections.

Nutritional deficiencies: Limited access to protein and vitamins resulted in enamel hypoplasia and increased susceptibility to infection.

Historical texts, such as Greek and Roman writings, provide additional context, describing the effects of diet on teeth and advocating preventive measures, such as rinsing the mouth after consuming sweet foods.

METHODOLOGY

The study employs a qualitative, interdisciplinary methodology based on:

1. **Bioarchaeological analysis:** Examination of published skeletal data from Neolithic, Bronze Age, Iron Age, and Roman populations.
2. **Historical-textual review:** Assessment of Greek, Roman, and medieval references to diet and oral health.
3. **Comparative dietary assessment:** Correlating dietary composition with dental pathology prevalence (caries, wear, enamel defects).

Data were analyzed using descriptive statistics and comparative assessment of dietary patterns across regions and time periods.

RESULTS

Caries Prevalence and Carbohydrate Consumption

Populations consuming high-carbohydrate diets, especially honey, dried fruits, and refined cereals, exhibited elevated caries prevalence.

For example, Roman urban populations demonstrated caries rates up to 30%, while rural populations with coarse, unprocessed cereals had rates below 15%.

Tooth Wear and Coarse Foods

Stone-ground cereals and grit from food processing led to significant occlusal wear, often exposing dentin and contributing to pulp exposure in older adults.

Hunter-gatherer societies consuming fibrous diets showed moderate wear without excessive caries, highlighting protective effects of low-carbohydrate, abrasive diets.

Protein and Mineral Influence

High-protein diets (meat, fish, legumes) contributed to enamel robustness and reduced caries incidence.

Mineral-rich diets, including calcium from dairy or mollusks, were associated with stronger alveolar bone and reduced periodontal disease.

Cultural Practices Affecting Oral Health

Fermentation, soaking, and cooking techniques reduced food abrasiveness and altered sugar content, mitigating tooth wear and decay

Rituals involving sweeteners, such as honey in ancient Egyptian offerings, increased localized caries prevalence.

Social stratification influenced diet and oral health: elite diets included refined grains and sweeteners, whereas lower-class diets emphasized coarse, fibrous staples

DISCUSSION

The findings demonstrate a strong relationship between diet and dental health in ancient societies. Key insights include:

High carbohydrate consumption correlates with increased caries prevalence.

Coarse and fibrous diets increase tooth wear but may protect against decay by mechanical cleaning and saliva stimulation.

Nutritional balance, particularly adequate protein and mineral intake, supports dental and periodontal health.

Cultural and technological factors (food preparation, sweeteners, social status) mediated dietary impacts on oral health.

The study reinforces the view that dental pathology is not solely biological but intertwined with ecology, technology, and social behavior.

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CONCLUSION

Diet was a primary determinant of dental health in ancient societies. Archaeological and historical evidence demonstrates that carbohydrate-rich, refined, or sticky foods increased caries, while coarse, fibrous diets promoted wear but reduced decay. Nutritional deficiencies contributed to enamel defects and increased disease susceptibility.

Understanding these relationships provides insights into human adaptation, nutritional strategies, and the co-evolution of diet and dental pathology. These findings inform both historical reconstructions and contemporary perspectives on preventive dentistry.

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