

Preventive Method for Caries Management - a Pedodontic Panacea

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ABSTRACT

At both the individual and population levels, dental caries responds to prevention and control. Additionally, it is easily treated with conventional surgical procedures and dental restorations. Pediatric dentists have a crucial role in early dental caries prevention and severity reduction. The prevalence and severity of dental caries have been steadily decreased by using a preventive approach to caries management. In light of recent discoveries, the current study concentrates on this magic cure for managing caries with preventive measures.

Keywords: Prevention, Panacea, Dental caries.

1. INTRODUCTION

Oral health is supposedly a fundamental human right, according to the World Health Organization, yet few people actually have access to it. [1] Even though oral and dental health have generally improved for those living in industrialised nations, up to 90% of school-aged children and most adults are still impacted by dental caries, despite these improvements. Dental caries is one of the most serious issues in public health because of its prevalence and ubiquity. [2] The management of dental caries is undeniably improved by prevention due to the high cost and lack of resources at the primary level.

At both the individual and population levels, dental caries is preventable and manageable. Additionally, it is easily treated with conventional surgical procedures and dental restorations. Pediatric dentists have a crucial role in early dental caries prevention and severity reduction. Pediatric health care practitioners are making major efforts to reduce the prevalence and severity of caries by using a preventive strategy. Caries severity in the teeth. The topic of the current review is this. In view of recent discoveries, a cure-all for caries management with preventive measures. In this context, a targeted approach model has been proposed, taking into account the many preventative armamentaria for dental caries that are currently accessible.

Current Concepts of Caries

A contagious, transmittable, and infectious bacterial infection is caries. Nowadays, it is known that caries is a biological illness that can be treated medically rather than simply by

surgical or restorative procedures. The disease's bacterial origin was identified ten years ago, but the intervention and techniques to bacteriologically and antimicrobially halt the development were not covered. Once the illness or decay had been located, it was often surgically removed, and the tooth was then restored with a filling. However, dentistry is moving toward the medical approach, which is to find the disease's origin and get rid of it. It is widely acknowledged that the previously employed preventive measures are ineffective in the current minimally invasive period when they are considered.

Targeted approach model for caries prevention

The authors provide a targeted approach model for caries management in the paediatric age group⁴ since caries is a dynamic bacterial process. The management strategy under this approach is time-driven because it is based on the schedule for caries. The benefit of this strategy is that caries can be stopped relatively early on, which seems to be of particular importance in paediatric dentistry. The scientifically based caries management regimen is made easier by the focused approach and is also based on the stages of caries formation. As a result, this method enables the doctor to very early on inculcate in the patient a positive dental attitude.

Caries prevention based on targeted approach

Treating caries as a doctor would (on an etiological basis) and as a dentist would (on a therapeutic/restorative basis):

1. Determine each person's caries risk and activity through a thorough assessment process.
2. Manage oral bacterial populations.
3. Identify the steps that will move the patient from a high-risk category to a low-risk one.
4. Explain the best course of action for remineralization and reversal of non-cavitated lesions.
5. Conventional treatment will be given to lesions that have cavitated.
6. Office and home upkeep techniques.

Methods on the horizon

The rise in illness incidence and growing pathogenic bacterial resistance to currently utilised antibiotics and chemotherapeutics have created a global demand for oral disease preventive and treatment alternatives and products that are safe, effective, and affordable. [5,6] The diffusion of antimicrobials and remineralizing agents into the dental plaque biofilm has been improved in a number of ways, and controlled release delivery systems, such as antimicrobials enclosed in controlled-release microcapsules, have been developed. 7 Sustained-release materials, responsive release (smart) materials that are triggered by pH changes, combination therapy (release of fluoride and mineral concentrates), and new biomaterials that buffer pH and have impermeable margins are additional ways to increase the residual capacity of antimicrobial delivery. [8]

Recent advances in understanding the human oral microbiome, a project of the Human Microbiome Project (<http://commonfund.nih.gov/hmp>), have made it possible to conduct a thorough survey and identify the kinds of bacteria that are linked to tooth health and disease. Once the metabolic activity of acidogenic species in dental caries is recognised, this has significant implications for the future development of therapies. This will make it possible to create techniques for identifying and blocking virulence factors. It will be possible to

successfully create new medicines for dental caries prevention by utilising metagenomics analysis and metabolic reconstruction of important pathways. For patients with a high risk of developing dental caries, methods of bacterial transplantation and/or replacement in the oral cavity may offer interesting new directions [8, 9].

Ozone gas (O₃) has the power to eradicate viruses, fungus, and bacteria. 10,11 There haven't been many well-controlled research to look into the bactericidal effects of different ozone gas dosages on oral bacteria. According to Oizumi et al.12, dentures containing the bacteria *Streptococcus mutans* (strain IID 973), *Staphylococcus aureus* (strain 209-P), and *Candida albicans* (strain LAM 14322) needed to be disinfected using an ozone generator producing 20 mg/h of ozone. Ozone has the ability to stop caries and maybe remineralize demineralized tooth structure, according to in vitro and in vivo studies [13-15].

Before ozone may be adopted for primary dental care or as an alternative to present treatments for the management and treatment of dental caries, further proof of adequate rigour and quality is needed [16].

Another recent addition to caries preventive armamentarium includes the recognition and research in the field of phytotherapeutic agents like *Mentha piperita*, *Rosmarinus officinalis* essential oil, green tea extracts, cloves, garlic extract and Propolis against *Streptococcus mutans*. These medications are regarded as holistic, affordable, and safe. [17]

Streptococcus mutans growth and the impact of filtered garlic extracts on acid generation were assessed. Garlic extracts might speed up the generation of acid and stop *S. mutans* from growing. The scientists came to the conclusion that although garlic stimulates the generation of acid, it may prevent dental caries by promoting salivary secretion and inhibiting bacterial growth in the oral cavity. Garlic may therefore have the ability to stop tooth cavities [18] *Streptococcus mutans* and *Streptococcus pyogenes* were found to be effectively inhibited by *Rosmarinus officinalis* and *Mentha piperita* essential oils [19]. Similarly, clove extracts were found to have inhibitory effects on the cariogenic capabilities of *S. mutans*, decreasing the synthesis of water insoluble glucan by over 50% at concentrations as low as 0.5 mg/ml. 20 Green tea's anticariogenic activity has been hypothesised to be a glucosyltransferase-inhibited direct bactericidal effect against *Streptococcus mutans* and *S. sobrinus* [21]. Likewise, research using unprocessed propolis.

2. DISCUSSION

Strategies for managing diseases and preventing caries that are "one-size-fits-all" fail miserably to take into account significant variances in how different populations experience diseases. There is a need to investigate interventions that are risk-based, age-specific, safe, and well-accepted at both the individual and population levels using biotechnology/biomaterials, clinical, behavioural, and social mediations.

Traditional strategies for treating dental caries continuously fall short of utilising modern scientific and pathologic knowledge. Dental caries should be identified and controlled with consideration for the disease's dynamic, progressive, infectious, diet-dependent, and behavioural characteristics.

Caries is a disease that affects everyone at some point in their lives, but it is fair to give children priority because it first develops in early childhood and affects everyone.

In order to move from treating dental caries as a condition to treating it as a disease, from passive to active management, from a static to dynamic understanding of pathogenesis, from

treatment to management, and from dento-centricity to individual and family centricity, it is necessary to address the current conceptual frameworks. [22]

The World Health Organization (WHO) recommends oral health interventions that (1) reduce disease burden through a "risk-factor" approach that focuses on high-need individuals and groups, (2) encourage healthy lifestyles and reduce risk factors arising from environmental, economic, social, and behavioural sources, (3) develop oral health systems that equitably improve oral health outcomes, respond to legitimate needs, and are financially fair, and (4) integrate oral health into national and community health plans. The U.S. Surgeon General's invitational Workshop on Children and Oral Health in 2001 focused on public and private policy interventions appropriate for young children, such as (1) start early and involve all those who interact with young children and their families; (2) ensure provider competencies; (3) be accountable through tracking and performance measures; (4) take public action through coalitions; (5) maximise utility of sound science; and (6) I 25 Dental healthcare professionals need to abandon the limited surgical perspective that seeks to apply interventive treatment as a one-time event at a specific trigger point of disease severity and accept the evidence that caries is a chronic, initially reversible disease with a well-known multi-factorial aetiology. Therefore, the caries process should be treated throughout time in a tailored manner for each patient.

3. CONCLUSION

The concepts of disease management must be the foundation of contemporary caries management. Accurate lesion diagnosis, lesion severity classification, caries risk assessment, therapy matching to risk level, monitoring for signs of future demineralization or remineralization, and assigning recall intervals based on treatment outcomes and risk levels are some of these. Applying the results of recent research should receive more focus in order to improve the efficacy of preventive measures and introduce them to underdeveloped parts of the world. It is now clear that a restorative approach to the illness does not, by itself, "cure" caries. As a result, in this context, the preventive targeted treatment to tooth caries stands out as a Pedodontic miracle cure.

4. REFERENCES

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