Can Chemical Mouthwash Agents Achieve Plaque/ Gingivitis Control?

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KEYWORDS

• Dental plaque • Gingivitis • Mouthwash • Mouthrinse • Systematic review • Meta-review

KEY POINTS

- Oral health is important since the mouth is the gateway to the human body. Bacteria are always present in the oral cavity and when not frequently removed the dental plaque biofilm leads to the development of oral disease.
- Over the past decades, the use of mouthwashes has become customary, usually following mechanical plaque biofilm control.
- Although people in industrialized countries use various oral hygiene products with the expectation of an oral health benefit, it is important that sufficient scientific evidence exists to support such claims.
- This meta-review summarized and appraised the current state of evidence that was based on systematic reviews, with respect to the efficacy of various active ingredients of over-the-counter chemotherapeutic mouthwash formulations for plaque control and managing gingivitis.
- Evidence suggests that a mouthwash containing chlorhexidine (CHX) is the first choice. The most reliable alternative for plaque control is essential oil (EO). No difference between CHX and EO with respect to gingivitis was observed.

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INTRODUCTION

The need to prevent human disease is well recognized and is related to making the occurrence or progression of a disease process unlikely or impossible. Oral health is important because the mouth is the gateway to the human body. Bacteria are always present in the oral cavity and when not frequently removed, the dental plaque biofilm leads to the development of oral disease. The merits of daily oral hygiene to oral health have long been understood.[1] Studies of tooth cleaning suggest that despite technological innovations, the level of mechanical oral hygiene practice is inadequate.[2–4]

The principle that plaque biofilm is the major etiologic factor causing gingivitis provides the justification for the use of antimicrobial mouth rinses.[5] The practice of mouth rinsing has been in use by humans for more than 2000 years. The first mouthwash advocated for dental plaque reduction seems to be urine from a child or, even better, from a newborn baby.[6] In the 1880s, Willoughby D. Miller (a dentist trained in microbiology) was the first to suggest the use of an antimicrobial mouthwash containing phenolic compounds to combat gingival inflammation.[7] Over the past decades, the use of mouthwashes has become customary, usually following mechanical plaque biofilm control. Mouthwashes are an ideal vehicle in which to incorporate chemicals and are appreciated by the public because of their ease of use, reduction of plaque biofilm, and breath-freshening effect.[8–10]

With keen competition between individual manufacturers vying for a percentage of this market, various claims for efficacy have been made, using numerous terms to describe efficacy. Although people in industrialized countries use various oral hygiene products with the expectation of an oral health benefit, it is important that sufficient scientific evidence exists to support such claims. Dental professionals have choices and make decisions every day as they advise their patients.[11] An evidence-based clinical decision integrates and concisely summarizes all relevant and important research evidence of acceptable quality that examines the same therapeutic question. The model to guide clinical decisions begins with original single random controlled clinical studies at its foundation. Syntheses (systematic reviews) build up from these to integrate the best available evidence from these original studies.[12] At the next level, a synopsis summarizes the findings of high-quality systematic reviews.[13,14] Meta-analyses (meta-review) in particular are appropriate for describing whether the current evidence base is complete or incomplete. The quantitative evidence is synthesized from relevant previous systematic reviews. The reason for including only systematic reviews is because this kind of research generally provides more evidence than separate empirical studies. Also in the presence of a significant increase in systematic reviews, meta-reviews give the dental community better guidance. From this perspective, it is a step forward in the direction of a clinical guideline.[15,16] Meta-reviews are a tool, a form of information, and guidance based on research evidence that assists the clinician in formulating the answer appropriate for each individual patient.[11]

Recently, 2 meta-reviews have been published that evaluate the efficacy of home-care regimens for mechanical plaque removal (toothbrushes and interdental cleaning devices) on plaque and gingivitis in adults.[2,3] The purpose of this article was to prepare a meta-review that summarizes the contemporary synthesized evidence with respect to the efficacy and safety of home-care self-support activities focusing on chemical agents in mouthwashes to manage plaque and gingivitis.