

CAUSES OF DENTAL CARIES AND PREVENTIVE MEASURES

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The objective of this study is to review medical and non medical treatments for prevention of caries. Dental caries is a pathologic process depending on several etiologic factors, which cause the destruction of the dental tissues and produces local and general complications.

Key words: Dental caries, prevention, fluoride.

Introduction

It is one of the most widespread diseases in the civilized populations with a prevalence of 40% at the age of seven years and 85% in seventeen year-old boys (2). However there is some evidence that that incidence in children aged five-seventeen years has decreased about 36% in the last decades and approximately 50% of children can be considered caries-free in the permanent dentition (3-5).

The objective of this study is to identify proofs of efficacy of medical and non medical treatments on prevention of caries providing a review of relevant literature published in the last fourteen years.

Material and Methods

A comprehensive computer literature search of the PubMed/ MEDLINE, Embase, Scopus and Cochrane data-bases was conducted using a search algorithm based on the term “dental caries” used as keyword and MeSH term (oriented in “control and prevention”) in order to find relevant published articles on methods for prevention of caries.

Only articles in English language were selected.

Only those studies that satisfied all of the following criteria were included in the present review:

- 1) systematic reviews performed by renowned scientific institutions;
- 2) acceptable quality of the studies on the basis of the standards “Consort statement”; (6)
- 3) only articles regarding prevention of caries from an individual and communitarian point of view were included;

Results

Using the selection criteria the computer literature search from the PubMed/MEDLINE, Embase, and Scopus revealed thirty systematic reviews . These studies were retrieved in their full-text version. No additional studies were

found screening the references. The characteristics of the studies included are shown in table 1 presenting the systematic reviews included in the study.

Table 1. Systematic reviews included in the study

N	Source	Author	Year	Title
1	Cochrane Collaboration Oral health group	Ahovuo-Salaronta et al. ³¹	2013	Sealants for preventing dental decay in the permanent teeth
2	Cochrane Collaboration Oral health group	Walsh et al. ³³	2015	Chlorhexidine treatment for the prevention of dental caries in children and adolescents
3	Cochrane Collaboration Oral health group	Marinho et al. ³⁴	2015	Fluoride gels for preventing dental caries in children and adolescents.
4	Cochrane Collaboration Oral health group	Iheozor-Ejiofor et al. ³⁵	2015	Water fluoridation for the prevention of dental caries.
5	Cochrane Collaboration Oral health group	Mickenautsch et al. ²	2012	Anticariogenic effect of xylitol versus fluoride - a quantitative systematic review of clinical trials
6	Cochrane Collaboration Oral health group	Yeung et al. ³⁶	2015	Fluoridated milk for preventing dental caries.

Discussion

In 2002, the Cochrane group evidenced that topical application of fluoride gel is associated with a substantial reduction in caries. Similarly, the same group a year later demonstrated that the use of topical systems (without distinction between toothpaste, mouthwash gels and varnishes) for fluoride therapy is clearly associated to the reduction of caries of children (8) and supervised regular use (daily or weekly) of fluoride rinse by children is associated with a clear reduction of caries (a reduction of 26% of the DMFS). This result improves by increasing the intensity of treatment (9).

In 2003, Marinho (11) suggested that the use of toothpaste and mouthwash compared to the use of fluoride toothpaste and fluoride gel appear to exert a similar effect in the prevention of caries in children. As no substantial differences appear between the use of paints and gels it seems to be more appropriate to use the paint because it leads to a lower intake of fluoride, however, there is insufficient evidence to define the side effects of the two interventions. The combined use of topical fluorides associated with the use of fluoride toothpaste reduces caries by at least 10%, however, there is no evidence of significant differences between the use of toothpaste and only the association of more fluoride (12).

In 2008, Azarpazhooh and collaborators detected 303 articles by the literature research about the effectiveness of pit and fissure sealants in preventing dental caries. The authors agreed about the application of dental sealants on all permanent molar teeth of high-risk populations without any decays and within four years after their eruption. Besides, the review showed off that resin-based sealants should had been preferred to glass ionomer cements sealants. In conclusion, their analysis underlined the importance of dental sealing without omitting the influence of fluoride varnish, education, nutritional and regular clinical consultation (16).

Conclusions

Prevention treatments may have a relevant impact on the avoiding the development of caries. On the basis of this large review, a greater diffusion of preventive interventions could reduce the incidence of caries at an affordable cost. Topical application of fluoride gel and fluoride supplements appear convenient and inexpensive tools to reduce dental caries. Likely, also pit and fissure sealants and fluoride varnishes appear to effectively reduce the risk of caries.

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