



Title	Caries – Diagnosis, Risk Assessment, and Non-Invasive Treatment. A Systematic Review
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Aim

To assess the scientific evidence with reference to the following questions:

- How effective are different methods of disclosing the presence of a caries lesion, compared with a reference method? Are there side effects and risks associated with the methods reviewed? Which diagnostic method is the most cost effective?
- How well can caries be predicted?
- Are there effective, non-invasive methods (no removal of tooth substance) to treat early caries lesions on the crown or the root surface of the teeth?

Conclusions and results

Past caries experience is the best single factor for predicting future caries. It is possible to identify children and adolescents at very low risk of developing caries during the next 2 to 3 years. However, it is difficult to determine accurately which individuals are at risk of developing caries.

For caries diagnosis, a combination of visual-tactile and radiographic examination is more reliable than either method used separately. In general, accuracy in excluding the presence of caries is greater than in confirming its presence. The likelihood that radiation-induced cancer will develop because of exposure to dental radiography is considered to be very small, but greater than zero. There are no studies on the cost effectiveness of the various diagnostic methods.

There is insufficient scientific support for any conclusions as to whether early caries lesions can be treated effectively by non-invasive methods.

Recommendations

No recommendations.

Methods

A systematic search of the literature was conducted primarily via electronic data bases (Cochrane Library and PubMed) dating back to 1966. To be included in the systematic review, all articles were required to meet predetermined criteria: the results of the studies should be relevant to the questions posed by the project, ie, have appropriate outcome measures and an appropriate followup period and study design. A model analysis was undertaken which analyzed and compared the cost of diagnosis, prediction, and treatment of early caries lesions. Ethical implications were considered.

Further research/reviews required

Currently, no studies verify that identification of patients at risk leads to better treatment, ie, that the effects of risk assessment and subsequent intervention benefit the patient in terms of improved oral health. The present scientific base is inadequate for drawing conclusions on the efficacy of the various methods of treating early caries lesions.

Studies need to address cost aspects of various methods of caries diagnosis and early treatment and need to evaluate the benefits of risk assessment in preventing the development of the disease.