

summary

Tooth whitening is effective, with neither adverse nor beneficial effects to gingiva or plaque

Niederma R, Tantraphol MC, Conway S, Ferguson M, Redmon P, Hayes C. Effectiveness of Dentist-Prescribed, Home-Applied Tooth Whitening. A Meta-analysis. *J. Contemporary Dental Practice* Fall 2000, Volume 1, Number 4 (<http://www.thejcdp.com/issue004/niedermn/01nied.htm>)

Objective To assess the efficacy and safety of dentist-prescribed, home-applied tooth whitening agents

Data sources Medline 1989–1999 inclusive

Study selection Placebo controlled clinical trials of 10% carbamide peroxide using a custom-fitted tray, which reported efficacy using a change in shade guide units were included.

Data extraction and synthesis Shade guide unit change was evaluated to reflect efficacy, and both gingival and plaque indices to reflect safety. All 3 were analysed for the significance of 4 variables: treatment group, daily application time, the duration of treatment, and brand of bleach were examined. Number needed to treat was calculated.

Results 28 trials evaluated tooth bleaching, 20 of which were dentists-prescribed, and patient applied agents. 7 met all the criteria. The data indicated that home-applied agents using a 10% carbamide peroxide gel delivered in a custom-fitted tray whitened teeth significantly, when compared to a placebo control.

Conclusions Within the caveats discussed in the paper, the results indicate that, on average, dentist-prescribed, home-applied tooth

Product	Control Event Rate	Experimental Event Rate	Absolute Benefit Increase (EER-CER)= ABI	Number Needed to Treat (1/ABI) × 100= NNT
Rembrandt	22.7%	90.9%	68.2%	1.5
Colgate	22.7%	100%	77.3%	1.3
Opalescence	15.4%	87.5%	72.1%	1.4

whitening will whiten teeth 2 shade guide steps for six months, and neither adversely nor beneficially affect the gingiva or plaque.

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Commentary

The results of this meta-analysis suggest that dentist prescribed, patient applied 10% carbamide peroxide gel, using a custom-fitted tray has a useful clinical impact. However, this impact is less predictable than expected and safety has not been thoroughly examined.

The paper includes a methods section that describes the search strategy for retrieving relevant randomised controlled trials and details of the criteria applied when assessing their individual validity.¹

Five valid studies evaluated the efficacy of five bleaching products and combining the results allowed data from over 200 patients to be analysed. An observable change of at least two-increments in shade guide units was consistent from study to study in 2 out of 3 patients. Additionally, half the patients who did

benefit from this change failed to maintain it for 6 months.

In the introduction the authors state that long-term use increases the safety concerns that hydrogen peroxide containing agents may cause pulpal damage. This is relevant because many patients, whose tooth whitening is not maintained, may wish to repeat the bleaching process. Unfortunately, none of the papers, which were retrieved and found to be valid, investigated this outcome variable.

Further randomised controlled trials that examine pulp vitality in response to bleaching are needed to determine whether there is an adverse effect.

When evaluating interventions and the advice we give, we must focus on the long-term outcomes for our patients². Therefore, when obtaining valid consent for

vital bleaching, the patient should be informed there is a 2 in 3 chance they will achieve a two-increment change in shade guide units. However only half of those patients who achieve a change will maintain it for 6 months, and the effects on the pulp are unknown.

1. Sackett DL, Scott Richardson W, Rosenberg W, Haynes RD, Evidence-based Medicine; How to Practice and Teach EBM, 1997 Churchill Livingstone, New York, 91–99
2. Eraut M, in Burke J, (Ed) Outcomes, Learning and the Curriculum 1995 London, Falmer Press, 260–263

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