How effective is nicotine replacement therapy in helping people to stop smoking?

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Authors' objectives

To assess the efficacy of nicotine replacement therapy (nicotine gum or skin patches) in helping people to stop smoking.

Searching

MEDLINE and Index Medicus were searched, and citations of review articles and retrieved trials were examined.

Study selection

Study designs of evaluations included in the review

Randomised controlled trials (RCTs) with at least 6 months follow-up were included.

Specific interventions included in the review

Nicotine-based gum, skin patches, nasal sprays and inhalers.

Participants included in the review

Smokers with varying degrees of nicotine dependence who either self-referred for help with smoking cessation or who were invited by health professionals.

Outcomes assessed in the review

Point prevalence of smoking cessation at 1-year follow-up; cessation at 1 year was verified by biological markers, mainly carbon monoxide, in all but 4 trials. Efficacy of nicotine replacement therapy was defined as the difference between the percentages of treated and control patients who had stopped smoking at 1 year.

How were decisions on the relevance of primary studies made?

The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality

Validity was assessed by the following criteria: random allocation, at least 1 study group receiving nicotine replacement therapy, follow-up of at least 6 months, and the recording of smoking cessation status. The authors do not state how the papers were assessed for validity, or how many of the authors performed the validity assessment.

Data extraction

The authors do not state how the data were extracted for the review, or how many of the authors performed the data extraction.

Methods of synthesis

How were the studies combined?

Combined estimates of efficacy were calculated using the random-effects model, according to the methods of DerSimonian and Laird (see Other Publications of Related Interest).

How were differences between studies investigated?

Significant heterogeneity among the 28 trials of 2 mg gum was largely accounted for by differences between those trials involving self-referred participants and those involving invited participants. Separate pooled estimates of efficacy were calculated for these 2 groups. Differences in effects for smokers with high and low nicotine dependence

were calculated when possible, using the Fagerstrom questionnaire, which classifies smokers into high and low degrees of nicotine dependence.

Results of the review

There were: 28 RCTs comparing 2 mg nicotine gum with placebo; 6 RCTs comparing 4 mg nicotine gum with 2 mg gum or placebo (2 of these trials were also included in the 28 RCTs with 2 mg gum); 6 RCTs comparing transdermal nicotine and placebo patches; 1 RCT comparing nicotine inhaler with placebo; and 1 RCT comparing nicotine nasal spray with placebo.

Summary estimate of efficacy of 2 mg gum compared to control: all 28 trials, 6% (95% confidence interval, CI: 4, 8); for self-referred patients (13 trials), 11% (95% CI: 7, 15); for invited patients (15 trials), 3% (95% CI: 2, 5); for highly nicotine-dependent smokers (subgroups of 6 trials), 16% (95% CI: 7, 25); and for less nicotine-dependent smokers (subgroups of 6 trials), 2% (95% CI: -7, 10.)

Summary estimate of efficacy of 4 mg compared to 2mg gum: for highly nicotine-dependent smokers (3 trials), 21% (95% CI: 9, 32); and for less nicotine-dependent smokers (2 trials), -18% (95% CI: -36, 1).

Summary estimate of efficacy of transdermal nicotine patch compared to control: all 6 trials, 9% (95% CI: 6, 13); for self-referred patients (3 trials), 12% (95% CI: 8, 16); and for invited patients (3 trials): 6% (95% CI: 2, 10).

Authors' conclusions

Nicotine chewing gum and transdermal patch are both effective aids for nicotine-dependent smokers who seek help in giving up. Nicotine replacement therapy could enable about 15% of smokers who are motivated to seek help to give up smoking. In the most highly nicotine-dependent smokers, 4 mg gum seems the most effective form of replacement therapy at present. Among less dependent smokers, the transdermal nicotine patch is at least as effective as 2 mg gum, and offers the advantages of greater convenience, minimal need for instruction, fewer side-effects and lower risk of habituation.

CRD commentary

MEDLINE is the computerised version of Index Medicus.

It is unclear whether more than one reviewer checked either the validity of the primary studies or the data extraction.

Only one published trial of each of nicotine nasal spray and nicotine inhaler were identified, and few details of these were given.

Implications of the review for practice and research

Nicotine replacement therapy can be useful, particularly for smokers motivated to stop smoking. Different forms and strengths of nicotine replacement may be more efficacious among smokers with different levels of nicotine dependence.

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Bibliographic details

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Other publications of related interest

DerSimonian R, Laird N. Meta-analysis in clinical trials. Control Clin Trials 1986;7:177-88.

Indexing Status

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MeSH

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.