Effectiveness and safety of nicotine replacement therapy: A systematic review

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ABSTRACT
Nicotine replacement therapy (NRT) is the use of various forms of nicotine delivery methods intended to replace the nicotine obtained from smoking or other tobacco usage. This reduces the withdrawal symptoms associated with smoking cessation and helps resist the urge to smoke cigarettes. The aim of this review is to determine the effectiveness of the different forms of NRT (chewing gum, transdermal patches, nasal spray, inhalers, and tablets) in achieving asceticism from cigarettes. As a method of delivering nicotine into the bloodstream, NRT is thought to be a comparatively less-dangerous method than tobacco smoking.

Key words: Addiction, catastrophe theory, nicotine replacement therapy, smoking

INTRODUCTION
In the developed and developing countries, smoking is the leading cause of preventable mortality. Smoking cessation has a considerable impact on improving the life expectancy, reducing the morbidity, and reducing the health care costs associated with treatment of smoking-related conditions. Several pharmacological interventions are available, but the most commonly used formulation to stop smoking is nicotine replacement therapy (NRT). It is a safe intervention to the general population and higher-risk groups, including pregnant and breastfeeding women, adolescents, and smokers with cardiovascular disease. NRT involves use of various forms of nicotine delivery methods intended to replace the nicotine obtained from smoking or other tobacco usage, in order to help deal with withdrawal symptoms and cravings caused by the loss of nicotine from cigarettes. Several forms of NRT have been marketed, including the nicotine patch, inhaler, nasal spray, gum, sublingual tablet, and lozenge.

LITERATURE REVIEW
All the commercially available forms of NRT [Figure 1] are effective as part of a strategy to promote smoking cessation by approximately 1.5-2-fold, regardless of the setting. The effectiveness of NRT appears to be largely independent of the intensity of additional support provided to the smoker.

Nicotine gums are available in two strengths -2 mg and 4 mg. Twelve to fifteen pieces of gum are taken per day to start with (about one per hour). The gum is chewed slowly until the taste is strong and then placed in the vestibule to allow absorption of nicotine into the bloodstream. After 2-3 months, the chewing time is reduced or the gum is cut into smaller pieces, or the nicotine gum is alternated with sugar-free gum and gradually chewing is stopped completely. The disadvantage of gum is that some people do not like the taste or always feel like having something in their mouth.

Nicotine patches are placed onto the skin [Figure 2] from where they release nicotine into the bloodstream. Some patches last for 16 or 24 h, and some remain full time. Patches are discrete, easy to apply, and the strength of patch is reduced over time before stopping the release completely. The disadvantage is that a steady amount of nicotine is delivered and skin irritation beneath the patch occurs in some users.
Nicotine inhaler resembles a cigarette. Nicotine cartridges are inserted into it, and it is inhaled in an action similar to smoking. Each cartridge provides up to three 20-min sessions. About 6-12 cartridges a day are used for 8 weeks, and then the frequency is gradually reduced over the next 4 weeks.[7]

Nicotine tablets/lozenges dissolve under the tongue (they are not swallowed) and are absorbed through the mouth into the bloodstream. They are easy to use.[6,7]

Nicotine of nicotine nasal spray is rapidly absorbed into the bloodstream from the nose. It closely mimics the rapid increase in nicotine level that one gets from smoking cigarettes. This may help to relieve sudden surges of craving. Side effects are nose and throat irritation, coughing, and watering eyes.[6,7]

Combined therapy[8] is an option, especially for those with bad withdrawal symptoms. The common combination is an NRT patch (which gives a regular background level of nicotine) with gum or a nasal spray (taken every now and then to top up the level of nicotine to ease sudden cravings). Evidence from research studies suggests that this kind of combination provides a small but significant increase in success rates, compared with a single product.

DISCUSSION

A recent Cochrane review of controlled trials testing NRT products indicated that smokers using NRT were 1.5-2 times more likely to be abstinent from smoking at follow-up than those in the placebo or control treatment condition.[9] A combination of NRT with support or counseling may give the best chance of success.

The nicotine products may cause side effects like headaches, nausea, digestive problems, and sleep apnea.[10] Nicotine patches pose no danger for people with heart or blood circulation problems, but patients with unhealthy cholesterol levels (lower high density lipoprotein (HDL) levels) do not recover until the nicotine patch is stopped. The unborn children of pregnant women may have a faster heart rate. This review found evidence that nicotine-assisted reduction can be effective in achieving sustained abstinence from smoking and there is no evidence of an increase in life-threatening problems.

CONCLUSION

NRT is associated with adverse effects that may be discomfiting for the patient but are not life threatening. Clinicians should monitor the side effects that may worsen the underlying conditions, such as insomnia in patients with depression, and consider additional or alternative treatments. In view of the benefits of smoking cessation and the important role of NRT in achieving this goal, efforts should be made to counsel patients on the most common side effects and strategies should be developed to deal with them.

REFERENCES


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