

A network meta-analysis of randomised controlled trial evaluating the effectiveness of e-cigarettes in smoking cessation

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Introduction and Aims: E-cigarettes are potential smoking cessation aids that provide both nicotine and behavioural substitution for combustible cigarette smoking. We systematically reviewed the effectiveness of nicotine e-cigarettes for smoking cessation with licensed nicotine replacement therapies (NRT) and nicotine-free based control conditions.

Method / Approach: Randomised controlled trials that allocated individuals to use nicotine e-cigarettes, compared to those that used licensed NRT nicotine-free control or usual care were identified within PubMed, Web of Science and PsycINFO. We only included studies of healthy individuals who smoked. Furthermore, we identified the latest Cochrane review on NRT and searched NRT trials that were published in similar periods as the e-cigarette trials we identified. Network meta-analysis (NMA) was conducted to compare the effect of e-cigarettes on cessation relative to NRT and control condition.

Results: Results from NMA indicated that participants assigned to use nicotine e-cigarettes were more likely to remain abstinent from smoking than those in the control condition (pooled Risk Ratio (RR) = 2.08, 97.5% CI = [1.39, 3.15]) and those who were assigned to use NRT (pooled RR = 1.49, 97.5% CI = [1.04, 2.14]). There was a moderate heterogeneity between studies ($I^2 = 42%$). Most of the e-cigarette trials has moderate or high risk of bias.

Discussions and Conclusions: Smokers assigned to use nicotine e-cigarettes were more likely to remain abstinent from smoking than those assigned to use licensed NRT, and both were more effective than usual care or placebo conditions. More high quality studies are required.

Implications for Practice or Policy: Given the current evidence about e-cigarette's effectiveness as a cessation aid and with a moderate effect size, a sensible policy would be to encourage smokers who have difficulty quitting tobacco to switch to nicotine e-cigarettes and to concurrently discourage the uptake of e-cigarettes and tobacco smoking among young people.

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