

Effectiveness of Vaping vs Counselling on Smoking Cessation

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Respiratory Therapy

Research Question

Is vaping more effective than behavioural counselling in achieving smoking cessation for at least 6 months in actively smoking adults aged 18-40?

Introduction & Background

Smoking is a global issue that increases risk of diseases, like lung cancer, and causes 400,000 deaths, or 1 in 5 deaths annually, in the United States¹. Cigarette smoke travels deep into the lungs and quickly delivers a high dose of nicotine to the brain making cigarettes highly addictive¹.

Two common smoking cessation methods include behavioural counselling (BC) and nicotine replacement therapies (NRT)². BC typically involves one-on-one sessions with a cessation counsellor¹. NRTs like E-cigarettes (EC)/vapes, which may or may not include nicotine, have been marketed as a smoking cessation tool and have been gaining popularity in recent years³.

Methods

The literature search was performed using PubMed (355 results) and the Cochrane Library (11 results) databases between Sept. 10, 2020 to Oct. 20, 2020. Keywords used in the search include, “smoking cessation”, “vaping”, “behavioural therapy”, “individual counselling”, “abstinence”. Keywords were combined using boolean operator “and” to constrain results and “or” to expand results. The search in both databases was limited to only free full text articles published in the past 5 years. Studies involving self-reported data were excluded.

Summary of Literature

Articles consist of: 1 RCT⁴, 1 prospective cohort study⁵, 3 reviews^{1,6,7}, 1 retrospective cohort study⁸, and 4 meta-analyses⁹⁻¹². 3 articles supported BC^{1,9,10} while 2 articles supported EC^{4,12} for smoking cessation over other NRTs. 5 articles were inconclusive^{5-8,11}. None of the articles provided a direct comparison between EC and BC.

The articles provided evidence that the target intervention, whether it be BC or EC, was effective for smoking cessation for up to 6 months to a year^{5,8,10,12}. One study compared and favoured EC over BC/no support but was not certain due to bias and imprecision¹².

There is mixed evidence of the efficacy of using EC over other NRT^{4,8,12}. EC led to higher quit rates and are especially useful in smokers with high nicotine dependency^{5,12}.

However, there are concerns for the safety and side effects of EC as a cessation tool and in their rising popularity in youth and non-smokers^{6,7,12}.

The majority of articles that discussed BC provided evidence of its effectiveness in smoking cessation^{1,9,10}. There were no adverse effects reported for BC and successful cessation past 6 months was found to be a secondary outcome¹⁰.

Critical Appraisal

Are the results valid?

All authors clearly declared conflicts of interest and their studies included large sample sizes and randomization, leading to strong external validity. Lancaster (2017) and Hartmann-Boyce (2020) use meta-analyses to increase the statistical power of their conclusions, and the RCT by Hajek (2019) is high quality evidence considered to be the gold standard. See Table 1.

Table 1	Lancaster & Stead ¹⁰ (Meta-analysis)	Hajek et al. ⁴ (RCT)	Hartmann-Boyce et al. ¹² (Meta-analysis)
Research Question (PICO)	P: ~19,000 adult smokers; I: Individual smoking cessation counselling include at least 1 face-to-face session ≥10 mins. C: Minimal contact control (usual care, brief advice or self-help materials); O: smoking cessation for ≥6 months, or at longest follow-up	P: 866 middle-aged smokers; I: E-cigarettes; C: NRT including patch, mouth spray, gum, lozenge, nasal spray, inhalator, mouth strip, and micro-tab; O: Sustained abstinence for 1 year validated biochemically	P: 12,430 adult participants; I: E-cigarettes with nicotine; C: other interventions: NRT, varenicline, nicotine-free EC, BC, and no support. O: abstinence from cigarettes for 6 months or more
Methods	Databases searched: Cochrane Tobacco Addiction Group Specialized Register, Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, PsycINFO, and all studies in previous US guidelines to include randomized or quasi-randomized trials.	3-month study of 886 randomized participants were divided into either the EC group (439) and the NRT group (447). One-on-one BC was available weekly for both groups for at least 4 weeks after the quit date. Telephone follow up was done at 26 and 52 weeks and biochemical validation was done at 52 weeks.	Databases searched: Cochrane Tobacco Addiction Groups Specialized Register, the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, Embase, and PsycINFO to include randomized controlled trials (RCTs), randomized cross-over trials, and uncontrolled intervention studies.
Results	Individual counselling increased cessation likelihood by 40-80% compared to minimal support (from 7% to 10-12%) (RR 1.57, 95% CI 1.40 to 1.77; I ² = 50%; n = 11,100). Individual counselling with pharmacotherapy increased likelihood of smoking cessation of up to 50% compared to minimal support with pharmacotherapy (from 11% to up to 16%) (RR 1.24, 95% CI 1.01 to 1.51; I ² = 0%; n = 2662). More intensive counselling (e.g. more sessions) with or without pharmacotherapy showed a small benefit to smoking cessation compared to less intensive counselling (RR 1.29, 95% CI 1.09 to 1.53; I ² = 48%; n = 2920)	78.8% of participants completed the 52-week follow up. The one-year abstinence rate for the EC group was 18% compared to the NRT group of 9.9%. The relative risk was 1.83, the 95% confidence interval is 1.30 to 2.30 with a P<0.001.	Quit rates were higher with nicotine EC compared to NRT (risk ratio (RR) 1.69, 95% confidence interval (CI) 1.25 to 2.27; I ² = 0%; 3 studies, 1498 participants), non-nicotine EC (RR 1.71, 95% CI 1.00 to 2.92; I ² = 0%; 3 studies, 802 participants), and behavioural support only/no support (RR 2.50, 95% CI 1.24 to 5.04; I ² = 0%; 4 studies, 2312 participants). Using nicotine EC resulted in an additional 4, 4 and 6 quitters out of 100 people, respectively.
Benefits	Individual counselling is an effective method for smoking cessation and is even more effective with more sessions or when combined with pharmacotherapy.	EC are an effective alternative to NRT to aid in smoking cessation. EC are an easy one-product solution, has higher satisfaction rates, and is subjectively better in reducing smoking urges.	Healthcare providers, policymakers, regulators, and smokers can be informed of the effectiveness of EC compared to other therapies.

Will the results help locally?

The results can be applied to inform both cigarette smokers and healthcare workers (e.g. respiratory therapists) of different smoking cessation strategies and proper recommendations for different types of smokers. See Table 1.

Summary & Discussion

While no studies did a direct comparison, our research showed that BC had strong support and involved no adverse effects. EC, had variable results and involved significant adverse effects, but were more effective compared to other NRTs and for those with high nicotine dependency.

The literature is currently missing a direct comparison of BC and EC. Once this comparison is made, further research may find that a combination of both therapies may work synergistically. The long-term health risks of EC products are also unknown. Future research on the benefits and dangers of choosing EC over other NRT should be explored as research on EC safety expands. Whether these interventions are effective in populations that both smoke and vape recreationally needs to be explored further.

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