



Commentary

Effects of e-cigarettes versus nicotine replacement therapy on short-term smoking abstinence when delivered at a community pharmacy

Sharon Cox^{a,*}, Lynne Dawkins^a, Jay Doshi^b, James Cameron^b^a London South Bank University, Centre for Addictive Behaviours, School of Applied Sciences, 103 Borough Road, London SE1 0AA, United Kingdom of Great Britain and Northern Ireland^b Grovehill Pharmacy, 2 Henry Wells Square, Hemel Hempstead, England HP2 6BJ, United Kingdom of Great Britain and Northern Ireland

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ABSTRACT

E-cigarettes (EC) are now the most popular quit aid in England but their effectiveness for cessation if offered at a pharmacy has not been tested. Here we test the effectiveness of offering an e-cigarette with and without nicotine replacement therapy (NRT) on 4–6-week quit rates in adult smokers seeking support from a community pharmacy. A between subject, six-week, prospective, cohort design. 115 smokers (female = 74; *M* age = 46.37, *SD* = 13.56) chose either an EC, EC + NRT or NRT alone, alongside standard behavioural support. Smokers opting for an EC alone or an EC + NRT were more likely to report complete abstinence from smoking at 4–6 weeks (62.2% and 61.5% respectively) compared to NRT alone (34.8%). An EC intervention was significantly more effective for smoking cessation than NRT in this community pharmacy. The results for e-cigarettes appear positive but with the caveat that participants chose their own products which may have introduced bias.

1. Introduction

Cigarette smoking is the single most important cause of premature mortality in the world and quitting is known to rapidly reduce the risk of lung cancer, cardiovascular disease, stroke, chronic lung disease and other cancers (The health benefits of smoking cessation, 1990; World Health Organization, 2008). Smoking prevalence has steadily declined in the UK with fewer young people starting and more adults quitting (Office for National Statistics (ONS), 2017) however, health care budgets for smoking cessation are being reduced limiting the choices available to smokers (ASH Action on Smoking and Health & Cancer Research UK, 2019).

E-cigarettes (EC) are currently the most popular quit aid for smokers in England (West, Proudfoot, Beard & Brown, 2019) and a recent trial in English Stop Smoking Services (SSS) demonstrated that participants provided with an EC were almost twice as likely to quit than those prescribed Nicotine Replacement Therapy (NRT) (Hajek et al., 2019). The context in which ECs are offered and the type of support received is likely to influence use and potentially cessation.

Pharmacies can be considered an important community-based front-line service in which to engage with smokers. They have been providing stop smoking support in the UK for many years, traditionally through over-the-counter or prescription of NRT and in some cases, behavioural

support. Although the evidence on cessation rates associated with pharmacies is limited, quit success is traditionally low via this method, 22.5% at 4-weeks (Bauld et al., 2010; Sinclair, Bond, & Stead, 2004). Furthermore, pressure on UK healthcare budgets has led to restrictions on the number of NRT prescriptions available to some smokers, many pharmacies (including the one in this study) can only offer one form of NRT (due to restrictions on reimbursement), although recent evidence suggests more than one can increase efficacy (Lindson et al., 2019). Offering an EC within a pharmacy setting may augment cessation rates, and a Cochrane review concluded that as pharmacists are trained in smoking cessation and provide counselling, they still have a positive role to play in cessation (Sinclair et al., 2004) and are cost-effective (Bauld et al., 2010).

Presented here is an exploratory study which measured the effectiveness of offering an EC on cessation within a community pharmacy setting in Hertfordshire, England compared with the pharmacy's usual care NRT protocol. Smokers were offered a range of cessation treatments, including an EC. The primary outcome was defined as 4–6-week self-report smoking cessation rates.

2. Methods

One hundred and fifteen smokers (female = 74; *M* age = 46.37,

* Corresponding author.

E-mail address: coxs15@lsbu.ac.uk (S. Cox).<https://doi.org/10.1016/j.abrep.2019.100202>

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Table 1
Participant demographic, pharmacy survey and smoking outcome data between the treatment conditions.

	NRT N = 65	E-cig with NRT N = 13	E-cig alone N = 37
Gender %			
Female/male	64/36	69/31	62/38
Mean age (SD)	45.45 (12.26)	51.08 (20.22)	46.32 (12.97)
Occupation %			
Routine/manual	61	31	32
Unemployed	6	16	8
Home carer	11	23	22
Managerial/professional	0	0	4
Retired	13	30	8
Sick/disabled	9	0	0
Missing data	0	0	26
Exposure to smoke %			
Smoke-free home	56	53	58
Smoke-free car	60	30	52
Others in household smoke	21	46	42
Children at home	27	15	20
Reasons for quitting %			
Worried about health	100	100	100
Family benefit	26	15	12
FTCD (SD) ^a	4.45 (1.84)	4.85 (1.95)	4.37 (1.40)
CO at baseline (SD)	13.63 (7.62) ^a	17.46 (13.63)	12.86 (5.03)
CO (where available) at last 4–6-week appointment (SD)	3.08 (1.66)	2.40 (1.95)	1.92 (1.62)

NRT – nicotine replacement therapy; E-cig – electronic-cigarette; FTCD – Fagerstrom Test for Cigarette Dependence (FTCD; Fagerström, 2011); CO – expired carbon monoxide breath test.

^a N = 64 (1 missing).

SD = 13.56) were recruited through pharmacy counter staff, digital and non-digital displays in the pharmacy window and social media (Facebook), throughout 2017–2018. In line with usual care standard, inclusion criteria were self-reported smoker verified by CO $7 \geq$ parts per million (ppm) and aged 18 years or over. Two of the participants were pregnant (both in EC condition).

A non-randomised prospective cohort study with a between subject design was employed. Participants could choose EC, NRT or a combination of both, thus treatment condition (NRT \times NRT with EC \times EC alone) was the independent factor. In line with the pharmacy's usual care protocol, the primary outcome was self-reported total smoking abstinence at 4–6 weeks follow up. CO validation was taken where possible.

Participants were considered non-quitters if they i) dropped out, ii) reported not-quitting, iii) dual used (i.e. smoked and used the EC), iv) CO ≥ 7 ppm.

Basic demographic information was obtained from all smokers (age, gender, employment status), current smoking status was ascertained by self-report and CO breath test. Cigarette dependence was measured using the Fagerstrom Test of Cigarette Dependence (FTCD; 10).

NRT consisted of a choice of gum (fruit flavoured, 2 mg, 4 mg or 6 mg); lozenge (mint or fruit, 1 mg, 2 mg, 4 mg); inhalator (15 mg); mouth spray 1 mg /spray or patch (10 mg, 15 mg or 25 mg).

A simple pod-based EC (Mylo brand) with 18 mg/mL nicotine concentration liquid was offered with a choice of e-liquid flavours.

3. Results

Table 1 presents demographic, survey and outcome data for individuals in all conditions.

Smokers opting for an EC alone or with NRT were more likely to have reported complete abstinence from smoking at 4–6 weeks (23/37 [62.2%] and 8/13 [61.5%] respectively) compared to NRT alone (22/

65 [34.8%]).

Compared with those using NRT, the odds of quitting with an EC increased by 3.23 and the odds of quitting with EC + NRT increased by 3.14.

4. Discussion

An EC intervention was more effective for smoking cessation than NRT in this community pharmacy; at 4–6 weeks, for every one person who quit successfully with NRT, 3.23 quit successfully with EC.

In England, although ECs are now the number one quit aid for smokers (West et al., 2019), more evidence is needed to understand the conditions under which they can assist quitting. These results come from a small sample with a short follow-up, but they add to a growing body of evidence (in England at least) that ECs are effective in helping smokers to quit. However, long-term abstinence is difficult to achieve; an observational study by Bauld et al. (2010) saw 4-week pharmacy CO validated quit rates with NRT fall from 22.5% to 3.6% at 12-months. Thus, to be reassured of the chance of relapse, it is recommended that longer term (6 and 12-month) follow up rates are measured with as high a rate of CO verified quit status data as feasible (West, Hajek, Stead, & Stapleton, 2005).

There are several limitations to this study. This was not a randomised trial and smokers were able to choose their product after consultation which is open to bias.

Those choosing an EC may present with different motivations, beliefs and attitudes towards smoking and the use of ECs, e.g., previous bad experiences with NRT, knowing other EC users, incentivised by a free and novel product, which may have influenced motivation to quit during this attempt.

5. Conclusion

Offering an EC within a pharmacy shows early signs of being effective for smoking cessation though more work is needed to determine whether these initial promising effects are sustained over a longer period.

Funding

No funding was received for this study. The e-cigarette devices were donated by Evapo Ltd. to the pharmacy offering the treatment.

Declaration of Competing Interest

SC has provided expert consultancy to the Pacific Life Insurance Group (2018) on UK smoking prevalence rates.

LD has provided consultancy for the pharmaceutical industry (2015, 2017) and acted as an expert witness for an e-cigarette patent infringement case (2015).

JD is a Superintendent pharmacist for Grovehill and Woodhall pharmacies in Hemel Hempstead Hertfordshire.

JC operates stop smoking clinics for Grovehill and Woodhall pharmacies and has provided advice on medical license application for E-cigarettes to Evapo and Thornton and Ross.

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