

Young people and e-cigarettes – what do the latest data tell us?

August 19 2015, by Linda Bauld



Credit: AI-generated image ([disclaimer](#))

Thanks to decades of action against tobacco, smoking rates among children and young people are in decline: far fewer teenagers are now taking up smoking than in the past.

In England, [for example](#), just 3% of 11 to 15-year-olds are regular

smokers, with [similar figures](#) in Scotland and elsewhere in the UK. This is welcome news, and will play a significant role in protecting the adults of the future from the [14 types of cancer](#) linked to smoking, as well as other diseases such as heart disease and stroke.

Over the same period, we've also witnessed the advent of nicotine replacement as a means to help adult smokers quit. Reviewing these products back in 1991, Michael Russell [remarked that](#) smokers "smoke for the nicotine, but they die from the tar". In other words, it's the many other toxic chemicals in combustible [tobacco](#) that cause disease and death, not nicotine.

Confusion over nicotine

Yet considerable public confusion exists about nicotine – up to 90% of non-smokers and 75% of smokers [believe it is harmful](#).

More recently we've witnessed a rapid rise in the use of e-cigarettes, which has caused considerable debate and controversy – particularly surrounding their use and uptake among young people. This concern is probably partly caused by the confusion over the relative harmfulness of nicotine.

E-cigarettes commonly contain nicotine, as well as other substances including flavourings [and propylene glycol](#), a synthetic liquid substance used in the cartridge. But e-cigarettes don't expose people to many of the harmful chemicals found in tobacco.

They're widely available: the World Health Organisation [recently estimated](#) that half of the world's population live in countries where e-cigarettes can be bought. And there's a [growing body](#) of [evidence that](#) they can help adult smokers to stop using tobacco.

However, health professionals, policy makers and others are worried that e-cigarettes' widespread availability might create a new generation of young nicotine addicts. If they were to take up tobacco smoking, this could undermine the great strides made against teenage smoking. Is this a valid concern?

Emerging evidence

When my team at the University of Stirling [first reviewed the studies](#) on e-cigarette use in young people, early in 2014, we could only find nine published peer-reviewed studies reporting prevalence of use in any country. Since then more than 30 new studies have been published from countries as diverse as Korea, France, Poland, Canada and Iceland. Most of these studies, particularly from larger countries like the US, focus on a single region or school district.

The UK is an exception, and nationally representative cross-sectional data are available. So what do they show?

Four representative surveys of UK teenagers [were conducted](#) in 2014, and while they focused on slightly different age groups, their findings were very consistent – a significant proportion of young people had tried [electronic cigarettes](#) at least once (8% in one survey in Great Britain and 12% in a representative UK-wide survey, and in national surveys in Scotland and Wales).

The same survey for Great Britain had also been conducted previously in 2013, and the proportion of young people who had tried e-cigarettes [rose between the two surveys](#). But the proportion who regularly used e-cigarettes (more than once a month), was still very low in 2014 (from 0.4% in Scotland to 2% in the UK survey) and concentrated in youth who also smoked tobacco.

What about among non-smokers?

Three of these surveys failed to find any young non-smokers who regularly used e-cigarettes, while the fourth – a survey of about 9,000 11 to 16-year-olds in Wales – [identified just 54 participants](#) who had never tried tobacco but who regularly used an e-cigarette.

What this all tells us is that, while young people are experimenting with e-cigarettes and the proportion who say they've tried them is rising, only very small numbers of young non-smokers are attracted to these products on any regular basis.

This, it's worth remembering, is during a period when [smoking rates](#) among young people are continuing to fall, suggesting that – in the UK at least – there is no evidence yet that more young people are starting to smoke because of e-cigarettes.

But there's an important caveat. The UK studies – like those in other countries – are cross-sectional surveys that merely provide a snapshot. They say nothing about longer-term trends, nor about changes in behaviour. For that, we need longitudinal studies, which follow the same group of people over time.

First study to follow a group

New research conducted in ten high schools in Los Angeles and published [in the *Journal of the American Medical Association*](#) provides the first example of a longitudinal study looking at e-cigarette and tobacco use. It involved about 3,300 participants, who were 14-years-old on average when they joined the study. They were followed up twice, after six and 12 months.

Among all participants, 7% had used an e-cigarette at least once in the previous 30 days. But when the researchers looked at the 2,530 who had never used tobacco at the start of the study, only 222 of them – 8.7% – said they'd ever tried an e-cigarette.

But were these young people more likely to then try smoking (either cigarettes, cigars or hookah pipes)? The researchers found that those who said they'd tried an e-cigarette at the start of the study were also more likely to have tried smoking six months later (30.7% vs 8.1%) and 12 months later (25.2% vs 9.3%).

The authors collected information on other factors that might put young people at risk of smoking (such as their socio-economic background) and adjusted for these – but still found the link.

Some important caveats

What to make of this finding? There are several caveats. As the authors make clear, this association doesn't prove that e-cigarettes cause young people to take up smoking – it merely demonstrates a statistical link between the two. On top of this, the way e-cigarette and tobacco use were measured was very basic, only determining whether people had "ever" or "recently" used them, not whether this was regular or sustained use.

Importantly, the age group in the study had just moved to secondary school - a time of transition and trying new things.

The numbers that were the main focus of the analysis were also very small – just 222 non-smoking e-cigarette users.

So to find out more longitudinal studies are needed that follow people up for longer, provide more information on how regularly they use e-

cigarettes and tobacco, and also the types of products are used. And we need studies that provide evidence on the safety of e-cigarettes, and their role in stopping smoking.

Research is also needed to assess the impact of policy changes being introduced in a number of countries to regulate e-cigarettes, including measures to limit youth uptake.

For this reason [research organisations such as Cancer Research UK](#) are looking closely at the issue of e-cigarettes and funding a number of studies. Ongoing monitoring and research, including studies that involve the public and e-cigarette users, are important if we are to inform policy and practice.

Previous research has played a hugely valuable role in helping to protect [young people](#) from the disease and death that smoking causes. The place of e-cigarettes within this remains to be seen; but it may be important – so we need to study it.

More information: Leventhal A et al, Association of Electronic Cigarette Use With Initiation of Combustible Tobacco Product Smoking in Early Adolescence, JAMA (2015) [DOI: 10.1001/jama.2015.8950](https://doi.org/10.1001/jama.2015.8950)

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