Regulation of e-cigarettes

Harm reduction is a well-established concept in public health. Reduced-risk substitutes for hazardous products are not expected to be totally safe (*nothing* is totally safe). They are only expected to be significantly safer. Nevertheless, the UK's Royal College of Physicians (2016: 84) has concluded that the long-term health risks from vaping are "unlikely to exceed 5% of those associated with smoked tobacco products, and may well be substantially lower than this figure".

The benefits of e-cigarette use in smoking cessation have been shown in a series of randomised control trials (RCTs), the gold standard of scientific evidence. Bullen et al. (2013), Carponnetto et al. (2013) and Adriaens (2014) all showed that smokers were more likely to quit smoking if they used e-cigarettes than if they used a placebo or nicotine replacement therapy. This was particularly impressive since two of the RCTs involved smokers who had no desire to quit at the outset.

More recently, Hayek et al. (2019) former found smokers to be nearly twice as likely to quit using e-cigarettes than if they used nicotine replacement therapy and Walker et al. (2019) found that smokers using nicotine patches plus a nicotine e-cigarette were more likely to quit than those using patches plus a zero-nicotine e-cigarette.

The evidence from RCTs is consistent with evidence from observational and ecological studies. For example, Zhu et al. (2017), found that the "substantial increase in e-cigarette use among US adult smokers was associated with a statistically significant increase in the smoking cessation rate at the population level." A study of vape shop customers found that 41 per cent had quit smoking within a year of taking up e-cigarettes (Polosa et al. 2015). A clinical trial using second generation e-cigarettes saw 53 per cent of subjects quit smoking (Pacifici et al. 2015). A recent analysis of 13,057 current and former smokers in 28 EU countries, which is not cited in the report, found that current e-cigarette users were almost five times more likely to have quit smoking in the last two years than non-vapers and more than three times more likely to have quit in the last three to five years (Farsilinos and Barbouni 2020).

Given the large body of evidence showing that e-cigarettes are effective smoking cessation devices, it would be foolish to introduce policies that will make vaping less appealing to smokers. Far from being in line with the precautionary principle, as the draft regulation suggests, the proposed ban non-tobacco flavoured e-cigarette products is reckless, misguided and antithetical to public health.

Unflavoured e-cigarette fluid is rarely consumed by vapers. 'Tobacco' flavour only vaguely resembles the taste of smoked tobacco and is an artificial flavour like any other. Some vapers like it, others do not. To encourage smokers to switch to vaping, it is important to have a wide range of flavours available.

There is evidence that younger people are more likely to use flavoured juice than older people. When e-cigarettes first came on the market, they were only available in tobacco flavour. The higher prevalence of tobacco flavour use among older vapers is likely to reflect, in part, the earlier initiation of the first cohort of vapers, but it is important to recognise that the majority of vapers of all ages use flavoured e-cigarettes.

The Special Eurobarometer 458 survey found that “flavours of e-cigarettes were also relatively unimportant as a reason for starting to use them”. This reason was cited by only 12 per cent of EU vapers when asked which factors were important in their decision to start using e-cigarettes. The most common response, mentioned by 61 per cent of vapers, was “to stop or reduce your tobacco consumption”. The report correctly notes that the same survey found that 81 per cent of vapers opposed a ban on flavours, with only 9 per cent in favour.

Goldensen et al. (2019: 7) found that ‘observational and qualitative studies suggest that flavored e-cigarettes may aid adult smokers in smoking reduction and cessation efforts. Former smokers cite the wide variety of available flavorings and superior taste of e-cigarettes as factors that aid smoking cessation, and note that restricting the availability of flavorings would make the vaping less enjoyable and reduce the appeal of e-cigarettes.’

It is important to note that a recent study by Yang et al. (2020) found that the ban on e-cigarette flavours in San Francisco led to increased smoking prevalence among 18-24-year-olds. Cigarette sales in the USA have risen in 2020 as a result of federal restrictions on flavours in certain e-cigarette products (Maloney 2020).

Claims about a ‘gateway effect’ (a term borrowed from War on Drugs rhetoric) is designed to encourage the prohibition of low-risk substances on the basis that their consumption inevitably leads to the use of high-risk substances. The concept remains highly controversial. Anti-vaping activists have been claiming that vaping acts as a stepping-stone to combustible tobacco consumption for at least a decade.

A number of cross-sectional and longitudinal studies, mostly from the USA, have produced evidence that purports to supports this claim but they all suffer from the same unavoidable flaw. The crucial missing variable is personality. The kind of person who is more likely to try an e-cigarette is the kind of person who is more likely to try a cigarette. Conversely, the kind of person who has a strong aversion to cigarettes is more likely to abstain from vaping. These personality traits are extremely difficult to control for and no researcher has yet found an adequate way of doing so. In the absence of sound methodology, ‘gateway’ studies only show that adolescents who are not risk averse will try different things and that the kind of people who would have experimented with cigarettes before e-cigarettes were on the market sometimes try vaping first (Phillips 2015).

The important question is whether the relative popularity of vaping among some adolescents has led to a surge in combustible tobacco use. If there was a gateway effect of any

significance, it should be apparent in the data after all these years. Smoking rates should be rising, or at least falling more slowly, in countries where vaping has become popular.

In reality, e-cigarette use is associated with sharp declines in the smoking rate (including the youth smoking rate). After vaping became popular in 2012, England's smoking rate fell by 20 per cent in just five years, following five years in which the rate had been almost flat. In the same period, the smoking rate among children halved and is now at the lowest rate on record. Of the people in the UK who have used both cigarettes and e-cigarettes in their lives, 91.8 per cent used cigarettes first while only 0.1 per cent used e-cigarettes first (Office for National Statistics 2020).

In the USA, cigarette smoking by American middle school students nearly halved between 2011 and 2019, from 4.3 per cent to 2.3 per cent, and fell by more than half among high school students, from 15.8 per cent to 5.8 per cent. These are historic declines occurring at a time when 4.7 per cent of middle school students and 19.6 per cent of high school students are current (past 30-day) e-cigarette users. Vaping is far more common among US school students than it was in 2011, and whilst this is not a welcome development in itself, it is striking that it has coincided with large declines in the smoking rate. The same is true of American adults who now smoke at the lowest level on record: down from 18.1 per cent in 2012 to 13.7 per cent in 2018.

The US adult smoking rate fell by 4.4 percentage points between 2012 and 2018. England's adult smoking rate fell by 4.5 percentage points in the same period. By contrast, in Australia, which has a ban on nicotine vaping products and some of the world's strongest tobacco control policies, the adult smoking rate only fell by 1.8 percentage points between 2013 and 2019.[1]

This evidence strongly suggests that if such an effect exists, it is trivial and heavily outweighed by the use of e-cigarettes as a gateway *from* smoking. Amongst younger people, vaping may well act as a prophylactic against smoking. The rapid decline of smoking in countries where e-cigarette use is common implies that there has been no 'renormalisation' of smoking. There is also empirical evidence from the UK showing that negative attitudes towards smoking among young people have remained strong despite the widespread acceptance of vaping (Brown et al. 2020; Hallingberg et al. 2020).

Studies from the economics literature help resolve some important questions. The observation that e-cigarettes are a substitute for, not a complement to, combustible cigarettes is an important one, not least because it suggests that efforts to suppress e-cigarette use will lead to greater use of traditional cigarettes. This is now well established. Several studies have shown that cigarettes and e-cigarettes are substitute products, both in the USA (Zheng et al. 2017) and in the EU (Stoklosa et al. 2016).

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[1] The Australian government only collects smoking prevalence data every three years.

Unsurprisingly, therefore, it has been shown that policies designed to deter e-cigarette use have the unintended consequence of increasing both cigarette consumption and smoking prevalence. Pesko et al. (2020) found that “higher e-cigarette tax rates increase traditional cigarette use” and that an e-cigarette tax of US$1.65 per ml would increase the number of daily smokers by one per cent. Cotti et al. (2020) studied e-cigarette taxes in eight US states and found that a decline in e-cigarette pod sales led to an increase in the sale of traditional cigarettes. Saffer et al. (2019) concluded that a large tax on e-cigarettes in Minnesota prevented 32,400 smokers from quitting. Abouk et al. (2019) found that e-cigarette taxes lead to more women smoking in pregnancy. Friedman (2015) found that banning the sale of e-cigarettes to minors increased the underage smoking rate by 0.9 percentage points.

Economic findings such as these provide indirect evidence that e-cigarettes are used by smokers to quit or cut down their cigarette consumption. And they give us direct evidence of the effects of policies designed to reduce e-cigarette consumption. Interventions that making vaping less attractive to consumers, including flavour bans, have been repeatedly shown to increase cigarette consumption and smoking prevalence.

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