



Editorial

E-Cigarette: A Modern Trojan Horse? ☆



Cigarrillo electrónico: ¿un moderno caballo de Troya?

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Smoking is an addiction that is widespread throughout the world. According to the World Health Organization (WHO), it is the leading cause of preventable death in developing countries. Despite this, therapeutic resources are limited.

There are only three first-line pharmacological treatments for this severe disease: nicotine, bupropion and varenicline, all of which have low success rates, with OR ranging from 1.6 to 2.31 vs placebo at 6 months, and even lower at 24 months.¹ This highlights the need for more effective treatments for this illness that is associated with such high morbidity and mortality rates.

In 2003, the electronic cigarette (E-cig) was launched on the market, supposedly to treat nicotine addiction. Within a short period, awareness and use of E-cigs became widespread. In a survey carried out in 2009 and repeated in 2010, awareness rose from 16.4% to 32.2%, and users from 0.6% to 2.7% (and growing).² In September 2013, the United States Centers for Disease Control and Prevention reported that the use of E-cigs had doubled among middle and high school students in 2011–2012, estimating that 1.78 million students had tried them by year-end 2012.³ Various studies have shown the percentage of young users to be between 13% and 20%. Concern is heightened by the fact that approximately 4% were previously non-smokers. Another survey in 4 countries found that 70.4% of participants used E-cigs to obtain nicotine in smoke-free spaces.⁴

All this shows that the use of e-cigarettes transcends the notion of a treatment for smoking cessation, and must be evaluated as a potential medium- and long-term health risk, an incentive for never-smokers to take up the habit, and a means of flouting laws banning smoking in closed spaces.

There are serious doubts as regard their efficacy and safety at the individual level, and even more at the population level. There is no clear evidence of their effect on non-smokers who come into contact with the vapor they emit, which contains nicotine, a highly addictive substance that can be lethal in excessive quantities. Recent evidence shows that nicotine could be a gateway drug due to the existence of a biological mechanism that might

explain the progression from cigarette smoking to cocaine use—an effect from which the E-cig is not necessarily immune.⁵ The E-cig also contains propylene glycol, glycerin, flavoring, nitrosamines and diethinyl glycol, among others. The vapor contains formaldehyde, acetaldehyde, acroleins and heavy metals (nickel, chrome, lead).

Some studies have shown their acute effects on the respiratory tract. Flouris et al.⁶ found an acute but clinically non-significant reduction in lung function (reduction in FEV1/FVC but no change in FEV1) after a brief E-cig smoking session, although passive exposure to the E-cig for 1 h did not cause any changes. Vardavás et al. analyzed the acute effects of inhalation of an E-cig for 5 min on the respiratory tract of 30 healthy smokers, and showed that this did not affect FEV1, FVC, PEF or MEF 50%–75%. There is little more evidence at present on damage in the respiratory tract caused by E-cigs.

However, E-cigs did cause a reduction in exhaled nitric oxide levels and an increase in peripheral airway resistance and impedance, similar to those observed shortly after the inhalation of tobacco smoke.⁷ The use of E-cigs can cause dry cough, probably due to the exposure to polyethylene glycol and glycerol in the vapor, although this fades after several weeks of use.⁸ One case of lipoid pneumonia in a 42-year-old woman who used E-cigs for 7 months has been published, but the presence of significant comorbidities meant that this could not be conclusively attributed to E-cigs.⁹ No studies have been published on the role of E-cigs in the impairment of respiratory function in patients with chronic lung disease, a common phenomenon in long-term cigarette smokers.

Their beneficial effects on smoking cessation or reducing nicotine damage have not been proven. Only 5 studies have been conducted to date, 3 of which had few patients and were not randomized or controlled. Two projects, the ECLAT study and the ASCEND study, evaluated efficacy and safety. The ECLAT study was a prospective 12-month randomized study that evaluated the efficacy of E-Cigs in achieving abstinence or reduction in a group of 300 smokers who did not wish to quit. It compared 2 nicotine doses and placebo. There was a reduction in all groups, with no significant differences between groups and no major side effects.¹⁰ In the ASCEND study, a group of smokers who were motivated to quit were assigned to 3 treatment arms: (a) 16 mg nicotine E-cig; (b)

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21 mg nicotine patches and (c) E-cig without nicotine. Low intensity behavioral support was given. After 6 months, the abstinence rate for the E-cigs + nicotine group was 7.3%, for the patches 5.8% and for the E-cigs with no nicotine, 4.1%.¹¹ Superiority could not be demonstrated in any of the groups, nor were there differences in adverse effects. Major conclusions could not be drawn from either study, either because the results lacked statistical significance or due to methodological errors. There was no blinding in any group, and the ASCEND study had serious limitations: subjects using the E-cig knew that they were using a new form of treatment, drop-outs and losses to follow-up were higher in the patch group, and those who received E-cigs did so cost-free at home while the patch group had to pay 4 Euros in the pharmacy for theirs.

In view of these data, it is obvious that better designed, more methodologically rigorous clinical studies are required before convincing conclusions can be drawn.

A recent document issued by the Forum of International Respiratory Societies, which brings together: the Latin American Chest Society, American College of Chest Physicians, American Thoracic Society, European Respiratory Society, Asian Pacific Society of Respiriology, International Union Against Tuberculosis and Lung Disease (THE UNION) and the Pan African Thoracic Society, analyzed the subject in depth, suggesting that E-cigs should be regulated as medicinal products. This includes prohibiting their promotion for use in smoking cessation until their risks, benefits and safety margin can be established, as required by regulatory agencies for other products.¹² This document echoes the recent statement issued by SEPAR,¹³ and is a clear example of the position that scientific bodies should take. The WHO has also recently taken a similar stance.¹⁴

The position statement issued by the Forum of International Respiratory Societies also evaluated the inclusion of recommendations on this device in the Framework Convention on Tobacco Control, including prohibiting its sale, advertising, promotion and sponsorship. E-cigs would also be included in measures to combat exposure to second-hand smoke.

It is time to take decisions, and these must be carefully analyzed. The scientific societies have taken the first step in this respect. Regulating E-cigs as a medicinal product is absolutely essential. We need clear scientific evidence in the form of methodologically rigorous studies not sponsored by the electronic cigarette and tobacco industry, particularly since tobacco companies in recent years have acquired licenses for marketing electronic cigarettes, thus putting users at even greater risk.

We are no longer misled by tobacco companies, so let us now keep up our guard and prevent the E-cig from becoming the new Trojan horse.

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