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E-Cigarette Necessities for Respiratory disease Prevention

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Abstract

Harm reduction policies attempt to diminish the damaging effects of a particular behaviour without aiming to eliminate the behaviour itself. Common applications include the provision of needle exchanges and safe injection kits to injection drug users, and the use of methadone to treat opiate addiction.

Keywords: Injection kits; Methadone; Harm reduction; Conventional cigarettes; Prolonged absistence; Nicotine replacement

Introduction

Despite continued resistance to harm reduction interventions, there is strong evidence demonstrating their successes in public health, most notably in reducing the incidence of HIV and Hepatitis C infection. Critics may argue that tobacco harm reduction, as it applies to e-cigarettes, remains distinct from harm reduction for other forms of drug addiction. While there is no definitive evidence that either e-cigarettes or needle exchanges promote substance initiation among non-users, critics have expressed concerns about the possibility of a gateway effect of e-cigarettes towards conventional cigarettes. In addition, unlike e-cigarettes, needle exchanges are not backed by powerful political lobbyists or for-profit companies. Lastly, injection drug use is comparably invisible relative to the conspicuousness of using an e-cigarette in public. While these important distinctions highlight the need for closer examination, they do not inherently exclude the harm reduction potential of e-cigarettes [1]. The burden of smoking-related illness suggests that novel public health interventions designed to reduce the harms associated with cigarette smoking are needed. Virtually all interventions to date have focused on eliminating nicotine use, as standard nicotine replacement therapies are indicated for use up to 12 weeks. These successes have been limited, with just over 15% of smokers motivated to quit achieving prolonged abstinence at 12 months with the aid of a smoking cessation therapy. Despite the fact that an elimination-centred approach is incongruous with the understanding that harm reduction strategies are more practical and feasible than enforcing population-wide abstinence, anti-tobacco activists have expressed concern that harm reduction might overshadow cessation messages, effectively resulting in a reduction in the number of successful quitters [2]. Tobacco harm reduction continues to be met with scepticism by public health advocates whose distrust of safer smoking products dates back to a misguided endorsement of light cigarettes in the 1950's and 60's. More recently, critics denounced the use of low-nitrosamine smokeless tobacco products, commonly known as snus, for tobacco harm reduction despite evidence that the increased use of snus among Swedish men was accompanied by a reduction in the prevalence of cigarette smoking and tobacco-related disease. Arguments against the use of smokeless tobacco for harm reduction are similarly used against e-cigarettes, including the continued promotion of an addictive substance, uncertain long-term safety concerns, the possibility of a gateway effect to conventional tobacco products, and concerns about questionable terms of engagement with the tobacco industry.

Discussion

An important distinction between e-cigarettes and smokeless tobacco to be considered among public health critics is the former's inherent likeness to conventional cigarettes, which arguably increases their appeal as an alternative to knowingly harmful combustible products [3]. However, this distinction has not prevented significant controversy and debate in the United Kingdom, stemming from polarized opinions concerning the strength of the evidence regarding e-cigarettes' potential for harm. The principal quandaries in framing e-cigarettes as a tool for harm reduction occur first in determining whether it is morally objectionable to promote a product whose long-term health effects remain unknown; second, in establishing whether mitigating a harm that already exists is morally superior to preventing a same or similar harm from materializing. What is the government's role in regulating and potentially incentivizing these products? Should physicians encourage tobacco harm reduction by advocating for the use of e-cigarettes? As they are neither tobacco products nor approved cessation devices, e-cigarettes constitute a novel product whose harm reduction potential stands to be weighed against the ethical implications surrounding their availability and use. E-cigarettes typically contain a solution of propylene glycol or glycerin, with or without nicotine, which is vaporized upon inhalation by the user [4]. Unlike tobacco cigarettes, e-cigarettes are free of combustion, A key challenge faced by regulatory agencies in choosing how to regulate e-cigarettes rests in considering the possibility of increased use among non-smokers. Data from a 2010–2013 online survey of US adults conducted in samples ranging from 2,505 to 4,170 respondents revealed that ever use of e-cigarettes was highest among current and former cigarette smokers compared to never smokers in every survey year, the mechanism through which toxicants contained in burned tobacco are inhaled and absorbed by the user [5]. To date, biochemical studies of e-cigarettes have failed to raise any serious health concerns. The most frequently reported adverse events associated with their use have included nausea, throat and mouth irritation, headache, and dry cough, all of which were found to resolve over time. Although e-cigarettes are believed to have similar toxicity as existing nicotine replacement therapies, the generalizability of these findings remains unclear given the absence of standardized

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manufacturing practices and the proprietary nature of industry studies. The product's novelty also entails that there is insufficient data to judge the long-term effects of regular inhalation of propylene glycol or glycerine [6]. However, studies of artificial smoke generators concluded that exposure to propylene glycol mist can cause ocular and upper airway irritation, which could potentially be of concern among users with chronic lung disease, including asthma, emphysema, or bronchitis. Safety evaluations will require quantifying the degree of risk warranted in the face of incomplete evidence with which to inform decision-making. In turn, promoting autonomy, or the right to make individual decisions with regards to one's life choices, requires the provision of information concerning the risks and benefits associated with a given behaviour and with voluntary choice. This rights-based position is compelling given that the majority of e-cigarette users are current smokers attempting to quit or reduce their number of cigarettes smoked. While autonomy may be compromised through the influence of nicotine addiction, the consequences may be less pronounced where this choice consists of selecting between alternative sources of nicotine, rather than choosing between indulgence and abstinence. However, were the demographics of e-cigarette users to change, for instance through an increased number of non-smokers or youth taking up e- cigarettes, from a utilitarian perspective, the autonomy argument may become less convincing in weighing individual harm against public good [7]. The best evidence concerning the efficacy of e-cigarettes for smoking cessation and reduction is presented in a 2014 Cochrane review that examined 13 studies, two of which were randomized controlled trials. While the included studies found some evidence that e-cigarettes help smokers quit or reduce smoking, the authors concluded that a lack of high quality randomized controlled trials reduces the certainty of these effects. Nonetheless, available data from several observational studies suggest that e-cigarettes can lead to substantial smoking reduction among smokers not motivated to quit. Many smokers continue to engage in dual use of e-cigarettes and tobacco cigarettes. A study examining the effects of cigarette reduction on cardiovascular risk factor levels in regular smokers motivated to decrease their consumption demonstrated that reducing the number of self-reported cigarettes per day by at least 40% led to significant improvements in several biomarkers of cardiovascular disease [8]. However, these were only modestly correlated with a reduced risk of disease. Similarly modest risk reductions found in other studies have led researchers to hypothesize that cigarette reduction among heavy smokers is frequently accompanied by compensatory smoking behaviour, including prolonging the duration of each cigarette smoked. Thus, despite improvements in biomarkers including haemoglobin, leukocyte counts, fibrinogen, and cholesterol, there is no evidence that reducing smoking to as few as ten cigarettes per day produces improvements in clinical cardiovascular disease outcomes. The absence of improved cardiovascular outcomes, however, does not preclude the existence of benefits attributed to reduced smoking [9]. A population-based cohort study with up to 31 years of follow-up determined that reducing smoking from 20 to fewer than ten cigarettes per day produced a 27% reduction in the relative risk of lung cancer as compared to continuously smoking more than 15 cigarettes per day. In a second study, smokers unwilling to quit were randomized to either 4 weeks of reduced smoking with subsequent advice to quit or to usual care with only quit advice. Both groups had similar quit rates at 6 months, suggesting that reduction messages do not hinder cessation attempts. Similarly, a review of 19 controlled, cohort, case control, and experimental studies examining the impact of reduction messages on smoking cessation revealed no study concluded that smoking reduction decreases subsequent smoking cessation among smokers unwilling to quit. Rather, reduced smoking likely constitutes a first step to attempt and subsequently achieve abstinence, particularly among smokers who perceive themselves as unable to quit. A key challenge faced by regulatory agencies in choosing how to regulate e-cigarettes rests in considering the possibility of increased use among non-smokers. Data from a 2010–2013 online survey of US adults conducted in samples ranging from 2,505 to 4,170 respondents revealed that ever use of e-cigarettes was highest among current and former cigarette smokers compared to never smokers in every survey year. Concerns have been raised that higher rates of never smokers initiating e-cigarettes would result in net public health harms via increased nicotine addiction, and the possibility for e-cigarettes to act as a gateway to tobacco cigarettes. There is limited evidence that nicotine exerts a priming effect on brain circuitry, which helps to explain why nicotine is frequently used as a precursor to other hard drugs [10].

Conclusion

However, the implications of such priming are unclear, particularly as concerns a possible gateway effect of e-cigarettes to tobacco cigarettes. Tenets of economics dictate that risk-minimizing strategies, including sunscreen, condoms, and travel vaccines, encourage more people to engage in otherwise risky activities. The same should be expected of e-cigarettes, probably leading to eventual high product uptake among non-smokers.

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Conflict of Interest

None

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