Should psychiatrists support the availability of nicotine e-cigarettes in Australia?

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Abstract

Objective: To examine the position statement of the Royal Australian and New Zealand College of Psychiatrists (RANZCP) regarding the availability of electronic cigarettes in Australia.

Conclusion: There is limited evidence supporting the efficacy of nicotine e-cigarettes as an effective tobacco harm-reduction or cessation strategy for people with mental illness. The recommendations to increase their availability under regulation must be balanced with the physical and mental health risks of vapour inhalation and nicotine use, particularly for youth. Future recommendations by the RANZCP in relation to e-cigarettes must consider both the available evidence for harm reduction and the potential risks associated with youth e-cigarette use.

Keywords: regulation, smoking, cessation, harm reduction, youth

Introduction

Electronic nicotine delivery systems (‘e-cigarettes’) are battery-operated devices which have been available since the mid-2000s. They produce vapour by heating liquid which contains nicotine. These devices have been proposed as a smoking alternative, a harm-reduction strategy and a smoking cessation aid. There is conflicting literature on their efficacy for these purposes. A meta-analysis of observational and clinical trials showed smoking cessation was less likely in those who use e-cigarettes whilst a large well-conducted randomised controlled trial reported that e-cigarettes were more effective than nicotine replacement therapy (NRT) in supporting smoking cessation.

In Australia, legislation concerning these devices is complex and varies between states. E-cigarette devices (without nicotine liquid) are sold under tobacco or consumer product legislation, while the nicotine liquid is considered a ‘restricted drug’ under Schedule 4 of the Australian Poisons Standard with a prescription, but is otherwise a Schedule 7, dangerous poison substance. Individuals (including minors) are able to purchase both products online, meaning that dosage, contaminants and concentrations are uncontrolled.

In October 2018, the Royal Australian and New Zealand College of Psychiatrists (RANZCP) released a position statement supporting increased regulated availability of e-cigarettes as a harm-reduction measure (Box 1).
This paper considers the position of the RANZCP through the prism of available evidence relating to nicotine e-cigarettes.

Health effects of nicotine e-cigarettes

Studies have varied in reports of harm to physical health due to e-cigarettes. Polosa et al. concluded that regular e-cigarette use was not associated with respiratory disease. In contrast, a Hawaiian survey found a significant association between e-cigarette use and chronic obstructive pulmonary disease, independent of combustible cigarette smoking. Whilst it is accepted that e-cigarettes are less harmful than combustible cigarettes, respiratory harm has been theoretically attributed to ultrafine particles such as formaldehyde, heavy metals and lanthanides, diacetyl and acetyl propionyl, which may be inhaled. Activation of an immune response with chronic inflammation is a proposed biological mechanism for respiratory disease associated with e-cigarettes. The long-term safety of nicotine e-cigarettes is difficult to assess, due to high rates of concurrent or past smoking of cigarettes by e-cigarette users.

There is also evidence of an association between tobacco smoking and onset of schizophrenia spectrum disorders, worsening of psychosis symptoms, depression and anxiety. Whilst these associations may be explained by unmeasured confounds, one plausible explanation is a causal association between nicotine use and mental illness. Nicotine has been shown to result in structural and functional neurological changes, particularly in adolescents.

The RANZCP position statement recognises the potential respiratory harm of e-cigarettes; however, it states that e-cigarettes are estimated to be 95% less risky to an individual’s health than regular cigarettes. It omits discussion of the possible adverse effects of nicotine on the mental health of e-cigarette users. Psychiatrists should be mindful of this area of ongoing research.

Nicotine e-cigarettes as a cessation and harm-reduction tool

A 2016 Cochrane review and meta-analysis identified two well-designed studies of up to 12 months’ duration comparing e-cigarettes with placebo for smoking reduction and cessation. The review concluded that nicotine e-cigarettes provide a small effect size in smoking cessation, measured by the 6-month abstinence rate when compared with placebo e-cigarettes. Participants randomised to e-cigarettes were also significantly more likely to reduce the number of cigarettes smoked by ≥ 50% (placebo: 27% versus e-cigarettes: 36%). A randomised controlled trial (n=886) reported e-cigarettes were more effective than NRT for achieving 1-year smoking abstinence (18.0% versus 9.9%) suggesting superiority of e-cigarettes for smoking cessation. Further, those randomised to e-cigarettes were less likely to relapse compared to NRT.

The RANZCP position statement advocates for the availability of e-cigarettes as a harm-reduction measure in people living with mental illness. There is limited research to support the use of e-cigarettes for either harm reduction from tobacco or cessation of cigarettes in people with mental illness. A systematic review identified four studies of vulnerable populations, all with methodological limitations including small sample sizes and lack of control groups. The review concluded that further research was required to assess the efficacy of nicotine e-cigarettes as a smoking cessation aid in vulnerable populations including those with mental illness.

In summary, there is evidence that e-cigarettes offer an advantage over placebo in enabling smoking reduction and cessation in nicotine-dependent individuals. The evidence for the efficacy of e-cigarettes as a smoking reduction or cessation aid in people with mental illness is weak.
Similarly studies of other smoking cessation methods in people living with serious mental illness do not show benefits of NRT or specialist smoking cessation interventions for achieving smoking cessation or abstinence in smokers with serious mental illness. Further research is needed in this area; however, the position statement’s recommendations which would increase availability of e-cigarettes for those with serious mental illness are not based on strong evidence in this population.

Other considerations relating to e-cigarettes

Nicotine e-cigarettes are marketed to young people through their novelty and flavouring. The use of combustible cigarettes by young people has been declining. In common with alcohol and gambling, marketing of nicotine e-cigarettes to youth has primarily occurred online, preventing active policing of advertising standards. There is debate as to whether e-cigarettes reduce cigarette smoking in youth or act as a ‘gateway drug’ for future smoking. In a 2015 survey of young Australian women (N=8915) aged 19–26 years, 6.4% were past-year e-cigarette users. Although prior smoking history was the strongest predictor of e-cigarette use, it is concerning that over 25% of those who used an e-cigarette one or more times were never-smokers. The frequency of e-cigarette use was not collected in this study so dependence could not be determined.

Other harm such as in utero exposure through maternal use of nicotine e-cigarettes is a concern. Furthermore, liquids marketed as ‘non-nicotine’ have been found to contain levels of nicotine comparable to low-dose nicotine e-cigarette liquid, reflecting the lack of quality standards in these products.

Conclusions and recommendations

The burden of smoking behaviour rests disproportionately with individuals living with mental illness. The tobacco smoking rate in the Australian adult population fell from 22.4% in 1998 to 14.5% in 2014–2015, further research is needed in this area; however, the position statement’s recommendations which would increase availability of e-cigarettes for those with serious mental illness are not based on strong evidence in this population.

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