Vaping: A Timely Conversation

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INTRODUCTION

Vaping in New Zealand has grown exponentially especially among rangatahi (youth) and non- and never-smokers since the widespread introduction of products in 2017 (Asthma and Respiratory Foundation NZ, 2023a). Initially promoted as a smoking cessation strategy for individuals, and a strategy to achieving the Manatū Hauora | Ministry of Health's goal of Smokefree Aotearoa 2025 (Manatū Hauora | Ministry of Health, 2017), the growth in vape use and vape shops is of significant concern to health professionals and organisations. Unlike tobacco smoking, vaping, with its vast array of devices and liquids, has become prolific among "never" smokers and, in particular, rangatahi. Physiotherapists are ideally placed to (a) screen for vaping, (b) provide vaping cessation advice, and (c) influence government policy. However, vaping cessation, unlike tobacco cessation, requires a different approach, skill set, and training. With growing trends in vaping uptake and research into its hazards, a timely conversation around vaping, vaping cessation, and smokefree policy is warranted. This editorial provides insights into aspects of vaping including devices and liquids, health hazards, and associated Government policy so physiotherapists can be better informed and provide evidence-based health messages. Finally, New Zealand-specific resources are provided as useful adjuncts to vaping cessation conversations, especially with rangatahi.

VAPING: DEVICES, LIQUIDS, AND FLAVOURS

Different devices have evolved since becoming commercially available and now include e-cigarettes, e-cigs, electronic nicotine delivery systems, electronic non-nicotine delivery systems, electronic smoking devices, and personal vaporisers. Devices include a mouthpiece, microprocessor and battery, cartridge (liquid storage area), and heating element/atomiser (coil and wick). Liquids are heated to 190–235°C via conduction or convention, creating a vapour of fine and ultrafine aerosol particles, which are smaller than particles in tobacco smoke (Son et al., 2020).

The exact constitution of vape liquids (also known as "e-liquid" or "e-juice") remains unknown and can vary depending on source. What is known is that liquid content is unregulated and recognised as harmful to health (Banks et al. 2023; World Health Organization, 2024). Basic ingredients include propylene glycol (also found in antifreeze), glycerine (used to generate more vapour), flavours, additives, and other chemicals including heavy metals (American Lung Association, 2023). Nicotine can be optional; however, some products claiming to be nicotine-free have been found to contain nicotine (Asthma and Respiratory Foundation NZ, 2024). This highlights the urgent call for regulation of liquid contents.

Flavours, while tested for inclusion in food products and regulated to meet food standards in the Australia New Zealand Food Standards Code (2002), have not been tested for inhalation purposes. Cinnamon, strawberry, and menthol, for example, have been found to be toxic to lung cells in non-human studies (Effah et al., 2022). Flavours such as bubble gum, with varying nicotine strength options (Shosha Vape, 2023), are certainly not marketed to adults aiming to quit smoking. This unregulated marketing, particularly to children and rangatahi, is disturbing (World Health Organization, 2024).

NEW ZEALAND DATA

Data from the New Zealand Health Survey 2021/2022 provides alarming insights into vaping in New Zealand. More never smokers have taken up vaping, with over 10% of New Zealanders over 15 years vaping monthly and one in five high school students (especially Māori students and notably Māori girls) vaping at least once weekly (Manatū Hauora | Ministry of Health, 2023a). Data highlight that the original marketing of vaping as a smoking cessation strategy has been superseded by a rapid uptake by children/rangatahi and non- and never-smokers, undoubtedly prompted by increased vape shop numbers and accessibility, aggressive marketing, and social influences.

MOTIVATING FACTORS AND ACCESSIBILITY

Vaping behaviour is influenced by peers and the built environment. Exposure to social media, however brief, is also found to influence vaping uptake and promote a more positive attitude to vape use (World Health Organization, 2024). A 2022 New Zealand survey across eight Auckland, Dunedin, and Gisborne schools found that personal relaxation, enjoyment of flavours and vaping tricks, connecting and relaxing with friends, and a genuine like of vaping were common reasons for young people to take up vaping (Hā Collective, 2022). The growth in vape shops has increased the visibility of vaping and made accessibility easy. Over 1,350 specialist vape stores now exist in New Zealand, often located in close proximity to schools, and co-located within dairies (Asthma and Respiratory

Foundation NZ, 2023c). Challenges therefore lie in influencing the motives to vape, as well as the visibility and accessibility of vaping to all ages.

HEALTH HAZARDS

Health risks are dependent on factors such as use frequency, product characteristics, device type, and constituents. Electronic devices have been linked with physical injuries, including burns from device malfunctions, unregulated products, or user tampering (World Health Organization, 2024). Adverse effects of tachycardia, elevated blood pressure, nausea, vomiting, diarrhoea, gingival inflammation, and a sore throat have been reported (Seiler-Ramadas et al., 2020). Nicotine is highly addictive; non-smokers who vape may become as addicted to nicotine as smokers and also find cessation challenging. For children and rangatahi, nicotine can interfere with cognitive development, control of inhibitions, and executive function (DeBry & Tiffany, 2008), and may negatively impact learning (Kong et al., 2020). For adults, especially non- or never-smokers, addiction can negatively impact on work productivity, mood, and finances.

From a respiratory perspective, vaping is hazardous to lung health, albeit that the long-term risks to lung health are not yet known, especially in rangatahi. Vaping is purported to result in lung function damage similar to tobacco smoking (Ghosh et al., 2019; Walele et al., 2018). Erythema, inflammation, and irritable airway mucosa have been found in a cohort of e-cigarette smokers compared with non- and tobacco smokers (Ghosh et al., 2018). In addition, changes in proteinase, similar to changes seen in people with emphysema, have also been found in vapers (Ghosh et al., 2019), indicating the potential to develop chronic lung disease. E-cigarette or vaping associated lung injury, is now a recognised vaping complication associated with hospitalisation and death (Centers for Disease Control and Prevention, 2021). Health hazards therefore may be severe and can impact on longer term health, health usage, and mortality.

Vaping also harms the environment. Vaping products, especially single-use or disposable devices, contain plastics and lithium batteries, which are a fire risk and pollutant (Pourchez et al., 2022). Vaping cannot be supported when growing evidence shows that vaping is hazardous to lung health, cognitive development and behaviour, and the environment.

VAPING CESSATION AND PHYSIOTHERAPY

With limited research into the physiotherapist's role in vaping cessation, much can be extrapolated from tobacco smoking cessation. Adults expect that smoking is addressed during a physiotherapy consultation (Kunstler et al., 2019), yet barriers are well documented, including time constraints, fear of intrusion into the patient's privacy, insufficient cessation training, and a sense of ineffectiveness (Darabseh et al., 2023; Luxton et al., 2019; Pignataro, 2017). In New Zealand, the "ABC" pathway (Ask, Brief Advice, Cessation Support) is recommended (Manatū Hauora | Ministry of Health, 2021) and on completion of ABC smoking cessation certification training, physiotherapists can prescribe nicotine replacement therapy (Physiotherapy Board of New Zealand, 2018). Knowledge and uptake of the ABC approach among New Zealand physiotherapists has been limited (McCleary et al., 2012) and nicotine replacement therapy and smoking cessation advice is applicable only to adults who smoke tobacco, which contrasts with the current population who vape. More recently, the role of physiotherapists was explored in addressing vaping and smoking cessation, and a targeted 5-step approach to vaping (and smoking) cessation ("Verify, Assess, Plan, Educate, and Refer") was proposed by Dias et al. (2022). However, this remains theoretical and its application to a New Zealand population is unknown. The current knowledge gap calls for research into physiotherapists' understanding of vaping, attitudes to cessation strategies, and training needs in vaping (and smoking) cessation.

VAPING CESSATION RESOURCES

A recently published reference guide to support rangatahi to quit vaping (Asthma and Respiratory Foundation NZ, 2023a) provides practical tips and evidence for health professionals working with adolescents and young adults. Five key steps are promoted, which are screening, assessment, behavioural support, pharmacotherapy, and follow up. Additional New Zealand evidence-based resources include:

- The "facts of vaping" (https://vapingfacts.health.nz/the-facts-of-vaping/take-the-quiz.html), which includes information on vaping side effects, risks, vaping and pregnancy, and a quiz to de-mythologise vaping.
- "Protect your breath" (https://www.protectyourbreath.co.nz) (Protect your breath, n.d.) is supported by Te Aka Whai Ora and Te Whatu Ora and promotes improved knowledge and understanding about rangatahi vaping in New Zealand.
- "Dontgetsuckedin" (https://dontgetsuckedin.co.nz) is a website for teens (Asthma and Respiratory Foundation NZ, n.d.). Resources are applicable to health professionals, parents, and patients.

While the reference guide and associated resources have yet to be evaluated, their use and benefit cannot be underestimated.

VAPING AND NEW ZEALAND LEGISLATION

What is clear is that vaping is not harmless and must be regulated (World Health Organization, 2024). Vaping regulations were introduced in New Zealand with the Smokefree Environments and Regulated Products (Vaping) Amendment Act (2020), which determined explicit obligations for retailers, distributors, and New Zealand manufacturers and importers. For example, sales to under 18s and vaping in work, education, and care facilities were prohibited, new specialist vape retailers were banned from within 300 m of schools and marae, and flavour restrictions were imposed (Manatū Hauora | Ministry of Health, 2023b). While amendments go some way to regulate vaping, more stringent changes are demanded. The Asthma and Respiratory Foundation NZ (Harding et al., 2021) called for further restrictions on access and marketing of vaping, prohibiting unproven health claims, and protecting current policy. Trans-Tasman respiratory groups demand a total ban of disposable vaping products (Asthma and Respiratory Foundation NZ, 2023b). At a global level, the World Health Organization (2024) calls for increased restrictions on social media, which is known to influence attitude and behaviours around vaping.

The current New Zealand Government has not shown a clear commitment to reducing vaping and smoking in New Zealand. Plans announced this month by Associate Health Minister Casey Costello included plans for increased smoking cessation tools and additional regulations on vaping, including preventing rangatahi from accessing vapes (Costello, 2024). Paradoxically, this was announced alongside the repeal of three parts of New Zealand's ground-breaking smokefree legislation: retail reduction scheme, de-nicotinisaton, and the smokefree generation measures.

SO WHAT NOW?

Growing evidence indicates that vaping is hazardous and not used in the manner for which it was originally promoted – as a strategy to aid smoking cessation. Vaping is detrimental to lung health, and predisposes both rangatahi and adults to respiratory lung disease. Aggressive marketing, social media influences, and increased accessibility have attracted non- and never-smokers to vaping. Legislation in New Zealand has regulated aspects of vaping, but only after vaping has taken grip of many New Zealand rangatahi and adults. There are still opportunities to further influence vaping in New Zealand, a responsibility for all health professionals including physiotherapists. It is therefore timely that physiotherapists, as evidence-based practitioners, broaden their understanding of vaping and its hazards, and access and utilise resources on vaping cessation. Individually and collectively, physiotherapists must influence policy and legislation that impacts on the health of all New Zealanders. It is timely both to talk and act.

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