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Vaping industry participation standards in health organizations: an exploratory policy content analysis

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Abstract

The vaping industry has been found to employ similar tactics to tobacco industry actors to seek credibility and distort the scientific evidence base around the health harms of nicotine vaping products. As vaping industry interests undermine vaping control efforts, safeguards are necessary to protect against this influence. We aimed to examine health organizations' policies on vaping industry participation in their activities in Australia. A descriptive approach integrating policy analysis and key informant surveys was used to obtain vaping industry participation information from health research stakeholders. Descriptive statistics on organization type, policy document type, policy document industry focus (tobacco or vaping) and respondent role and responsibility were collected. We used framework analysis to identify themes describing organizational allowances, constraints, and rationale for vaping industry research participation. Relevant health organizations were identified within Australia for policy searching (n = 156), which identified 47 unique policy documents. After contacting 267 key stakeholders from eligible organizations, 31 survey responses were analysed. Research organizations and universities were highly represented in both the policy and survey data. Most health research stakeholders recognized that vaping industry interests counteract public health priorities and opposed vaping industry participation. However, many organizations lacked clear, vaping industry-specific participation policies. To protect the integrity of the emerging evidence base around vaping harms which inform vaping policy, health organizations require strong, comprehensive policies to resist vaping industry participation in research.

Keywords: tobacco industry, electronic nicotine delivery devices, vaping, public policy, commercial determinants of health

BACKGROUND

The use of electronic cigarettes, otherwise commonly known as 'vaping', has become increasingly popular in Australia. According to the most recent National Health Survey 2020–2021, almost 1 in 10 (9.3%) people aged 18 years and older report having vaped at least once in the past year, with 2.2% reporting current daily use (Australian Bureau of Statistics, 2021). Vaping, or e-cigarette use was highest among young people, with 21.7% of those aged 18–24 years, and 7.6% of children aged 15–17 years having vaped at least once in the past year (Australian Bureau of Statistics, 2021).

While there is evidence to suggest that nicotine e-cigarettes can be effective smoking cessation tools, particularly from randomized controlled trials (Hartmann-Boyce et al., 2022), the strongest evidence for safety and efficacy exists for behavioural support combined with current first-line pharmacological therapies (e.g. nicotine patches, inhalators) (Duru Çetinkaya *et al.*, 2020). Therefore, vaping products are considered a secondary treatment for smoking cessation (Royal Australian College of General Practitioners, 2021). However, concerns have arisen regarding the safety of these products. Studies have identified harmful chemicals in e-liquids such as benzaldehyde, cinnamaldehyde

Contribution to Health Promotion

- Vaping industry participation in research discourse is a commercial determinant of health that can shape research on vaping harms and policy.
- Addressing health organizations' lack of vaping industry participation policies is a public health lever to counteract industry influence.
- Strong participation policies can support the integrity of the evidence on vaping harms, which informs vaping policy, control and legislation.
- This research recommends further developing and updating organizational research participation policies to directly address vaping industry participation.

and formaldehyde (Larcombe et al., 2022). Active vaping has also been linked to burns, injuries, nicotine addiction, nausea, poisoning and increased likelihood of tobacco smoking among those who have not previously vaped (Adkins et al., 2020; Claes et al., 2020; Wang et al., 2020; Werner et al., 2020; Banks et al., 2022). Furthermore, nicotine use among adolescents has been associated with negative impacts on cognitive development, learning, attention and mental health (Murthy, 2017; Masaki et al., 2022). Given these factors, the growing popularity of nicotine vaping among youth and young adults threatens to undermine established tobacco and nicotine control efforts.

In Australia, nicotine vaping products (NVPs) can only be legally accessed via authorized prescribers (Therapeutic Goods Administration, 2022). This strong regulatory approach is largely underpinned by the current evidence on vaping harms, in addition to Australia's obligations under Article 5.3 of the WHO Framework Convention on Tobacco Control, which encompasses e-cigarettes (World Health Organization, 2003; Australian Government, 2019b). Despite attempts to limit access to NVPs, a burgeoning black market for cheap, disposable e-cigarettes exists, with these often containing unspecified levels of nicotine (Tobin, 2022). Tighter border controls and marketing restrictions have been proposed to stem illegal importation and sale of vaping products in Australia (Attwooll, 2022). The e-cigarette market was largely dominated by smaller manufacturers until 2012, after which large tobacco corporations began buying existing e-cigarette brands and developing their own product lines (Greenhalgh *et al.*, 2022). The large overlap between the tobacco industry (TI) and vaping industry (VI) actors is a concern, as the TIs have an established and ongoing history of interfering with the scientific discourse on tobacco smoking harms and tobacco control (Ulucanlar *et al.*, 2016).

Mechanisms of TI interference are well-documented. For example, the TI has sought to shape public opinion through tactics such as rebranding and promoting alternative products. In 2018, Phillip Morris International (PMI) claimed it was transitioning to a technology-focused company and began promoting their heated tobacco product (IQOS) as an 'unsmoke' solution (Hird *et al.*, 2022). PMI's involvement with the industry transformation coalition, a PR entity that positions corporations as forces for positive change, further reflects their concerted effort to influence public opinion and maintain credibility (Hird *et al.*, 2022). An additional example of potentially seeking to manipulate scientific discourse is the company JUUL sponsoring an issue of the American Journal of Health Behaviour (Tan *et al.*, 2019).

Over the past few years, VI actors have started to exert scientific influence in similar ways to the tobacco companies. For example, Altria, one of the world's largest tobacco product marketers, purchased a minority stake in e-cigarette company JUUL Labs in 2019 (Tan *et al.*, 2019). Shortly after this investment, JUUL established JLI Science, with the stated goal of better understanding vaping products' long-term health effects, discouraging new users, and sharing findings with the scientific community (Tan *et al.*, 2019). Altria has since exchanged its stake in JUUL for heated tobacco product intellectual property rights (Altria, 2023).

While JLI Science claims to advocate for tobacco harm reduction, studies examining JLI-funded research suggest otherwise. An independent review found that JLI-funded studies failed to meet the basic criteria for TI funding independence and research bias (Tan *et al.*, 2019). Separate research found that less than half of all e-cigarette trial outcomes were adequately reported or declared in research funded by JLI (Mahase, 2021). These findings are consistent with a systematic review finding that financial conflict of interest is strongly associated with industry-favourable results indicating no health harms of e-cigarettes (Pisinger *et al.*, 2019).

Industry participation in research discourse is a commercial determinant of health (West and Marteau, 2013), capable of shaping entire fields of study related to vaping harms and policy (McHardy, 2021). Here, VI includes manufacturers, distributors and wholesalers of e-cigarettes, parent and subsidiary companies (e.g. TI), and representatives include actors who are compensated financially or otherwise to promote VI interests. 'Research activity' includes actions undertaken by organizations that create and support new knowledge,

or that use existing knowledge to generate new evidence and concepts.

As much of the research surrounding the physical and psychological health impacts of vaping is still in its infancy, safeguarding against VI influence on research discourse is necessary to maintain the integrity of emerging evidence around vaping risks, policy and vaping and nicotine control. An evaluative study (Walsh and Sanson-Fisher, 1994) and an advocacy article (Chapman, 2004) have examined the policies and practices of Australian higher education providers in relation to TI research funding. Current policies and practices of Australian health organizations (HOs) addressing VI participation in research more broadly have not been examined.

This study aimed to investigate how VI actor participation in research is managed and rationalized in HO policies. This first step towards mapping the VI research participation policy landscape is needed, given HO's influence on regulation and public acceptance of NVPs.

METHODS

Study design and setting

This descriptive study integrated policy analysis and key informant surveys; an approach designed to increase the identification of relevant participation policy information. Data were collected from respondents at Australian-based HOs.

Ethics

Ethical approval for this research was obtained via the Flinders University Human Research Ethics Committee (Approval#: 5507). All participation was voluntary, and respondents indicated informed consent via an online survey. No incentives were provided.

Identifying organizations

We identified relevant HOs via structured Google and Google Scholar searches using combinations of the following key terms and operators: (health OR medical OR scientific) AND research AND (organizations OR institutions OR member associations) AND Australia. Additional HO's were identified through the websites of health research member-based associations. HOs were eligible for inclusion if they met three criteria: (i) were a health, medical or scientific research organization, or member-based association; (ii) had an Australian presence (e.g. offices) and (iii) published on, or advocated for, research on smoking, tobacco, vaping, nicotine or non-communicable disease related to vaping or smoking. Supplementary Material S1 outlines key definitions relating to the project.

Identifying policies

We identified participation policies from eligible HOs via structured searches using the following key terms: HO name AND (electronic cigarettes OR e-cigarettes OR vaping OR tobacco) AND (industry participation OR policy). Policy documents were included for analysis if they met the following criteria: (i) explicitly cited one or more ways TI or VI representatives are permitted or prohibited from engaging in their HO research activities, or provided a viewpoint on e-cigarette use or uptake within an Australian context; (ii) were a policy, funding agreement, guideline, media release, statement, discussion paper or terms and conditions document and (iii) were released between 2012 and 2022, including where policy amendment date had passed. Policy searches were conducted from August to November 2022. If organizations had more than one policy version, the most recent was included for analysis. Policy materials citing TI participation were included, as many tobacco companies own or have stakes in vaping companies or produce their own NVPs.

Participants

The stakeholder survey invited HO representatives to provide the following information: (i) the type of HO they work for, (ii) their role within the organization, (iii) organization allowances and constraints on VI participation in research activities, (iv) the organization's rationale for this position and (v) whether this position had changed recently or was likely to change (Supplementary Material S2). An anonymous Qualtrics survey link was emailed to one to two key contacts for each HO identified during the study, with reminders sent 2 and 4 weeks after initial contact. Contacts were able to forward the survey to other staff within their HO or member organizations if they were better placed to respond.

Of 267 key stakeholders contacted, a total of 61 responses were received, with 30 excluded. Survey responses were excluded if no consent to participate was provided. Participation was terminated from this point onwards; however, the response was still submitted. Survey responses were also excluded if the participant did not attempt more than the first two demographic questions. This demographic data was collected and displayed in Supplementary Material S3, however, the surveys were excluded from the analysis as the remaining content-specific questions were left unanswered. Overall, 31 responses were analysed.

Data analysis

As all researchers in this study were current non-smokers working in public health, a professional focus on

supporting public health priorities informed analysis and interpretation. HOs were classified by organization type, with all policy documents and stakeholder responses separately imported into NVivo v12. Policy documents were deductively coded by organization type, document type and industry focus. Stakeholder responses were coded according to organization type, and role/area of responsibility. We used matrix queries to quantify policy documents and surveys within each category (e.g. *n* = survey respondents that identified policy as their role/area of responsibility). Framework coding was used to analyse policy content and open-ended survey questions (Gale *et al.*, 2013). This method is highly suited to combined qualitative analysis and provides structured outputs of summarized data (Gale *et al.*, 2013).

Initial deductive codes were created in reference to industry participation literature on conflict of interest, health harms, harm reduction, advocacy, funding, events and production of research (Ulucanlar *et al.*, 2016; Australian Government, 2019a; Legg *et al.*, 2021; Hartmann-Boyce *et al.*, 2022). In this study, a conflict of interest occurs when an individual's or entity's judgement, decisions or actions are compromised by their vested interests (e.g. financial, social). Policy content relevant to research participation was coded against this initial framework by IH, with codes modified to account for newly identified concepts. Coding stopped when no new concepts were identified in the data. All authors discussed the code framework, JT reviewed 20% of coded materials, with the coding framework then applied to all policy materials.

RESULTS

Within eligible HOs (*n* = 156) we identified 47 unique documents relevant to research participation. Most policy documents were produced for non-government organizations (49%) (Table 2), which represented the majority of identified HOs (71%) (Table 1).

The policy documents obtained from this study detailed organizational requirements around tobacco-related issues, such as industry funding, employee conduct and ethical considerations. Conversely, guidelines offered general recommendations or suggestions relating to the issues above. Whilst similar concepts, funding agreements delineated the financial backing for different projects (e.g. research), whereas terms and conditions outlined regulations relating to entire projects. Finally, media releases were formal announcements on behalf of organizations (relating to tobacco/vaping control), whereas statements comprised succinct messages conveying a position or reaction to tobacco/vaping control issues. Although there was some convergence between the collected document types and the conveyed perspectives, each had a nuanced purpose.

Table 1: Health organization characteristics (online search), *n* = 156

Characteristic	Total *n* (%)
Organization type	
Aboriginal or Torres Strait Islander Community Controlled	4 (2.6)
Government	9 (5.8)
Non-government	111 (71.2)
Research/University	32 (20.5)
Other	-

Note. Percentages may not equal 100% due to rounding.

The most common document type identified was policy (e.g. smoking policy, TI funding policy) (56%) (Table 2). From all HOs, the largest proportion of policy documents was associated with universities (66%) (Table 2). Organizations without publicly accessible relevant policy materials were excluded from the analysis (*n* = 108, 69%). Characteristics of excluded organizations (*n* = 108) and stakeholder survey responses (*n* = 30) are provided in Supplementary Material S3. Of stakeholder survey respondents (*n* = 31), most worked in research/universities (42%) (Table 3) and given this the main role/area of responsibility identified by respondents was research (52%).

We identified five main themes through an analysis of participation policy information and policy target areas: (i) lack of e-cigarette-specific or inclusive policy and awareness; (ii) few reasons for participation identified; (iii) inconsistent discourse around financial support; (iv) conflict of interest as the primary rationale for non-participation and (v) participation stance being influenced by evidence.

Theme 1: Lack of e-cigarette-specific or inclusive policy and awareness

Of the 47 participation policy documents identified through the policy search, 36 (77%) referred to the TI, 10 (21%) to the VI and 1 (2%) to both industries (Table 2). This highlights that nearly all (77%) of those with existing TI policies had not yet amended them to account for VI participation.

Three respondents were unaware if their organization had a policy that explicitly addressed VI participation in research activities. Three were also uncertain about the need for one, given they had not yet been approached by the industry or experienced a situation where VI participation was a possibility:

Table 2: Policy document characteristics (policy document search), *n* = 47

Characteristic	Policy documents Total *n* (%)	Organization type Total *n* (%)
Organization type		
Aboriginal or Torres Strait Islander Community Controlled	0 (0.0)	0 (0.0)
Government	3 (6.4)	3 (1.9)
Non-government	23 (48.9)	23 (14.7)
Research/University	21 (44.7)	21 (13.5)
Other	-	-
Document type		
Policy	26 (55.3)	-
Funding agreement	1 (2.1)	-
Guidelines	8 (17.0)	-
Media release	1 (2.1)	-
Statement	9 (19.1)	-
Terms and conditions	2 (4.3)	-
Industry focus		
Tobacco	36 (76.6)	-
E-cigarette	10 (21.3)	-
Both	1 (2.1)	-

Note. Percentages may not equal 100% due to rounding.

Table 3: Health organization characteristics (stakeholder survey), *n* = 31

Characteristic	Policy documents Total *n* (%)	Organization type Total *n* (%)
Organization type		
Aboriginal or Torres Strait Islander Community Controlled	1 (3.2)	1 (25.0)
Government	2 (6.5)	2 (22.0)
Non-government	11 (35.5)	11 (10.0)
Research/University	13 (41.9)	13 (41.0)
Other	3 (9.7)	-
Prefer not to answer	1 (3.2)	-
Role/area of responsibility		
Policy	13 (41.9)	-
Advocacy	14 (45.2)	-
Prevention	8 (25.8)	-
Research	16 (51.6)	-
Other	7 (22.6)	-
Prefer not to answer	0 (0.0)	-

Note. Percentages may not equal 100% due to rounding.

> *I am not aware of any policies our health-based government organisation has regarding the participation of vaping representatives. – Survey respondent, Government Organization*
> *I do not think that we have a specific policy that mentions vaping companies, but I assume that they would be considered the same as tobacco companies. – Survey respondent, Research/University Organization*
> *It (participation policy position) would change if we became targeted by vaping industry representatives. – Survey respondent, Research/University Organization*

Theme 2: Few reasons for participation identified

Of the policy documents and surveys analysed, most (*n* = 43) addressed VI constraints, while only three addressed allowances. One respondent was open to involvement on a harm-reduction basis:

> *We listen to anyone who wants to discuss reducing the death and disease toll from [tobacco] smoking. We do not do research, so they do not participate. – Survey respondent, undisclosed*

Three respondents highlighted specific research activities that VI representatives were allowed to participate in, including provision of research funding, attendance at annual events, as well as production of media statements and joint advocacy pieces:

> *[We have] accepted financial support from the small retail vape sector (in the past). – Discussion paper, non-government*
> *We hold annual events where the vaping industry and others are welcome to come along to understand our work, and the position of the sector we represent – Survey respondent, non-government*
> *[We allow VI] releasing media statements, joint advocacy pieces with industry partners. – Survey respondent, research/university*

Theme 3: Inconsistent discourse around financial support

'Contributions' was the most referenced VI constraint in the policy participation materials (*n* = 53, Table 4). While most organizations stated they would not accept or make financial contributions for health research (*n* = 31), the discourse around this varied. For example, six organizations used the terms 'direct' and 'indirect' when referring to funding acceptance:

Table 4. Policy targets identified in policy documents and stakeholder survey

Characteristic	Materials addressing policy target, *n* = 53 *n* (%)	References to policy target in all materials, *n* = 79 *n* (%)
Policy target area		
Advocacy (e.g. fundraising activities, media statements)	6 (11.3)	9 (11.4)
Contributions (e.g. funding for research, sponsorships, gifts, awards)	31 (58.5)	53 (67.1)
Events (e.g. conferences, annual meetings, forums)	7 (13.2)	8 (10.1)
Membership (e.g. professional organizations)	1 (1.9)	1 (1.3)
Research production (e.g. commissioning, reporting and communication of outcomes, publishing)	8 (15.1)	8 (10.1)

Note. Percentages may not equal 100% due to rounding.

… [we] must not accept direct or indirect research funding from the tobacco industry. – Policy, research/university
… [we disallow it] regardless of whether the funds are received directly or indirectly. – Funding agreement, non-government

One organization exclusively used the term 'direct' when referring to financial support, while the majority (*n* = 19) used neither term:

…[we] must not accept direct funding from the tobacco industry for any purpose. – Policy, research/university
'…does not accept funding from the tobacco industry.' – Policy, research/university

Theme 4: Conflict of interest as the primary rationale for non-participation

Many organizations (*n* = 18) recognized that there was a conflict of interest between VI interests and upholding public health priorities. As a result, they were opposed to allowing VI research participation in any form:

The commercial interests of the e-cigarette industry are in a fundamental conflict with public health and tobacco control objectives in Australia. – Survey respondent, non-government

One respondent displayed an awareness of the inter-industry relationship between the TI and VI and acknowledged how financial conflicts of interest skew findings in favour of the funder:

We understand that most, if not all, research on vaping that is reliant on tobacco funding will always skew findings towards vaping and the tobacco companies that own these arms of the business [that are] promoting and selling vape products. – Survey respondent, Aboriginal and/or Torres Strait Islander Community Controlled Health

Theme 5: Participation stance influenced by evidence

While most organizations adopted a firm stance towards VI participation in research, a small number of stakeholders (*n* = 3) stated that they would reconsider their stance of opposing VI participation, based on evidence relating to vaping harms, shifts in current regulation and changes to the relationship between the TI and VI.

Our position may change in the face of sound scientific evidence – Survey respondent, medicines industry
…[there] may be some consideration of support for research if vaping products in the future are classified as therapeutic devices, and [are] produced by regulated pharmaceutical companies (cf. nicotine replacement therapy)… – Survey respondent, research/university
Possibly, depending on how the connection between tobacco industry and vaping industry plays out. If they are recognised as separate industries, the university might open its doors to the vaping industry. – Survey respondent, research/university

DISCUSSION

For the first time, the VI policy standpoint of multiple types of HOs has been examined within an Australian context. Our findings revealed that most HOs lack a publicly accessible VI participation policy, and of those identified, most were TI-specific. This may reflect e-cigarettes being a relatively new product, despite growing availability. This may also reflect people waiting to see how evidence emerges. Our findings also indicate that some stakeholders believe they are accounting for VI participation within existing TI policies due to the relationship between the two industries, or that they may

adopt a reactive approach to policy development when they encounter industry actors.

Research organizations and universities were highly represented in the final policy data. This finding is consistent with the results from a previous study, which demonstrated how Australian higher education institutions have implemented policies to avoid or ban acceptance of TI funding (Walsh and Sanson-Fisher 1994). While policy targets and rationales related to TI and VI participation in universities may be highly represented in our sample, many of these targets were not university-specific (e.g. acceptance of funding) and could be used to inform general recommendations for HOs.

Financial support was the most cited TI/VI policy target in the participation materials analysed. These findings demonstrate policy responsiveness to the evidence on TI/VI-funded research and are consistent with a scoping review that found that researchers are generally aware of the risk industry sponsorship poses to the research agenda (Fabbri *et al.*, 2018; Legg *et al.*, 2021). Our results also revealed that the discourse around financial support was inconsistent with policy participation materials. It is important to highlight differences in how different organizations refer to financial support, as this can alter the meaning and effectiveness of a policy with respect to this participation area. As noted, the VI can exert influence both directly, indirectly and through intermediaries such as affiliated research institutions (Tan *et al.*, 2019; Tobacco Tactics, 2021). HOs that do not accept direct funding could potentially accept indirect funding, if not explicitly stated.

The TI has a well-documented, ongoing history of interfering with the research on smoking harms and controls (Brandt, 2012; Gilmore *et al.*, 2015; Legg *et al.*, 2019, 2021). Interestingly, almost all stakeholders deemed that VI interests are at odds with public health priorities, indicating an awareness of industry tactics, and a duty to public health. Despite this, some were willing to reconsider their stance based on evidence of vaping harms, as well as the actions of regulatory bodies and similar HOs. This highlights the need for VI-specific policies that apply a precautionary approach, similar to that taken against TI actors. Such measures are required before evidence on potential vaping harms becomes clearer, as opposed to after as the data suggest. Implementing these policies proactively will not only prevent VI actors from manipulating the evidence base that influences policy implementation but also increase the likelihood of HOs maintaining or revising their policy stance.

By integrating policy analysis and stakeholder surveys, this increased capture of participation policy information. Survey data also suggested participation policy barriers, such as uncertainty surrounding the need for a policy, highlighting a need for further research and stakeholder education. Findings may also be extended to studies of unhealthy or harmful commodity industries (e.g. ultra-processed foods), to further strengthen industry participation policies. However, as policy documents were not identified for over half of eligible HOs, it cannot be determined whether they lack participation policy, or if the policies are not publicly accessible. Given the near absence of VI participation policy and the burgeoning threat of VI participation in research, it is recommended that organizations align their existing and future policies with the objectives of Article 5.3, which include rejecting research partnerships and prohibiting industry involvement in tobacco control initiatives (World Health Organization, 2003). That said, further research is required to establish how these policies might be structured for different organizations.

Another limitation of this study was the potential for survey non-response, which could have introduced bias and impacted the generalizability of the findings. Of the responses that were included in the analysis, few stated how VI representatives were permitted to participate in their organization's research activities, making it difficult to clarify the consensus of non-participation from incentive to declare allowances. However, excluded survey respondents were comparable to included respondents on HO type.

CONCLUSION

HOs' VI participation policies are generally lacking and ambiguous. Given this lack, we need to continue to identify policy materials, delineate participation allowances and minimize organizational non-response. However, from our findings, we encourage health research stakeholders to consider three recommendations: (i) implement a VI participation policy, or amend existing TI participation policy to explicitly include the VI; (ii) ensure that participation policies explicitly state VI participation constraints in line with the policy areas identified by this research; (iii) where possible, ensure that participation policies align with objectives of Article 5.3 and (iv) ensure that organization staff and members at all levels are aware of the participation policy, how to access it, and its importance for sound scientific conduct within the organization. Enacting these recommendations in a timely manner will help HOs protect the emerging evidence base around vaping harms, and support translation of evidence into public health policy and vaping regulation.

SUPPLEMENTARY MATERIAL

Supplementary material is available at *Health Promotion International* online.

AUTHOR CONTRIBUTIONS

Conceptualization: Isabelle Haklar, Joshua Trigg, Jacqueline Bowden; Literature searches and data extraction: Isabelle Haklar; Formal analysis: Isabelle Haklar, Joshua Trigg; Writing—Original draft: Isabelle Haklar; Writing—Review & editing: Isabelle Haklar, Joshua Trigg, Jacqueline Stephens, Jacqueline Bowden; Supervision: Joshua Trigg, Jacqueline Stephens. All authors reviewed the manuscript and confirmed the approval of the submitted manuscript.

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CONFLICT OF INTEREST STATEMENT

None declared.

DATA AVAILABILITY STATEMENT

All data relevant to the study are included in this article or as supplementary material.

INSTITUTIONAL ETHICAL APPROVAL

This study was approved by the Flinders University Human Research Ethics Committee [Approval#: 5507]. Participants gave informed consent to participate in this research.

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