

# BMJ Open The messages presented in online electronic cigarette promotions and discussions: a scoping review protocol

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**To cite:** McCausland K, Maycock B, Jancey J. The messages presented in online electronic cigarette promotions and discussions: a scoping review protocol. *BMJ Open* 2017;7:e018633. doi:10.1136/bmjopen-2017-018633

► Prepublication history and additional material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2017-018633>)

Received 11 July 2017  
Revised 13 September 2017  
Accepted 6 October 2017



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## ABSTRACT

**Introduction** Electronic cigarettes have become increasingly popular over the last 10 years. These devices represent a new paradigm for tobacco control offering smokers an opportunity to inhale nicotine without inhaling tobacco smoke. To date there are no definite conclusions regarding the safety and long-term health effects of electronic cigarettes; however, there is evidence that they are being marketed online as a healthier alternative to traditional cigarettes. This scoping review aims to identify and describe the breadth of messages (eg, health, smoking-cessation and price related claims) presented in online electronic cigarette promotions and discussions.

**Methods and analysis** A scoping review will be undertaken adhering to the methodology outlined in The Joanna Briggs Institute Manual for Scoping Reviews. Six key electronic databases will be searched to identify eligible studies. Studies must be published in English between 2007 and 2017, examine and/or analyse content captured from online electronic cigarette promotions or discussions and report results for electronic cigarettes separately to other forms of tobacco delivery. Studies will be screened initially by title and abstract, followed by full-text review. Results of the search strategy will be reported in a PRISMA flow diagram and presented in tabular form with accompanying narrative summary.

**Ethics and dissemination** The methodology consists of reviewing and collecting data from publicly available studies, and therefore does not require ethics approval. Results will be published in a peer reviewed journal and be presented at national/international conferences. Additionally, findings will be disseminated via social media and online platforms. Advocacy will be key to informing policy makers of regulatory and health issues that need to be addressed.

**Registration details** The review was registered prospectively with The Joanna Briggs Institute Systematic Reviews database.

## INTRODUCTION

The proliferation of alternate nicotine delivery devices represents a new paradigm for tobacco control, providing smokers with a novel way to inhale nicotine without inhaling tobacco smoke.<sup>1 2</sup> The increase in nicotine delivery devices, predominantly electronic cigarettes, suggests that these devices may be perceived as a healthier alternative

## Strengths and limitations of this study

- This is a nascent area of research in which the scoping review methodology supports the generation of evidence to increase understanding of how the online space is being used to promote and discuss electronic cigarettes.
- The review will adhere to the methodology outlined in the Manual for Scoping Reviews by The Joanna Briggs Institute.
- The review will not assess the quality of the evidence identified from the literature, rather provide an overview of the existing evidence, regardless of quality.
- The heterogeneity of content areas covered by this methodology may provide challenges in synthesising the results into succinct conclusions or recommendations.

to traditional cigarettes.<sup>3-5</sup> However, there remains numerous questions in relation to the public health benefits of these devices. Questions posed are in regard to their facilitation of smoking uptake among youth<sup>6 7</sup>; their effectiveness as a smoking cessation intervention, with dual use of cigarettes and electronic cigarettes potentially maintaining cigarette addiction<sup>6 8-10</sup>; the possible harms from device malfunctions<sup>11 12</sup> and the potential health risks associated with their use.<sup>13</sup> These questions emphasise the need for research to inform electronic cigarette and emergent nicotine delivery device policy and regulations.

Electronic cigarettes (also commonly known as e-cigarettes) are battery-powered devices that heat a solution, known as juice or e-liquid, typically containing nicotine, which generates a vapour for inhalation.<sup>14</sup> E-liquid is available in a range of flavours including butterscotch, cherry choc and vanilla<sup>15</sup> which appeal to many youth.<sup>16 17</sup> Studies have found wide variability in the level of nicotine delivered by these products,<sup>18-20</sup> device quality (airflow rate, aerosol production, leaking e-liquid cartridges) and labelling,<sup>19 21</sup> and

have connected electronic cigarette use with nicotine addiction, respiratory damage, aortic stiffness and intake of carcinogenic heavy metals.<sup>22–26</sup>

The International Tobacco Control Policy Evaluation Project is the first international cohort study of tobacco use.<sup>27</sup> The project's objective is to measure the psychosocial and behavioural impact of key national level policies of the WHO Framework Convention on Tobacco Control.<sup>28</sup> It is a collaborative effort with international health organisations and policy-makers in more than 25 countries thus far.<sup>29</sup> Data from the project have confirmed, as well as extended the understanding of the level of awareness and use of electronic cigarettes in high-income countries.<sup>30</sup> The data are consistent with results from the HealthStyles<sup>31</sup> and ConsumerStyles<sup>32</sup> surveys conducted in the USA providing further evidence of increasing levels of electronic cigarette awareness and use over the last decade. Australian data from the International Tobacco Control Project have shown that awareness of electronic cigarettes increased from 20% in 2010 to 66% in 2013, and self-reported use from 1% in 2010 to 7% in 2013,<sup>33</sup> even though the sale, purchase and marketing of electronic cigarettes were (and continues to be) prohibited.<sup>34</sup>

Regulation of electronic cigarettes differs among countries, ranging from no regulation, licensing as medicines, to complete prohibition.<sup>35</sup> For example, as of 2016 across the European Union, electronic cigarettes could not be advertised or promoted directly or indirectly, including via internet and commercial e-mail.<sup>36</sup> Similarly, the US Food and Drug Administration recently extended its regulatory power to include electronic cigarettes, meaning they intend to regulate the marketing, labelling and manufacturing of these devices.<sup>37 38</sup> Despite this, evidence suggests online marketing of electronic cigarettes continues.<sup>39 40</sup>

There is increasing evidence of substantial financial investment by tobacco and other industry groups using websites, social media and other non-traditional marketing methods to increase the electronic cigarette market.<sup>7 41 42</sup> In the USA and Canada alone, over \$2 million is spent annually on online electronic cigarette advertising.<sup>43</sup> The online social networking service, Twitter, with 328 million active monthly users<sup>44</sup> is regularly used as a promotional tool by electronic cigarette manufacturers and retail outlets. For example, electronic cigarette tweets were found to increase 10-fold during 2009–2010, of which 93% were classified as advertising.<sup>45</sup> The rise of new media has enabled the tobacco industry to penetrate channels such as Twitter and YouTube with information offsetting tobacco control denormalisation strategies,<sup>46 47</sup> of which the electronic cigarette industry is now capitalising on.<sup>48</sup>

Electronic cigarette companies are employing techniques previously used by the tobacco industry to influence young people's decision to use cigarettes.<sup>49</sup> These include the addition of sweet flavourings to e-liquid and promoting products using youth-resonant themes, such as sex appeal, rebellion, social status and celebrity testimonials.<sup>50 51</sup> In addition, electronic cigarettes

are being advertised as a harm reduction alternative<sup>7 41</sup> and promoted in a way to create a vaping culture that appeals to youth (even non-smokers),<sup>52 53</sup> potentially supporting the creation of a whole new generation of nicotine addicted young people, normalising vaping and renormalising smoking in public places and serving as a gateway to tobacco use.<sup>54–56</sup>

The development of positive perceptions of electronic cigarettes by consumers contributes to their decision to use these devices, and are often motivated and supported by tobacco industry marketing.<sup>57</sup> Cyberspace continues to be a prominent media used to promote and market electronic cigarettes and their associated products.<sup>58</sup> Electronic cigarette retail websites and social media accounts present an assortment of explicit and implicit marketing claims, most commonly with regard to claims of health benefits, being less harmful than tobacco, and being able to assist in quitting smoking.<sup>43 50 59 60</sup> Assertions that electronic cigarettes are a safe and healthy alternative to traditional tobacco cigarettes may undermine tobacco control efforts while the increased visibility of youth appealing images may provoke tobacco or electronic cigarette uptake.<sup>50</sup> It is therefore imperative to understand the marketing strategies consumers are exposed to.

Very little is known about this emerging product, and there is a need for systematic research to understand the marketing drivers for the uptake of electronic cigarettes and how they are promoted and accessed online. Only through this understanding can appropriate policies and regulations be developed. This manuscript outlines a proposed methodology for a scoping review which aims to identify and describe the breadth of messages (eg, health, smoking-cessation and price related claims) presented in online electronic cigarette promotions and discussions.

## METHODS AND ANALYSIS

### Study design

A scoping review will be undertaken to identify and describe the breadth of messages presented in online electronic cigarette promotions and discussions. Scoping reviews use a systematic process to map key concepts and types of evidence in an area of research and identify gaps in an existing body of knowledge.<sup>61–63</sup> Scoping reviews tend to differ from systematic reviews in a number of ways and typically do not assess the quality of the studies included.<sup>61 63</sup> This scoping review will adhere to the methodologically rigorous methods manual by The Joanna Briggs Institute (JBI).<sup>64</sup> The scoping review frameworks proposed by Arksey and O'Malley,<sup>61</sup> and Levac, Colquhoun and O'Brien<sup>63</sup> have been drawn on in the development of the JBI methodology for scoping reviews. The JBI scoping review methodology consists of five parts: (1) Title, objective and question; (2) Inclusion criteria; (3) Search strategy; (4) Extraction of the results and (5) Presentation of the results.

A preliminary search of the literature was conducted in the following databases: JBI Database of Scoping

Reviews and Implementation Reports, Cochrane Database of Systematic Reviews, PROSPERO International Prospective Register of Systematic Reviews, Database of Promoting Health Effectiveness Reviews (DoPHER) and Epistemonikos which confirmed that no systematic or scoping review has been published or is currently underway on this topic. The review was prospectively registered with the JBI Systematic Reviews database (5 May 2017). It is anticipated that the scoping review will commence by September 2017 with data extraction completed by November. We aim to submit the findings of the review in the form of a manuscript for peer review by the end of January 2018.

### Title, objective and question

**Review title:** *The messages presented in online electronic cigarette promotions and discussions: A scoping review protocol.* The title was guided by the 'PCC' mnemonic (Population, Concept and Context).<sup>64</sup> Using the PCC mnemonic enables the title to reflect key information about the focus and scope of the review to impending readers.

**Review objective:** *This scoping review will identify and describe the breadth of messages presented in online electronic cigarette promotions and discussions.* The review objective is congruent with the title and specifies what the review aims to achieve.

**Review question:** *What messages are presented in online electronic cigarette promotions and discussions?* The review objective includes the PCC elements and guides and directs the development of the inclusion criteria for the scoping review.

### Inclusion criteria

This scoping review will include studies that have examined and analysed content captured from online electronic cigarette promotions and discussions (eg, social media: YouTube, Facebook, Instagram, Twitter; and websites: retail sites, discussion forums, blogs). The media reported in the study must be clearly identified (eg, analysis of tweets from Twitter). Studies reporting multiple media will be excluded (eg, analysis of tweets and posts from Twitter and Facebook, respectively) unless the results for each media are reported separately. Other tobacco product studies (eg, traditional tobacco cigarette, snus, chewing tobacco or hookah) will be excluded unless electronic cigarettes are also examined in the study and reported separately. In addition, studies that do not distinguish between electronic cigarettes and other forms of tobacco delivery will be excluded. Studies examining promotions or discussions in traditional media (eg, TV, newspaper and magazine) will be excluded unless online media is also examined in the study and reported separately. Studies will be limited to the following countries: UK, USA, New Zealand, Australia and Canada. These countries have been selected as they are all developed countries and electronic cigarette use is well established.<sup>29</sup> The review will consider only peer reviewed primary research studies. Systematic

and literature reviews, grey literature, editorials and thesis publications will be excluded.

### Search strategy

The search strategy aims to identify peer reviewed primary research studies. Consultation with the Faculty Librarian identified five key databases: Medline, Scopus, ProQuest, Informit and Google Scholar. The research question crosses subject areas, hence the Medline, Scopus, Informit and ProQuest databases were identified due to their multidisciplinary nature and broad scope. Google Scholar will provide a sound overview of what published material exists on the topic. A hand search of the Journal of Medical Internet Research will also be conducted to ensure no studies meeting the inclusion criteria are missed. Preliminary searches have located numerous articles published in this journal that are relevant to the review question. The first 200 results from Google Scholar will be examined for eligibility and subject to the screening process outlined below.

An initial search of Medline was undertaken, followed by an analysis of the text words contained in the title, abstract and index terms used to describe the articles. This informed the development of the search strategy, including identified keywords and index terms. A comprehensive search using all the identified keywords and index terms will be undertaken across all databases. Lastly, the reference list of all articles subject to full text review will be screened for additional studies and assessed for suitability based on the studies title and abstract.

The search will be limited to studies published in English in the last 10 years (2007–2017), this period correlates with the approximate time that electronic cigarettes were first introduced to the USA and Europe.<sup>65</sup> The primary reviewer (KM) will contact authors of primary research studies if access to full text cannot be obtained. Studies reported as abstracts or for which full texts cannot be identified will be excluded from the review.

The initial search terms are: ('electronic cigarette' OR e-cigarette OR 'electronic nicotine delivery system' OR 'personal vapo?ri?er' OR 'electronic nicotine delivery device' OR 'vape pen' OR 'smokeless tobacco' OR 'electric cigarette' OR 'electric nicotine delivery system' OR 'electric nicotine delivery device' OR e-hookah OR e-juice OR e-liquid OR vaping) AND ('social media' OR internet OR online OR YouTube OR Facebook OR Instagram OR Twitter OR 'online media' OR website OR e-mail OR blog OR 'digital media' OR 'social networking') AND ('content analysis' OR 'content evaluation' OR message OR meaning OR coding OR 'media analysis' OR 'textual analysis'). A transcript of a draft search strategy conducted in Medline is provided in (see online supplementary appendix I).

Retrieved citations from each database will be imported into EndNote X7<sup>66</sup> reference management software, with duplicate citations removed before being imported into Covidence.<sup>67</sup> Covidence is a not-for-profit service working in partnership with Cochrane to improve the



production and use of systematic reviews for health and well-being. Covidence is a web-based software platform that streamlines the production of systematic reviews by supporting the key steps in the review process such as citation screening; full text review; risk of bias assessment; extraction of study characteristics and outcomes; and export of data and references.<sup>67</sup>

### Study selection

Studies will be assessed for inclusion based on the inclusion criteria, examined initially by title and abstract. Full text articles will be retrieved if they appear to meet the inclusion criteria or if further examination is required to determine eligibility. Two reviewers (KM and JJ) will independently screen all titles/abstracts to determine their eligibility. Full text screening will then be undertaken by the primary reviewer to further determine study eligibility for inclusion in the review. This process will be assisted by the online screening and data extraction tool—Covidence.<sup>67</sup> Any disagreements will be resolved through discussion with a third reviewer (BM).

### Extraction of the results

The relevant content from each study will be extracted using a data extraction proforma (see online supplementary appendix II). Data extracted will include: Author(s), year of publication, origin/country of study, aim/purpose of study, media reported, sample size, study design/methods, results and key findings that relate to the review question. There will be no attempt to contact authors of primary research studies for which extraction information is not reported. Primary outcome data will include the type of media being reported (eg, Twitter or retail website), and the sentiment (positive, negative and neutral) and theme (eg, cessation, flavour, discount) of the messages presented. Reporting on these outcomes will satisfy the aim of this scoping review. Secondary outcome data that will be extracted if reported on is author category (eg, vaping enthusiast or tobacco company).

To ensure inter-rater reliability, two reviewers (KM and JJ) independent of one another will chart the first five studies using the data extraction proforma and meet to determine whether their approach to data extraction is consistent with the research question and purpose. In addition, this process will be used to refine and/or expand the data extraction proforma to ensure all relevant results are being extracted. Any change made to the data extraction proforma will be reported in the results publication. The primary reviewer will then extract data from the remaining studies unaccompanied.

### Presentation of the results

The results of the search strategy will be presented in a PRISMA flow diagram indicating the number of articles found via each search method, the number of duplicates removed and the number of studies excluded and included. A list of studies excluded after full text screening will be made available along with the main reason for exclusion.

To illustrate and summarise the main findings, results will be presented in tabular form (as per data extraction proforma), with an accompanying narrative summary describing how the results relate to the review objective and question.

### Ethics and dissemination

The scoping review methodology consists of reviewing and collecting data from publicly available peer reviewed articles, therefore this study does not require ethics approval.

The results of the scoping review will be published in a peer reviewed journal and presented at national/international conferences and symposia. Additionally, findings will be distributed via academic, research and community publication, and news and social media platforms, such as The Conversation, Research Gate and Twitter, in order to increase circulation. Advocacy, such as discussions with, and presentations to professional associations will be key to informing policy makers of regulatory and health issues that need to be addressed. The expertise of the research team (health promotion, public health, knowledge translation) will support broad dissemination of the findings.

## IMPLICATIONS

Findings from this scoping review will increase understanding of the types of electronic cigarette promotion and discussions occurring online. This may provide evidence that will inform the need for advertising restrictions, as well as stimulate further research to understand and combat the proliferation of this online advertising. Additionally, the findings will inform various components of a research project investigating electronic cigarette discussion among Australian Twitter users. This study will access public Australian Twitter data through Tracking Infrastructure for Social Media Analysis (TrISMA),<sup>68</sup> a powerful new framework for tracking, storing, and processing social media communication activities of Australian users. The study aims to compare electronic cigarette Twitter discussion in 2012, 2014 and 2016 using a triaxial classification scheme to capture tweet sentiment, theme and author category.

**Contributors** KM, JJ and BM conceptualised the research. KM drafted the protocol. JJ and BM aided in developing the research question and study methods, contributed meaningfully to editing and approved the final manuscript.

**Funding** This work was supported by an Australian Government Research Training Program Scholarship. The Scholarship is provided by the Commonwealth of Australia to support general living costs for students undertaking Research Doctorate studies.

**Disclaimer** The funder is not involved in any aspect of the project and will have no input in the interpretation or publication of the study results.

**Competing interests** None declared.

**Provenance and peer review** Not commissioned; externally peer reviewed.

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