Original paper
Is it safe to vape whilst breastfeeding? Postpartum women’s opinions on e-cigarettes, using online forum discussions: a qualitative analysis.

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Abstract

Background

E-cigarettes are an increasingly popular alternative to smoking helping to prevent relapse in those trying to quit, and with potential for harm reduction as they are likely to be safer than smoking. Many women relapse to smoking in the postpartum period having stopped smoking during pregnancy, and this can affect their decisions about breastfeeding, but little is known about women’s opinions on using e-cigarettes during this period.

Objectives

To explore online forum users’ current attitudes, motivators, and barriers to using e-cigarettes postpartum, particularly as a breastfeeding mother.

Methods

Data were collected via publically accessible (identified by Google search) online forum discussions, and a priori codes identified. All transcripts were entered into NVivo for analysis, a template approach to thematic analysis was used to code all transcripts from which themes were derived.

Results

Four themes were identified: Use, Perceived risk, Social Support and Evidence, and a number of subthemes were identified within these broader themes. Women were using e-cigarettes to prevent postpartum relapse to smoking, however opinions on the safety of e-cigarettes was conflicting. Women were concerned about possible transfer of harmful products from e-cigarettes via breastmilk and second hand exposure. Women were actively seeking and sharing information on e-cigarettes from a variety of sources, and although some women were supportive of e-cigarette use, there were many instances of harsh judgement for mothers who use them.

Conclusions

E-cigarettes have potential to reduce relapse to smoking in the postpartum period, and potentially improve breastfeeding rates, if breastfeeding mothers have access to relevant and reliable information. Health care providers should consider discussing e-cigarettes with mothers at risk of relapse to smoking in the postpartum period.

Key words: e-cigarette, online forums, postpartum relapse, smoking, breastfeeding
Introduction
Maternal smoking and low breastfeeding rates are both major public health concerns relating to the post-partum period, with health implications for both the mother and her child [1-8]. Whilst most mothers quit smoking during pregnancy a substantial proportion will return to smoking by six months postpartum [9], and the latest UK statistics show that despite 81% of mothers initiating breastfeeding at birth, by six months only 1% of UK infants are still breastfed [10].

Studies have consistently reported associations between smoking behaviour (abstinence) and breastfeeding patterns [11-15]; the intention to breastfeed acts as a precipitating factor for reducing postpartum relapse, and the initiation and continuation of breastfeeding is positively associated with smoking abstinence postpartum [16,17]. The intention to return to smoking is one of the strongest predictors of the intention not to breastfeed, and the early cessation (<3 months postpartum) of breastfeeding [13,18]. These associations may be partly explained by confounders including sociodemographic factors [19],[20], but they may be attributable to concerns regarding safety of smoking whilst breastfeeding. This is despite the American Paediatrics Association (APA) [21,22] and the online National Health Service (NHS) information [23] which promotes the continuation of breastfeeding even if the mother smokes.

A relatively new product that may be useful for preventing relapse to smoking, and/or supporting cessation are e-cigarettes (e-cigs) [24]. E-cigs are handheld devices that produce an aerosolized mixture from a solution typically containing concentrated nicotine, flavouring chemicals, and propylene glycol [25]. The user draws a deep breath and inhales the vaporised liquid, known as ‘vaping’, creating a similar experience to smoking combustible tobacco [26]. It is now well recognised that e-cigs are safer than smoking traditional cigarettes and the use of e-cigs is proposed as a harm reduction tool for smokers [27,28].

Very little research thus far has examined the use of e-cigs amongst postpartum women; the research available has focused on the use of e-cigs in pregnancy. Therefore we aimed to explore online forum user’s current attitudes, motivators, and barriers to using e-cigs as a breastfeeding mother, through the analysis of data extracted from online parenting forums.

Methods
Qualitative analysis of discussions on online parenting forums has been previously used to explore a range of context-specific behaviours, attitudes and beliefs [29, 30]; including the use of e-cigarettes (e-cigs) during pregnancy [31]. Online support groups provide specific benefits of virtual group membership compared to
physical group membership. They are accessible 24-hours a day, 7-days a week, are free to join and participate in, lack geographical barriers and offer anonymity [32-36]. The use of online support groups, or ‘forums’, can have potentially empowering effects on those who use them providing health information, information sharing and input for individuals to make health-based decisions [32]. Online forum use can offer a safe place to discuss sensitive topics, or topics in which a person feels they may be judged [37] and has been used for discussions regarding smoking [38]. The use of parenting forums is a valuable source of data on what women think about health related risks and decision making [39-42].

Inclusion criteria: Due to varying guidelines between countries on e-cig use, only UK based forums were used. The UK already have guidance recommending the use of e-cigarettes rather than traditional cigarettes during pregnancy, hence UK forums were used in this research [28]. The eligibility for inclusion of a thread (a continuous discussion on a forum) in the final analysis were:

- It was posted to a forum which is open to public use, without the need to sign up/log in to read posts
- It was posted to parenting forums not affiliated with vaping or tobacco companies
- It contained a minimum of four unique contributors to the discussion
- Discussions that included the mention of e-cigarette use/vaping and breastfeeding

Search strategy: The key words for e-cigs (table 1) were combined using operator “AND” with key words for breastfeeding, and searched using the search operator – a Google-based command to filter results - “site:sampleforum.co.uk” via Google search engine.

<table>
<thead>
<tr>
<th>Key words (electronic cigarette)</th>
<th>Key words (Breastfeeding)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Cigt(s)</td>
<td>Breastfeeding</td>
</tr>
<tr>
<td>E-cigt(s)</td>
<td>BF (ing)</td>
</tr>
<tr>
<td>Electronic cigarette (s)</td>
<td>Nurse/Nursing</td>
</tr>
<tr>
<td>Vaping</td>
<td>Breastmilk</td>
</tr>
<tr>
<td>Vape (s)</td>
<td>Feeding</td>
</tr>
</tbody>
</table>

The use of search operators was the most effective and thorough way to ensure relevant discussions were obtained, whilst ignoring forums owned by specific groups who may have competing interests, such as e-cig manufactures or tobacco companies. These sites were identified by screening of the URL name and home page.

A total of 597 google results were returned using the above search terms, searches were then adapted to exclude ‘pregnancy’ and ‘TTC (trying to conceive)’ in line with the aims of the research. The threads used in analysis were then transcribed for NVivo11.
In the analysis, abbreviations within quotes were expanded in squared brackets, and data source is identified by T (thread), and the numbered data set.

**Ethical considerations and data collection**

Informed individual consent was not obtained as the data were publically posted on a large forum [43-46]. The British Psychological Society (BPS) [47] recognize that informed consent might not be achievable in this context, however certain steps can be taken to protect the participants. Therefore, only data from publically accessible forums, where users are made aware during the initial sign up process that all posts are open to public access, were used [48]. Furthermore, as comments on large public forums are less identifiable than those on smaller, private online communities [49], data was only obtained from large forums (for the purposes of this research, a large forum was defined as forums with over 1,000 members). All contributing users were randomly assigned a new name to protect their identity, names of people, places and institutions were removed from quotes and quotations were corrected for spelling and kept brief to reduce the possibility of them being traced back to the original poster.

Ethical approval was obtained from University of Nottingham Medical School Research Ethics Committee.

**Analysis**

Template analysis (a template approach to thematic analysis) was used to analyse the data, following the guidelines outlined by King [50, 51]; the use of a priori codes permits the analysis of the textual data that had been produced for ‘a different purpose in a different context’ [51]. When analysing large online support group datasets, template analysis is useful for comparing the perspectives of different contributors. In the current study, the initial template of a priori codes was used to code each transcript, with codes being continually modified or expanded. After the last transcript was coded, a final version of the template was used to re-code all transcripts (Appendix 1: Final Coding Template). A mind map was also created to show integrative relationships and prevalence (Appendix 2: Integrative themes - mapping).

**Results**

Of the eight parenting forums identified, two met the inclusion criteria.

Following the search method outlined, a total of 95 google results (discussion threads) were screened for inclusion – 39 were duplicate results and 46 did not meet the inclusion criteria, leaving a total of 10 results to be analysed (table 2). Four main themes were identified within the transcripts: use, perceived risk, social support, and evidence.
Table 2 – Threads selected for analysis

<table>
<thead>
<tr>
<th>Thread number</th>
<th>Opening post title</th>
<th>Website</th>
<th>Sub-group heading</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Vaping whilst Breastfeeding?</td>
<td>Babycentre</td>
<td>Vapers Lounge</td>
<td>13</td>
</tr>
<tr>
<td>T2</td>
<td>Ecigarette and breastfeeding :(</td>
<td>Babycentre</td>
<td>June 2016 Birth Club</td>
<td>6</td>
</tr>
<tr>
<td>T3</td>
<td>Smoking while breastfeeding?</td>
<td>Babycentre</td>
<td>September 2015 Birth Club</td>
<td>19</td>
</tr>
<tr>
<td>T4</td>
<td>Does anyone vape?</td>
<td>Babycentre</td>
<td>October 2015 Birth Club</td>
<td>10</td>
</tr>
<tr>
<td>T5</td>
<td>Today I am..</td>
<td>Babycentre</td>
<td>February 2015 Birth Club</td>
<td>48</td>
</tr>
<tr>
<td>T6</td>
<td>(AIBU?) To smoke an electronic cigarette whilst breastfeeding?</td>
<td>Mumsnet</td>
<td>Am I Being Unreasonable? (AIBU)</td>
<td>23</td>
</tr>
<tr>
<td>T7</td>
<td>(AIBU) To use the vape? For friend?</td>
<td>Mumsnet</td>
<td>Am I Being Unreasonable? (AIBU)</td>
<td>6</td>
</tr>
<tr>
<td>T8</td>
<td>(AIBU) To use electronic cigarettes even though I’m BF?</td>
<td>Mumsnet</td>
<td>Am I Being Unreasonable? (AIBU)</td>
<td>55</td>
</tr>
<tr>
<td>T9</td>
<td>(AIBU) To ask DH to stop vaping?</td>
<td>Mumsnet</td>
<td>Am I Being Unreasonable? (AIBU)</td>
<td>129</td>
</tr>
<tr>
<td>T10</td>
<td>(AIBU) To not give up smoking just yet?</td>
<td>Mumsnet</td>
<td>Am I Being Unreasonable? (AIBU)</td>
<td>39</td>
</tr>
</tbody>
</table>

Use (preventing relapse, quitting smoking & motivation for use):

Women were using e-cigs postpartum in a variety of ways. Some reported using them to prevent relapse, describing cravings that returned postpartum, normally associated with specific triggers such as the demands of motherhood, mental health issues or relationship problems. Motivations for use were a separate subtheme, as motivations applied to those who had relapsed to smoking postpartum as well as those who had not relapsed (thus far), with women identifying this as a better alternative to smoking. Despite many women reporting going “cold turkey” throughout pregnancy, cravings were still experienced post birth which some women found could be alleviated by e-cig use:

‘Before pregnancy I used to smoke roll ups but quit when I found out I was pregnant! But after giving birth I started craving badly so decided that rather than smoking again I would try e-cig.’ Cressida, T2

Some women had used an e-cig to quit during pregnancy and continued use of an e-cig postpartum prevented them from returning to smoking. Others, however, did not manage to achieve abstinence during pregnancy or had already relapsed to smoking postpartum, whilst some had planned to return to smoking postpartum as they
enjoyed smoking. The following quote highlights the experience of one woman who had already identified that she enjoyed smoking and didn’t want to lose that experience, but found an e-cig to be a suitable alternative:

‘I didn’t want to quit, I liked smoking. Bought an e-cig and did 24hrs on it and thought well I can’t go back to smoking now. That was 9 months ago and I haven’t smoked at all’ Sakina, T10

As identified above, women were able to identify what motivated them to seek out an alternative method of nicotine delivery. These were mainly related to the context specific issues attributed to new motherhood, such as lack of sleep, stress, loss of identity and relationship difficulties, as discussed below:

‘She is going through a massively stressful time right now and struggling to cope. She borrowed her mum’s vape and loved it, felt totally better and less stressed straight away.’ Leah, T5

Perceived risk and strategies to mitigate risk (behavioural strategies, psychological strategies, physiological effects & environmental risks)

Although women were using e-cigs postpartum, they still had concerns regarding risk, with the perceived risks of vaping often compared to the risks of smoking:

‘They are not unregulated, we know what’s in them and they are at least 95% safer than tobacco.’ Talitha, T6

Sometimes these were compared favourably and used to make assumptions on e-cig safety, such as the guidance on smoking and breastfeeding being used to argue the safety of vaping and breastfeeding:

‘They say it’s better for a smoker to smoke and breastfeed than not to breastfeed at all, so I should think the same applies to e-cigs.’ Delilah, T4

However, there were also unfavourable comparisons, such as the health detriments of smoking being projected to vaping:

‘I’m not an anxious or risk averse person, really. It’s just the link between smoking and SIDS is so strong. What if you do continue to breathe out something for hours after vaping? If in twenty years they turn round and say vaping and co-sleeping causes x, and our baby had x?’ Acacia, T7

Many of these comparisons were related to the nicotine content, for example the following forum user was advised it was OK for her husband to vape as he is not breastfeeding:

‘The most harmful thing in e cigarettes is the nicotine. Unless your DH [dear husband] plans on doing the breastfeeding, it isn’t going to harm your baby.’ Daffodil, T7
There were also perceived risks associated with the physiological effect of vaping on breastmilk, with discussions on what was likely to transfer to the infant via breastmilk if the mother vapes. There were comments about ‘unknown’ substances that may be harmful if transferred to an infant, however the most commonly discussed concerns were about nicotine, and the perceived health risks associated with passing nicotine to the baby. However, there were comments about ‘unknown’ substances that may be harmful if transferred to an infant. This concern was often mixed with judgement, the emphasis being that a good mother would not smoke or vape, for example:

‘You’re basically asking, “AIBU [Am I Being Unreasonable] to feed my baby small amounts of nicotine”? What do you think OP [opening poster]?’ Tirzah, T6

Mothers were also informed their infant would develop an addiction to nicotine, in that the infant would ‘feel like they want a fag’ and would suffer ‘withdrawal’ from nicotine when breastfeeding ceased.

The concept of risk came with a variety of strategies to manage perceived risks. Behavioural strategies involved altering behaviours to reduce exposure to vapour for infants; these included only vaping outdoors or in a separate room, choosing low nicotine juice, or timing vaping around the infant’s feeds to allow the maximum time to pass between vaping and the infant receiving inhaled components via breastmilk.

Psychological strategies were also used; this involved justifying any perceived risk in a way that presented their choice to vape in a more favourable light, such as explaining that without vaping they would be stressed – which was worse for their baby. They also justified the perceived risks of vaping by comparing it to more accepted health behaviours, such as drinking coffee, as illustrated in the following quote:

‘Nicotine is in the same drug classification as caffeine so its only as bad as anyone that drinks coffee and breastfeeds.’ Helena, T2

As well as specific risks to infants via the breast milk, there were wider concerns for risks from the environmental exposure to vapour. This was mainly founded on the basis of the harm from passive smoking; women were concerned about the exposure to second hand vapour based on the known harm from second hand smoke.

**Social support (informational, emotional & instrumental)**

Whilst discussing risk on the forums, women were also seeking and giving support to one another about vaping. Social support was varied in nature. In many ways the forum users offered positive social support to women.
who were vaping or considering an e-cig. There was informational support such as giving advice on which products to use or how best to use an e-cig. Informational support was often guided by the woman’s own experience of vaping, and included positive messages to support women, especially those, who were trying to quit smoking.

Emotional support came from supportive comments about posters’ own, and others, experiences of quitting smoking and the health benefits they experienced, or by reassuring a vaper that she would not be judged for vaping; the following forum user discussed her partner’s experience of vaping and how she viewed it positively:

‘I would much rather see him vape than smoke and he no longer wheezes when lying down, he is much fitter and it’s the first time he has gone longer than a week without smoking.. I think he is coming onto three years now.’ Bryony, T7

However, not all posts were positive and supportive – there were instances of harsh judgement of vaping mothers, or indeed a mother’s harsh judgement of herself. There were accusations of not putting their infant’s needs before their own and the insinuation that by vaping they were somehow encouraging their child to learn unhealthy coping techniques:

‘Why would anyone condone it? Very strange. She is teaching her son an unhealthy way of coping with normal life stress.’ Tabitha, T6

The varying forms of support often led to a polarised divide amongst forum users with strong views amongst both those pro-vaping and anti-vaping.

Instrumental support was also identified, which included directing women to the best places to buy products or other forums to use for more information. This was also evident from those opposed to smoking who would direct women to alternative products/behaviours to remain smoke free – including traditional NRT use, self-help materials or indeed more comical ways of both parents remaining smoke free:

‘Reward him with... I dunno. Doughnuts or something. I’d suggest BJs [oral sex] but then I remember how pregnant you are.’ Xanthe, T7

Evidence (professional, non-professional, anecdotal, lack of evidence & mistrust/uncertainty)
This theme showed that women accessed a wide variety of sources of information to inform their arguments and opinions, and then interpreted and communicating their understanding of this evidence on forums (sometimes inaccurately).

Professional evidence came from academic articles or via professional websites such as the National Health Service (NHS) and Public Health England (PHE). This was often misinterpreted, particularly from those who were opposed to vaping. One example was an article available on the NHS website about ‘popcorn lung’, this was cited several times across transcripts, incorrectly, as evidence of e-cigs being harmful. A further example is the following poster, who hyper-linked a paper by Farsalinos & Polosa (2014):

‘If you want decent info on the risks and benefits of vaping this is a good place to start. You can access the whole paper for free if you create an account’ Jael, T4

The most frequently quoted evidence was from non-professional sources; this included media articles such as blog posts and newspaper articles, but also linked to social media profiles and discussions. There were also examples of non-empirical sites, such as Wikipedia, being cited as sources of evidence against vaping – this was met with ridicule by some pro-vape forum users. The non-professional evidence was mostly quoted by those opposed to vaping, whereas professional evidence was equally shared by those pro and anti-vaping.

Anecdotal evidence was also shared by both pro and anti-vapers, and appeared to be the most substantial form of evidence accepted by women – the women were often more responsive to the experiences and stories from other forum users than they were to other forms of evidence available, and these forms of evidence often appeared to be more persuasive:

‘Anecdotally I can tell you that when my ExH [Ex-husband] vaped, our cats fled from the vapour and I hated the idea of him vaping inside near the cats. I’d be even more concerned about a baby.’ Grace, T4

‘I do, I feel so much better too, no coughs or colds. I am positive that e cigs are much much less dangerous than cigarettes and think maybe you’re being a bit over anxious.’ Jonquil, T7

As well as sharing, quoting and interpreting evidence, there was also a general discussion on the lack of evidence available about the safety of e-cigs. This was most often attributed to a lack of empirical evidence of the long term effects of vaping. Women were anxious to read information that related specifically to their situation, and talked about lack of evidence on vaping and breastfeeding, or vaping around young children.
This lack of evidence specific to new mothers was also displayed in the final subtheme of mistrust and uncertainty. In the following quote a forum user highlights the use of thalidomide in pregnancy, and how this was perceived as safe:

‘95% safer, Not 100% safe then? Not that long ago the NHS also said Thalidomide was safe. Look how that ended.’ Camelia, T7

This is evidence of women looking for evidence that relates to their specific circumstances – the comparison of a professional recommendation that resulted in infant harm. But it wasn’t just mistrust at the science itself, but also the institutions that make the recommendations:

‘And PHE [Public Health England] have been criticised for their supportive stance on e-cigs. They are very keen to get tobacco smoking down so I can see why they would be supportive.’ Joy, T6

Discussion and conclusions
This research is the first to describe how women are accessing information about e-cig use during the postpartum period, and the first to provide evidence of women proactively using e-cigs to prevent relapse to cigarette smoking and aid smoking cessation, particularly as breastfeeding mothers. Women have concerns regarding potential risks of using an e-cig and utilise online forums to discuss these risks with other women. This type of forum provides both positive and negative social support.

The themes show that women are accessing information on e-cig safety and their use via multiple sources – both lay and professional, however this information is not necessarily being interpreted correctly, or is met with a degree of mistrust and uncertainty. There are conflicting opinions on the use of e-cigs whilst breastfeeding; mainly due to health concerns regarding what may be transferred from e-cig to the breastmilk, and then to the infant, as well as concerns about harm from second hand vapour exposure.

There are limitations as to the use of online forum data; the very nature of this research forgoes the possibility of following up individual users or seeking clarification on the meaning of their words which increases the risk of bias during coding. It is also impossible to establish the validity of posts – i.e. to be completely confident that a user who identifies as a breastfeeding mother is in fact, a breastfeeding mother. The transferability of these themes to the general postpartum population is limited due to a) the exclusive participation of forum users and b) all transcripts coming from only two parenting forums. There is also no way to completely establish the authenticity of the users on the forum, or whether they have connections within the e-cig or tobacco industry. On
the other hand, the use of online data has several strengths; discussions are free from the response bias that may be present within interviews, forum data provides discourse that has been written with the intention of expressing and debating opinion for the purposes of discussion, not for the purposes of research. The use of forum data provides in-depth qualitative data; in other research, the use of a discussion analysis tool found that online interactions involving conflicting viewpoints promoted more discussion and critical thinking [52]. Our research is novel, in both subject matter and approach, and therefore should be treated as an exploratory qualitative piece for which further research can be built upon – thus far this is the only piece of work that considers the motivators, barriers and opinions of breastfeeding mothers using e-cigs postpartum.

This work has improved our understanding of how and why women use e-cigs in the postpartum. For the first time we are able to understand and explore what evidence women are accessing to inform themselves about e-cigs, and how this information is then interpreted. It also provides the first evidence of women perceiving their use of e-cigs postpartum to be preventative of smoking relapse. We are also able to better understand the concerns women have around the impact of e-cigs on infant health, in particular that a misattribution of nicotine as the most harmful substance transferred to infants via a smoking mother’s milk is sometimes an obstacle to the use of e-cigs postpartum.

Previous research has highlighted that some women perceive smoking to affect the quality of their breastmilk in a way which is detrimental to their infant’s health [15, 53], despite the previous decade of recommendations from professional health bodies encouraging women who do smoke, to continue breastfeeding [23]. This current research helps us better understand the fears women have in relation to e-cig use; most notably in relation to the perceived lack of consistent, evidence based information about e-cig safety and the effects of nicotine transferring through breastmilk. By addressing these concerns we could improve the acceptability of using a vape alternative for women who are breastfeeding and smoke, whilst minimising harm to the mother and infant and reducing her fears regarding her child’s exposure to vape constituents via breastmilk.

Prior work using forum data considered e-cig use during pregnancy [31], with three distinct themes explaining the ways in which forum users debated the use of e-cigs whilst pregnant: quitting (nicotine) cold turkey is unsafe, vaping is the lesser of two evils and vaping is not worth the risk, concluding that women perceive their addiction to cigarettes as more than just a nicotine addiction and that the behavioural aspects of smoking are also important, hence the potential for e-cigs. In these forum transcripts, women reported using e-cigs to either prevent relapse to smoking or to quit smoking after having already relapsed. Relapse (or perceived likelihood of
relapse) was often triggered by the demands of motherhood, perceived stress or the feeling of needing some ‘me’ time. It is interesting that some women are choosing an e-cig in response to what has previously been identified as reasons why women relapse to smoking traditional cigarettes – smoking for relief and nostalgia for their former self [54]. Although evidence is limited, it is suggestive that women who use e-cigs during pregnancy are still likely to relapse to cigarette smoking, with one qualitative study partly attributing this to a lack of professional consensus within healthcare on the safety of e-cigs [55]. Lack of consistent and transparent information from professional health sources is a significant barrier to e-cig use postpartum, an issue to be addressed given the success some women report using e-cigs to prevent smoking relapse.

In our study, women also displayed mixed views on e-cig safety. The majority of users accepted that e-cigs were ‘probably’ safer than cigarettes, however there was a lot of scepticism and mistrust of the evidence for this. Health bodies such as PHE and the NHS were classed as biased due to their targets of reducing cigarette smoking, and comparisons were made regarding previous health recommendations that have since transpired to be detrimental. Women are accessing scientific journals to learn more about e-cigs, however this is often mistranslated. News media stories are often shared amongst online groups if a headline is particularly provocative – even when these stories were discredited users felt that these fears must be based on something. Lack of evidence, or mistrust of the current evidence, appears to be a barrier for the use of e-cigs as a harm reduction tool during the postpartum period; this often gives rise to a thought process of ‘better the devil you know’. This scepticism is not confined to e-cigs, previous research identifies some women believe nicotine replacement therapy patches to be harmful, and smoking as preferable to these [56].

Uncertainty regarding e-cig safety often led to women discussing the concept of ‘risk’, either in terms of comparison to smoking, or in justifying the perceived risk. This individual assessment of risk is not unique to e-cig use, and is attributed to a ‘knowledge deficit’ between professionals and the lay public [57]. The risk assessment formed by lay people is complex and situationally influenced, and reflects their personal values [58], particularly relevant when considering the morality of motherhood and the negative attitudes some women hold towards vaping whilst breastfeeding. For example, the negative attitude to government backed advice on risk is assumed to be due to perceived exclusion from science-led and political decision-making [59]. With this in mind, involving women in discussions about e-cig use and safety within usual postnatal visits could help them make an informed choice on e-cig use.
This knowledge deficit could explain the reliance on unverified evidence from social media, news publications or web content found within this study – these are written to inform a general population, but are also written to be read with ease, and so this may be why women are engaging more with this type of evidence. There is also a reliance on others for information; while women are seeking support and advice from health care professionals, they are also seeking advice from other mothers. It is unsurprising that new mothers would seek information that is easy to access and easy to read, but also the use of online forums provides anonymity. Therefore, despite judgement from other mums, the ability to remain anonymous whilst receiving or giving information provides some form of protection of self [60], the mother can still have a perceived control over how those around her perceive her morally and ethically.

The concept of risk is a subjective one – whilst there was much discussion of risk, apart from discussions on nicotine, this risk was not defined. There were suggestions of harm drawn from media conclusions, but risk was often discussed as a general term. Other lifestyle behaviours such as alcohol and caffeine consumption were often used to justify this ‘risk’ concept – the idea that if these behaviours were acceptable for mothers, then vaping was also acceptable. The risk of nicotine exposure to the baby was one of the defined examples of risk. There were false attributions that nicotine caused SIDS, as well as concern of infants becoming addicted to nicotine and being forced to experience withdrawal once breastfeeding ceased, but also concerns that the use of e-cigs to manage the mother’s mental health needs (such as stress) would lead to children who grew up exposed to unhealthy coping mechanisms. The exposure of infants to nicotine was also the subject of judgement, some women would argue that a mother asking if it was OK to vape, was actually asking if it was OK to feed her baby nicotine – the nicotine becomes a deliberate exposure rather than a by-product of the breastmilk. This concern regarding nicotine acts as a barrier to the use of e-cigs postpartum – although some women acknowledged the known harmful substances in cigarettes, the primary concern seemed to be nicotine. Harmful effects from nicotine are not fully understood but are likely to be minimal compared to the effect of other compounds, although it is accepted as an extremely addictive substance [61]; there are far more worrying compounds within cigarette smoke, which research suggests are either not present in e-cigs, or present at significantly lower levels [62]. There is still limited empirical data on the safety and composition of e-cig vapour, however there has been some promising toxicity testing which has evaluated the chemical nature of the vapour generated from e-cigarettes. [62] Despite the identification of certain toxicants within e-cig vapour, these levels are <1% of the levels present in cigarette smoke. E-cigs therefore have potential as a harm reduction tool, as confirmed by the PHE report [63].
This research closely relates to the ‘good mother’ social construct [64], as shown with the justification of perceived risk, or the moralised stances against the use of any nicotine containing products as a breastfeeding mother. The role of mother is one that is subject to historical and cultural experiences; social networks provide a framework within which to make sense of their experiences and responsibility that are culturally defined [65]. The use of an online forum varies slightly from this – bringing together women from various socioeconomic backgrounds, age, experiences and cultures to discuss breastfeeding. Therefore, the social constructions of a ‘good mother’ are more explicit, particularly for infant feeding [66] – a ‘good mother’ is synonymous with breastfeeding, without cultural or environmental context [64]. The justification of risk here is similar to mothers who justify smoking by claiming that it is for their baby’s sake [67] – i.e. the explanation that it is better for the baby to have a mother who isn’t stressed, or is more alert.

In conclusion this study has shown women hold a mixture of views on the acceptability of vaping as a mother, but some woman are using (or interested in using) e-cigs in the postpartum period. They are seeking, and need, more reliable information to facilitate their use, especially when breast feeding.

Therefore we need further research which considers how women could have opportunity to ask and receive advice, opening a dialogue between mothers and health care providers which could potentially reduce rates of maternal smoking and increase breast feeding rates.

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**Conflict of interest**
None declared

**Abbreviations**
E-cig: Electronic Cigarette

PHE: Public Health England

NHS: National Health Service
References


