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RESEARCH REPORT

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The old and familiar meets the new and unknown: patient and clinician perceptions on e-cigarettes for smoking reduction in UK general practice, a qualitative interview study

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Abstract

Background and Aims: Clinicians could promote e-cigarettes for harm reduction to people who smoke but cannot stop, but many clinicians feel uneasy doing so. In a randomized controlled trial (RCT), primary care clinicians offered free e-cigarettes and encouraged people with chronic diseases who were unwilling to stop smoking to switch to vaping. We interviewed clinicians and patients to understand how to adopt harm reduction in routine practice.

Design: Qualitative analysis nested within an RCT, comprising thematic analysis of semi-structured interviews with primary care clinicians who delivered the trial intervention, and patients who took part.

Setting: Primary care clinics in England.

Participants/Cases: Twenty-one patients and 11 clinicians, purposively sampled from an RCT.

Measurements: We qualitatively explored patients' and clinicians' experiences of: being offered/offering an e-cigarette, past and current perceptions about e-cigarettes and applying a harm reduction approach.

Findings: Four themes captured clinicians' and patients' reported perspectives. These were: (1) concepts of safety/risk, with clinicians concerned about recommending a product with unknown long-term risks and patients preferring the known risks of cigarettes; (2) clinicians felt they were going out on a limb by offering these as though they were prescribing them, whereas patients did not share this view; (3) equating quitting with success, as both patients and clinicians conceptualized e-cigarettes as quitting aids; and (4) unchanged views, as clinicians reported that training did not change their existing views about e-cigarettes. These themes were united by the higher-order concept: 'The old and familiar meets the new and unknown', as a contradiction between this new approach and long-established methods underpinned these concerns.

Conclusions: A qualitative analysis found barriers obstructing clinicians and patients from easily accepting e-cigarettes for harm reduction, rather than as aids to support

smoking cessation: clinicians had difficulty reconciling harm reduction with their existing ethical models of practice, even following targeted training, and patients saw e-cigarettes as quitting aids.

KEYWORDS
e-cigarettes, family practice, harm reduction, Primary care, qualitative interviews, smoking reduction

INTRODUCTION

The onset of smoking-related illness prompts quit attempts in nearly everyone who smokes [1], but many relapse [2]. People who continue smoking have the most to gain from stopping. Therefore, national policies, such as those in the United Kingdom, incentivize physicians to intervene to support cessation in this group. In the United Kingdom physicians are asked to offer referral to a behavioural support programme and to prescribe medication, but it appears that they commonly advise cessation only [3]. Arguably, continuing to advise cessation in people who have tried and failed may be perceived as unhelpful and appears ineffective [4]. An alternative, if cessation is not possible or has failed, would be to promote smoking reduction instead; this type of harm reduction strategy is advocated in some countries in the context of smoking, such as the United Kingdom [5] and Canada [6]. In England, the National Institute for Health and Care Excellence (NICE) provides national evidence-based guidance and advice to improve health and care. NICE guidelines recommend harm reduction for people who: 'may not be able (or do not want) to stop smoking in one step, may want to stop smoking without necessarily giving up nicotine' and who 'may not be ready to stop smoking, but want to reduce the amount they smoke'. NICE recommend using an alternative nicotine source to promote smoking reduction [7]. We use this broad definition of harm reduction hereafter.

Systematic reviews of randomized trials show that providing nicotine replacement while smoking to people with no immediate intention to quit nearly doubles the likelihood of long-term cessation [8, 9]. Given the certain health benefits of cessation this form of, and outcome from, harm reduction interventions improves health. There is more uncertain epidemiological evidence that reduced smoking without abstinence leads to health benefits [10]. In many countries, such as the United Kingdom and the United States [11], e-cigarettes are the most popular alternative source of nicotine to smoked cigarettes, with 27% of UK smokers using these to support quit attempts, for example, compared with 16% using over-the-counter nicotine replacement therapies (NRT) [12]. The popularity of e-cigarettes and their identity as 'non-medical' nicotine delivery devices make them potentially suitable as harm reduction aids for people with no intent to quit. There is moderate-certainty evidence that they are more effective than NRT at assisting cessation in people making a quit attempt, but the direct evidence that they are effective as harm reduction aids is suggestive but uncertain [13–16], which is why we planned the trial from which these data are taken. There is clear evidence that switching completely from smoking to vaping reduces the concentration of toxins in the body, with some evidence of improved biomarkers of health [17]. In people partially switching, concentrations of toxins are lower in the short term [18].

We conducted a randomized controlled trial (Management of Smoking in Primary Care; MaSC) in which we trained primary care clinicians to give brief advice about e-cigarettes and offer these to people with smoking-related chronic diseases who were unwilling to stop smoking. Clinicians were asked to advocate partial switching with no advice on quitting [19]. Although smoking abstinence was a primary outcome, in line with the evidence that this represented a certain health benefit, patients and clinicians remained blinded in this ambition until the trial end to facilitate recruitment and enactment of the intervention, respectively.

In this qualitative study, we investigated clinicians' and patients' views on using e-cigarettes for what NICE terms 'harm reduction' in this way. We aimed to understand primary care clinicians' and patients' reported perceptions about offering and being offered a free e-cigarette for harm reduction. Our objectives were to: understand potential barriers to clinicians promoting and patients taking up e-cigarettes for harm reduction; assess how the offer of e-cigarettes for harm reduction fitted into participants' understanding of smoking; and to provide insights into potential barriers.

METHODS

Context—the MaSC trial

These data were collected as part of the MaSc trial, a two-arm, individually randomized controlled trial. Forty-eight primary care clinicians [11 general practitioners (GPs), 31 nurses and six health-care assistants] were trained to offer e-cigarettes to hardcore smokers: people who declined the offer of support to stop smoking, despite living with smoking-related chronic disease. Practitioners were asked to encourage hardcore smokers to switch some cigarettes for e-cigarettes to reduce the total amount of cigarettes smoked. The rationale was that, for people who had smoking-related disease and did not want to quit, using e-cigarettes alongside cigarettes would reduce smoke intake [20], which might improve health directly, but there is strong evidence that it would lead (unexpectedly) to smoking cessation [8, 9]. Although patients and clinicians were unaware, a primary outcome of the trial was abstinence from smoking (with or without continued vaping). Training provided as part of the trial attempted to dispel clinicians' key concerns about e-cigarettes by informing them about public health and medical organizations in the United Kingdom that encourage clinicians to promote e-cigarettes, and gave detailed advice on

how to recommend e-cigarettes as a harm reduction approach. In the intervention arm smokers who had declined standard stop-smoking support during an annual review consultation were offered a free e-cigarette starter kit. The starter kit contained: an Aspire PockeX all-in-one e-cigarette; two 0.6-ohm coils and 1.2-ohm coil; three nicotine-containing e-liquids in blueberry (18 mg), mixed fruit (12 mg) and menthol (18 mg); and a patient support booklet. Patients were encouraged to switch some cigarettes for the e-cigarette. Of 164 patients who were offered an e-cigarette, only 16 declined. Full details of recruitment, randomization and consent procedures are available in the trial protocol [19].

Data collection—semi-structured interviews

Upon being recruited into the trial, patients were informed about the interview study and provided with a patient information sheet. Those who consented to interview provided written informed consent. Clinicians consented to interview when agreeing to participate in the trial. Ethical approval was received from the National Research Ethics Committee Wales REC 4 (REC reference: 17/WA/0352) and Health Research Authority (HRA).

Semi-structured interview guides were developed by R.B., A.F. and C.A. based on existing literature and the aims of the study. The patient interview topic guide focused upon patients' perceptions of: (1) e-cigarettes; (2) being offered an e-cigarette by their clinician; and (3) use of the e-cigarette. The clinician interview topic guide focused upon clinicians' perceptions of (1) e-cigarettes, including comparison with other treatments; (2) receiving training on e-cigarettes and harm reduction; (3) putting training into practice; and (4) offering e-cigarettes. Topic guides were piloted by C.A. and iterated after each interview (see Supporting information).

We used theoretical sampling to 'generate theoretical insights drawing on comparisons' between populations or events in our data [21]. Sampling was iterative, based on categories developing during data collection and analysis. This allowed us to respond to what we were noticing during initial analyses and adapt data collection to collect further perspectives. Additional file 3 demonstrates how attention to deviant cases guided sampling. For patients, we initially aimed for a purposive sample within this trial population and sought variation in sex, index of multiple deprivation (IMD—the official measure of relative deprivation for neighbourhoods in England) score, and acceptance or rejection of the e-cigarette. For clinicians, we aimed to recruit across a range of practice locations, clinician roles and specialities within these roles. We sampled further as we started developing theoretical constructs from our data, and aimed to sample until saturation was reached. Saturation was defined as the point at which all relevant themes, and their relation to each other, were well developed [22]. We reached saturation for patients, health-care assistants and nurses, but would like to have interviewed additional GPs. However, too few GPs participated to allow this.

All interviews were conducted by the lead author (C.A.), a female medical anthropologist specializing in qualitative methods, from 5 May to 24 August 2019. We booked interviews with clinicians by calling practices and e-mailing clinicians. We telephoned patients who had consented and explained that C.A. was a researcher interested in their experience, and not part of the main clinical trial team. There was no relationship between C.A. and study participants prior to study commencement. All participants were reimbursed for their time. Interviews were conducted by telephone at a time and place convenient for the participant, usually their home. Patients were interviewed shortly after their 2-month follow-up appointment, and clinicians were interviewed after they had finished all interventions. Interviews lasted between 15 and 58 minutes (average 35 minutes). They were audio-recorded and transcribed verbatim. Identifying information was replaced with pseudonyms, and data were stored on secure departmental drives. Field notes were taken after each interview, which included planned iterations to the topic guide, and reflexivity notes. Data collection and analysis were underpinned by an interpretivist approach, acknowledging that data were co-created between the researcher and participant, and interpreted by the researcher during analysis. No repeat interviews occurred, transcripts were not returned to participants and no one withdrew consent to interview. Reporting follows *Addiction*'s Guidance for reporting qualitative manuscripts (additional file 1) and Consolidated Criteria for Reporting Qualitative Studies (COREQ) (additional file 2).

Data analysis

C.A. coded interviews inductively using thematic analysis, 'a method for identifying, analysing and reporting patterns' [23]. She followed a line-by-line coding approach, and then grouped codes into broader descriptive categories. She then used the 'one sheet of paper' (OSOP) technique [24] to develop themes. Data were managed using NVivo version 11. C.A. took a relativist ontological position, and her epistemological assumptions were grounded in subjectivism. Coding and analysis occurred alongside data collection. During analysis data were discussed regularly with a psychologist specializing in smoking cessation research (R.B.), a clinical academic specializing in behaviour change (P.A.) and a qualitative researcher specializing in in-consultation communication (R.Barnes). Field notes were used to support analysis. C.A. and R.B. used thematic mapping to move beyond description and develop an underpinning higher-order theme. Additional file 3 provides further details on maintaining trustworthiness and credibility, and a coding tree is provided in additional file 4.

RESULTS

We interviewed 11 clinicians (Table 1) and 21 patients (Table 2) and present a joint analysis, as both perspectives illuminate concerns and barriers in offering and being offered an e-cigarette. Supporting information, Table S1 shows the baseline characteristics of patient interview subsample and equivalents for all trial participants. Clinicians reported that training in harm reduction and how to talk about

TABLE 1 Clinician characteristics (sorted by IMD decile)

Clinician ID	Practice ID	Sex	Role	Practice IMD[a] Decile[b]
1	3	Female	Smoking cessation specialist nurse	1
2	7	Female	Practice nurse	1
3	9	Female	Health-care assistant	4
4	1	Male	GP and research lead	4
5	1	Female	Respiratory specialist nurse	4
6	1	Female	Diabetes specialist nurse	4
7	8	Male	GP	7
8	2	Female	Practice nurse	7
9	6	Female	Health-care assistant	7
10	4	Female	Practice nurse	7
11	5	Male	GP specializing in treating addiction and research lead	10

G = Pgeneral practitioner.

[a]The Index of Multiple Deprivation (IMD) 2015 is the official measure of relative deprivation for small areas1 (or neighbourhoods) in England. Calculated from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/464430/English_Index_of_Multiple_Deprivation_2015_-_Guidance.pdf.

[b]The IMD ranks every small area in England from 1 (most deprived area) to 32 844 (least deprived area). It is common to describe how relatively deprived a small area is by saying whether it falls among the most deprived 10, 20 or 30% of small areas in England (although there is no definitive cut-off at which an area is described as 'deprived'). To help with this, deciles are published alongside ranks. Deciles are calculated by ranking the 32 844 small areas in England from most deprived to least deprived and dividing them into 10 equal groups. These range from the most deprived 10% of small areas nationally to the least deprived 10% of small areas nationally.

e-cigarettes increased their knowledge and their confidence in offering e-cigarettes to patients. Both clinicians and patients reported that offering or receiving encouragement to use a free e-cigarette was acceptable and viewed positively. Despite this, both clinicians and patients expressed difficulties in engaging with long-term use of e-cigarettes in the context of harm reduction. Complexities and contradictions were evident in perceptions of harms, safety and risk and this paper focuses upon these topics. We developed four key themes during analysis: (1) reconciling known benefits and unknown risks of e-cigarettes; (2) uncharted territory: conceptualizing E-cigarettes as a replacement therapy; (3) equating quitting with success; and (4) inexorable views and changing behaviours.

Reconciling known benefits and unknown risks of e-cigarettes

All clinicians and patients agreed that e-cigarettes were safer in the short term than cigarettes. However, most clinicians articulated discomfort about advocating this approach to harm reduction in the long term, one saying that 'it should really be treated as a short-term measure…'. They discussed that the lack of long-term studies on e-cigarettes meant that there could be unknown negative effects of long-term use:

> 'I still do worry deep down, you know, years to come will there be something comes out about them… so twenty, thirty years down the line, if someone's been smoking an E-cig for that long… what kind of effect it's going to have on people, but you're not going to know that are you, until later on…' (clinician 3, health-care assistant).

Training in intervention delivery emphasized that e-cigarettes are less harmful than cigarettes, and encouraged clinicians to communicate this. For most clinicians, however, concerns about unknown risks overshadowed knowledge that replacing smoking with vaping was likely to benefit health. Many clinicians said that they communicated these concerns to their patients, saying, for example:

> 'we explained… this is what the study is, we don't know the risks involving it' (clinician 7, GP).

One nurse talked about professional integrity, and said she was concerned about promoting long-term vaping but reconciled this concern by stressing to patients that this should be in the short term only:

> 'we don't know the whole evidence… as a nurse… my registration wouldn't be affected as such… but it was just sort of in terms of integrity, or the moral aspect, I just sort of thought… I'm promoting this, and yet we don't know the long-term effects… I overcame that… by just… stressing that it's supposed to be short term' (clinician 10, nurse).

Some clinicians said that they were more comfortable asking patients to vape long term. These clinicians focused upon the 'known' risks of long-term smoking rather than the 'unknown' risks of long-

TABLE 2 Patient characteristics (sorted by IMD rank)

Patient ID	Practice number	Accepted/ declined E-cigarette	Sex	Highest level of formal education	Ethnicity	Employment status	Age (years)	Total cigarettes smoked per day at baseline	IMD[a] Rank	IMD[a] Decile[b]
1	17	Accepted	Female	None	White British	Retired	68	20	594	1
2	9	Accepted	Male	A-levels or equivalent	Prefer not to say	Retired	72	54	594	1
3	17	Accepted	Female	GCSE or equivalent	White British	Long-term sick or disabled	55	14	872	1
4	17	Accepted	Male	GCSE or equivalent	White British	Employed	58	10	2184	1
5	16	Declined	Female	GCSE or equivalent	White British	Long-term sick or disabled	53	18	3318	2
6	15	Accepted	Male	None	White British	Retired	68	20	4118	2
7	15	Accepted	Male	University undergraduate	White British	Other	52	42	5949	2
8	15	Accepted	Female	A-levels or equivalent	White British	Retired	57	24	7173	3
9	18	Declined	Male	University undergraduate	White British	Retired	72	20	7428	3
10	19	Accepted	Female	None	White British	Retired	76	10	9641	3
11	13	Accepted	Female	GCSE or equivalent	White British	Retired	70	15	12 149	4
12	13	Accepted	Female	GCSE or equivalent	Any other White	Employed	46	10	12 623	4
13	14	Accepted	Female	University postgraduate	White British	Employed	34	12	16 147	5
14	12	Declined	Male	None	White British	Unemployed	50	25	16 367	5
15	12	Accepted	Male	None	White British	Retired	67	10	19 085	6
16	11	Declined	Female	GCSE or equivalent	White British	Retired	66	20	21 480	7
17	1	Accepted	Male	GCSE or equivalent	White British	Unemployed	60	27	23 834	8
18	19	Accepted	Female	None	White British	Retired	66	20	27 218	9
19	6	Declined	Male	None	White British	Long-term sick or disabled	61	20	27 331	9
20	10	Accepted	Male	GCSE or equivalent	White British	Unemployed	58	20	28 005	9
21	10	Accepted	Male	A-levels or equivalent	White British	Unemployed	64	50	28 283	9

GCSE = general certificate of secondary education; A-level: advanced level.

[a]The Index of Multiple Deprivation (IMD) 2015 is the official measure of relative deprivation for small areas1 (or neighbourhoods) in England. Calculated from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_ data/file/464430/English_Index_of_Multiple_Deprivation_2015_-_Guidance.pdf.

[b]The IMD ranks every small area in England from 1 (most deprived area) to 32 844 (least deprived area). It is common to describe how relatively deprived a small area is by saying whether it falls among the most deprived 10, 20 or 30% of small areas in England (although there is no definitive cut-off at which an area is described as 'deprived'). To help with this, deciles are published alongside ranks. Deciles are calculated by ranking the 32 844 small areas in England from most deprived to least deprived and dividing them into 10 equal groups. These range from the most deprived 10% of small areas nationally to the least deprived 10% of small areas nationally.

term vaping. They said they were comfortable offering patients something to mitigate these known risks:

> 'What we do definitely know is that tobacco smoking kills you… and affects every organ in the body. Which you know vaping, so far, has not been proven to do' (clinician 5, nurse).

Many patients also expressed concern about unknown long-term effects, one saying:

> 'They don't really know the effects of vaping, or the long-term effects of vaping' (patient 21).

To illustrate this, some patients, such as in the excerpt below, compared vaping with previous attitudes towards cigarettes where they were initially recommended by doctors, but later, long-term evidence showed that these were not safe. Others made similar comparisons with asbestos and diesel fumes.

> 'they say "oh, there's no harmful additives in with these"… But you don't know. Nobody has really done research. I mean, they didn't research into cigarettes until way later, and realised…' (patient 16).

In contrast to discussing the 'unknown' long-term risks of vaping, many patients talked about 'knowing' the risks of long-term smoking when explaining their reasoning for continuing to smoke:

> 'At the end of the day smoking is smoking… Everyone in the world knows that smoking is bad for your health… I don't suppose we know the real effects… of anybody that's on [e-cigarettes]' (patient 9).

Clinicians also reported commonly hearing this perspective from their patients during consultations. One clinician described tobacco smoke as like a patient's 'old friend' evoking images of warmth and familiarity, while vaping was both 'new' and 'unknown'. They indicated that patients were more comfortable with a familiar behaviour, where they know the risk, than an unfamiliar one where the risks are uncertain:

> 'You know what you're getting in tobacco smoke, which is dreadful really, isn't it? They're happy to do that and destroy their lungs with that tobacco smoke, but that's how they feel. It's like their old friend… Fear of the unknown isn't it? It's human nature' (clinician 6, nurse).

However, despite most patients expressing concern about a lack of long-term evidence for the safety of e-cigarettes, most accepted the offer of an e-cigarette. Patients generally reported that this was because although they did not know the long-term risks, they felt they were safer than cigarettes.

Uncharted territory: conceptualizing e-cigarettes as a replacement therapy

Some clinicians expressed discomfort in offering an e-cigarette to patients who had declined standard advice and support, saying they felt as if they were 'prescribing' cigarettes. Discomfort arose because offering an e-cigarette was new and deviated from usual practice:

> 'it was quite weird… it was like you're offering cigarettes to somebody… and it was… sort of an uncharted territory' (clinician 7, GP).

Many highlighted years of recommending more familiar pharmacotherapies, such as NRT, as the reason for this discomfort. They stated that further education on conceptualizing e-cigarettes as a valid replacement therapy, rather than as a cigarette, could challenge these beliefs:

> 'I think it's a mindset of the doctors… you are prescribing a cigarette… I think that probably needs a bit more, a bit of discussion, a bit of education. And it's sort of a replacement therapy of some kind, not, not a cigarette. I think that might be required…' (clinician 7, GP).

Clinicians who offered addiction services for other substances typically felt positive about tobacco harm reduction. These clinicians did not differentiate between vaping and other types of NRT. One clinician experienced in treating addiction welcomed the addition of e-cigarettes:

> 'I think they're a brilliant part of the arsenal now, you know, that's never been there before' (clinician 5, nurse).

In contrast to clinicians, patients did not conceive that clinicians were 'prescribing' cigarettes. Patients clearly differentiated between e-cigarettes and cigarettes, seeing them as fundamentally distinct:

> 'It is totally different to smoking a real cigarette obviously' (patient 14).

Mainly, patients did not report conceptualizing connections between e-cigarettes and NRT (although we did not ask them directly). Only one patient articulated a direct connection, saying:

> 'Better than chewing gum, that's a dead cert [for sure]' (patient 11).

This may highlight that, for many patients and doctors, vaping is currently viewed as different from traditional NRT.

Equating quitting with success

Clinicians expressed difficulty with long-term harm reduction because they conceived quitting all forms of nicotine to be the only outcome of value. For example, one clinician described a patient who had swapped some cigarettes for e-cigarettes and continued vaping. Rather than framing this as success, the clinician stated that offering a free e-cigarette had not worked as the patient was still smoking as well, although he had cut down significantly. For clinicians, framing success in a harm reduction paradigm was difficult and counterintuitive:

> 'the patient who maintained them at the trial, you know, for him it didn't work very well… and he's still smoking' (clinician 7, GP).

Two reasons seemed to underpin this perception of quitting as 'success'. The first was that clinicians had been 'brought up' to equate quitting with success. Beliefs about harm reduction seemed incongruent to long-held beliefs about cessation:

> 'for us, quitting is the only successful outcome. Whereas in fact, there probably is harm-reduction, but —we've been brought up, you know, quitting is the only successful outcome' (clinician 4, GP).

In many cases clinicians said they told patients that vaping was a way to help them quit, rather than cut down, highlighting their discomfort with viewing switching to vaping and reduced smoking as a successful outcome.

Similarly, very few patients who used an e-cigarette said they planned to use it to cut down in the long term. Most said they viewed it as a way to help them to quit:

> 'I want to stop altogether, yeah. So, I'm sort of breaking myself in with these vapers' (patient 21).

This may have been because either their clinician presented the e-cigarette as support to quit or because patients also conceive that quitting is success.

The second reason patients and clinicians gave for viewing quitting as 'success' was that they were not confident that harm reduction was effective. One clinician said:

> '… there is harm reduction, but I'm not convinced that's achievable and effective' (clinician 4, GP).

Some clinicians mentioned research, or talked about experiential evidence that contributed to their beliefs that harm reduction is ineffective, and could lead to people actually smoking more. They stated that it is better to encourage people to quit, to avoid this:

> 'research shows that people who cut down eventually go back within a very short time, go back and actually end up smoking more, if they're allowed to continue smoking. It's much better just to cut the addictive pathway straightaway. And my experience is exactly that'. (clinician 6, nurse).

A few patients also expressed beliefs that that harm reduction was ineffective. Rather than increasing smoking behaviour, as expressed by clinicians, patients believed that people could become addicted to vaping:

> 'they're as addictive as a normal cigarette' (patient 17).

One clinician who delivered services for treating other addictions expressed contrary views. They stated that the aim of working in addiction is to encourage a reduction in 'risky behaviours', and using e-cigarettes to support long-term smoking reduction rather than cessation fitted with their pre-existing views. When asked how they felt about advising people to cut down rather than quit, this GP responded:

> 'I didn't have any problem with that at all because I'm one of the GPs that does addictions… And addiction is all about harm-minimization… And all you want to do is move someone… into being in a better position than they were when you saw them last… And for them to be doing less risky behaviours…' (clinician 11, GP).

We subsequently sampled more clinicians with experience treating addiction. We found that clinician-reported perception of the appropriateness of tobacco harm reduction depended upon experience of delivering addiction services. GPs, nurses and health-care assistants who regularly worked in addiction expressed positive views of tobacco harm reduction (as conceived in the guidelines) as an alternative to abrupt cessation, and perhaps to reduce the long-term risks of smoking for this group of patients.

One clinician with experience in treating addiction said she often treated patients who struggled to quit, and yet viewed quitting as the only successful outcome. She said that being able to offer an e-cigarette to support smoking reduction, rather than quitting, was a helpful approach:

> 'It's just that attitude that, "Oh, she said I've got to stop, urgh". But if you say to them, "Well, maybe this could go hand in hand…". "Oh, I never thought of that. Yeah, that might be a way of doing it", and I think it's just giving people ideas instead of just telling them,

"Right, you've gotta stop" ' (clinician 9, health-care assistant)

Most patients accepted the e-cigarette, but the few that refused explained that they 'didn't want to quit'. These people perceived that they were being asked to quit. They did not conceive that reducing, rather than quitting smoking could be an alternative approach:

'I won't give up smoking, and that's the end of it…' (patient 16).

E-cigarette safety: inexorable views and changing behaviours

Most patients and clinicians (apart from those clinicians with experience treating addiction) stated that before delivering/receiving the brief e-cigarette intervention they thought that vaping was a short-term measure to support cessation. Many were concerned about the unknown harms of long-term use, and these views did not change after undertaking training and offering e-cigarettes in practice. Similarly, patients did not report changing their views on the safety of e-cigarettes in response to the clinician's brief intervention.

Despite these inexorable views, many patients who reported concerns about the safety of e-cigarettes accepted the offer of an e-cigarette and reported shifts in behaviours. The patient below, for example, shared their uncertainties about safety, but was using their e-cigarette regularly:

'I've still got my doubts whether it's harmful or not… I've watched these programmes, and there's no conclusive about it' (patient 17).

Just as patients reported inexorable beliefs about e-cigarettes, most clinicians reported that receiving training and delivering the brief intervention confirmed, rather than changed, their earlier views:

'a much better alternative to smoking, but with limitations. And in fact, the evidence which I read, which was included in the study pack, before I undertook the study, confirmed that opinion' (clinician 4, GP).

One clinician reported a small 'quiet' change of views, saying that she now knows that vaping is better than smoking, although she still had concerns about limited evidence:

'I think I have changed because I guess the maths I deal with actually, obviously there's less chemicals in them than cigarettes, so it is a better choice than smoking… So, I think I have changed my thoughts quietly… I guess there is only so much limited evidence at the moment isn't there' (clinician 2, nurse).

Most clinicians reported no change in views, but reported changing their behaviour and recommending vaping. However, clinicians often did not follow their training exactly, but modified practice to better align with their underlying beliefs. They changed from not recommending vaping at all to recommending vaping as a step to quitting. This better reflected their underlying belief that quitting was the desired end goal.

Higher-order theme—'old and familiar' meets the 'new and unknown'

Uniting all themes was the concept of the 'old and familiar' meets the 'new and unknown'. Perceptions of safety/risk, conceptualizing e-cigarettes as replacement therapy, equating quitting with success and inexorable views were tightly bound together, and were underpinned by the fact that recommending e-cigarettes in the context of harm reduction comprised two new novel issues. First, harm reduction was a new approach to treatment, and secondly, e-cigarettes were a new mechanism through which this was delivered, with unknown long-term risks. This new approach deviated from extant practices with which most patients and clinicians were familiar, and created a barrier to engaging with and recommending long-term e-cigarette use.

For those clinicians with previous experience treating addiction, however, the approach was familiar and they were able to translate this familiar concept to a new practice, recommending e-cigarettes with limited challenge. One patient explained that she tried the e-cigarette precisely because it was new. This highlighted that, for some patients who have tried multiple methods to change their smoking behaviour, a new approach can be welcomed.

DISCUSSION

Summary

Clinicians successfully recommended and provided e-cigarettes to hardcore smokers with chronic diseases who had declined standard stop-smoking support. Patients responded positively to these recommendations. However, most patients and clinicians struggled to advocate or accept long-term e-cigarette use and were uncomfortable with harm reduction. This was due to: concern about the unknown long-term effects of e-cigarettes, difficulty perceiving e-cigarettes as a legitimate cessation or harm reduction aid and perceptions that 'quitting' rather than 'harm reduction' is the only valuable outcome.

For both clinicians and patients, concepts of safety, novelty and challenges to previously held perceptions of success were tightly interlinked. We developed the concept of the 'old and familiar' meets the 'new and unknown', which unites our findings. Clinicians implemented, and patients were offered, a new approach to treatment (e-cigarette) and mechanism through which this was delivered (harm reduction), deviating from familiar, established, approaches. The new

approach did not sit easily with clinicians as there was no long-term evidence of safety, and it differed from how they usually treated tobacco addiction. Perhaps reflecting the uncertainties clinicians shared with them, many patients also expressed concern about unknown long-term effects. In contrast, clinicians who delivered other addiction services believed that e-cigarettes were a useful way to support long-term smoking reduction, which could be due to their familiarity with, and acceptance of, harm reduction.

Despite presenting evidence on the relative safety and recommendations by professional organizations, neither patients nor clinicians changed their extant beliefs about e-cigarettes. They did, however, change their behaviour in the context of the trial and offered/agreed to try an e-cigarette despite the presence of these barriers.

Comparison with existing literature

Clinicians have reported wanting official sanction of e-cigarettes and practical tools to use in the consultation to recommend their use [25]. Our study showed that, even when provided with evidence, training, awareness of official sanctions and tools to support discussions, many practitioners were still reluctant to recommend e-cigarettes as a long-term alternative to smoking. This was due to unease with the concept of harm reduction, such that the safety and efficacy of e-cigarettes were compared to the standards used for medication, rather than to cigarettes.

Our results parallel findings from a qualitative study of clinicians treating people with substance use disorder, where clinicians were not sympathetic to harm reduction [26, 27]. Addiction specialists have suggested that clinicians should 'quit the focus on quitting' [28]. Our results suggest that brief training in how to use e-cigarettes in this context is insufficient to overcome this issue. Further investigation of the way in which clinicians conceive treatment, and how this fits with harm reduction, will be needed if this approach is to become routine in clinical practice.

The concerns clinicians reported about safety, lack of evidence and a difficulty in engaging with harm reduction are paralleled in Norwegian GPs' reluctance to recommend Swedish moist snuff (snus) [29]. Similar to e-cigarettes in the United Kingdom, snus is a widely used nicotine product in Sweden that appears to have led to much lower smoking-related mortality [30]. Norwegian GPs rarely recommend snus due to concerns about safety and risk [29]. Lund *et al.*'s interview study indicated that GPs could not accept that snus is less harmful than cigarettes. In our study GPs seemed to acknowledge the consensus that e-cigarettes were a 'less-risky' alternative, but that they still carried some unknown risk. Therefore, compared with quitting, which is the preferred outcome, recommending anything else is inconsistent with their role.

Existing qualitative work has shown that patients regard NRT and e-cigarettes as fundamentally different [31]. Our study showed that many clinicians shared this view, equating e-cigarettes more closely with cigarettes than licensed NRTs.

Consistent with previous interview studies [32], patients reported pervasive worries about e-cigarette safety but also acknowledged that they were safer than smoking cigarettes. Other work has shown that smokers have analogous concerns about smokeless tobacco products [33, 34], but were prepared to try these if clinicians recommended them.

Previous work emphasizes the importance of endorsement and availability for motivating e-cigarette use [35, 36]. Sheratt *et al.* hypothesize that, should e-cigarettes become endorsed and freely available by prescription, this may overcome key barriers to use [36]. Our study, which uniquely examined the endorsement and offer of e-cigarettes by clinicians, shows that an offer by a clinician can indeed motivate use in a population unwilling to quit. Furthermore, although many patients reported underlying concerns about safety, these did not stop most people from trying and using an e-cigarette that was both clinician-provided and clinician-endorsed.

Recent surveys of clinicians [37] and stop-smoking practitioners [38, 39] have highlighted the need for training in understanding harm reduction. Our study showed that following training, support and the ability to offer e-cigarettes, clinicians felt comfortable enough to recommend them. However, most were not able to fully reconcile advocating smoking reduction rather than cessation, even when shown evidence that smoking reduction could increase the probability of long-term cessation. Further studies should examine how clinicians can be supported to more effectively incorporate this harm reduction approach for people who are unwilling or unable to quit.

Strengths and limitations

A strength of this study was the in-depth interview approach using a theoretical sample. Embedding this research within a trial allowed an initial maximum variation sample across a range of characteristics, providing a rich data set from which to develop themes. A further strength was our detailed analytical approach and multi-disciplinary team allowing us to identify both barriers to recommending e-cigarettes and to build a higher-order theme to identify the reasons underpinning these. A weakness was that only three GPs consented to interview; however, the intervention was delivered mainly by nurses and health-care assistants. A limitation is that interviews are subject to recall and social desirability biases. As this is qualitative research, the results are probably transferrable [40] to similar contexts, rather than universally generalizable.

CONCLUSION

Although clinicians in this study were prepared to offer e-cigarettes as part of a study, the notion that they were advocating a product to use alongside smoking did not sit easily with them. This appears to stem from a lack of consonance between their notion of their role and harm reduction; given that the best was available, how could clinicians in

good conscience recommend second-best, particularly when this was a newer approach which conflicted with established training and practice? Therefore, clinicians responded by advocating e-cigarettes only as short-term quitting aids. Understanding how harm reduction can be made to fit within clinicians' notions of good treatment will be needed to change this situation and allow implementation of harm reduction guidelines where this approach is advocated.

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AUTHOR CONTRIBUTIONS

Charlotte Albury: Data curation; formal analysis; investigation. **Rebecca Barnes:** Formal analysis; funding acquisition; investigation; methodology. **Anne Ferrey:** Data curation; formal analysis; investigation; methodology. **Tim Coleman:** Conceptualization; investigation. **Hazel Gilbert:** Conceptualization; investigation. **Felix Naughton:** Conceptualization; investigation. **Paul Aveyard:** Formal analysis; funding acquisition; investigation; methodology; supervision. **Rachna Begh:** Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; supervision.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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