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Is it all smoke without fire?

Welsh Primary School Children's
Perceptions of Electronic Cigarettes

April 2018

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Executive Summary

The increasing popularity and rapid growth of electronic cigarettes has raised considerable concern about their impact on children and young people. Concerns relate to electronic cigarettes acting as a potential gateway to tobacco smoking for young never smokers, increased experimentation leading to a renormalisation of smoking behaviour and potential health harms of vaping. Current research is largely focused on adolescents and young adults. In view of the recognised influence of the early years on attitude and habit formation, better understanding of what young children think about electronic cigarettes is needed; to inform the development of effective health promotion interventions that highlight potential risks and prevent uptake in young never smokers.

The Public Health Institute at Liverpool John Moores University was commissioned to undertake a study investigating Welsh primary school children's perceptions of electronic cigarettes. The research was conducted with children in Years 2, 4 and 6 (7-11 years of age) from 8 primary schools across Wales. The study aimed to provide insight into children's awareness of electronic cigarettes relative to tobacco smoking, their beliefs about vaping and smoking and understanding of the risks and benefits. Data was collected in June and July 2017 using a mix of methods. Four hundred and ninety-eight children completed the class-administered booklet encompassing a draw and write exercise and questionnaire. Ninety-six children also participated in 24 peer discussion groups.

The small-scale exploratory study found that almost all children across the 3-year groups had an **awareness of electronic cigarettes**. Most children (94.9%) were able to differentiate between electronic and tobacco cigarettes particularly in terms of look (93.3%), cost (67%) and smell (51%) but were less able to discern differences in the smoke/ vapour. Some children in the peer discussion groups were **aware of the confectionary flavours** available to electronic cigarette users and thought it would make vaping taste better. They believed the different flavours of e-liquids would appeal to different age groups and could potentially encourage young people to use electronic cigarettes.

Children's perceptions of who vaped and smoked were not clear-cut. No distinct patterns of use regarding age and gender of electronic cigarette users and tobacco smokers emerged. A higher proportion of children felt that older people (35.8%) and males (37.7%) would prefer tobacco cigarettes than electronic cigarettes. Conversely, a higher proportion felt that younger people (44.9%) and females (40.3%) would prefer electronic cigarettes than tobacco cigarettes. There was **some uncertainty around current legislation governing electronic cigarettes**. Children in the peer discussion groups were less sure about age of sale restrictions and access to electronic cigarettes relative to tobacco cigarettes.

Responses from the draw and write exercise suggest that children perceive motivations for vaping and smoking as different. Across all 3 year groups children reported that the primary reason for using electronic cigarettes **was to stop smoking** (28%) tobacco cigarettes, thus recognising the role of electronic cigarettes in smoking cessation. Children who had a parent or relative that used electronic cigarettes were more likely to be aware of their role in smoking cessation. By comparison, the main reason for smoking tobacco cigarettes was **to look cool** (22%). Some children associated tobacco

smoking with stress. In the draw and write exercise, 10% (n=45) believed **people smoke cigarettes to relieve stress**.

Study findings highlighted that the children had little understanding of any health harms of electronic cigarettes. There were many misperceptions and considerable uncertainty; almost a third of responses regarding health harms were 'don't know'. Only a minority of draw and write responses (7%) correctly indicated that electronic cigarettes were less harmful than tobacco cigarettes to users. Despite considering electronic cigarettes to be a healthier than tobacco cigarettes, more than half of the Draw and Write responses associated vaping with similar levels and types of health harms as tobacco. There was some understanding of the concept of addiction across the year groups but it was primarily associated with tobacco smoking. Two thirds (66.7%) felt it was harder to quit smoking tobacco cigarettes as compared to electronic cigarettes (46.9%). **The role of nicotine in vaping and smoking was poorly understood**.

The perception that **electronic cigarettes were 'healthier' than tobacco cigarettes** resonated throughout the questionnaire and peer discussions. More than half the children believed tobacco cigarettes were worse for smoker's lungs (59.6%) and worse for other people's lungs (55.4%) than electronic cigarettes. Questionnaire results indicated that more children (74.6%) thought smoking was never a good thing to do as compared to 59.6% who thought using an electronic cigarette was never a good thing to do. Whilst electronic cigarettes were thought to be less harmful than tobacco cigarettes, they were still considered to be more harmful than not smoking or vaping at all.

Despite prevailing negative perceptions, both electronic cigarette users and tobacco smokers were often depicted as feeling **more positive (e.g. happy) than negative (e.g. sad)** in the draw and write exercise. For electronic cigarette users, more than half of responses (56%) were positive (e.g. happy, relaxed, cool) whilst over a quarter (27%) were negative (sad, sick, stressed). By comparison, nearly half the responses (48%) for tobacco smokers were positive (e.g. happy, cool, and relaxed). Negative responses (39%) included feeling bad, sick and stressed.

Almost all the children in the study were of the opinion that using **electronic cigarettes (98.8%) and smoking tobacco cigarettes (99.2%) were inappropriate for children their age** because it was illegal, and children's bodies were still developing. Almost half however thought **it was okay for adults to use electronic cigarettes (49.6%) or tobacco cigarettes (46.2%)**. Results were age related and influenced by exposure to cigarettes in the home.

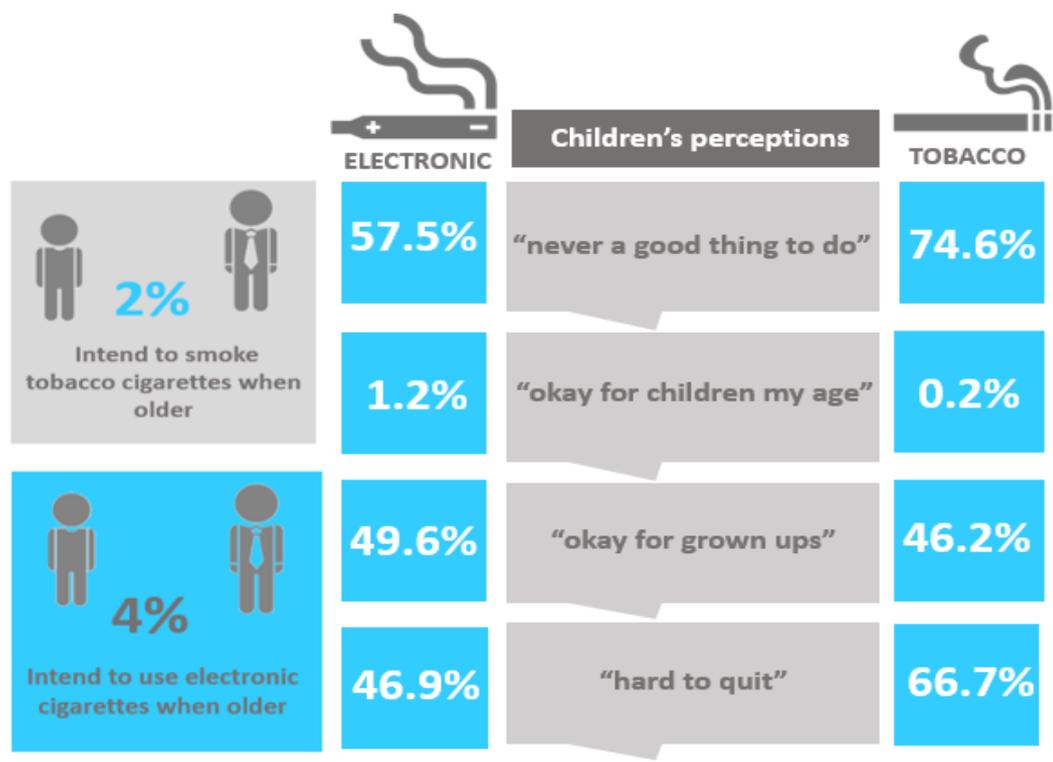
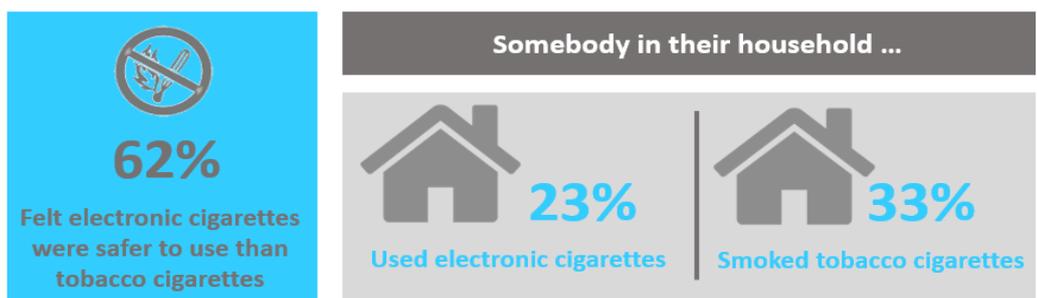
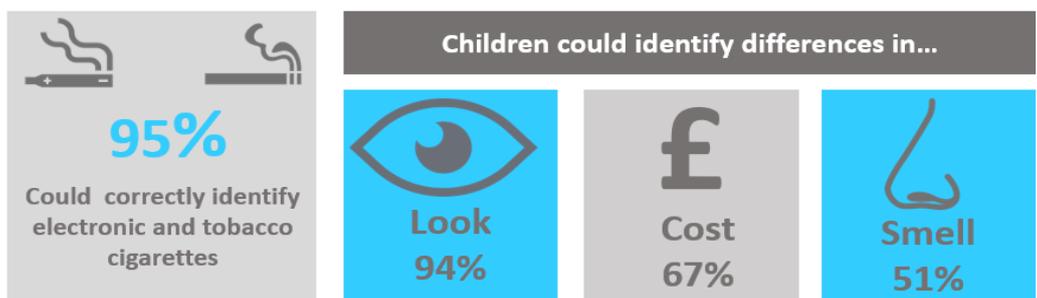
Children in the study were exposed to both vaping and smoking, primarily through family and friends. Over a fifth (22.4%) of participants indicated that somebody who lives in their household uses electronic cigarettes. Findings suggest that **children who had family members that were electronic cigarette users were better informed**.

Children had **few intentions to use electronic cigarettes or smoke tobacco cigarettes when older**. Of the minority of children who reported future intentions, slightly more felt they would vape (3.9%) rather than smoke (1.8%). Responses were age related with older children citing less or no intention and influenced by exposure to smoking in the household. Intention to smoke/use tobacco cigarettes/electronic cigarettes was also more likely if a child lived with someone who smoked or used them.

This study provides unique insights into Welsh primary school children's perceptions of electronic cigarettes. Whilst children have an awareness of electronic cigarettes relative to tobacco cigarettes, understanding was limited, characterised by misconception, uncertainty and some contradiction. The findings also demonstrate how children often contextualise their understanding of electronic cigarettes

based on their own experiences and existing knowledge of tobacco cigarettes. As one of the first global studies to investigate electronic cigarettes in the context of childhood, this research contributes important insights to an underdeveloped body of knowledge. Primary school children represent an important cohort. Understanding where they are at in their thinking about electronic cigarettes prior to experimentation is imperative for the development of effective health promotion interventions that highlight potential risks and prevent uptake in non-smokers. As such, findings from this study not only inform public health practice but also contribute to the emergent evidence base on electronic cigarettes and provide a foundation for further research; to better understand the potential impact of electronic cigarettes on children and young people.

Welsh Primary School Children’s Perceptions of Electronic Cigarettes



1. Introduction

Background

Electronic cigarettes are battery operated devices that produce a vapour typically containing nicotine that users inhale in a process known as vaping. Electronic cigarettes do not rely on combustion, do not produce smoke and do not contain tobacco. Since their introduction to Great Britain (GB) in 2006, there has been a rapid increase in popularity and usage of electronic cigarettes among adults and young people (Greenhill et al, 2016). This reflects the international landscape - countries like Canada and the USA have witnessed similar trends (Hammond et al, 2017; Zhu et al, 2017). There are an estimated 2.8 million adult users (ASH, 2016a) and 2331 adolescent users (aged 11-18) in GB (ASH, 2016b). Although awareness of and experimentation with electronic cigarettes is increasing, youth tobacco smoking rates continue to decline (Bauld et al, 2017). Regular use of electronic cigarettes (once a month or more) amongst young people is rare and largely found among those who currently or have previously smoked (ASH Wales, 2016; Bauld et al, 2017).

In Wales, recent studies confirm that regular use of electronic cigarettes among 11–16 year olds remains relatively low (de Lacy et al, 2017).

The increasing popularity and rapid growth of electronic cigarettes has raised significant concerns about the harms and benefits of using electronic cigarettes. Despite a burgeoning research effort, findings are often inconclusive, confusing and contradictory. There is a growing body of evidence to support the notion that electronic cigarettes carry fewer health risks than tobacco cigarettes. A review commissioned by Public Health England claims electronic cigarettes are 95% less harmful than tobacco cigarettes (McNeil et al, 2015). Although research suggests the risk to health in the short term is considerably less for electronic cigarettes relative to tobacco cigarettes, the evidence is limited and the extent to which electronic cigarettes are 'less harmful' is contested (Goniewicz et al, 2014). Moreover, the long term health effects of electronic cigarettes are as yet unknown (Callahan-Lyon, 2014). Opinions on the relative merits of electronic cigarettes as a smoking cessation aid are also divided (Royal College of Physicians, 2016). Whilst some consider electronic cigarettes to be a safer alternative to tobacco cigarettes and promote them as a useful tool for smoking cessation (McNeill et al, 2015; Hartmann-Boyce et al, 2016; Royal College of Physicians, 2016), evidence of effectiveness remains inconclusive (Malas et al, 2016).

With regards to children and young people, a range of concerns have emerged with the increased popularity of electronic cigarettes.

The escalation and increased visibility of electronic cigarette use poses particular concerns for children and young people. Concerns relate to electronic cigarettes acting as a potential gateway to tobacco smoking for young people who have never smoked, increased experimentation leading to a renormalisation of smoking behaviour, the health consequences of electronic cigarette use on children and young people, quality and safety concerns of the product and the marketing of 'confectionary-like' flavours which may appeal to children and young people (de Lacy et al, 2017; Measham et al, 2016; Public Health Wales, 2017). There are also concerns that electronic cigarettes are being used as a form of nicotine replacement in locations where smoking is banned thereby undermining current tobacco

control strategies and potentially renormalising smoking behaviour (de Lacy et al, 2017; Moore et al, 2015).

Concern that electronic cigarettes might act as gateway to tobacco smoking or a means of renormalising smoking has polarised opinion. Some researchers refute the premise on the basis that smoking rates amongst teenagers in the UK have continued to decline during the period when electronic cigarette experimentation has increased (ASH, 2016c; Bauld et al, 2017; de Lacy et al, 2017; Royal College of Physicians, 2016). They suggest that the first step in the pathway to smoking for adolescents is smoking a tobacco cigarette, and then moving onto an electronic cigarette (Bauld et al, 2016; Clarke and Lusher, 2017; de Lacy et al, 2017; Eastwood et al, 2015). Evidence from Welsh (ASH, 2016a) and UK (Kaufman et al, 2017) questionnaire data indicates that experimentation with electronic cigarettes among non-smokers does not translate into habitual electronic cigarette use, with regular electronic cigarette use almost entirely concentrated among young people who smoke tobacco cigarettes. A recent systematic review has however concluded that electronic cigarette use is associated with greater risk for subsequent cigarette smoking initiation (Soneji et al, 2017) and a longitudinal study in Scotland found that adolescents who had tried an electronic cigarette were more likely to try a tobacco cigarette during the next 12 months although a causal link between electronic cigarettes and smoking could not be proven (Best et al, 2017).

Relative to tobacco cigarettes, evidence suggests that the health risks of electronic cigarettes are considerably less (McNeill et al, 2015). There is a general consensus in public health that electronic cigarettes are not risk free and should not be promoted to children. Electronic cigarette vapours contain some toxic substances (Callahan-Lyon, 2014) and many electronic cigarettes contain nicotine, a highly addictive substance. Whilst the prevailing evidence indicates that nicotine poses a minor risk to health (McNeill et al, 2015), there has been some suggestion that children and young people may be 'vulnerable' to the negative consequences of nicotine exposure (US Report of the Surgeon General, 2016). Children are also at risk of nicotine poisoning through accidental ingestion of tobacco or liquid nicotine (ASHc, 2016).

Efforts to minimise risk and protect children from exposure to electronic cigarettes are in place. UK and domestic regulation of electronic cigarettes bans the marketing of electronic cigarettes and proxy purchasing, limits the concentration of nicotine in e-liquids, requires warning labels on products and child and tamper proof packaging, and enforces an age of sale lower limit of 18 years (House of Commons, 2017). In 2015/16 the Welsh Government proposed to ban the use of electronic cigarettes in enclosed and substantially enclosed public places in Wales (National Assembly for Wales, 2014). Although endorsed by Public Health Wales in their position statement on electronic nicotine delivery systems, which advocated for restrictions in settings predominantly used by children (e.g. in schools and school grounds and around the entrances to schools) (Public Health Wales, 2017), the bill was rejected by the Welsh Assembly. Consequently the recently enacted Public Health (Wales) Act 2017 which bans tobacco smoking in school grounds, hospital grounds and public playgrounds does not extend to electronic cigarettes (National Assembly for Wales, 2017).

This brief overview has highlighted the complexity and contention surrounding electronic cigarette use among children and young people. Evidence suggests that awareness and experimentation are on the rise but regular use is still rare. The increased visibility and popularity has raised concerns that electronic cigarettes may act as a gateway to tobacco and renormalise smoking. As causal associations have yet to be established, further research is needed to understand the interplay between electronic and tobacco cigarettes. A good starting point is understanding how children and young people view electronic cigarettes. Whilst research with this focus has been conducted with adolescents, (Akre and Suris, 2017; Griesbach and Platts, 2016; Hardcastle et al, 2014; Hilton et al, 2016; Measham et al, 2016),

to date very little is known about the perceptions of young children. Only one study done by Faletau et al (2013) have explored perceptions of electronic cigarettes with 6-10 year old Maori and Pacific Islander children in New Zealand who were unfamiliar with the product. Findings revealed that some children could not differentiate between electronic and tobacco cigarettes. Children expressed positive views about the potential of electronic cigarettes to assist with smoking cessation and conveyed negative views about continued nicotine intake.

In view of the recognised influence of the early years on attitude and habit formation (Leventhal and Cleary, 1980) and the increasing prevalence of electronic cigarettes use, better understanding of how young children perceive vaping relative to smoking is needed; to inform development of health education interventions aimed at preventing uptake of electronic cigarettes among adolescent non-smokers. Against this backdrop, Public Health Wales commissioned the Public Health Institute at Liverpool John Moores University to undertake a mixed method exploratory study using a Draw and Write Exercise, a questionnaire and peer discussion groups across 8 primary schools in Wales. The research conducted with children aged 7-11 years aimed to provide insight into children's perceptions of electronic cigarettes relative to tobacco smoking.

2. Methods & Sampling

Sample

Eight geographical areas of Wales were purposely selected by the research team and Public Health Wales to represent geographical spread of deprivation, Welsh language, urban and rural areas and prevalence of electronic cigarette use (PHW, 2015). Schools in the selected areas were initially contacted by the Welsh Healthy Schools Co-ordinator to inform them about the project. All suitable schools¹ from these areas 8 areas were identified using the Welsh Government database² and contacted via a letter from the research team. This provided information about the study, methods and the protocol for gaining consent/assent and the contact details of the research team. Members of the research team followed up via email and telephone to determine which schools were able and willing to take part. Eight primary schools were purposively selected to ensure maximum variation. If multiple schools from an area expressed an interest then schools were selected based on whether they represented the area in terms of average size and typical geographical deprivation levels. The sampling aimed to select schools that reflected a range of populations across Wales. One school from a predominantly Welsh speaking area was selected as well as one school from an area that has a high black and minority ethnic (BME) population. The remaining six schools were selected from a variety of urban and rural principal areas with varying levels of deprivation (Table 1). For further details of the sample and methods, refer to Appendix 1.

Within each school a class from years 2, 4 and 6 were selected, thus participating children were aged 7, 9 and 11 years (Figure 1). All schools, apart from school 6, had exclusive year group classes. In school 6, the teacher separated the classes to ensure that only children from the selected year groups took part. Schools were provided with information letters for parents, which included an option for them to withdraw their children from the study. Discretion was also given to teachers to remove any children they felt may have had difficulties with the research activities and children were given the opportunity to exclude themselves. Ethical approval for the study using opt-out parental consent was obtained from the Liverpool John Moores University Research Ethics Committee (17/PBH/008).

¹ English speaking for areas 1-6 & 8 and Welsh speaking for area 7. Fee paying and single sex schools were excluded from the sample.

² <http://gov.wales/statistics-and-research/address-list-of-schools/?lang=en>

Table 1: School demographics

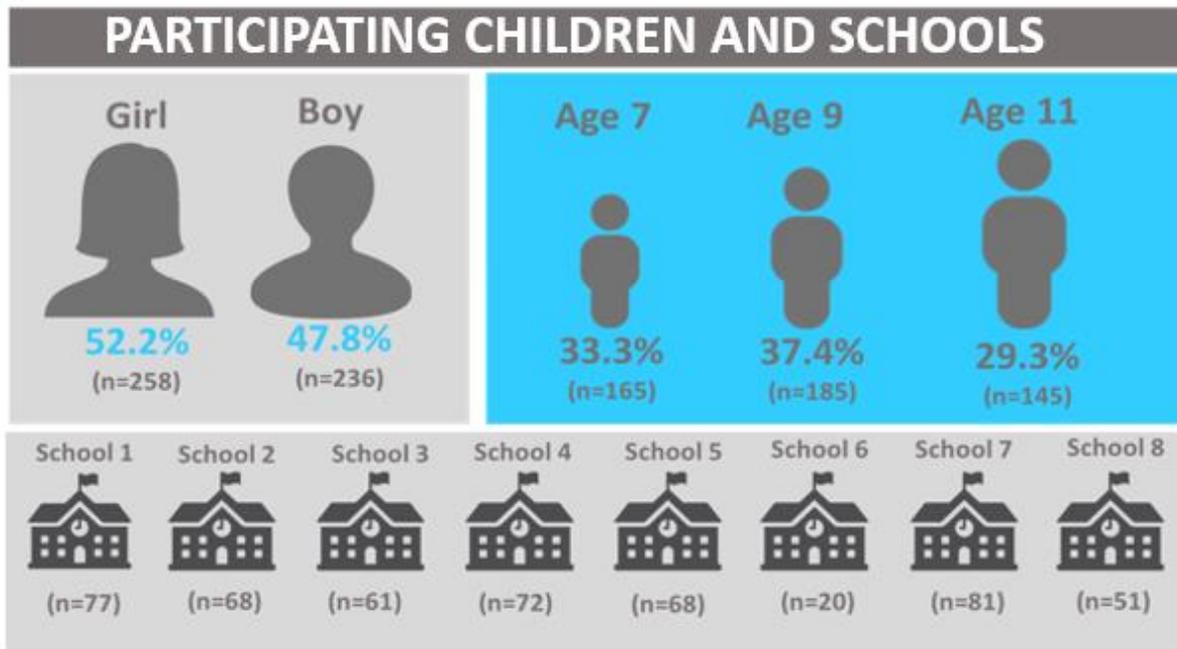
School	Urban/ Rural ³	Deprivation ⁴	% of total number of students in the school entitled to free school meals	Total number of students in the school	Total number of students who participated in the questionnaire / D&W ⁵
1	Rural	Outside perimeters of most and least deprived	2.4%	247	77
2	Rural	Least deprived	1%	200	68
3	Urban	Outside perimeters of most and least deprived	29.8%	124	61
4	Rural	Most deprived	31%	429	72
5	Urban	Most deprived	6.7%	224	68
6	Rural	Least deprived	12.2%	49	20
7	Rural	Outside perimeters of most and least deprived	0.4%	228	81
8	Semi- rural	Outside perimeters of most and least deprived	5.4%	128	51

³ According to Local Authority 2013 Household Survey

⁴ <http://wimd.wales.gov.uk/geography/la?lang=en>

⁵ 12 students in each school participated in the peer discussion

Figure 1: Participating children and schools



Methodology

A mixed method approach was adopted for this research consisting of both quantitative (questionnaire) and qualitative (draw and write [D&W], peer discussion) research methods (Figure 2 and Appendix 1). Research tools were initially drafted with input from Public Health Wales and revised following piloting in a primary school from an area in Wales that had not been selected for the research sample. Research tools were provided in English for schools 1-6 and 8, and in Welsh for school 7 (although English versions of the draw and write and questionnaire were available in case a child was not confident or able to complete in Welsh). A teacher from a Welsh-speaking school that did not participate in the research provided feedback on the English to Welsh translation to ensure it remained suitable for primary school children. All of the data collected in school 7 was translated into English, with the translation crosschecked by two Welsh speaking research assistants. Details of the methodology limitations are included in Appendix 1.

Figure 2: Outline of study methods

 <p>Draw and Write</p>	<p>This was a class based activity for children aged 9 and 11, and a small group activity for children aged 7. All participants completed 2 draw and write inquiries.</p>
 <p>Questionnaire</p>	<p>This was a class based activity for children aged 9 and 11, and a small group activity for children aged 7. All participants completed a questionnaire which included 13 predominantly closed questions.</p>
 <p>Peer Discussions</p>	<p>Four children (2 male and 2 female) from each class took part in a semi-structured peer discussion.</p>

Analysis

Draw and Write – A content analysis was undertaken to determine the presence of certain words/ concepts within the written text. To facilitate this, an iterative qualitative coding framework was developed from the responses (Williams et al, 1989). The children’s written responses were coded, refined and combined into content categories. Simple frequency counts were done in Excel and themes in the data were identified. A child’s response was only counted once in each category but could be coded to several categories in the event that the answer had multiple responses. Analysis of the frequencies within each theme enabled us to make inferences about the messages within the children’s texts.

Questionnaire - All data was entered, cleaned and analysed in SPSS v23. Analyses used frequencies, descriptive statistics and chi-squared tests.

Peer discussion groups - The peer discussions were recorded using a digital audio device and were transcribed in verbatim. Thematic analysis (Braun and Clarke, 2006) was applied to the data. Illustrative quotations are used throughout the write up of the analysis to highlight themes. The transcripts were analysed using QSR NVivo 11 (NVivo qualitative data analysis Software; QSR International Pty Ltd. Version 11, 2012).

3. Results

Data on children’s perceptions of electronic and tobacco cigarettes are presented thematically, based on the key messages that emerged from analysis across the three methods used. Verbatim quotes from the peer discussion groups are presented in speech bubbles to support qualitative analysis.

Key Message:

Children are aware of electronic cigarettes and able to differentiate them from tobacco cigarettes

Study findings demonstrated that almost all the children across the 3 age groups were aware of electronic cigarettes and the majority (94.9%) could distinguish electronic cigarettes from tobacco cigarettes.⁶ Almost three quarters (73.7%) reported seeing tobacco cigarettes more often than electronic cigarettes (14.5%) (Figure 4). By year group, the proportion correctly identifying each type ranged from 89% amongst those aged 7 to 100% amongst those aged 11 ($p<0.01$; Table A1, Appendix 3). Questionnaire responses also indicated that the majority of children thought electronic and tobacco cigarettes looked different from each other (93.3%), and that the insides were different (82.5%) (Figure 3). Around half reported that they think they smell different (51.1%) and the smoke is different (48.0%) (Figure 3). A higher proportion thought that compared to electronic cigarettes, tobacco cigarettes were used more by people and were easier to purchase (Figure 4). Electronic cigarettes were depicted as *cheaper* ($n=3$) and *easier and faster to use* ($n=7$) than tobacco cigarettes in some D&W responses. Peer discussion participants also suggested that electronic cigarettes were cheaper to buy than tobacco cigarettes because they were reusable however there was little recognition that e-liquids would have to be frequently replaced.

“It might be stronger longer and you don’t throw it away” (Female, Aged 7, School 1)

“They [electronic cigarette] last longer” (Female, Aged 11, School 2)

⁶ When presented with six different images of tobacco and electronic cigarettes

Over six in ten questionnaire respondents (61.8%) stated that electronic cigarettes were *safer to use* than tobacco cigarettes. This was evidenced in the qualitative findings as well and was principally based on the fact that electronic cigarettes did not need to be lit and therefore were not a fire hazard. Six D&W responses stated that electronic cigarettes were safer to use because a lighter was not needed. The risk of fire was a particular concern of younger children.

“I think the electronic one is more safer than the other [tobacco] one because if we blow it too hard and we drop it and it is still flaming it might cause a forest fire or a house fire” (Male, Aged 7, School 3)

“With the other ones [tobacco cigarettes] if you light it and drop it on the carpet it can cause a fire” (Female, Aged 9, School 5)

“They [tobacco cigarettes] can set fire to anything” (Female, Aged 7, School 4)

Figure 3: Differentiating aspects of electronic and tobacco cigarettes (questionnaire)

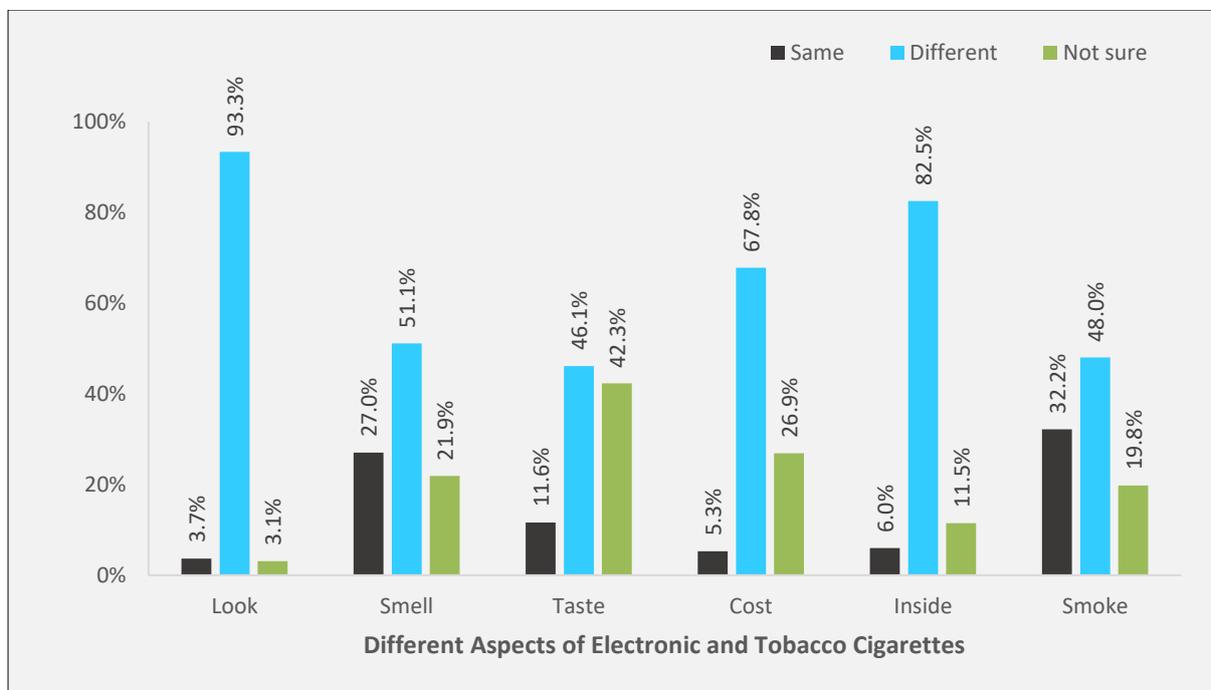
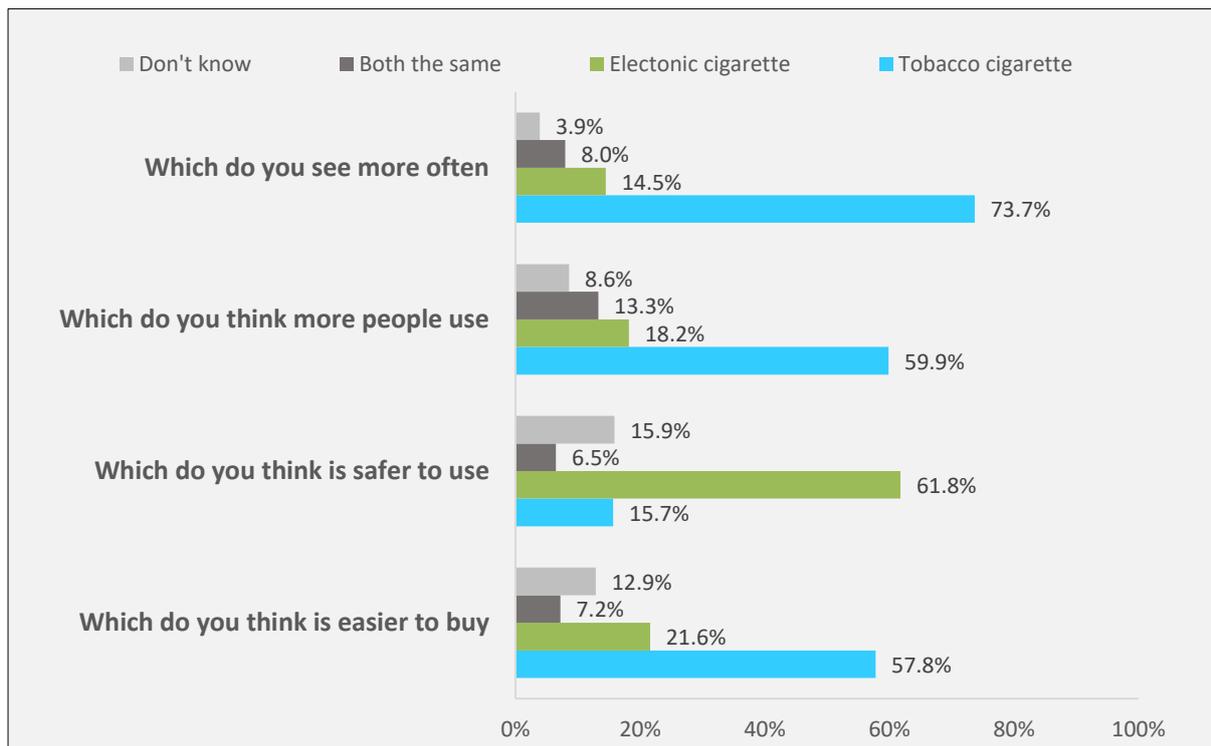


Figure 4: Children's perceptions of electronic and tobacco cigarettes (questionnaire)



Female, Aged 11, School 5, Electronic Cigarettes

People smoke electric cigarettes to prevent themselves from smoking a normal cigarette. Some people smell different scents because people use flavours.

Who is this person (boy/girl, age)?
boy

How do they feel?
good because it is preventing them from smoking a real cigarette.

Why are they using an electronic cigarette?
To prevent them from using a real cigarette.

What does using an electronic cigarette do to their body?
I do not know?

What do you see and smell?
You can see smoke
And smell different scents.

Male, Aged 11, School 4, Tobacco Cigarettes

Who is this person (boy/girl, age)?
my mother (140+)

How do they feel?
She feels relaxed that the stress goes away

Why do they smoke?
To stop being stressed

What does smoking do to their body?
make their face all wrinkly and mess up and their voice deep and changes the color of their teeth but it hasn't happened yet to her

What do you see and smell?
I see smoke
I smell tobacco and it disgusts me

Qualitative data confirmed that the children could discern the difference between electronic and tobacco cigarettes. All of the children who took part in the peer discussions could distinguish between pictures of electronic and tobacco cigarettes (Table A1, Appendix 3) and use relevant terminology for each ('e-cigarettes', 'e-cigs' and vapes versus 'cigs' and 'fags').

Many in the peer discussions could name the components that make up tobacco cigarettes (tobacco, nicotine) but there was some confusion at times about the components in electronic cigarettes. The majority however knew electronic cigarettes were made of metal and a minority discussed the e-liquids. Children exposed to people who vape and smoke appeared to be better informed about the products.

"They [electronic cigarettes] don't have any tobacco in" (Male, Aged 9, School 7)

"They look like different from normal fags" (Male, Age 7, School 4)

"[Electronic cigarettes are made of] plastic with electrics inside, so a glass tube filled with some sort of oil" (Male, Aged 11, School 7)

"I've seen them [electronic cigarettes], but I don't know what they are made of" (Female, Aged 9, School 4)

With regard to the e-liquid, some children in the peer discussions believed that different flavours of electronic cigarettes would appeal to different age groups with young people preferring sweeter flavours. Flavours played an important part in children's views on the taste and smell of electronic cigarettes. Across all the peer discussions the children felt that fruit flavoured e-liquids were more likely to appeal to young people and could potentially encourage electronic cigarette use. A small number of children also proposed that trying these different flavours might be a reason for electronic cigarette use among young people.

"I think that the younger people will want to do it because with all the different flavours, they just want to try them" (Female, Aged 9, School 1)

"Well, older people like peppermint" (Male, Aged 11, School 7)

"I think grown-ups must get alcohol flavour" (Female, Aged 9, School 1)

"Probably, because most children like sweets. It's probably that they would want to try that flavour" (Male, Aged 11, School 3)

There was some uncertainty around age restrictions and the legal age of purchase for both tobacco and electronic cigarettes in the peer discussions. Interestingly, some children included people in their D&W depictions who were under the required legal age to purchase tobacco and electronic cigarettes.

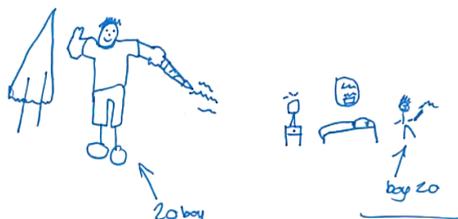
Additionally, there was confusion across all age groups about the legal consequences of those who were under the lawful age to purchase tobacco and electronic cigarettes with some participants stating that children or parents could go to prison if they were found to be smoking or vaping.

“You have to be like eighteen to smoke or something (Female, Aged 7, School 2)”

“Over 16” (Male, Aged 9, School 6)

“The parents might get in jail because they’re letting their children smoke” (Female, Aged 7, School 4)

Female, Aged 9, School 8, Electronic Cigarettes



Who is this person (boy/girl, age)?

20 boy

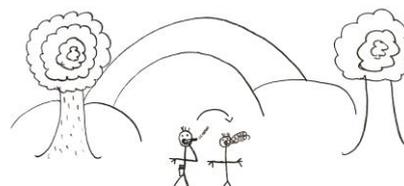
How do they feel? *cooler than having a fog*

Why are they using an electronic cigarette? *because you can get different flavors*

What does using an electronic cigarette do to their body? *people think they are better*

What do you see and smell? *the thing they have in.*

Female, Aged 11, School 8, Tobacco Cigarettes



Who is this person (boy/girl, age)? *boy in teens*

How do they feel? *cool because they smoke*

Why do they smoke? *because they have been persuaded by their peers to smoke.*

What does smoking do to their body? *creates and builds tar on their lungs*

What do you see and smell? *I see smoke and smell smoke*

Children in the peer discussions were also less sure about where to purchase electronic cigarettes compared to tobacco ones. Across all age groups they were better able to discuss tobacco cigarettes being available in supermarkets and newsagents. Some older children were aware that tobacco products had to be stored out of public view in shops. Others discussed the warning labels on packets of tobacco cigarettes and commented that electronic cigarettes did not carry similar warnings. In relation to electronic cigarettes, some participants discussed seeing specialist shops and those who had relatives that used electronic cigarettes were aware of a number of different places that they could be purchased including specialist shops, supermarkets and online.

"You can buy them [electronic cigarettes] from shops, sort of special shops" (Male, Aged 9, School 4)

"You need to get a proper one [electronic cigarette] from special shops. My mum has a proper one" (Female, Aged 11, School 6)

"You can get them [tobacco cigarettes] in shops but they're behind the counter and you have to show ID" (Female, Aged 11, School 7)

"I know there is an e-cig shop down in town somewhere" (Male, Aged 11, School 4)

Although the children in the study were able to differentiate between the products themselves, there was lack of clarity around the vapour produced by electronic cigarettes. Of the 410 responses in the D&W exercise describing what children see and smell when near an electronic cigarette user, almost half (45%) referred generically to smoke (n=183). Nearly a quarter (n=94) mentioned *sweet, scented smoke, nice smells* and fruit flavours including *cherry, watermelon, bubble-gum and toffee*, but only 29 children referred specifically to steam, vapour or condensation. With regards to tobacco smoke, three quarters of the children (n=324) mentioned *smoke* in their responses and one quarter (n=106) specifically commented that the smell of tobacco smoke was *disgusting* and *horrible*.

Female, Aged 11, School 8, Electronic Cigarettes



Who is this person (boy/girl, age)? boy in teens

How do they feel? calm

Why are they using an electronic cigarette?
because they only want nicotine - the addictive ingredient in cigarettes.

What does using an electronic cigarette do to their body?
I don't know.

What do you see and smell?
I see white vapour, I smell different sweet things depending what flavour e-cigarette they have.

Male, Aged 7, School 1, Tobacco Cigarettes



Who is this person (boy/girl, age)?

17 girl

How do they feel?
fashionable

Why do they smoke?
want to be cool

What does smoking do to their body?
take 5 min of life

What do you see and smell?
fumes smoke

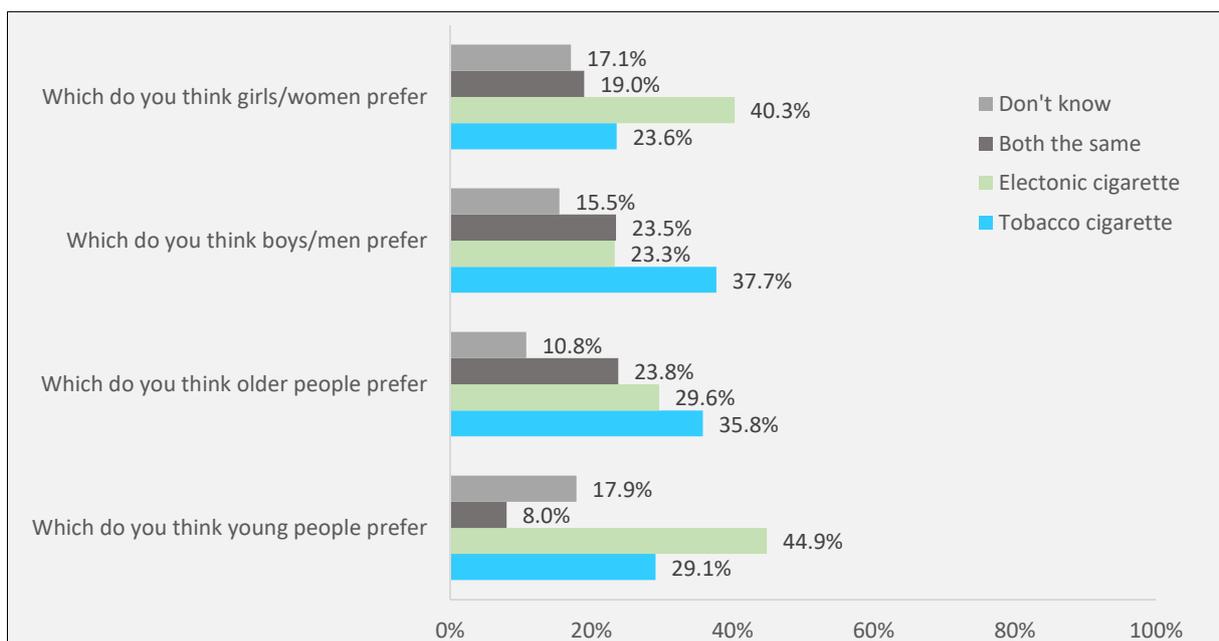
Regarding who vapes or smokes, there were few discernible differences between depictions in the D&W exercise. More than half the illustrations were labelled as males aged 25-60 years, although

slightly more men were presented as tobacco smokers than electronic cigarette users. In the questionnaire, a higher proportion of children felt that older people (35.8%) and males (37.7%) would prefer tobacco cigarettes than electronic cigarettes (Figure 5). Conversely, a higher proportion felt that younger people (44.9%) and females (40.3%) would prefer electronic cigarettes than tobacco cigarettes (Figure 5).

In the peer discussion groups, smoking tobacco cigarettes tended to be associated with a wider range of age groups compared to electronic cigarettes. Participants believed that older people would be more likely to smoke rather than vape, as electronic cigarettes were relatively new and therefore older people would be unfamiliar with them.

*“The older people would have got used to the old ones [tobacco cigarettes]”
(Female, Aged 9, School 6)*

Figure 5: Perceptions of tobacco and electronic cigarettes (questionnaire)



Key Message:

Children believe people use electronic cigarettes and tobacco cigarettes for different reasons

According to study findings, children think people mainly use electronic cigarettes to stop smoking and tobacco cigarettes to look cool. This suggests an understanding of the role electronic cigarettes play in smoking cessation and recognition of the social role of tobacco smoking. As highlighted in Table 2, the reasons cited for using electronic cigarettes included to *stop smoking* tobacco cigarettes (age 7, n=20; age 9, n=38; age 11, n=44), because they are *better* (age 7, n=11; age 9, n=20; age 11, n=13) and *healthier* than tobacco cigarettes (age 7, n=16; age 9, n=9; age 11, n=14). By comparison, the main reasons given for smoking tobacco cigarettes was to *look cool / popular* (age 7, n=21; age 9, n=38; age 11, n=39), because *it was fun, enjoyable* and smokers *liked it* (age 7, n=53; age 9, n=24; age 11, n=15) and smokers *were addicted* (age 7, n=6; age 9, n=32; age 11, n=27). There were a similar number of *don't know* responses for both electronic and tobacco cigarettes (16% and 18% respectively).

Female, Aged 9, School 2, Tobacco Cigarettes



Who is this person (boy/girl, age)?
It is a girl. She is 19½.

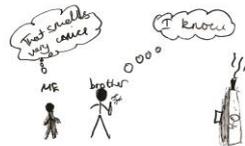
How do they feel?
Relaxed

Why do they smoke?
Because they are stressed,
Her dog died.

What does smoking do to their body?
It makes your lungs
Rip up. You could get lung cancer.

What do you see and smell?
I see smoke and smell ash.

Male, Aged 11, School 4, Electronic Cigarettes



Who is this person (boy/girl, age)?
Boy / brother (16)
(17 this year)

How do they feel?
Don't know

Why are they using an electronic cigarette?
I think it is to be cool
in front of his friends

What does using an electronic cigarette do to their body?
don't know

What do you see and smell?
I see a lot of smoke
I smell a very nice bubble gum
smell

Interestingly, some children also associated tobacco smoking with stress. Forty-five responses (10%) cited 'relieving stress' as a reason for smoking tobacco cigarettes as compared to 2% for electronic cigarettes (Table 2). Stress was also cited as a factor in how smokers feel. This was reiterated in the peer discussions where several children cited stress as a reason why people smoked tobacco cigarettes. These children tended to have a parent or relative that smoked.

“They might smoke, grown-ups, because they are really stressed from work” (Female, Aged 9, School 3)

“People get stressed a lot, like my mum smoked. She’s stressed cause her dad passed away a few years ago...she just says it calms her down” (Male, Aged 9, School 2)

Table 2: Children’s perceptions of why people vape and smoke (Draw & Write)

	Rationale	Electronic Cigarettes (370 responses*)	Tobacco Cigarettes (445 responses*)
	To stop smoking	102 (28%)	0 (0%)
	Don’t know	60 (16%)	79 (18%)
	Better than smoking	44 (12%)	0 (0%)
	Like it, want to, fun, enjoyable	40 (11%)	92 (21%)
	Healthier	39 (11%)	0 (0%)
	Look cool / be popular	38 (10%)	98 (22%)
	Easier, quicker	12 (3%)	0 (0%)
	Addicted to cigarettes	10 (3%)	65 (15%)
	Stress relief	7 (2%)	45 (10%)
	Friends, peer pressure	7 (2%)	33 (7%)
	Safer to use	6 (2%)	0 (0%)
	Imitate others	4 (1%)	11 (2%)
	Cheaper	3 (1%)	0 (0%)
	Depressed	0 (0%)	13 (3%)
	Drunk	0 (0%)	9 (2%)

**Responses are the number of responses per inquiry based on word frequencies derived from a content analysis of the D&W text rather than individual children*

Male, Aged 11 School 5, Tobacco Cigarettes



Who is this person (boy/girl, age)?

11 years old boy

How do they feel?

Cool because they can smoke and they think they are cooler than everyone.

Why do they smoke?

Peer pressure and because there family smoke they want to be cool like them.

What does smoking do to their body? It's not cool at all. Can't breathe, black lungs, kills you, makes you ill.

What do you see and smell?

You smell this disgusting smell on the clothes also it makes other people smell.

Female, Aged 9, School 7, Tobacco Cigarettes



Pwy yw'r person (bachgen/merch/bedran)?

Bachgen 46
boy, aged 46

Sut mae'n teimlo?

strest
stressed

Pam mae'n smygu?

cuil - cool.

Beth mae smygu yn ei wneud i gorrff y person?

chingallu marw
you can die.

Beth wyt ti'n ei weld a'i arogl?

Mwg
smoke

Female, Aged 11, School 1, Electronic Cigarettes



Who is this person (boy/girl, age)?

24

How do they feel?

relaxed

Why are they using an electronic cigarette?

they are being peer pressured

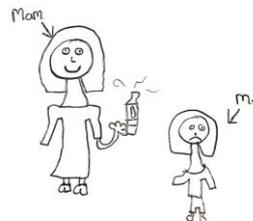
What does using an electronic cigarette do to their body?

It's the same as a cigarette

What do you see and smell?

Not sure

Female, Aged 9, School 4, Electronic Cigarettes



Who is this person (boy/girl, age)?

girl 35

How do they feel?

I don't know

Why are they using an electronic cigarette?

to try and give up

What does using an electronic cigarette do to their body?

I don't no

What do you see and smell?

I don't no

Children's understanding of the role electronic cigarettes play in smoking cessation were evident in the peer discussions as well. Children who were familiar with electronic cigarettes were better able to discuss how using electronic cigarettes can help people to quit smoking. Several cited examples of parents and relatives who previously smoked but now use electronic cigarettes. It was also noted that, as adults were perceived as being more likely to smoke tobacco cigarettes, that they would also be more likely to use electronic cigarettes as a means of smoking cessation.

"They are electric cigarettes to stop you from smoking" (Female, Aged 9, School 4)

"People who smoke normal tobacco, they wanted to quit so they started smoking the electronic (Male, Aged 11, School 3)

"He [dad] has mostly stopped using them [tobacco cigarettes] and just uses those [electronic cigarettes]" (Male, Aged 7, School 5)

"My father stopped smoking about 3 years ago now, he has been on vapes since then. He has been lowering the nicotine and he is down to 0 now" (Male, Aged 11, School 5)

There were some associations made with young people (teenagers) using electronic cigarettes to look cool and fit in with peer groups, but this was less so compared to associations made with tobacco cigarettes. There appeared to be a much stronger stereotype of teenagers smoking tobacco cigarettes. Whilst the participants felt that some young people would smoke tobacco cigarettes to look cool, they acknowledged that it was harmful to health.

"Teenagers, they try really hard to look cool and stuff" (Male, Aged 11, School 6)

"Maybe [they use] it [electronic cigarettes] because they think that it's cool or something" (Male, Aged 9, School 7)

"If all their friends use cigarettes and one person doesn't, then you're that person that doesn't smoke" (Male, Aged 9, School 3)

"They [teenagers] like to impress the girls / boys" (Male, Aged 9, School 8)

"Probably teenagers [smoke tobacco cigarettes] because they are silly" (Male, Aged 7, School 3)

"They think because they are under 18 that it's really cool and they go and get cigarettes but actually they are endangering their life" (Male, Aged 11, School 1)

Key Message:

Children have little understanding of any health harms of electronic cigarettes

Whilst study findings have demonstrated that the children are aware of different aspects of electronic cigarettes relative to tobacco cigarettes, they appear to have little or no understanding of health harms, often associating vaping and smoking with similar levels and types of health harms.

Table 3 illustrates children's D&W responses to the question 'what does using an electronic cigarette do to the body?' Almost a third (30%) of responses were *do not know*; 6% *not harmful* and 7% *healthier and less harmful* than tobacco cigarettes. Electronic cigarettes were considered to be as bad for health as tobacco cigarettes or to cause death in 4% of responses respectively. Almost a quarter (23%) referenced internal damage to the body (e.g. *lungs, heart, and chest*) or *generic illness*.

With respect to smoking tobacco cigarettes, almost all the children (94%) acknowledged the harmful effects of smoking in the D&W exercise. Responses to the question 'what does smoking do to the body' ranged from *death* (8%) to *general illness* (19%). More than half the D&W responses (56%) mentioned particular internal organs (e.g. *lungs, heart and chest*) or *cancer* and 11% alluded to the visible signs of tobacco smoking on the body (*wrinkles, black teeth and stained fingers*). Only 1% considered smoking cigarettes to have no health effects and 5% *did not know* of any health harms.

Male, Aged 9, School 1, Electronic Cigarettes



thinks that only
real cigarettes are
bad so she uses e-cigs
Age: 10

Who is this person (boy/girl) age?

How do they feel?

like only real cigarettes have bad side effects.

Why are they using an electronic cigarette?

because they feel they can live vaping and not bad side effects.

What does using an electronic cigarette do to their body?

almost the exact same as normal ones.

What do you see and smell?

Smoke and James again.

Female, Aged 11, School 1, Tobacco Cigarettes



Who is this person (boy/girl, age)? Girl age: 26

How do they feel? They feel like smoking is good for them and they want to be cool.

Why do they smoke? To be cool (they smoke to be cool)

What does smoking do to their body? Smoke gives you bad lungs and you can sometime -s die.

What do you see and smell? I smell smoke it makes me cough and I see them being stupid.

Table 3: Perceived health harm of electronic and tobacco cigarettes (Draw & Write)

	Perceived Health Harms	Electronic Cigarettes (385 Responses*)	Tobacco Cigarettes (540 responses*)
	No effect on health - not harmful	26 (6%)	4 (1%)
	General illness Hurts body, poorly, ill, unhealthy	87 (23%)	105 (19%)
	Same health effect as smoking	17 (4%)	n/a
	Better, healthier than smoking	28 (7%)	n/a
	Internal damage Lungs, heart, chest, cancer	87 (23%)	301 (56%)
	External damage Black teeth, bad breath, wrinkly	10 (3%)	58 (11%)
	Death - Kills, die	14 (4%)	46 (8%)
	Don't know	116 (30%)	26 (5%)

***Responses are the number of responses per inquiry based on word frequencies derived from a content analysis of the D&W text rather than individual children*

Poor understanding of any health harms of electronic cigarettes was evident in the peer discussions as well. Children who had less exposure to electronic cigarettes often said that they were not aware of any health harms associated with electronic cigarettes. Some children, especially those who were younger, mistook the fruit flavours as being an indication that the e-liquids contained fruit and were therefore healthy.

“If you put in a different juice [e-liquid] and you haven't washed it out properly, they can get mixed together that's make it worse. If a child is coughing, it goes into their and it makes them really ill” (Female, Aged 9, School 3)

“They might try it [vaping], but if they are too young they might not know that there is bad bacteria inside” (Male, Aged 7, School 3)

“It's strawberry flavoured and strawberries are healthy” (Female, Aged 7, School 1)

“I think the electronic one [is healthier] because it has fruits in” (Female, Aged 7, School 3)

Interestingly, the lack of scientific knowledge around the health harms of electronic cigarettes was discussed by older children in the peer discussions who felt that people should be cautious about vaping until health harms were better understood.

"In about 2 years' time we could find out that they're [electronic cigarettes] even worse than the other ones but we don't know yet" (Male, Aged 11, School 1)

With respect to tobacco smoking, children across all peer discussions cited a number of health harms associated with smoking tobacco cigarettes similar to those elicited in the D&W inquiries. The level of knowledge varied across age groups with the majority citing how smoking was bad for a person's lungs and caused people to cough, with older children being more likely to discuss cancer as a potential health harm. Children who had a relative who smoked appeared to be more aware of specific health harms. Several who had grandparents that smoked spoke about how their parents would discuss the health implications of smoking in relation to health problems that their grandparents were now experiencing. This appeared to be a deterrent as these participants' implied that they would not smoke in the future. Some participants whose parents smoked discussed how they were concerned for their parent's health.

"It creates tar on their lungs" (Male, Aged 11, School 8)

"My grandparents died from cancer because of smoking" (Male, Aged 11, School 4)

"My mum and dad told me smoking is really bad for your lungs and everything. My nan smoked once and she had cancer and everything" (Female, Aged 9, School 4)

"[Smoking] makes you die early" (Female, Aged 7, School 7)

A prevailing theme throughout the study was children's perceptions that electronic cigarettes were *healthier* than tobacco cigarettes. It is important to note here that whilst electronic cigarettes are commonly framed as 'less harmful' by the public health community, the children in this study largely used the phrase 'healthier' in relation to electronic cigarettes. For example, when describing reasons for using electronic cigarettes in the D&W exercise (Table 2), 11% (n=39) stated that people used them because they were *healthier*. In Table 3, 7% (n=28) of responses about the health effects of electronic cigarettes indicated that vaping was *better and healthier* than smoking when considering the health effects of electronic cigarettes.

Female, Aged 11, School 1, Electronic Cigarettes



Who is this person (boy/girl, age)? boy age : 30

How do they feel? They feel cool dudes.

Why are they using an electronic cigarette? They use them because they think they are healthy for them.

What does using an electronic cigarette do to their body? I am not sure

What do you see and smell? I smell horrible smoke.

Female, Aged 11, School 2, Electronic Cigarettes

My auntie's daughter



Who is this person (boy/girl, age)? girl 20-30 year old

How do they feel? don't know

Why are they using an electronic cigarette? They want to smoke but they know that it's safer to use an electronic. Family smokes a lot.

What does using an electronic cigarette do to their body? damages the heart + lungs but not as much as a normal cigarette.

What do you see and smell? The same thing but a lot less smoke and less smell.

However, whilst electronic cigarettes were generally seen as 'healthier' than tobacco cigarettes, they were still considered to be more harmful than not smoking or vaping at all. Questionnaire results (Figure 6) indicated that more children (74.6%) thought smoking was never a good thing to do as compared to 57.5% who thought using an electronic cigarette was never a good thing to do. Children were less likely to feel that using an electronic cigarette was never a good thing to do if they lived with somebody who used them. Additionally, more than half the children believed tobacco cigarettes were worse for smoker's lungs (59.6%) and worse for other people's lungs (55.4%) than electronic cigarettes. Further, questionnaire results also showed that the perception that tobacco cigarettes were worse for the lungs than electronic cigarettes increased with age from 46% of children aged 7 to 72.7% aged 11. This sentiment was evident in the peer discussion discussions as well. Whilst many of the participants did not think it was okay to use electronic cigarettes, they were generally considered to be not as bad as tobacco cigarettes. They also felt that people who wanted to be healthy would more likely use electronic cigarettes than smoke tobacco cigarettes.

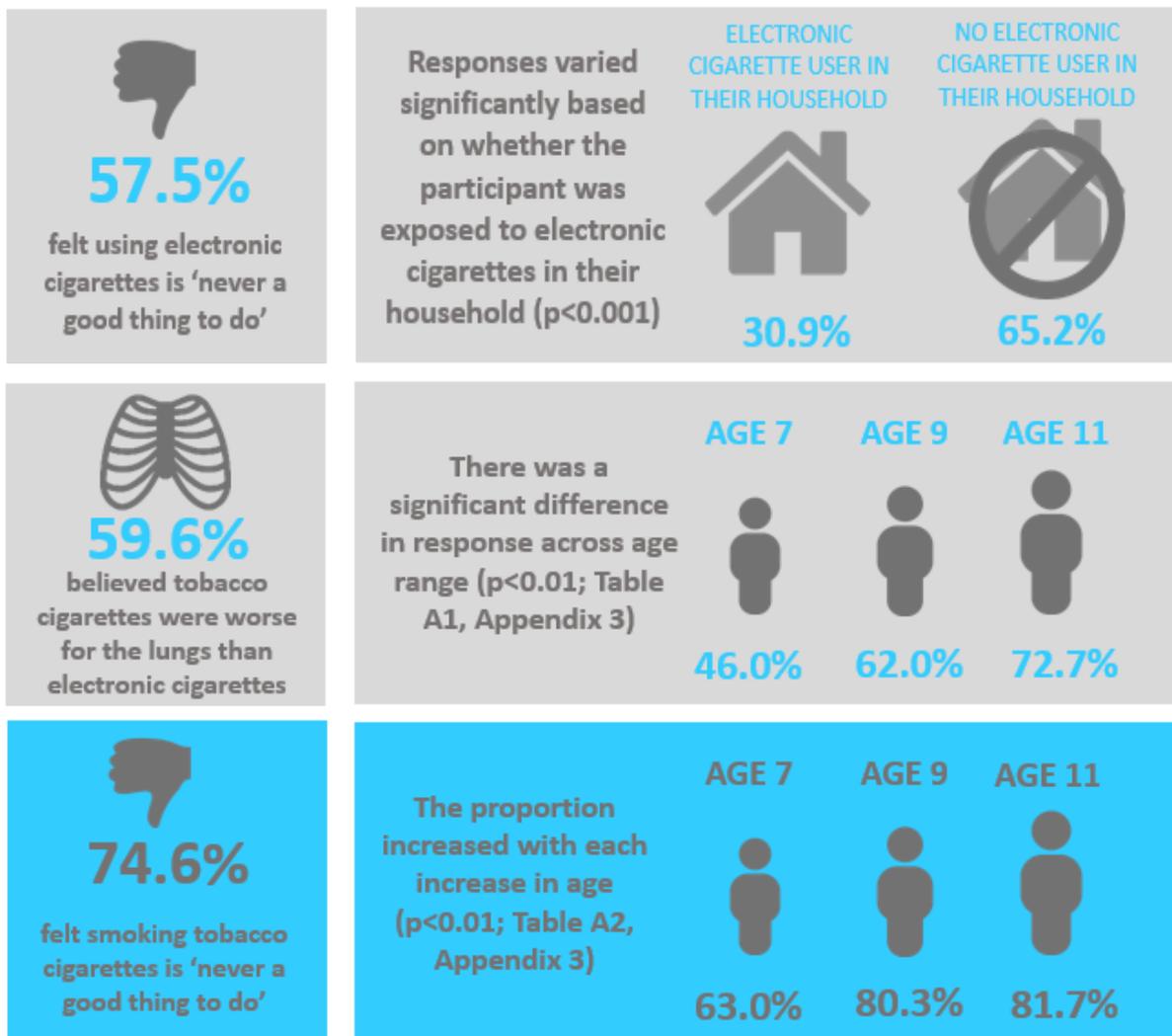
"Well they don't damage your lungs like tobacco ones because you don't have the ash in it" (Male, Aged 7, School 5)

"People class them as like a healthier way of using cigarettes, people think they are better but they're not" (Female, Aged 9, School 4)

"There is no tobacco in them so it can't harm you as much" (Male, Aged 11, School 7)

"They [electronic cigarettes] are ever so slightly better [than tobacco cigarettes] because they have no tar and stuff" (Male, Aged 11, School 6)

Figure 6: Responses to the question: Is using electronic or tobacco cigarettes a good thing to do? (questionnaire)



Whilst study findings demonstrated that children generally had negative perceptions of vaping and smoking, it is interesting to note in Table 4 that more than half the D&W responses to the question 'how would your electronic cigarette user feel?' were positive (e.g. happy, relaxed, cool), just over a quarter (27%) were negative (sad, sick, stressed), 7% of responses were neutral (okay, fine) and 11% of children did not know how an electronic cigarette user would feel. By comparison, nearly half the responses (48%) for tobacco smokers were positive (e.g. happy, cool, and relaxed). Negative responses for tobacco cigarettes (39%) included feeling bad, sick and stressed. Neutral responses (5%) included references to being fine, okay and normal and 8% of children did not know how the tobacco smoker would feel. In the peer discussions, children tended to discuss more negative feelings in relation to smoking tobacco cigarettes, mainly around stress and feeling sick. The exception to this was young people smoking, as discussed previously they were perceived as finding smoking fun and cool.

“They [the smokers] look like they’re miserable” (Male, Aged 7, School 3)

“They [teenagers] think it’s cool” (Male, Aged 11, School 5)

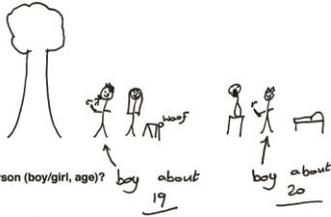
Notably, some children (n=20) perceived electronic cigarette users to feel *better* because they were no longer smoking ‘real’ cigarettes. Eight children specifically highlighted that their electronic cigarette user was ‘happy’ because they had stopped smoking. Age-related differences were identified with the youngest children (age 7) giving individualised responses for positivity (happy, like it) and the oldest (age 11) giving socially motivated responses (to be cool).

Table 4: Responses to the question: How does your person feel? (Draw & Write)

How do they feel?		Electronic Cigarettes (445 responses*)	Tobacco Cigarettes (498 responses*)
Positive feelings 	 Happy, like it, good	160 (36%)	153 (31%)
	 Cool	38 (9%)	50 (10%)
	 Relaxed and calm	27 (6%)	34 (7%)
	 Better – stopped smoking	20 (5%)	0 (0%)
Negative feelings 	 Impact on person: sad, angry, bad, worried, upset	87 (20%)	91 (18%)
	 Impact on person: sick, poorly, ill	15 (3%)	44 (9%)
	 Negative feelings: stressed	12 (2%)	39 (8%)
	 Rationale: addicted to cigarettes	8 (2%)	20 (4%)
Neutral feelings	 Okay, fine, normal	30 (7%)	25 (5%)
Don't Know 	 Don't know	48 (11%)	42 (8%)

**Responses are the number of responses per inquiry based on word frequencies derived from a qualitative content analysis of the D&W text rather than individual children*

Female, Aged 9, School 8, Tobacco Cigarettes



Who is this person (boy/girl, age)? boy about 19

How do they feel? Cool

Why do they smoke? because they want to be cool

What does smoking do to their body? Makes them ill and their body gets bad

What do you see and smell? Smoke

Female, Aged 7, School 1, Electronic Cigarettes

My dad has one as well- he uses it at work but smokes at home.



Who is this person (boy/girl, age)? dad 40

How do they feel? good

Why are they using an electronic cigarette? Because they want to stop smoking

What does using an electronic cigarette do to their body? it makes him lazy

What do you see and smell? I see leads and 1000s of smoke

Study findings also suggest that children misunderstood the role of nicotine in both vaping and smoking. Some comprehension of addiction was evident but it was primarily associated with tobacco cigarettes and largely not attributed to nicotine. Figure 7, highlights significant age related differences in questionnaire responses which show more children reporting it would be harder to stop smoking tobacco (66.7%) than electronic cigarettes (46.9%). There was little difference across the age groups with regards to their perception that it would be hard to stop smoking tobacco cigarettes once started (Appendix 3, Table A1). However, there was more discrepancy between the age groups when it came to 'no' and 'don't know' responses. Those aged 11 were less likely to think it was not hard to stop smoking tobacco cigarettes once started (4.9%) compared to those aged 7 (22.6%).

In the D&W exercise, the word *addicted* was cited 103 times, exclusively in relation to how tobacco smokers feel and why they smoke tobacco cigarettes. Peer discussions also highlighted a general lack of awareness that nicotine was a key ingredient in many electronic and all tobacco cigarettes. This was reflected in discussions of the composition of electronic cigarettes. Those children who did think electronic and tobacco cigarettes were addictive did not know why. Some children considered tobacco cigarettes to be more addictive than electronic cigarettes. These tended to be the children who had a parent that used electronic cigarettes.

"They're [electronic cigarettes] not as addictive [as tobacco cigarettes]" (Male, Aged 9, School 4)

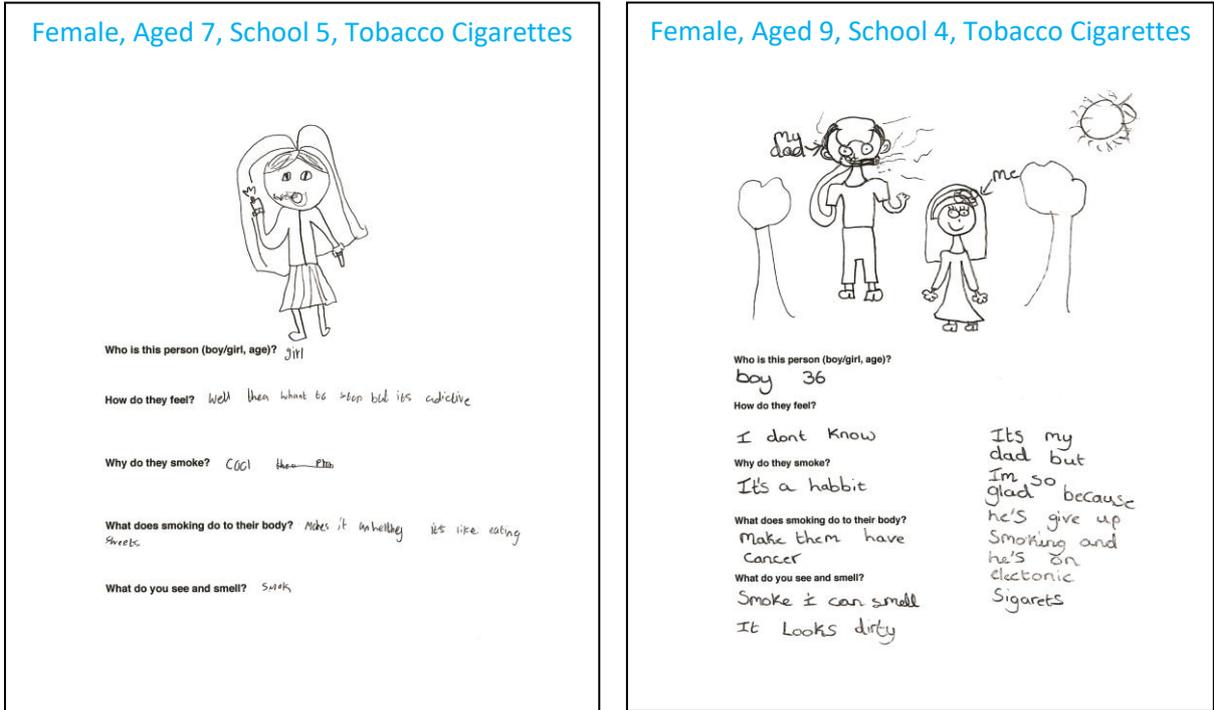
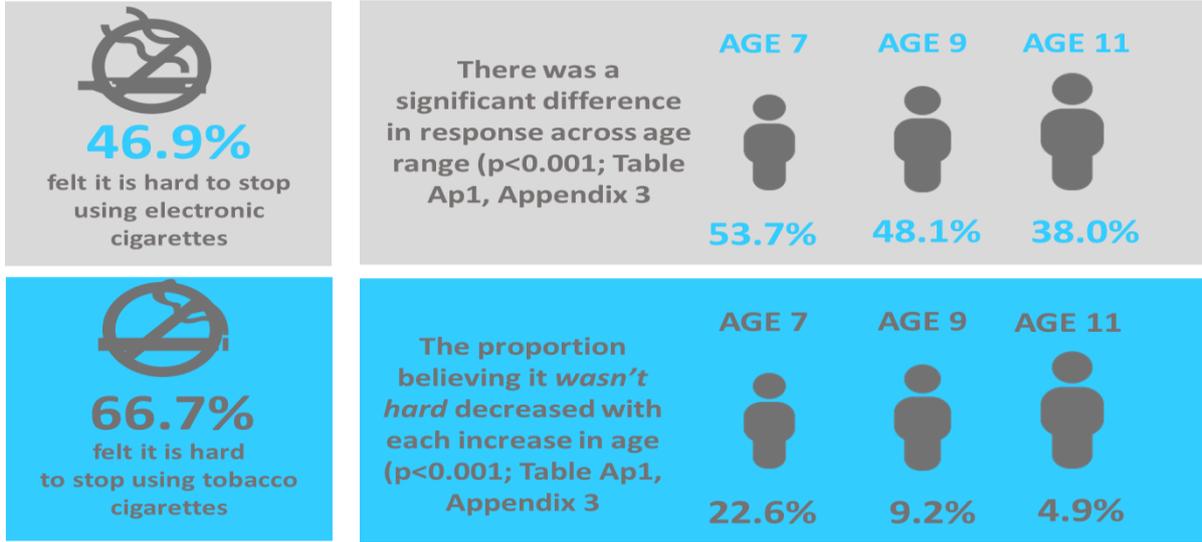


Figure 7: Responses to the question: Is it hard to stop vaping / smoking? (questionnaire)

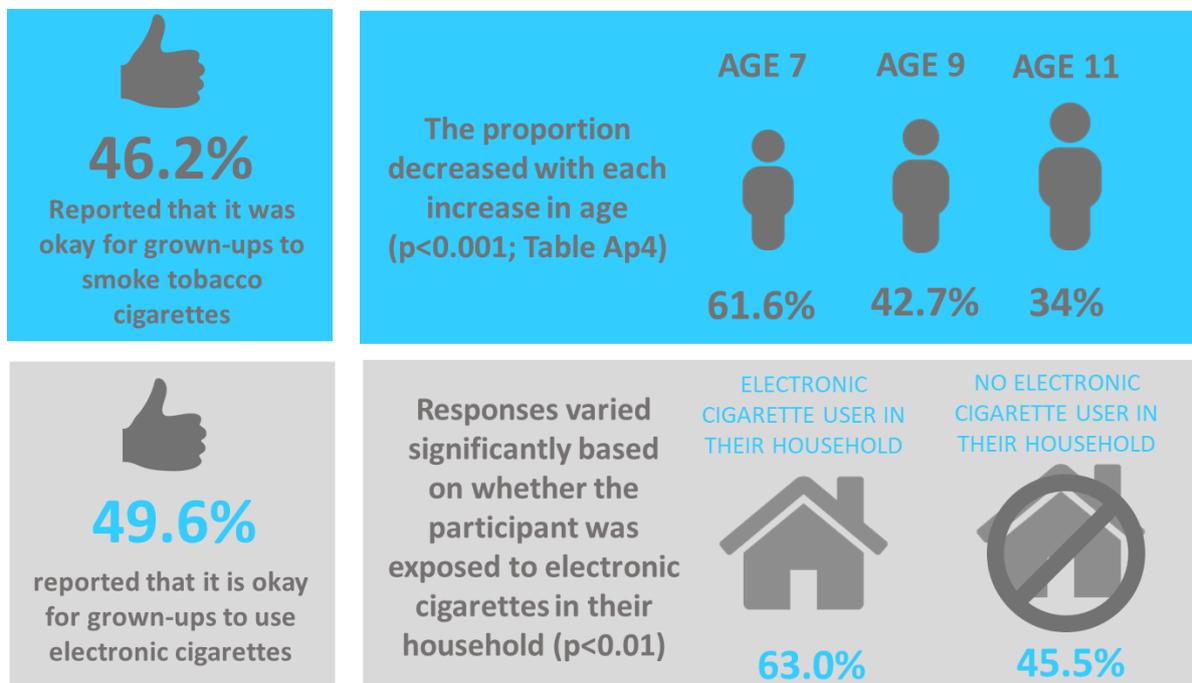


Key Message:

Children perceived vaping and smoking to be unacceptable for children but more acceptable for adults

Almost all children in the study were of the opinion that using electronic cigarettes and smoking tobacco cigarettes was inappropriate for children their age. Six (1.2%) participants thought it was okay for children their age to use electronic cigarettes and only 1 (0.2%) participant thought it was okay for children their age to smoke tobacco cigarettes. However, almost half thought it was okay for grown-ups to use electronic cigarettes (49.6%) or tobacco cigarettes (46.2%) (Figure 8 and Table A4, Appendix 3). Questionnaire results were age related, with acceptability of tobacco smoking decreasing with age, and influenced by exposure to cigarettes in the home, with children who lived with an electronic cigarette user being more likely to report that it was ok for grown-ups to use electronic cigarettes.

Figure 8: Responses to the question: Is it okay for grown-ups and children to vape / smoke? (questionnaire)



This dichotomous view was reflected in the qualitative data as well. The rationale for this perception was explored in the peer discussions. Most of the children felt it was more acceptable for adults to use electronic and tobacco cigarettes than children because of the legal age restriction; many of the children were adamant that it was important that this was adhered to although, as discussed previously, many were unclear what the legal age was. Furthermore, there was a perception that adults were better able to make decisions about behaviours that had potential risk. Some children suggested that the smoke from tobacco cigarettes was more harmful to children's bodies because they were still developing and therefore it is less acceptable for them to smoke. It should be noted that the distinctions made between adults and children using electronic cigarettes were less clear than the discussions about tobacco cigarettes, which reflects the higher levels of uncertainty around electronic cigarettes.

*"[Older people] they will be older then and their lungs won't be damaged that much [compared to younger people]"
(Male, Aged 7, School 5)*

"Maybe your veins go stronger [when you are older], so maybe your veins can handle it" (Male, Aged 9, School 1)

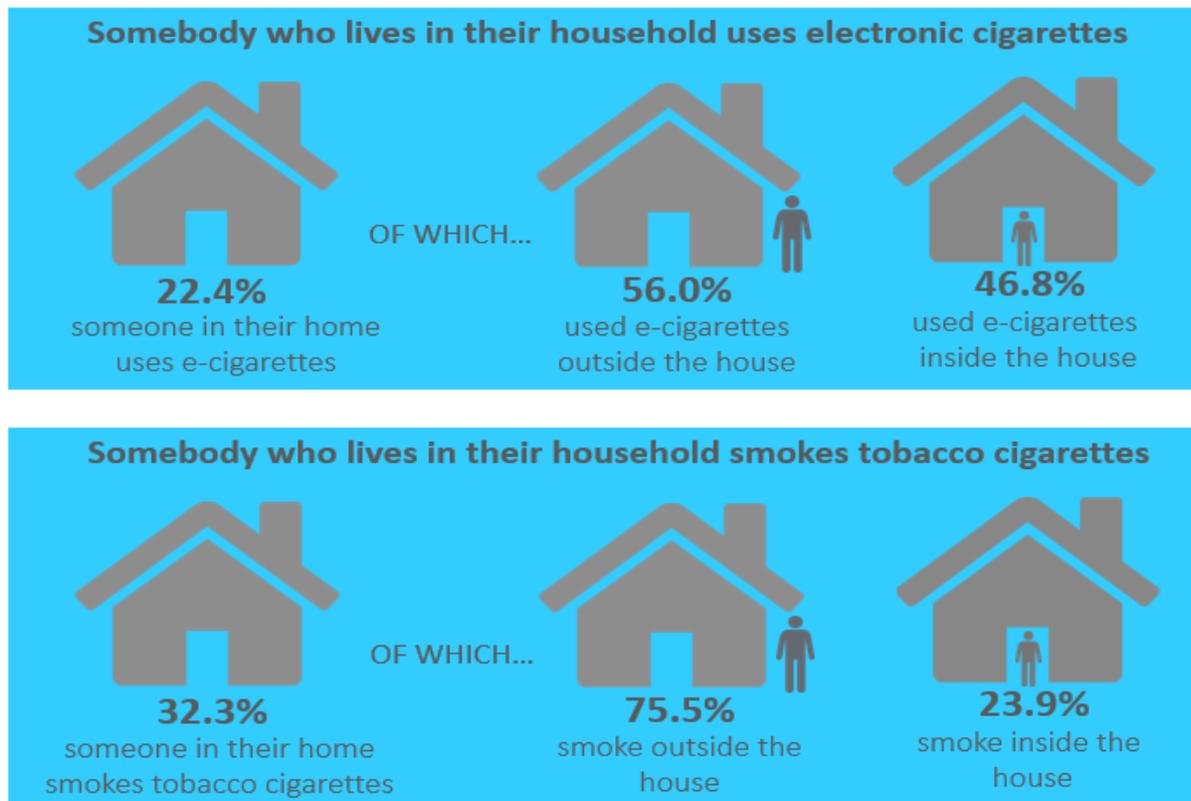
Key Message:

Exposure to electronic and tobacco cigarettes through family and friends influenced children's perceptions of smoking and vaping

Children in the study were exposed to both vaping and smoking, primarily through family and friends (Figure 9). According to the questionnaire results, over a fifth (22.4%) of participants indicated that somebody who lives in their household uses electronic cigarettes. Of these, the key locations for using electronic cigarettes by people in their house were outside (56.0%) and inside (46.8%) the house (Table A5, Appendix 3). A third (32.3%) of participants indicated that somebody who lives in their household smokes tobacco cigarettes. Of these, the key location⁷ for smoking tobacco cigarettes by people in their house was outside the house (75.5%; Table A5, Appendix 3).

⁷ Selected from a pre-defined list; participants could select more than one option

Figure 9: Responses to the question: who in your household vapes or smokes? (questionnaire)



Over six in ten of those who lived with someone who uses electronic cigarettes reported that it was okay for grown-ups to use them, compared with 45.5% of those who did not live with someone who used electronic cigarettes ($p < 0.01$).

Subtle familial influences were noted in peer discussion data as well. Findings suggest that children who had family members that were electronic cigarette users or smokers were much more knowledgeable about the products and could discuss on they were used and where they could be purchased. These children were also able to comment more broadly on the variety of fruit flavoured liquids available and the use of electronic cigarettes to stop smoking and tended to be less negative about people using them compared to those who had limited exposure.

*“My step-dad has one, you put liquid in them and then that burns out. It’s got nicotine in it, some of them have”
(Male, Aged 11, School 4)*

*“My mum and dad both like the strawberry and they like the watermelon”
(Female, Aged 7, School 8)*

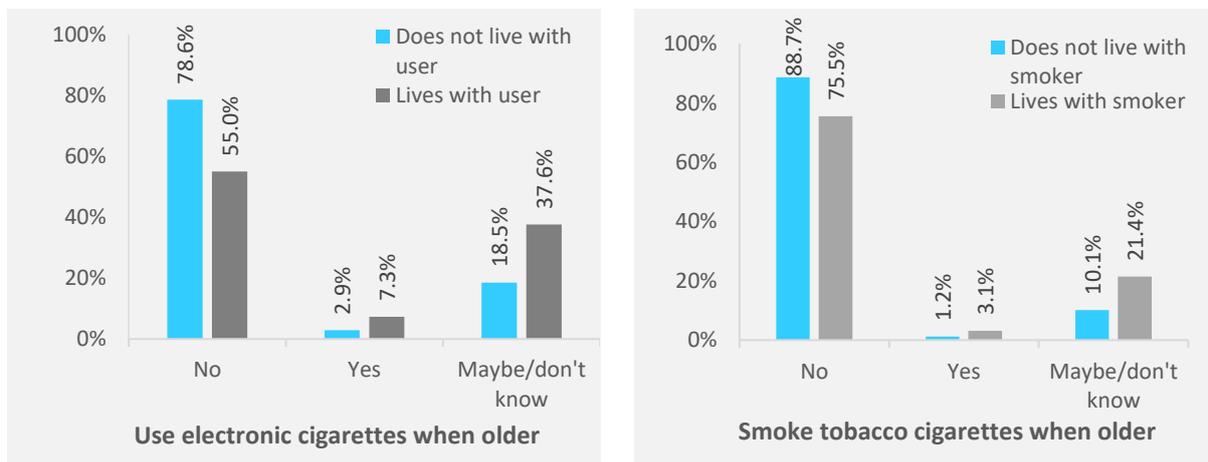
“I don’t mind [electronic cigarettes] as much because when I breath the smoke that comes out of them it doesn’t make me feel choaked” (Male, Aged 11, School 7)

Key Message:

Few children intend to use electronic cigarettes or smoke tobacco cigarettes when older

Study findings indicate that children had few intentions to use electronic cigarettes or smoke tobacco cigarettes when older. Of the minority of children that reported future intentions, slightly more children felt they would vape (3.9%) rather than smoke (1.8%). Responses were age related with older children citing less or no intention and influenced by exposure to smoking in the household. Intention to smoke/use tobacco cigarettes/electronic cigarettes was more likely if the child lived with someone who smoked or used them. Nearly one in twenty-five (3.9%) participants believed they would use an electronic cigarette when they are older, with proportions decreasing as age increased (age 7, 6.7%; age 9, 3.3%; age 11, 1.4%; Table A5, Appendix 3). Less than one in 50 (1.8%) participants reported that they think they will smoke tobacco cigarettes when they are older (no 11 year old participants stated that they would smoke tobacco cigarettes when they are older [Table A5, Appendix 3]). Responses varied depending on whether the participant was exposed to smoking in their household (i.e. lives/does not with someone who smokes tobacco cigarettes; Figure 10)

Figure 10: Questionnaire data demonstrating children's intentions to smoke tobacco or use electronic cigarettes when older, by household exposure to cigarettes



Little intention to vape or smoke when older was also noted in the qualitative data. The majority of peer discussion participants were of the opinion that they would not smoke tobacco or use electronic cigarettes in the future however a small number did suggest they might try electronic cigarettes because they perceived them to be less harmful and taste better than tobacco cigarettes. Some participants, in particular those that were older, did state that whilst they currently had no intention to smoke or vape when they were older, this may change in the future.

"I won't use them" (Male, Aged 7, School 7)

"I don't want to breathe a drug into my body" (Female, Aged 11, School 1)

"If I'm talking about now, I have never actually smoked so I don't know what it's like so when I'm 18 I might think 'oh what's it like?' and then you can't stop smoking" (Male, Aged 11, School 1)

4. Discussion

Findings from this mixed methods exploratory study have provided initial understanding of Welsh primary school children's perceptions of electronic cigarettes, relative to tobacco smoking. As one of the first studies to investigate electronic cigarettes in the context of childhood, this research contributes unique and important insights to an underdeveloped body of knowledge. Primary school children represent an important cohort. Understanding where they are at in their thinking about electronic cigarettes prior to experimentation is imperative for the development of effective health promotion interventions that highlight potential risks and prevent uptake in young never smokers.

Findings demonstrate that many children in this study had general awareness of electronic cigarettes across a range of different aspects including product design, composition, use, safety and cost. This is not surprising given the increasing popularity and greater prominence of electronic cigarettes today. Awareness of electronic cigarettes is on the rise in general globally and it is likely that children are increasingly exposed to vaping via family and friends or when they are out and about (Greenhill et al, 2016). Previous research with young people in Wales found that 88.5% of children under the age of 13 were aware of electronic cigarettes (ASH Wales, 2016c) and adolescent awareness of electronic cigarettes is now close to absolute awareness (Greenhill et al, 2016). These findings suggest that educational efforts around electronic cigarette would be appropriate for children in primary school as they are already assimilating information about and forming opinions of vaping.

Almost all children in the study (94.9%) could differentiate between electronic and tobacco cigarettes although differences in the smoke and vapour were less discernible. As the new generation of electronic cigarettes look very different from conventional tobacco cigarettes, this finding is not unexpected and concurs with research in older populations (McKeganey et al, 2018). Being able to discern the difference between smoking and vaping is important – some suggest it may even mitigate against the re-normalisation of smoking behaviour (Faletau et al, 2013; McKeganey et al, 2016).

In line with previous research (Measham et al, 2016; Moore et al, 2015; Pepper et al, 2016; Vasiljevic et al, 2016; YouGov, 2016;) qualitative findings highlighted some awareness of novelty flavoured electronic cigarettes and their potential appeal to younger people. Children had strong opinions about flavour preferences between younger and older users and felt that certain flavours could encourage young people to vape. A few children incorrectly thought the fruit in the flavours made them healthier. Further research is needed to gain better understanding of the attraction of flavoured electronic cigarettes and their potential role in vaping uptake by young people. Information and education is also needed to dispel misconceptions children have about the electronic cigarettes.

Findings demonstrate uncertainty around the current legislation that governs electronic cigarettes. Children were unsure about the legal age of purchase for both tobacco and electronic cigarettes. With regard to availability of the products, children across all age groups were better able to discuss where tobacco cigarettes could be purchased. Those who had relatives who used electronic cigarettes were aware of a number of different places including specialist shops, supermarkets and online. A range of regulatory measures have been implemented in the UK to protect children and adolescents against the potential risk associated with e-cigarettes (House of Commons, 2017). Children need to be kept abreast of policies and regulations that govern both electronic cigarettes. Knowing the current legislation reinforces the message that electronic cigarettes are intended for adult smokers who want to cut down

or quit smoking. Understanding how children's perceptions of policies and regulations that govern electronic and tobacco cigarettes influence their behaviour is worthy of further exploration.

An encouraging result from our study was the finding that children were aware of the role electronic cigarettes play in smoking cessation with many citing 'to stop smoking' and 'because they were 'healthier and safer' than tobacco cigarettes as the primary reason why people vape. These findings concur with previous research in which adults cited the main reasons they use electronic cigarettes is as an aid to stop smoking (49%) and because they were considered less harmful than cigarettes (22%) (ONS, 2017). Children who had a parent or other relative that used electronic cigarettes were more likely to be aware of their role in smoking cessation. The efficacy of electronic cigarettes for smoking cessation is gaining momentum and there is some evidence to support their use in harm reduction strategies (McNeill et al 2015; Hartmann-Boyce et al, 2016; Royal College of Physicians 2016). It has been suggested that children should be educated about the use of electronic cigarettes as a means to quit smoking with emphasis on the fact that the products are for adult smokers and ex-smokers. Dialogue between parents who use these products and their children should be encouraged, to contextualise their use in a culture of cessation and 'normalise quitting behaviour' (Faletau et al, 2013). Findings also demonstrated awareness that adults use tobacco cigarettes as a way of dealing with stress. Educational efforts are required to challenge the social norm of smoking being an appropriate response to stress and should provide awareness of healthier stress management techniques.

Age related differences in motivations for vaping and smoking were noted, in particular for tobacco smoking. Older children (aged 11 years) focused more on social motivations, such as appearing cool and having fun. Younger children (aged 7 years) focused more on how smoking made people feel. These differences in perceptions support the need for tailored interventions for primary school children. Such findings also raise concerns that despite on-going tobacco control efforts to denormalise smoking, social acceptability prevails.

Given the novel nature of electronic cigarettes, it is perhaps unsurprising that the majority of children in this study had little or no understanding of electronic cigarette health harms. There were many misperceptions and considerable uncertainty as well; almost a third of responses regarding health harms were 'don't know'. Only a minority of responses (7%) correctly indicated that electronic cigarettes were less harmful than tobacco cigarettes to users. More than half of responses associated vaping with similar levels and types of health harm as tobacco. Such misperceptions are understandable given children's cognitive abilities, the absence of health education and the lack of definitive evidence on the subject. Notably, misperceptions of electronic cigarettes health harms common even amongst older children and adults are on the rise (Majeed et al, 2017). Previous research found that the proportion of 11-18 year olds in Great Britain who believe electronic cigarettes are equally as harmful as tobacco cigarettes has increased over past 3 years from 11-23% (ASH, 2016b). This provides a strong rationale for the inclusion of electronic cigarette education into the current drug education curriculum in primary schools. According to Piaget's theory of cognitive development, in the absence of information children will 'group objects together on the basis of common features' to make sense of them (Faletau et a, 2013; Meadows, 1983). With little understanding of the health harms of electronic cigarettes, children may be according their existing knowledge of tobacco health harms (which in itself was patchy and not always accurate) to electronic cigarettes. This knowledge gap for both electronic and tobacco cigarettes needs to be addressed so understanding is based on accurate information.

Study findings highlight some understanding of the concept of addiction. More children believed it was harder to quit smoking than vaping. However, there was little awareness of the substantive role of nicotine with regards to addiction, and no awareness of its use in vaping. This knowledge gap has

important implications given that nicotine is the main stimulant in many electronic cigarettes. Children need to better understand the addictive properties of nicotine and the risks that come from using it. There is a lack of definitive data on the potential health harms of nicotine (Callahan-Lyon, 2014). Public health needs to be responsive to the scientific research on nicotine as it becomes available and tailor health messages accordingly.

A prevailing perception throughout the study was that electronic cigarettes were 'healthier' than tobacco cigarettes. The fact that children consider vaping to be 'healthier' and 'safer for health' than tobacco cigarettes is very encouraging and efforts to reinforce these views need to be maintained. However, framing electronic cigarettes as 'healthy' rather than less harmful potentially masks the fact that electronic cigarette use is not without risk. Health promotion efforts should support and reinforce the message that vaping is 'less harmful' rather than 'healthier' when discussing electronic cigarettes with children and young people.

Contradictions in children's perceptions of electronic and tobacco cigarettes emerged. Questionnaire data indicated children had largely negative views of vaping and smoking. Most considered smoking to be more detrimental to health than vaping and both to be more harmful than not vaping or smoking at all. Few children expressed any intentions to use electronic cigarettes or smoke when older. However, in relation to how children think smokers and electronic cigarette users feel, it was interesting to note that more than half of the D&W responses for electronic cigarettes and almost half of the D&W responses for tobacco smokers were positive (e.g. happy, cool, and relaxed). This is concerning given that more positive attitudes toward smoking may predict intentions to smoke in the future and later smoking behaviour (McGee et al, 2015). Moreover, these positive views prevail despite strong anti-smoking social norms. One explanation for the discrepancy has been put forward by Freeman et al (2005, p1538) who suggest that Draw & Write technique 'may have captured positively balanced understandings of smoking that cannot be detected by other measures.' Further exploration is needed to shed light on this and other reasons children characterise those who vape and smoke with positive characteristics.

Consistent with previous tobacco research, there was almost universal agreement that vaping and smoking was not appropriate for children their age but almost half felt it was okay for adults to do so (Porcellato et al, 2005; Freeman et al, 2005). Results were age related and influenced by exposure to cigarettes in the home. The fact that children do not consider vaping and smoking as a suitable activity for themselves is heartening. The real concern here is that despite intensive tobacco control efforts and pervasive anti-smoking social norms, children in the study still think it is okay for adults to smoking tobacco cigarettes. As previously stated, further research is needed to understand why the social acceptability of tobacco persists.

Study findings also highlight the influence of the family on children's perceptions of electronic and tobacco cigarettes. In line with previous research demonstrating associations of parental modelling, (Palmer and Hallingberg, 2014; Moore et al, 2015; Barrington-Trimis et al, 2016), children who lived with someone who used electronic cigarettes or smoked tobacco cigarettes were more likely to think it was okay for grown-ups to use them, had greater intentions to smoke or vape in the future and tended to be more knowledgeable about the products. Children who had a relative who used electronic cigarettes tended to be more knowledgeable of their role in smoking cessation and therefore more likely to discuss the positive aspects of their use compared to those who had limited exposure.

Given that children's future behaviour is directly linked to adult's current role modelling behaviour (Bandura, 1971; Leonardi-Bee et al, 2011) familial involvement in any health promotion measures to prevent experimentation and uptake of vaping and smoking is imperative. Research investigating parental influences on electronic cigarette use is sparse (Moore et al, 2015). In the short term, health

promoters should be encouraged to draw on the experiences and evidence from the fields of tobacco and alcohol for guidance on best practice. Additionally, parents who use electronic and tobacco cigarettes need to be made aware that through the influence of example, their behaviour may prompt their children to use electronic or tobacco cigarettes in the future. To mitigate against this risk, parents should be encouraged to stop smoking. Faletau et al (2013) also recommend that parents who vape to reduce smoking related harm should discuss their rationale for doing so with their children, to avoid any misperceptions around use.

This study provides unique insights into Welsh primary school children's perceptions of electronic cigarettes. Whilst children have an awareness of electronic cigarettes relative to tobacco cigarettes, understanding is limited, characterised by misconception, uncertainty, contradiction and gaps in knowledge. The findings also demonstrate how children often contextualise their understanding of electronic cigarettes based on their own experiences and existing knowledge of tobacco cigarettes. The findings from this study offer opportunity to contribute to the emergent evidence base on electronic cigarettes and provide a foundation for further research; to better understand the potential impact of electronic cigarettes on children and young people.

5. Key Considerations

The following key considerations are based on study findings. Several limitations must be taken into account when interpreting results. This was a small scale mixed methods exploratory study with 8 primary schools across Wales which endeavoured to explore children's perceptions of electronic cigarettes relative to smoking. This was not a statistically representative sample of the population as schools were purposively selected for maximum variation therefore findings cannot be generalised to all children in Wales. In saying that, findings are likely to reflect the national context and thus may have wider relevance. Moreover, they provide interesting insights, useful information to inform public health practice and offer potential direction for larger studies to explore electronic cigarettes within the context of childhood and adolescence. Other limitations of the study are discussed in Appendix 1.

Education

- **Comprehensive evidence based electronic cigarette education should be incorporated into the current drug education curriculum of Welsh primary schools.** Our study found that primary school children are aware of electronic cigarettes but have little or no understanding of key issues such as potential health harms, the addictiveness of nicotine and the regulation of electronic cigarettes. Currently, health promotion delivered in schools in Wales at age 3-7 years (Key Stage 1⁸) and age 8-11 year olds (Key Stage 2⁹) addresses the harms associated with smoking. Key Stage 2 goes further and considers the harms to others caused by people smoking. Although knowledge gaps around tobacco smoking were noted, the data from this study demonstrates that children aged 7, 9 and 11 years have largely assimilated understanding of tobacco smoking which they use to understand vaping. Children afford an unprecedented opportunity for intervention as health behaviours develop at an early age. It is important that educational information should be provided with regards to vaping from Key Stage 1, to help build children's understanding of electronic cigarettes, address uncertainties, dispel misconceptions and discourage future uptake. Given the age related differences that emerged from our findings, education programmes should also address the different perceptions of electronic cigarettes across the age ranges.

Health Promotion

- **Health messaging efforts should reinforce children's views of electronic cigarettes as smoking cessation devices within a harm reduction narrative.** Our study demonstrates that many children have some understanding of the role electronic cigarettes play in smoking cessation. They consider smoking to be more detrimental to health than vaping, perceiving electronic cigarettes to be 'healthier' and 'better' than tobacco cigarettes rather than less harmful. Whilst these findings are

⁸ <http://gov.wales/docs/dcells/publications/141111-personal-and-social-development-well-being-and-cultural-diversity-en.pdf>

⁹ <http://learning.gov.wales/docs/learningwales/publications/130425-personal-and-social-education-framework-en.pdf>

encouraging, framing electronic cigarettes as a healthy alternative potentially diminishes the perception of risk. It is important that children are encouraged to view electronic cigarettes as smoking cessation tools but need to understand they are not risk free and therefore should be considered less harmful rather than healthier than tobacco.

- **Smoking cessation advice to adults should emphasis the message that electronic cigarettes are a smoking cessation tool.** Our research demonstrated how children gained many of their perceptions about smoking and vaping from family members. There is currently limited advice available for parents in regards to discussing electronic cigarette use with young people. Current advice¹⁰ suggests that discussions about electronic cigarette use with children should focus on their role in smoking cessation and that they should only be used in this context. It is important that those who provide smoking cessation advice promote this message when providing support to parents who are trying to stop smoking and using electronic cigarettes. This would provide a holistic approach to the prevention of tobacco cigarette/electronic cigarette uptake by young people by endorsing current anti-smoking social norms and ensuring electronic cigarettes are represented within this.

Research

- **Further research on whether electronic cigarettes could become a gateway to nicotine addiction and smoking tobacco cigarettes in the future is required.** Our research has demonstrated how children generally do not intend to smoke or vape when they are older. However, there was more uncertainty around the potential use of electronic cigarettes compared to tobacco cigarettes. It is therefore important to understand whether a young person using electronic cigarettes will potentially lead to a nicotine addiction and whether they would go on to smoke tobacco cigarettes.
- **Further research is needed to explore whether perceptions influence use of tobacco or electronic cigarettes by young people.** For example, do children's perceptions of the flavoured e-liquids act as motivation for experimentation with electronic cigarettes, or do children's perceptions of policy and regulation influence their smoking or vaping behaviour?
- **Further research is needed to understand how the social norms of electronic and tobacco cigarette use influences the way children and young people think about and behave towards vaping and smoking.** Despite negative perceptions, our research highlights a social acceptability of tobacco smoking, a belief that smoking and vaping is fine for adults and positive associations with smoking and vaping. Whether such views lead to smoking or vaping uptake requires further investigation. Additionally, research needs to address the perceptions and knowledge of older children as a comparison to this study, to see how these may change over time.

¹⁰ <http://parentinfo.org/article/e-cigarettes-and-vaping-a-parent-s-guide>

6. References

Action on Smoking and Health (ASH) (2016a). ASH Factsheet: Use of E-Cigarettes (Vapourisers) among Adults in Great Britain. Available online: <http://ash.org.uk/information-and-resources/fact-sheets/use-of-ecigarettes-among-adults-in-great-britain-2017/> (accessed on 04 Oct 2017).

Action on Smoking and Health (ASH) (2016b). ASH Factsheet: Use of Electronic Cigarettes among Children in Great Britain. Available online: <http://ash.org.uk/information-and-resources/fact-sheets/use-of-electronic-cigarettes-vapourisers-among-children-in-great-britain/> (accessed on 08 Oct 2017).

Action on Smoking and Health (ASH) (2016c). ASH Factsheet: Nicotine and Addiction. Available at: <http://ash.org.uk/information-and-resources/fact-sheets/nicotine-and-addiction/> (accessed on 16 Jan 2018).

Action on Smoking and Health (Wales) (2016). *A study into young people's e-cigarette awareness and usage in Wales- 2016*. Available online: http://ashwales.org.uk/assets/factsheets-leaflets/ASHWales_ECigReport2016_Final.pdf (accessed on 09 Oct 2017).

Akre, C & Suris, J.C (2017). 'Adolescents and young adults' perceptions of electronic cigarettes as a gateway to smoking: a qualitative study in Switzerland', *Health Education Research*, 32, 5, pp448–454, <https://doi.org/10.1093/her/cyx054>.

Bandura A (1971). *Social learning theory*. New York: General Learning Press.

Barrington-Trimis, J.L., Urman, R., Leventhal, A.M., et al (2016). 'E-Cigarettes, Cigarettes, and the Prevalence of Adolescent Tobacco Use', *Paediatrics*, DOI:10.1542/peds.2015-3983.

Bauld, L., MacKintosh, A.M., Ford, A. and McNeill, A. (2016). 'E-Cigarette Uptake Amongst UK Youth: Experimentation, but Little or No Regular Use in Non-smokers', *Nicotine Tobacco Research*, 18, 1, pp102-103.

Bauld, L., MacKintosh, MA., Estwood, B., Ford, A., Moore, G., Dockrell, M., Arnott, D., Cheeseman, H. and McNeill, A. (2017). *International Journal of Environmental Research and Public Health*, 14 ,973.

Bell, A. (2007). 'Designing and testing questionnaires for children' *Journal of Research in Nursing*, 12, 5, pp461-469.

Best, C., Haseen, F., Currie, D., Ozakinici, G. et al (2017). 'Resaltionship between trying electronic cigarette and subsequent cigarette experimentation in Scottish adolescents: a chohort study', *Tobacco Control*, DOI:10.1136/tobaccocontrol-2017-053691.

Borgers, N., De Leeuw, E. and Hox, J. (2000). 'Children as respondents in survey research: cognitive development and response quality', *Bulletin de Methodologie*, 66, pp60-75.

Braun, V. and Clarke, V. (2006). 'Using thematic analysis in psychology', *Qualitative Research in Psychology*, 3, 2, pp77-101.

Callahan-Lyon, P. (2014). Electronic cigarettes: human health effects. *Tobacco Control*, 23 (suppl 2), ii36-ii40. doi:10.1136/tobaccocontrol-2013-051470.

Clarke, T.N. and Lusher, J.M. (2017). 'Willingness to Try Electronic Cigarettes Among UK Adolescents', *Journal of Child and Adolescent Substance Abuse*, DOI:10.1080/1067828X.2016.1242098.

De Lacy, E., Fletcher, A., Hewitt, G., Murphy, S. and Moore, G. (2017). 'Cross-sectional study examining the prevalence, correlates and sequencing of electronic cigarette and tobacco use among 11-16 year olds in schools in Wales', *BMJ Open*, DOI:10.1136/bmjopen-2016-012784.

Eastwood, B., Dockrell, M.J., Arnott, D., Britton, J., Cheeseman, H., Jarvis, M.J. and McNeill, A. (2015). 'Electronic cigarette use in young people in Great Britain 2013-2014', *Public Health*, DOI:10.1016/J.PUHE.2015.07.009.

Faletau, J., Glover, M., Nosa, V. and Pienaar, F. (2013). 'Looks like smoking, is it smoking? Children's perceptions of cigarette like nicotine delivery systems, smoking and cessation', *Harm Reduction Journal*, 10, 30.

Farmer, S. and Porcellato, L. (2016). "'Thinking about drinking": Exploring Children's Perceptions of Alcohol Using the Draw and Write Tool', *Health Education*, 116, pp541-560.

Freeman, D., Brucks, M. and Wallendorf, M. (2005). 'Young Children's understanding of cigarette smoking', *Addiction*, 100, pp1537-1545.

Goniewicz, M.L., Knysak, J., Gawron, M. et al (2014). 'Levels of selected carcinogens and toxicants in vapour from electronic cigarettes' *Tobacco Control*, 23, pp133-139.

Griesbach, D. and Platts, A. (2016). 'Young adults and e-cigarettes: A qualitative exploration of awareness, experience and attitudes' The Scottish Government: Edinburgh.

Greenhill, R., Dawkins, L., Notley, C., Finn, M. and Turner J (2016). 'Adolescent awareness and use of electronic cigarettes: a review of emerging trends and findings' *Journal of Adolescent Health*, 59 pp612-619.

Greig, A., Taylor, J. and Mackay, T. (2012). *Doing Research with Children: A Practical Guide*. London: Sage.

Hammond, D., Reid, J., Cole, A., and Leatherdale, S (2017). ' Electronic cigarette use and initiation among youth: a longitudinal cohort study'. *Cmaj*, 189(43), E1328-e1336. doi:10.1503/cmaj.161002.

Hardcastle, K.A., Hughes, K. and Worsley, J. (2014). "Most people I know have got one": Young people's perceptions and experiences of electronic cigarettes'. Centre for Public health, Liverpool John Moores. University.

Hartman-Boyce, J., McRobbie, H., Bullen, C., Begh, R., Stead, L.F. and Hajeck, P. (2016). 'Electronic cigarettes for smoking cessation' *Cochrane Library*, DOI:10.1002/14651858.CD010216.pub3.

Hilton, S., Weishaar, H., Sweeting, H., Trevisan, F., & Katikireddi, S. V. (2016). E-cigarettes, a safer alternative for teenagers? A UK focus group study of teenagers' views. *BMJ Open*, 6(11). doi:10.1136/bmjopen-2016-013271.

House of commons., (2017). "The regulation of electronic cigarettes. Briefing paper number 8114, 31 Oct 2017" *House of Commons Library*, <http://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-8114#fullreport> (accessed 22 Jan 2018).

Kamberelis, G. and Dimitriadis, G. (2013). *Peer discussions: From structured interviews to collective conversations*. London: Routledge.

Kaufman, N. and Currie, D. (2017). 'The Scottish adolescent e-cigarette user: profiling from the Scottish Schools Adolescent Lifestyle and Substance Use Survey (SALUS)', *Public Health*, DOI:10.1016/j.puhe.2017.02.004.

Leonardi-Bee, J., Jere, M. L., & Britton, J. (2011). Exposure to parental and sibling smoking and the risk of smoking uptake in childhood and adolescence: a systematic review and meta-analysis. *Thorax*, 66(10), 847-855. doi:10.1136/thx.2010.153379.

Leventhal, H., & Cleary, P. D. (1980). The smoking problem: A review of the research and theory in behavioral risk modification. *Psychological Bulletin*, 88, 2, pp370-405. <http://dx.doi.org/10.1037/0033-2909.88.2.370>.

Mair, M. and Kierans, C. (2007). 'Descriptions as data: Developing techniques to elicit descriptive materials in social research', *Visual Studies*, 22, 2, pp120-136.

Majeed, B. A., Weaver, S. R., Gregory, K. R., Whitney, C. F., Slovic, P., Pechacek, T. F., & Eriksen, M. P. (2017). Changing Perceptions of Harm of E-Cigarettes Among U.S. Adults, 2012-2015. *Am J Prev Med*, 52(3), 331-338. doi:10.1016/j.amepre.2016.08.039.

Malas, M., van der Tempel, J., Schwartz, R., Minichiello, A., Lightfoot, C., Noormohamed, A., Ferrence, R. (2016). Electronic Cigarettes for Smoking Cessation: A Systematic Review. *Nicotine Tob Res*, 18(10), 1926-1936. doi:10.1093/ntr/ntw119.

McGee CE., Trigwell J., Fairclough SJ., Murphy RC., Porcellato L., Ussher M., and Foweather L. (2015). Influence of family and friend smoking on intentions to smoke and smoking-related attitudes and refusal self-efficacy among 9-10 year old children from deprived neighbourhoods: a cross sectional study. *BMC Public Health* 15:225.

McKeganey, N., Barnard, M and Russell C. (2016). *Visible Vaping: E-Cigarettes and the Further De-Normalization of Smoking*. International Archives of Addiction Research and Medicine, 2:023 Volume 2 | Issue 3 ISSN: 2474-3631

McKeganey, N., Barnard, M., & Russell, C. (2018). Vapers and vaping: E-cigarettes users views of vaping and smoking. *Drugs: Education, Prevention and Policy*, 25(1), 13-20. doi:10.1080/09687637.2017.1296933.

McNeill A, Brose LS, Calder R and Hitchman SC (2015). 'E-Cigarettes: an evidence update. A report commissioned by Public Health England'. Available from: [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/457102/E-cigarettes an evidence update A report commissioned by Public Health England FINAL.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/457102/E-cigarettes_an_evidence_update_A_report_commissioned_by_Public_Health_England_FINAL.pdf).

McWhirter, J.M., Young, A.J. and Wetton, N. (2004). 'In a class of its own: Introducing a new tool for understanding adolescents' perceptions of the world of drugs', *Health Education Journal*, 63, 4, pp 307-323.

McWhirter, J. (2014). 'The draw and write technique as a versatile tool for researching children's understanding of health and well-being', *International Journal of Health Promotion and Education*, 52, 5, pp 250-259.

Meadows, S. (1983). *Developing Thinking: Approaches to Children's Cognitive Development (Psychology in Progress)* London: Routledge.

Measham, F., O'Brien, K. and Turnbull, G. (2016). 'Skittle and red bull is my favourite flavour: E-cigarettes smoking vaping and the changing landscape of nicotine consumption amongst British Teenagers: Implications for the normalisation debate, *Drugs, Education, Prevention and Policy*, 23, pp224-237.

Moore, G., Hewitt, G., Evans, J., Littlecott, H.J. et al (2015). 'Electronic cigarette use among young people in Wales: evidence from two cross-sectional surveys, *BMJ Open*, doi:10.1136/BMJOPEN-007072.

Moore, G. F., Littlecott, H. J., [Moore, L.](#), Ahmed, N. and Holliday, J. (2016) E-cigarette use and intentions to smoke among 10-11-year-old never-smokers in Wales. [Tobacco Control](#), 25(2), pp. 147-152. (doi:[10.1136/tobaccocontrol-2014-052011](https://doi.org/10.1136/tobaccocontrol-2014-052011))

National Assembly for Wales (2014). Public Health White Paper: Listening to you – Your Health Matters. Available at: <http://www.assembly.wales/research%20documents/rn-14-023%20white%20papers%20health/rn14-023.pdf> (accessed on 09 Oct 2017).

National Assembly for Wales (2017). Public Health (Wales) Act 2017. Available at: <http://senedd.assembly.wales/mgIssueHistoryHome.aspx?lId=16155> (accessed on 09 Oct 2017).

NVivo qualitative data analysis Software; QSR International Pty Ltd. Version 11, 2012.

Office for National Statistics (2017). Adult Smoking Habits in the UK. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/adultsmokinghabitsingreatbritain/2015> (accessed 22 Jan 2018).

Palmer, R. and Hallingberg, B. (2014). 'Young People and the use of E-Cigarettes', ASH Wales: Cardiff.

Pepper, J. K., Ribisl, K. M., & Brewer, N. T. (2016). Adolescents' interest in trying flavoured e-cigarettes. *Tobacco Control*. doi:10.1136/tobaccocontrol-2016-053174.

Porcellato, L., Dugdill, L., Springett, J. and Sanderson, F.H. (1999) 'Primary school children's' perceptions of smoking: implications for health education', *Health Education Research*, 14, 1, pp71-83.

Porcellato, L., Dughill, L., and Springett, J (2002). "Using peer discussions to explore children's perceptions of smoking: reflections on practice", *Health Education*, 102, 6, pp310-320.

Porcellato L, Dugdill L and Springett J (2005). 'Longitudinal study exploring Liverpool primary school children's perspectives on smoking', *Childhood*, 12, 4, pp425-443.

Public Health Wales (2017). Electronic Nicotine Delivery Systems (ENDS) Position Statement on electronic cigarettes. Available at: <http://www.wales.nhs.uk/sitesplus/888/news/43873> (accessed on 09 Oct 2017).

Public Health Wales (2015). 'Welsh Health Survey'. Available from <http://gov.wales/statistics-and-research/welsh-health-survey/?lang=en>.

Royal College of Physicians (2016) Nicotine without smoke: Tobacco harm reduction. London: RCP.

Soneji S, Barrington-Trimis J.L, Wills T.A et al (2017). Association Between Initial Use of e-Cigarettes and Subsequent Cigarette Smoking Among Adolescents and Young Adults. A Systematic Review and Meta-analysis *JAMA Pediatr*, 171, 8, pp788-797.

US Report of the Surgeon General (2016). Electronic Cigarette Among Youth and Young Adults US Dept of Health and Human Services. https://e-cigarettes.surgeongeneral.gov/documents/2016_sgr_full_report_non-508.pdf (accessed 09 Oct 17).

Vasiljevic, M., Petrescu, D.C. and Marteau, T.M. (2016). 'Impact of advertisements promoting candy-like flavoured e-cigarettes on appeal of tobacco smoking among children: an experimental study', *Tobacco Control*, 25, pp107-112.

Williams, T., Wetton, N.M. and Moon, A. (1989). 'A Picture of Health', Health Education Authority, London.

YouGov (2016). 'Smoke Free GB Youth Survey'. Available from: <http://ash.org.uk/category/information-and-resources/young-people-tobacco-information-and-resources/>.

Zhu, S.-H., Zhuang, Y.-L., Wong, S., Cummins, S. E., & Tedeschi, G. J. (2017). E-cigarette use and associated changes in population smoking cessation: evidence from US current population surveys. *BMJ*, 358. doi:10.1136/bmj.j3262.

Infographic icons used throughout the report were taken from the Noun Project (<https://thenounproject.com/>) and Canva (<https://www.canva.com/>).

7. Appendices

Appendix 1: Sample design, selection and participant recruitment

A mixed method exploratory study with Welsh primary schoolchildren in Years 2, 4 and 6 (ages 7-11) was undertaken in June and July 2017 by a team of researchers from the Public Health Institute (PHI) at Liverpool John Moores University (LJMU) in June and July 2017.

The research took part in two stages. In stage 1, participating classes (one per year group in each school) completed a workbook, which included a D&W exercise and a developmentally appropriate questionnaire. The workbook was completed with all participating children on a whole classroom basis for the participants aged 9 and 11 years and in small groups (2-4 children) with those aged 7 years. Children were asked to work independently and keep their answers private. They were advised their results would be confidential and anonymous. Whilst the children were completing the activity, researchers remained in the classroom to assist any children who required further clarification or help. Researchers also assisted those aged 7 years with their writing; however, researchers were careful not to influence the children's answers and only used set prompts. Teachers remained in the classroom whilst the children completed the draw and write activities but reiterated that they would not see the children's work and referred any queries to the researchers.

Following completion of the workbook, two friendship pairs (two boys and two girls) were selected by the teacher from each class to take part in a peer discussion. Based on previous research, teachers were instructed to choose children who were confident and comfortable speaking with the researchers outside the classroom (Porcellato et al, 2002). Peer discussions were conducted in English for schools 1-6 and 8. For school 7, the peer discussion was conducted in Welsh. Teachers were not present for the peer discussions.

The following sets out the rationale and justification for the research methods:

Draw and Write

Draw and Write (D&W) is a useful tool for classroom based research activities, allowing for open-ended questions to capture meanings from the children's perspectives and the collection of a large amount of rich insightful data in a short timescale (McWhirter, Young and Wetton, 2004; McWhirter, 2014). It is widely used in child centred participatory research and has been previously utilised to explore children's awareness of drugs, (McWhirter et al, 2004), alcohol (Farmer and Porcellato, 2016) and perceptions of smoking (Mair and Kierans, 2007; Porcellato et al, 2005), and the design of the D&W activity for the current study drew on these previous studies.

During the D&W exercise, children were instructed by a researcher to firstly draw a person who smokes (Inquiry 1) and to describe why they smoke, how the person feels and what the children themselves would see and smell if they were standing nearby. This was repeated for a person who uses electronic cigarettes (Inquiry 2).

An iterative qualitative coding framework was developed from the responses (Williams et al. 1989). The children's written responses were coded, refined and combined into content categories. Simple

frequency counts were used and themes in the data were identified. A child's response was only counted once in each category but could be coded to several categories in the event that the answer had multiple responses. For example, children may have written "black teeth" and "lung cancer" in response to the question: what does smoking do to the body? This will have been coded to two different categories (external damage and internal damage) under the theme of perceived harms to health. Children's drawings were not coded but used to illustrate typical themes emerging in the data. An independent researcher reviewed the coding system to aid the credibility and trustworthiness of the analysis, any anomalies were discussed and a final decision was jointly made.

Questionnaire

This method is considered appropriate for this age group in line with the general consensus from the literature that children and young people with average cognitive development will feasibly be able to take part in questionnaires with carefully adapted questions by age seven (Bell, 2007; Borgers et al, 2000).

The questionnaire collected basic demographic information (sex, age), child and family smoking and vaping behaviours, knowledge of and attitudes/ beliefs about cigarettes and electronic cigarettes. The questions were adapted from the existing literature children (Porcellato et al, 1999; Moore et al, 2015; Moore et al, 2016) and with input from PHW. All data was entered, cleaned and analysed in SPSS v23. Analyses used frequencies, descriptive statistics and chi-squared tests.

Peer discussions

Peer discussions are a useful method to obtain in-depth information from peer groups as not only is data obtained from the responses to the researcher's questions, but the discourse between participants also elicits further data (Kamberelis and Dimitriadis, 2013). Friendship pairs are recommended for interviewing children and teens where the topic is sensitive or the respondents are likely to be more open in the presence of a friend. Throughout the peer discussions, photographs were used as elicitation devices to help promote discussion and further assess knowledge of and attitudes toward smoking and vaping, as well as exploring social norms and perceptions of health risks. The visual nature of such methods make them particularly appropriate for research with children (Greig et al, 2012). The interview guide was developed based on previous research regarding smoking with children (Porcellato et al, 1999; Porcellato et al, 2002) and electronic cigarette literature (Moore et al, 2015; Moore et al, 2016).

The peer discussions were divided into two parts. Firstly, children were shown photographs of tobacco cigarettes, electronic cigarettes and e-flavours to help determine their knowledge and perceptions of these different products. Throughout the first part of the peer discussions questions also probed the children's attitudes to smoking tobacco cigarettes and using electronic cigarettes in terms of whether they intended to smoke or use them when they were older and how they felt about other people's use. The second part of the peer discussions focused on the children's beliefs and perceptions about the type of people that may smoke tobacco cigarettes and/ or use electronic cigarettes.

The peer discussions were recorded using a digital audio device and were transcribed verbatim. Two research assistants who were native Welsh speakers transcribed the peer discussions from school 7 and checked each other's work for accuracy. Illustrative quotations have been used throughout the write up of the analysis to highlight themes. The transcripts were analysed using thematic analysis (Braun and Clarke, 2006) in QSR NVivo 11 (NVivo qualitative data analysis Software; QSR International Pty Ltd. Version 11, 2012).

Limitations

The study has the following limitations:

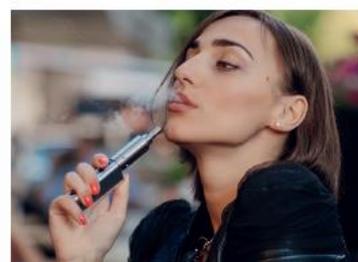
- **Limited sample size** – This was a small scale exploratory study which aimed to collect primarily qualitative data. Whilst efforts were made to ensure maximum variation within the sample, the sample is not representative and therefore findings cannot be generalised. The rich, qualitative data collected provides useful insights into the perceptions of young children regarding electronic cigarettes addresses a knowledge gap and thus provides a useful starting point from which future research can be developed.
- **Classroom setting** – This was a school based study and took place in a classroom setting with children in their early years. Whilst efforts were made to encourage the children to complete the workbooks on their own, the close proximity of desks in the classroom meant that there was potential for children to view each other's work, and discuss and share views thus influencing each other's responses. Additionally, during the peer discussions the researcher frequently reiterated that it was okay for the children to have different answers but it is possible that some participants would not want to be seen as disagreeing with their peers and therefore gave socially desirable answers.
- **Presence of the teacher** – Teachers were present in the classroom whilst the workbooks were completed with the children aged 9 and 11 years. This was a necessity from a health and safety point of view. Prior to the workbooks being completed the researcher went through the participant information sheet and informed the class that their responses would be anonymised and remain confidential. However, as the teachers were present in the classroom it is possible that this may have influenced some of the children's responses.
- **Mixed method nature of the study** – As the study involved multiple components, it is possible that children's responses in the later stages may have been influenced by their participation in the earlier stages. This is particularly relevant for those who took part in a peer discussion as they were carried out after the workbooks were completed. Throughout the completion of the workbooks and the peer discussions, researchers reiterated that if the children were unsure of any of the questions that it was okay to write/state 'don't know' to try and keep individuals levels of knowledge and understanding apparent throughout the different stages.
- **Translation and language** – In school 7, the research was conducted in Welsh. A Welsh speaking primary school teacher reviewed a copy of the translated workbook to ensure the translation was appropriate for the different age groups. Whilst English versions of the workbook were made available on the day, teachers in school 7 were keen for their students to complete it in Welsh. Two Welsh speaking research assistants were available to help the participants but it is possible that, if the children had limited ability in speaking and reading Welsh, the quality of data collected may have been affected.

Appendix 2: Photographs used in peer discussions and questionnaires

1. Photographs used in the peer discussions to encourage dialogue



2. Photographs used in the questionnaire – children were asked to tick all the boxes showing someone smoking a cigarette



Appendix 3: Additional data tables

Table A1. Knowledge and understanding of tobacco and electronic cigarettes amongst a sample of children in Welsh primary schools

		Gender				Age (years)			
		All n (%)	Female n (%)	Male n (%)	P value	7 n (%)	9 n (%)	11 n (%)	P value
Correctly identified tobacco and electronic cigarettes ^a		467 (94.9%)	245 (96.5%)	221 (94.4%)	NS	146 (89.0%)	175 (96.7%)	144 (100%)	**
Believe tobacco cigarettes are worse for smokers lungs than electronic cigarettes		294 (59.6%)	155 (60.8%)	136 (58.1%)	NS	75 (46.0%)	114 (62.0%)	104 (72.7%)	**
Believe tobacco cigarettes are worse for other people's lungs than electronic cigarettes		271 (55.4%)	136 (53.5%)	132 (56.9%)	NS	73 (45.3%)	110 (60.1%)	88 (61.5%)	**
Hard to stop smoking tobacco cigarettes once started	No	62 (12.6%)	18 (7.1%)	43 (18.3%)	**	37 (22.6%)	17 (9.2%)	7 (4.9%)	***
	Yes	329 (66.7%)	184 (72.4%)	143 (60.9%)		109 (66.5%)	123 (66.8%)	97 (68.3%)	
	Don't know/maybe	102 (20.7%)	52 (20.5%)	49 (20.9%)		18 (10.9%)	44 (23.9%)	38 (26.8%)	
Hard to stop using electronic cigarettes once started using	No	89 (18.2%)	37 (14.6%)	52 (22.2%)	*	51 (31.5%)	25 (13.7%)	12 (8.5%)	***
	Yes	230 (46.9%)	121 (47.8%)	107 (45.7%)		87 (53.7%)	88 (48.1%)	54 (38.0%)	
	Don't know/maybe	171 (34.9%)	95 (37.6%)	75 (32.1%)		24 (14.8%)	70 (38.3%)	76 (53.5%)	

NS = not significant * p<0.05 **p <0.01 ***p<0.001^a When shown six images of tobacco and electronic cigarettes (Appendix 2)

Table A2. Perceptions of, and attitudes towards, tobacco cigarette smoking amongst a sample of children in Welsh primary schools

		Gender				Age (years)			
		All n (%)	Female n (%)	Male n (%)	P value	7 n (%)	9 n (%)	11 n (%)	P value
Smoking tobacco cigarettes is:	Never a good thing to do	368 (74.6%)	186 (73.2%)	179 (76.2%)	NS	104 (63.0%)	147 (80.3%)	116 (81.7%)	**
	Sometimes okay but not everyday	68 (13.8%)	32 (12.6%)	35 (14.9%)		40 (24.2%)	15 (8.2%)	12 (8.5%)	
	Okay everyday if that is what a person wants	23 (4.6%)	14 (5.5%)	9 (3.8%)		4 (2.4%)	11 (6.0%)	7 (4.9%)	
	Don't know what to think	34 (6.9%)	22 (8.7%)	12 (5.1%)		17 (10.3%)	10 (5.5%)	7 (4.9%)	
People should be allowed to smoke tobacco cigarettes:	Nowhere	192 (38.8%)	101 (39.6%)	87 (36.9%)	NS	55 (33.5%)	78 (42.4%)	57 (39.6%)	NS
	Inside their own homes	82 (16.6%)	39 (15.3%)	43 (18.2%)	NS	26 (15.9%)	22 (12.0%)	34 (23.6%)	*
	In their cars	40 (8.1%)	17 (6.7%)	23 (9.7%)	NS	21 (12.8%)	9 (4.9%)	10 (6.9%)	*
	In parks and playgrounds	64 (12.9%)	27 (10.6%)	37 (15.7%)	NS	42 (25.6%)	15 (8.2%)	7 (4.9%)	***
	Sitting at tables outside of pubs, cafes and restaurants	153 (30.9%)	75 (29.4%)	78 (33.1%)	NS	55 (33.5%)	58 (31.5%)	39 (27.1%)	NS
	At the school gates	20 (4%)	5 (2%)	15 (6.4%)	*	14 (8.5%)	5 (2.7%)	1 (0.7%)	**
	Don't know	103 (20.8%)	52 (20.4%)	51 (21.6%)	NS	33 (20.1%)	38 (20.7%)	32 (22.2%)	NS

NS = not significant * p<0.05 **p <0.01 ***p<0.001

Table A3. Perceptions of, and attitudes towards, use of electronic cigarettes amongst a sample of children in Welsh primary schools

		Gender				Age (years)			
		All n (%)	Female n (%)	Male n (%)	P value	7 n (%)	9 n (%)	11 n (%)	P value
Using electronic cigarettes is:	Never a good thing to do	284 (57.5%)	138 (54.3%)	143 (60.6%)	NS	85 (51.5%)	112 (60.9%)	84 (59.2%)	NS
	Sometimes okay but not everyday	122 (24.7%)	63 (24.8%)	58 (24.6%)		47 (28.5%)	42 (22.8%)	33 (23.2%)	
	Okay everyday if that is what a person wants	45 (9.1%)	25 (9.8%)	20 (8.5%)		12 (7.3%)	17 (9.2%)	16 (11.3%)	
	Don't know what to think	43 (8.7%)	28 (11.0%)	15 (6.4%)		21 (12.7%)	13 (7.1%)	9 (6.3%)	
People should be allowed to use electronic cigarettes:	Nowhere	159 (32.4%)	86 (33.9%)	69 (29.6%)	NS	50 (31.1%)	70 (38.0%)	38 (26.6%)	NS
	Inside their own homes	123 (25.1%)	58 (22.8%)	65 (27.9%)	NS	40 (24.8%)	36 (19.6%)	46 (32.2%)	*
	In their cars	58 (11.8%)	24 (9.4%)	34 (14.6%)	NS	20 (12.4%)	17 (9.2%)	21 (14.7%)	NS
	In parks and playgrounds	70 (14.3%)	27 (10.6%)	43 (18.5%)	*	41 (25.5%)	17 (9.2%)	12 (8.4%)	***
	Sitting at tables outside of pubs, cafes and restaurants	147 (29.9%)	71 (28.0%)	76 (32.6%)	NS	47 (29.2%)	58 (31.5%)	41 (28.7%)	NS
	At the school gates	27 (5.5%)	7 (2.8%)	20 (8.6%)	**	15 (9.3%)	9 (4.9%)	3 (2.1%)	NA
	Don't know	109 (22.2%)	58 (22.8%)	51 (21.9%)	NS	34 (21.1%)	40 (21.7%)	35 (24.5%)	NS

NS = not significant * p<0.05 **p <0.01 ***p<0.001

NA = significance value not calculated due to small numbers.

Table A4. Perceptions of, and attitudes towards, smoking tobacco cigarettes and using electronic cigarettes amongst a sample of children in Welsh primary schools

			Gender				Age (years)			
			All n (%)	Female n (%)	Male n (%)	P value	7 n (%)	9 n (%)	11 n (%)	P value
Tobacco cigarettes	It is okay for grown-ups to smoke them	No	147 (29.8%)	82 (32.3%)	62 (26.4%)	NS	37 (22.6%)	60 (32.4%)	48 (34%)	***
		Yes	228 (46.2%)	106 (41.7%)	122 (51.9%)		101 (61.6%)	79 (42.7%)	48 (34%)	
		Don't know/maybe	118 (24.0%)	66 (26.0%)	51 (21.7%)		26 (15.8%)	46 (24.9%)	45 (31.9%)	
	It is okay for children my age to smoke them	No	486 (98.2%)	251 (98.4%)	232 (98.3%)	NS	163 (98.8%)	182 (98.4%)	139 (97.9%)	NS
		Yes	1 (0.2%)	0 (0%)	0 (0%)		0 (0%)	0 (0%)	0 (0%)	
		Don't know/maybe	8 (1.6%)	4 (1.6%)	4 (1.7%)		2 (1.2%)	3 (1.6%)	3 (2.1%)	
Electronic cigarettes	It is okay for grown-ups to use them	No	122 (24.9%)	68 (26.9%)	53 (22.6%)	NS	35 (21.5%)	49 (26.8%)	37 (26.2%)	*
		Yes	243 (49.6%)	114 (45.1%)	128 (54.7%)		95 (58.3%)	87 (47.5%)	59 (41.8%)	
		Don't know/maybe	125 (25.5%)	72 (28%)	53 (22.6%)		33 (20.2%)	47 (25.7%)	45 (31.9%)	
	It is okay for children my age to use them	No	454 (92.1%)	243 (95.7%)	209 (88.6%)	*	153 (93.3%)	173 (94%)	127 (86.4%)	*
		Yes	6 (1.2%)	0 (0%)	6 (2.5%)		5 (3%)	1 (0.5%)	0 (0%)	
		Don't know/maybe	33 (6.7%)	11 (4.4%)	21 (8.9%)		6 (3.6%)	10 (5.4%)	15 (10.5%)	

NS = not significant * p<0.05 **p <0.01 ***p<0.001

Table A5. Exposure to tobacco and electronic cigarettes, and future intentions to smoke/use them, amongst a sample of children in Welsh primary schools

		Gender				Age (years)				
		All n (%)	Female n (%)	Male n (%)	P value	7 n (%)	9 n (%)	11 n (%)	P value	
Tobacco cigarettes	Talked to friends about them	49 (9.9%)	27 (10.5%)	21 (8.9%)	NS	17 (10.3%)	16 (8.6%)	15 (10.4%)	NS	
	Someone who lives in my house smokes them	160 (32.3%)	87 (33.9%)	70 (29.8%)	NS	61 (37.0%)	54 (29.3%)	44 (30.6%)	NS	
	People in my house smoke them ^a	In front of me/ around me	22 (13.8%)	14 (16.1%)	7 (10.0%)	NS	11 (18.0%)	10 (18.5%)	1 (2.3%)	NA
		Outside the house	120 (75.5%)	61 (70.1%)	58 (82.9%)	NS	43 (70.5%)	41 (75.9%)	36 (81.8%)	*
		Inside the house	38 (23.9%)	23 (26.4%)	15 (21.4%)	NS	16 (26.2%)	14 (25.9%)	8 (18.2%)	NS
		Somewhere else	38 (23.9%)	26 (29.9%)	12 (17.1%)	NS	15 (24.6%)	13 (24.1%)	10 (22.7%)	NS
	I think I will smoke them when I'm older	9 (1.8%)	2 (0.8%)	7 (3.0%)	*	7 (4.2%)	1 (0.5%)	0 (0%)	NA	
Electronic cigarettes	Talked to friends about them	35 (7.1%)	18 (7.1%)	17 (7.2%)	NS	19 (11.5%)	11 (6.1%)	4 (2.8%)	NA	
	Someone who lives in my house uses them	111 (22.4%)	49 (19.1%)	60 (25.5%)	NS	42 (25.5%)	40 (21.9%)	28 (19.4%)	NS	
	People in my house use them ^a	In front of me/ around me	27 (24.8%)	15 (31.3%)	11 (18.6%)	NS	11 (27.5%)	10 (25.0%)	6 (21.4%)	NS
		Outside the house	61 (56.0%)	23 (47.9%)	37 (62.7%)	NS	25 (62.5%)	23 (57.5%)	13 (46.4%)	NS
		Inside the house	51 (46.8%)	23 (47.9%)	28 (47.5%)	NS	15 (37.5%)	20 (50.0%)	16 (57.1%)	NS
		Somewhere else	30 (27.5%)	11 (22.9%)	19 (32.2%)	NS	8 (20.0%)	13 (32.5%)	9 (32.1%)	NS
	I think I will use them when I'm older	19 (3.9%)	6 (2.4%)	13 (5.6%)	NS	11 (6.7%)	6 (3.3%)	2 (1.4%)	NA	

NS = not significant * p<0.05 **p <0.01 ***p<0.001^a Limited to those who stated that they lived with someone who smokes tobacco cigarettes or uses electronic cigarettes respectively.

NA = significance value not calculated due to small number.

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