

Table of Characteristics of included studies

Paper Number	Authors, Date of Publication, Country	Population Age, gender, cultural identification, recruited smoking/vaping status	Recruitment and Data Collection methods	Analysis	Quality Rating
1	Akre et al (1) 2016 Lausanne, Switzerland	N=42 Age:16-26 Female:19 Male: 23 E-cigarette user: 74% Dual User: 31%	Participants recruited through social media, university sites and snowball methods Topic guide developed from previous qualitative study on substance use and a literature search 8 Focus groups stratified by consumption type Questions centred around: <ul style="list-style-type: none"> • Consumption • Reasons to use or not to use e-cigarettes • Difference between e-cigarettes and traditional cigarettes • Thoughts on “gate-way effect” 	Thematic analysis (2)	Good
2	Antin et al (3) 2020 San Francisco, USA	N=49 Age:15-25 Female:24 Male: 25 38% White 62% Other 100%: Ever use of e-cigarette	Participants recruited through social media, on street recruitment methods and snowball methods Semi-structured interviews No mention how topic guide was developed Topic guide centred around: <ul style="list-style-type: none"> • Participant’s history of nicotine therapy (NT) use • Pathway into and current practices of vaping and smoking • Perceptions of vaping and smoking 	Thematic analysis (4)	Good
3	Camenga et al (5) 2015 Public University and Public College,	N=127 Age: 13-22 Female:61 Male:66 56.7% non-Hispanic White	Purposive sampling of smokers and non-smokers within colleges and high school groups 18 Focus groups stratified by gender and smoking status Semi-structured qualitative guides developed from pilot focus group containing high school and college students Questions centred around: <ul style="list-style-type: none"> • Motivations to use e-cigarettes 	Framework analysis (6)	Good

	New Haven County, USA	20.5% non-Hispanic Black 10.2% Hispanic White, 3.9% Asian 8.7% other or multiple race/ethnicity 33.3%: Ever use of e-cigarettes	<ul style="list-style-type: none"> Experiences with e-cigarettes Comparison between e-cigarettes and cigarettes Social norms around e-cigarette use Recordings supplemented by field notes		
4	Case et al (7) 2016 Southwestern University, Texas, USA	N=30 Age: 18-26 Females:16 Males:14 40% white non-Hispanic 17% Hispanic 30% Asian, 13% other races 50%: Current e-cigarette users	Purposive sampling of e-cigarette users and non -users from university participant pool and recruitment online through university wide event calendar Semi structured interviews Interview guide developed from the ‘Health Belief Model’ (8,9,10) and the ‘Theory of Planned Behaviour’ (11,12) Topic guide centred around: knowledge, attitudes, perceived benefits/advantages, perceived barriers, perceived disadvantages, perceived norms and perceived self-efficacy	Thematic analysis (13)	Good
5	Chen et al (14) 2019 Washington D.C., Maryland and Virginia, USA	N=25 Age 18-34 Female: 10 Male:15 36% non-Hispanic black 28% non-Hispanic white 20% mixed race 8% white 8% other races	Participants recruited from posting on Craigslist.com Semi-structured interviews conducted over the phone No mention how topic guide was developed Topic guide centred around: <ul style="list-style-type: none"> Young adult smokers’ attitudes and beliefs towards e-cigarette flavours Intentions of using e-cigarettes given an e-cigarette flavour ban 	Thematic analysis (15)	Good

		100%: Used e-cigarettes in the past 30 days			
6	Cheney et al (16) 2016 Oklahoma, USA	<p>N= 30 Age: 18-30 Females:16 Male:14</p> <p>77% white 17% African American 3% Hispanic 3% American Indian</p> <p>77%: daily e-cigarette use 15%: use e-cigarette at least once a week 10%: use e-cigarette at least once a month</p>	<p>Purposive sampling of e-cigarette users through posters within the local community and online advertising Semi-structured interviews Interview questions developed from a review of the literature, observations in vape stores and conversations with three straight-to-work young adults who were not included in the study Questions included were:</p> <ul style="list-style-type: none"> • Tell me about the first time you used an e-cigarette • How much did you vape when you started • How much do you use now • If you run out of juice and the stores are closed, what do you do • How do your family and friends view vaping • Do people view you differently when they see you vaping rather than smoking • Looking back, how do you feel about your decision to start vaping • Do you see yourself quitting vaping at some point 	Thematic analysis (17)	Good
7	Cheney et al (18) 2018 Southwest USA	<p>N= 32 Age:18-25</p> <p>Female: 10 Male: 22</p> <p>75% white 3% African-American 13% Hispanic 3% Asian 6% American Indian</p>	<p>Purposive sampling of participants through recruitment posters placed on university campuses and postings on website visited by students Semi-structured interviews Topic guide developed through reviewing literature and prior interviews with a small sample of college student e-cigarette users who were not included in the study Topic guide centred around:</p> <ul style="list-style-type: none"> • Prior and current use of e-cigarettes and other tobacco products • How and when e-cigarettes are used • Beliefs about e-cigarettes • Specific influences on e-cigarette use • How family members and peers viewed their e-cigarette use 	Thematic analysis (19)	Good

		100%: use e-cigarette once a week			
8	Choi et al (20) 2012 Minneapolis, Minnesota, USA	N=66 Age: 18-26 Female:40 Male: 26 56% American White 29% Asian 6% African American 1% Other	Recruited through online adverts, flyers at two college campuses, a recruitment booth and an announcement in a student newsletter 11 focus groups stratified to gender and education Discussion guide developed through a literature review and with experts in tobacco control policy, marketing, advertising and social media Topic guide centred around: Perceptions of new tobacco products and experiences of these products. Participants were also shown pictures of snus, dissolvable tobacco products and e-cigarettes	Thematic analysis (21)	Good
9	Coleman et al (22) 2016 Washington, Orlando, Providence, Richmond and Los Angeles. USA	N=116 Age: 18-29 + 30> Female:57 Male:59 66% American White 15% Black or African American 11% Hispanic 7% Asian 1% American Indian 2% Other 47%: exclusively used e-cigarettes in the past 30 days 53%: used e-cigarettes as well as one other	Recruitment of participants through local market research firms 14 Focus groups Moderator guide developed from the 'Theory of Planned Behaviour' (23) Questions included: <ul style="list-style-type: none"> • Why they used e-cigarette products • The benefits of using them • Similarities and differences between e-cigarettes and other tobacco products • Knowledge about ingredients • Beliefs about the harm of e-cigarettes • Their friends and families' opinions of e-cigarettes 	A phenomenological approach (24)	Good

		tobacco product in the past 30 days			
10	Cooper et al (25) 2016 University of Texas Health Science Centre. Austin, Texas, USA	N= 59 Age: 21-23 + 37-41 Female:26 Male:24 56% American White 6% African American 22% Asian 16% Other 72%: use e-cigarettes daily 28%: use e-cigarettes some days	Recruitment through a research opportunity post on the university online calendar Interview guide developed through review of existing literature Semi-structured interviews Interview guide centred around: <ul style="list-style-type: none"> • Motivations for use and perceptions of health impact • Subjective effects of nicotine delivery and dependence • Self-reported efficacy for smoking cessation or reduction 	Thematic analysis (26)	Good
11	De Andrade et al (27) 2016 Fife, Scotland	N=182 Ages 13-16	Recruited purposively by sex and smoking status Health education and promotion programme produced a 'Pop-Up Radio Project' to explore whether pupils recalled key points from tobacco-education interventions E-cigarettes were discussed by pupils All pupils were interviewed by the primary investigator Questions centred around: <ul style="list-style-type: none"> • Whether they had taken part in any interventions • Gathering perceptions of interventions if applicable • Perceptions of smoking • Assessing views on smoking prevalence in young people • Exploring how interventions can be improved 	Thematic analysis (26)	Good
12	Dobbs et al (28) 2019 Arkansas USA	N=22 Age: 18+ Female:11 Male:11	Participants recruited through campus online newsletter 5 Focus groups Topic guide developed from reviewing existing literature. Topic guide centred around:	Thematic analysis (26)	Good

		Demographic data not collected from participants 45%: trying/using e-cigarettes	<ul style="list-style-type: none"> • The acceptability of college students using traditional cigarettes and e-cigarettes • Where individuals typically used e-cigarettes • Exploring social norms for cigarette and e-cigarette • Assessing participants knowledge and opinions of tobacco-free policies 		
13	Dono et al (29) 2019 South Australia	N=30 Age:18-25 Females:13 Male:17 33%: Never used e-cigarettes 47%: Experimental use of e-cigarettes 20%: Used e-cigarettes to quit smoking	Participants recruited using a professional recruitment company 6 Focus groups No mention how topic guide was developed Visual stimuli used to facilitate discussions Topic guide centred around: <ul style="list-style-type: none"> • Experiences with smoking tobacco • Thoughts on smoking cessation • Knowledge and perceptions of e-cigarettes • Perceptions of messages portrayed in e-cigarette advertising • Perceptions of anti-e-cigarette messaging in the media 	Thematic analysis (30)	Good
14	Gowin et al (31) 2017 Oklahoma, USA	N=30 Age:19-31 Females:14 Males:14 77%: White 17%: African American 3%: Hispanic 3%: American Indian 100%: Current users of e-cigarettes	Purposive sample of participants recruited through posters at various community locations Semi structured interviews Topic guided developed from review of current literature, author's research on e-cigarette store owners and conversations with a small sample of young adults who were not included in the study Topic guide centred around: <ul style="list-style-type: none"> • Knowledge, beliefs and rules regarding the health/safety of e-cigarette • Where they accessed their information 	Grounded theory (32)	Good

15	Hammal and Finegan (33) 2016 University of Alberta, Canada	N= 45 Age: 12-17 Female:22 Male:23 33% European 13.3% Asian 4.4% Latin American 35.6% African American 13.3% Other 0%: used e-cigarettes in the past 30 days 54.9%: ever use of e-cigarettes	Convenience and quota sampling within schools to recruit participants along with snowball sampling 8 Focus groups with participants stratified by age Topic guide developed from literature review Questions centred around knowledge, initiation, use behaviour and family attitudes.	Content analysis (32)	Good
16	Hardcastle et al (34) 2014 Chester and Merseyside, England, UK	N=45 Age:13-17 Female: 15 Male: 30 91.1%: White British 8.99%: Other 42.2%: ever use of e-cigarettes	Recruitment was facilitated by youth group leaders and teachers 7 Focus groups Development of topic guide not discussed Topic guide centred around young people's use of and attitudes towards e-cigarettes	Thematic analysis (26)	Good
17	Harrell et al (35) 2019 Southeastern USA	N= 49 Age: 18-29 Female:15 Male:34	Participants recruited through publicised adverts 4 focus groups and 2 individual interviews Topic guide developed from reviewing current literature Topic guide centred around: <ul style="list-style-type: none"> • E-cigarette expectancies among young adults • Exploring beliefs regarding social effects of e-cigarettes • Perceptions about short/long term effects of e-cigarettes 	Content analysis (36)	Good

		<p>44.9% Non-Hispanic white 30.6% Non-Hispanic African American 8.2% Non-Hispanic Asian 4.1% Non-Hispanic multiracial 12.2% Hispanic</p> <p>Nonuser: 44.9% E-cigarette user: 24.5% Dual User: 16.3% Cigarette user: 14.3%</p>			
18	<p>Hess et al (37) 2017 San Francisco Bay area, California, USA</p>	<p>N=46 Age: 18-25 Female:24 Male:22</p> <p>100%: African American</p> <p>33%: ever use of e-cigarettes</p>	<p>Recruited through social media and in local communities Further snowball sampling used Structured interviews The interview guide was developed from a literature search and exploratory focus groups conducted with black young adults Interview questions centred around:</p> <ul style="list-style-type: none"> • Background of the participant • Racial identity • Personal tobacco and e-cigarette use • Smoking identity • Beliefs about tobacco • The social acceptability of tobacco • Perceptions and use of e-cigarettes <p>Recordings supplemented by field notes</p>	Thematic analysis (26)	Good
19	<p>Hilton et al (38) 2016 Scotland and</p>	<p>N=83 Age: 14-17 Female:39 Male:44</p>	<p>Recruited purposively by SES, gender, conventional cigarette use and e-cigarette use 16 focus groups Topic guide developed from a literature search and pilot work</p>	Thematic analysis (26)	Good

	England. UK	45%: ever use of e-cigarettes 11%: Current e-cigarette users	The guide focused on 5 areas, which were knowledge and understanding about e-cigarettes, belief about the potential benefits and harms, experiences of e-cigarettes, knowledge and opinions on regulation Discussions further facilitated by images of e-cigarettes and promotional material Recordings supplemented by field notes		
20	Johnson et al (39) 2017 Georgetown University Medical Centre, Washington , DC, USA	N=25 Age: 12-17 Female:14 Male:11 32%: African American 52%: White 16%: Other 8%: ever use of e-cigarettes	Purposive sampling of participants from an adolescent medicine clinic in an urban tertiary care hospital Semi-structured interviews Topic guide was developed from a literature review and consultation with study team Questions centred around: <ul style="list-style-type: none"> • Exposure to e-cigarettes • Recall of details of e-cigarette advertising locations • Perceived harm and addictiveness of e-cigarettes • Features of e-cigarettes and their advertising that may enhance or detract from their appeal to youths 	Thematic analysis (26)	Good
21	Keamy-Minor et al (40) 2019 California, USA	N= 24 Age: 18-29 Female: 5 Male:19 Demographic data not recorded 100%: Current e-cigarette user	Participants recruited through posts on Facebook and Instagram Semi-structured interview No mention how topic guide was developed Topic guide centred around: <ul style="list-style-type: none"> • How young adults perceive and use next generation pod device • If their use of pod devices differs from non-pod e-cigarettes and traditional cigarettes 	Thematic analysis (41)	Good
22	Lucherini et al (42) 2018 Scotland, UK	N= 72 Age:16-24 Female: 39 Male: 33 Demographic data not recorded	Participants recruited through community organisation, educational institutions, postings on skills exchange website Gumtree and snowball methods. 22 focus groups and 11 individual semi-structured interviews No mention how topic guide was developed Topic guide centred around: <ul style="list-style-type: none"> • Smoking/vaping history • Where, when and how participants had encountered e-cigarettes 	Thematic analysis (26)	Good

		83%: Ever use of e-cigarettes	Different e-cigarette types were brought as props to generate discussions Visual example of e-cigarettes being used and e-cigarette advertising were provided during the interview		
23	Lucherini et al (43) 2019 Scotland, UK	N= 72 Age:16-24 Female: 39 Male: 33 Demographic data not recorded 83%: Ever use of e-cigarettes]	Purposive sample of participants recruited through community organisation, educational institutions, postings on skills exchange website Gumtree and snowball methods. 22 focus groups and 11 individual semi-structured interviews No mention how topic guide was developed Topic guide centred around: <ul style="list-style-type: none"> Experiences of smoking and vaping Participants experiences of e-cigarette marketing and advertising Different e-cigarette types were brought as props to generate discussions Visual example of e-cigarettes being used and e-cigarette advertising were provided during the interview	Thematic analysis (26)	Good
24	Maglalang et al (44) 2019 California, USA	N= 12 Age: 19-34 Female: 4 Male: 8 100%: Asian American 100%: Current e-cigarette users	Participants recruited through social media, electronic newsletters and snowball sampling Semi-structured interviews Topic guide developed from review of existing literature Topic guide centred around: <ul style="list-style-type: none"> Their identity Use of Electronic cigarettes Health perceptions of electronic cigarettes How Asian culture influences behaviour and attitudes towards Electronic Cigarettes	Thematic analysis (26)	Good
25	McDonald EA and Ling PM (45) 2015 Manhattan, Brooklyn and Queens. NYC, USA	N=87 Age: 18-27 Female:44 Male:56 52%: Non-Hispanic white 9%: African American	Recruitment of participants from bars 12 Semi-structured interviews 16 Focus group stratified to either daily smokers or non-smokers who had used e-cigarettes No mention on how topic guide was developed Topic guide centred around: <ul style="list-style-type: none"> Definitions of smoking and smokers Experiences with tobacco and e-cigarettes Perceived benefits and risks Experiences with stopping tobacco use 	Thematic analysis (26)	Good

		<p>3%: Pacific Islander 23%: Hispanic 13%: Other races</p> <p>32%: current e-cigarettes users</p>	Recording supplemented with video-taping of focus groups		
26	<p>McKeganey et al (46) 2018 North of England, Scotland, UK</p>	<p>N=8 Age: 16-30</p> <p>Female:2 Male: 6</p> <p>Demographic data not recorded</p>	<p>Participants recruited from larger e-cigarette study Two semi-structured interviews occurred 6 months apart No mention how topic guide was developed Topic guide centred around:</p> <ul style="list-style-type: none"> • Perceptions and use of e-cigarette • Circumstances of their use • How their use is perceived by others • The frequency of their use of e-cigarettes • The likelihood of participants using e-cigarettes in the future 	<p>Content analysis No reference included</p>	Fair
27	<p>McKeganey et al (47) 2018 North of England, Scotland, UK</p>	<p>N=50 Age:16-26</p> <p>Females:18 Male:32</p> <p>100%: E-cigarette users</p>	<p>Participants recruited from universities/colleges, leisure and work settings and snowball sampling. No mention how topic guide was developed Topic guide centred around:</p> <ul style="list-style-type: none"> • Reasons for initiating e-cigarette use • Views on the relative harm of smoking and vaping • Views on how similar or dissimilar the activities of vaping and smoking are • Whether in their view their likelihood of smoking had increased or decreased as a result of their vaping 	<p>Content analysis No reference included</p>	Good
28	<p>Peters et al (48) 2013 University of Houston, Texas, USA</p>	<p>N= 47 Age: 15-17 Male: 47</p> <p>74%: African American 26%: Hispanic American</p>	<p>Purposive sampling of male participants by school staff No mention on how topic guide was developed Focus groups stratified by age Questions asked:</p> <ul style="list-style-type: none"> • Why do youth use electronic cigarettes • Where are places that you use electronic cigarettes • What do your friends think about electronic cigarettes • Why are electronic cigarettes so popular 	<p>Thematic analysis (26)</p>	Fair

		100%: current e-cigarette users	Recordings supplemented by field notes		
29	Pokhrel et al (49) 2015 University of Hawaii Cancer Centre, Hawaii, USA	N=62 Age: 18-35 Female:39 Male:23 19%: Asian American 8%: African American 12%: Filipino 7%: Hispanic/Latino 23%: Native Hawaiian/other Pacific Islander 31%: White 100%: current e-cigarette users	Recruitment through adverts and flyers at colleges 12 mix-gender focus groups Topic guide development not mentioned Three sets of questions asked across all focus groups The responses to one set of questions is discussed in this paper <ul style="list-style-type: none"> • If you currently smoke cigarettes when do you smoke cigarettes and when do you use e-cigarette • [For those who had quit both] At the time when you were using both cigarettes and e-cigarettes, when did you use cigarettes and when did you use e-cigarettes Recording supplemented by field notes	Content analysis (50)	Good
30	Pokhrel et al (51) 2015 University of Hawaii Cancer Centre, Hawaii, USA	N= 62 Age: 18-35 Female:23 Male:39 19%: Asian American 8%: African American 12%: Filipino 7%: Hispanic/Latino 23%: Native Hawaiian/other Pacific Islander 31%: White	Recruitment through adverts and flyers at colleges 12 mix-gender focus groups Topic guide development not mentioned Three sets of questions were asked across the focus groups The responses to two sets are discussed in this paper <ul style="list-style-type: none"> • What do you like about e-cigarettes • Why do you use e-cigarettes • What are the positive consequences that you expect out of using e-cigarettes • What do you not like about e-cigarettes • What are the negative consequences that you expect out of using e-cigarette • What are the reasons that may make you stop using e-cigarettes • Questions on dual use were asked but not provided as it is not relevant to this study Recording supplemented by field notes	Content analysis (50)	Good

		100%: current e-cigarette users			
31	Roditis et al (52) 2015 Stanford University, California, USA	N=24 Age: 15-19 Female: 9 Male:15 25%: White 33.3% Black/African American 16.7%: Asian 4.2%: American Indian/Alaskan native 16.7%: ever use of e-cigarettes	Participants were purposefully selected from afterschool programmes in urban Northern California school district 6 Focus groups Topic guide development not mentioned Semi-structured guide used to assess perceptions of the risk and benefits related to using conventional cigarettes, e-cigarettes and marijuana: <ul style="list-style-type: none"> • Where, what and from whom they had learned about these products • Asked to discuss why they would use one product over another product 	Thematic analysis (26)	Good
32	Wagoner et al (53) 2016 Raleigh, Durham and Chapel Hill. North Carolina, USA	N=77 Age: 13-25 Female:43 Male:34 57%: White 26%: Black 4%: Asian 13%: Other 28.6%: past 30-day e-cigarette use 14.3%: ever use of e-cigarettes	Recruitment through adverts on social media, newspapers, and media outlets Further in-person recruitment in community settings 10 Focus groups stratified by age and use of e-cigarettes Topic guide developed from a literature review, pilot work and input from the study team Topic guide centred around familiarity, knowledge and health effects New questions added to focus groups 7-10 <ul style="list-style-type: none"> • Have you heard of e-hookahs or hookah pens • What do you know about them • Are they different from e-cigarettes • Do you know people who use them • Are there other devices like this we should know about 	Thematic analysis (26)	Good
33	Weishar et al (54) 2016	N=83 Age: 14-17 Female:39 Male:44	Recruited purposively by age, SES, smoking status and e-cigarette use 16 Focus groups Topic guide developed from a literature search and pilot work	Thematic analysis (26)	Good

	Scotland and England. UK	57%: ever use of e-cigarettes	The guide focused on five areas, which were, knowledge and understanding about e-cigarettes; belief about the potential benefits and harms; experiences of e-cigarettes; knowledge and opinions on regulation Discussions further facilitated by images of e-cigarettes and promotional material Recordings supplemented by field notes		
34	Yule and Tinson (55) 2017 Massachusetts, USA	N=20 Age: 21-27 Female:12 Male:8 45%: current e-cigarette users	Purposive sampling of participants in ‘emerging adulthood’ who engage with vaping behaviour Semi-structured interviews Topic guide/question development process not mentioned Questions centred around: <ul style="list-style-type: none"> • Experiences and perspectives of e-cigarettes • Sociability of vaping • Knowledge of vaping • Thoughts on restrictions and regulations on e-cigarettes 	Grounded theory (56)	Good

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