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Smoke-free homes: what are the barriers, motivators and enablers? A qualitative systematic review and thematic synthesis

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ABSTRACT

Objective: To thematically synthesise primary qualitative studies of the barriers, motivators and enablers of smoke-free homes (SFHs).

Design: Systematic review and thematic synthesis.

Data sources: Searches of MEDLINE, EBM Reviews (Cochrane Database of Systematic Reviews), PsycINFO, Global Health, CINAHL, Web of Science, Informit and EMBASE, combining terms for families, households and vulnerable populations; SFH and secondhand smoke; and qualitative research, were supplemented by searches of PhD theses, key authors, specialist journals and reference lists.

Study selection: We included 22 articles, reporting on 18 studies, involving 646 participants. Inclusion criteria: peer-reviewed; English language; published from 1990 onwards (to week 3 of April 2014); used qualitative data collection methods; explored participants' perspectives of home smoking behaviours; and the barriers, motivators and enablers to initiating and/or maintaining a SFH.

Data extraction: 1 of 3 authors extracted data with checking by a second.

Data synthesis: A thematic synthesis was performed to develop 7 core analytic themes: (1) knowledge, awareness and risk perception; (2) agency and personal skills/attributes; (3) wider community norms and personal moral responsibilities; (4) social relationships and influence of others; (5) perceived benefits, preferences and priorities; (6) addiction and habit; (7) practicalities.

Conclusions: This synthesis highlights the complexity faced by many households in having a SFH, the practical, social, cultural and personal issues that need to be addressed and balanced by households, and that while some of these are common across study settings, specific social and cultural factors play a critical role in shaping household smoking behaviours. The findings can inform policy and practice and the development of interventions aimed at increasing SFHs.

Trial registration number: CRD42014014115.

Strengths and limitations of this study

- To our knowledge, this is the first systematic review and thematic synthesis of the qualitative literature exploring the barriers, motivators and enablers of establishing and maintaining smoke-free homes.
- Inclusion of studies from multiple countries, cultural and social settings allowed identification of common barriers, motivators and enablers, as well as how these issues vary within and between contexts.
- Synthesising the qualitative research evidence can inform policy and practice and the future development of interventions aimed at increasing smoke-free homes.
- Limitations of this study include the restriction to English language articles, and that the majority of the included studies were conducted in Western countries, potentially restricting the transferability of the review findings and the evidence base.

INTRODUCTION

Six hundred thousand premature deaths annually result from non-smokers being exposed to secondhand smoke (SHS).[1 2] SHS is defined as a mixture of exhaled mainstream smoke and side stream smoke released from a smoldering cigarette or other smoking device (cigar, pipe, bidi, etc) and diluted with ambient air.[3] Exposure to SHS is causally linked to disease and disability in non-smokers[4 5] and is estimated to account for 0.7% of the total global burden of disease.[1] There is no safe level of exposure[6] and given the large numbers of non-smokers who are at risk of exposure in private and public spaces, there is a need for effective tobacco control strategies to protect those at risk. There are increasing numbers

of jurisdictions which have enacted legislation mandating smoke-free environments, principally in workplaces and public spaces, which has reduced non-smokers SHS exposure and related morbidity and mortality.[7] However, such smoke-free legislation (SFL) does not cover homes, resulting in homes being a predominant source of SHS exposure for non-smokers, in particular children and the elderly.[1 8] The proportion of non-smokers living in smoke-free homes (SFHs), defined as a home where no one is allowed to smoke anywhere inside the house,[9] is increasing in many countries.[10 11] However, not everyone has a SFH, particularly among disadvantaged groups,[4] and non-smokers living in homes that are reportedly smoke-free may still be exposed to SHS given there is variation in perceptions of what a SFH is and the fluid implementation of home smoking restrictions.[12] Strategies which stop short of making the home completely smoke-free, such as opening windows, do not prevent SHS exposure or reduce risk.[13 14]

There is qualitative evidence to suggest that some households can successfully create and maintain SFHs whereas others face significant barriers, given the substantial behaviour change that may be required.[12 15 16] Key reported motivators for change include protecting the health of others, in particular children, while barriers reportedly include a lack of knowledge around the harms of SHS and habitual home smoking behaviours.[12 15 16] These primary qualitative data provide an in-depth insight into households' experiences of SFHs within individual study contexts, but to date, this evidence has not been synthesised. Therefore, this systematic review will thematically synthesize[17] qualitative studies that explored the barriers, motivators and enablers to creating and maintaining SFHs, across different geographic, social and cultural contexts, and in locations with differing tobacco control policy settings. We used thematic synthesis as our intention was to create a synthesis that would facilitate the development of evidence-based policy recommendations as well as informing the design and implementation of effective interventions to reduce SHS exposure in the home.[18]

METHODS

In reporting this review, we have followed the Enhancing Transparency of Reporting the Synthesis of Qualitative Research (ENTREQ) framework.[19] The protocol is registered with PROSPERO (Identifier: CRD42014014115).[20]

Selection criteria

Peer-reviewed journal articles meeting the following criteria were included: English language; published from 1990 onwards; used qualitative data collection methods; explored participants' perspectives of home smoking behaviours; and the barriers, motivators and enablers to initiating and/or maintaining a SFH. Our definitions of barriers, motivators and enablers are shown in figure 1. Mixed-methods studies including a qualitative component were included. To maximise the diversity of articles, those reporting the views of any household or community member as well as relevant healthcare professionals were included. We excluded non-primary research (letters, opinion pieces and reviews); articles focused on institutional residential care settings or public spaces of multiunit housing (as individuals may have less control over their environment); and articles only reporting the acceptability of components of SFH interventions, for example, air quality monitoring/feedback systems (as these did not address barriers, motivators and enablers to making a home smoke-free, but to the feasibility and acceptability of intervention components).[21] Initially we included articles addressing barriers/motivators/enablers to making cars smoke-free but subsequently excluded these as only two articles focusing on cars were identified, and the legislative context of smoke-free cars differs from that of homes.

Search strategy

We searched MEDLINE, PsycINFO, Informit Online—Health (excluding sports science and HIV), CINAHL, Global Health, Web of Science, EMBASE and EBM Reviews: Cochrane Database of Systematic Reviews, for articles published from 1990 to week 3 of April 2014, using a search strategy based on a modified SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, Research type) tool.[22] SPIDER is an alternative search strategy to PICO (Population, Intervention, Comparison, Outcome) for identifying qualitative articles (see[20] search terms). The search combined terms for families, households and vulnerable populations; SFH and SHS; and qualitative research. As qualitative articles are poorly indexed,[23] we hand searched nine key tobacco, sociological and qualitative research journals, the reference lists of included articles and relevant PhD theses, and undertook key author searching to identify additional articles (see[20] for more details and http://www.crd.york.

Figure 1 Definitions of barriers, motivators and enablers used as part of the review.

Barrier: a circumstance, reason or obstacle that keeps households from creating or maintaining a smoke-free home.

Motivator: reasons or factors for wanting to create and/or maintain a smoke-free home. Motivation is also the catalyst for the change from desire to trying to actually create a smoke-free home.

Enabler: person, agency, strategy or other assistance that might help households to create and/or maintain a smoke-free home.

ac.uk/PROSPEROFILES/14115_STRATEGY_20140908.pdf for the MEDLINE search terms. These were modified as appropriate for other databases and are available from the authors on request).

Following removal of duplicates, titles and abstracts of identified articles were screened by two authors, with exclusion of those not meeting the inclusion criteria. Full-text versions of the remaining articles were independently reviewed by two authors, with agreement by consensus and differences resolved by a third (figure 2).

Quality assessment

Given the ongoing debate[24 25] regarding methods of appraising the quality of articles for inclusion in qualitative systematic reviews, we appraised included articles for the clarity, appropriateness and the rigour of their methodological reporting, their awareness of ethical issues and understanding of reflexivity using a slightly modified Critical Appraisal Skills Program (CASP) Qualitative Checklist[26] and for their conceptual richness.[27] To avoid bias, none of the review authors were involved in the CASP appraisal of their own papers.

Data extraction

Key characteristics of each study were extracted by one author using a proforma developed for this study and checked by a second author. As some of the review authors were also authors on included papers, no authors were involved in extracting data from their own papers. For each article, all text and participant quotations from the 'Results/Findings' and the 'Discussion' were extracted and imported into NVivo V.10 (NVivo. Qualitative data analysis software V.10: QSR International Pty Ltd, 2012) for coding. For mixed-methods papers, only the qualitative components were extracted.

Analysis and synthesis

First, one article[28] was identified as an index article (as it was well reported and conceptually rich) and coded independently by three authors (MEP, JML, LLJ) within each of the a priori core constructs of barriers, motivators and enablers. This was followed by in-depth discussion and consensus to develop a working codebook. This process was repeated with seven further articles to iteratively develop and refine the codebook, until no

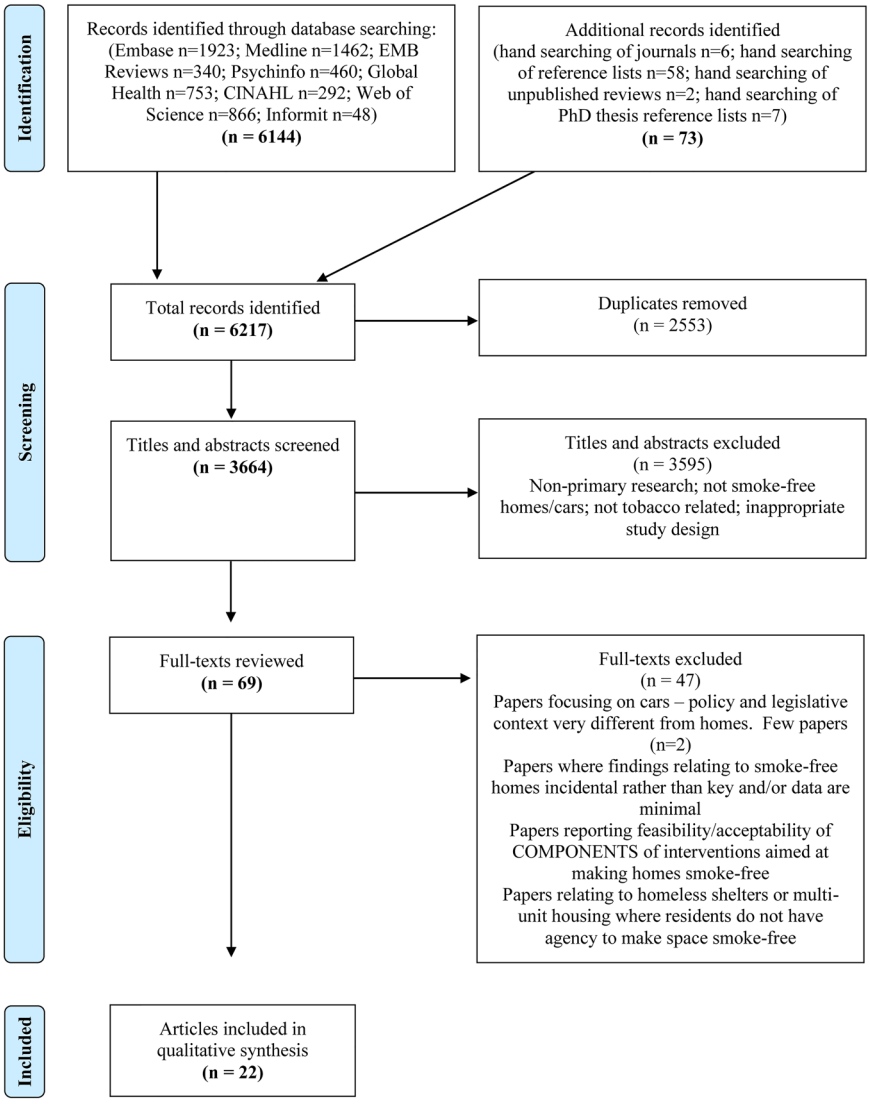

Figure 2 Search strategy and results flow diagram.

new codes were identified. All articles were then divided between three authors, ensuring that no author coded a paper on which they were an author, and the extracted text was line-by-line coded against the codebook in NVivo with generation of descriptive categories and analytic themes. Within each paper, only the sections of the findings and discussion that were relevant to our qualitative synthesis and that related to the paper's primary data were coded. The categories and themes were discussed repeatedly within the team until consensus was reached. Relationships and patterns across themes were examined and discussed to identify analytic themes and explore variation by context.[17]

RESULTS

Literature search

The search identified 3664 articles after removal of duplicates (figure 2). Following review of title and abstracts, 3595 were removed, with full review of 69 articles. Of these, 47 failed to meet the inclusion criteria and were excluded, with the remaining 22 (reporting 18 different datasets) included.

Characteristics of studies and participants

The 22 articles reported on 18 studies from the UK (n=10), Australia (n=4), the USA (n=3), Canada (n=3) and China (n=2) included 646 participants (633 adult household or community members, 13 healthcare professionals). Nineteen of the studies were cross-sectional, with three using longitudinal data collection methods. Data were collected via 58 focus groups, 474 individual interviews, and 2 expert panels between 1998 and 2011. Three articles did not report the year of data collection. Ethnicity was not reported in all articles, but for the 12 that did, participants were Hispanic and non-Hispanic white American, African-American, white British, South Asian British, black British, 'mixed ethnicity' British, Australian Aboriginal, Canadian First Nations, Maori, white Australian, Australians born overseas (Greek, Filipino, Scottish, Lebanese, Uruguayan, Arabic, Vietnamese) and Chinese. Three studies purposively targeted ethnic minorities: Arabic and Vietnamese communities in Australia,[29] Aboriginal Australians[30] and First Nations Canadians[31] (see online supplementary table S1).

Smoking behaviours

The included studies were undertaken with a range of participant groups, with some specifically targeting smokers who smoked in their home;[12 32 33] some included smokers or households with at least one smoking adult, regardless of SFH status;[15 16 29 34–40] others purposively included families with and without SFH.[28 41–44] Three studies did not use smoking or SFH status as an inclusion criterion;[30 31 45] and one was undertaken with professionals in tobacco control.[46] There were mixed degrees of restrictions on smoking within the home, from no restriction to a total ban, with many participants restricting smoking to specific rooms, or restricting smoking in the presence of children. However, for many articles, it was not possible to ascertain which observations applied to which level of restriction. While participants in many studies reported that their homes were smoke-free, exceptions to this rule were frequently reported, with 18 of the articles[12 15 16 28–32 35 36 38–45] reporting considerable fluidity in the application of home smoking rules. Fluidity occurred when rules to keep the home smoke-free were modified by daily life,[12 15 16 29 30 36 39 40 41 44] visitors who smoked,[12 16 28 29 31 32 38 42 45] the presence/absence of children[12 16 35 41–43] and weather.[12 16 29 32 38]

Smoke-free policy context

Public indoor smoking restrictions were in place at the time of data collection for 11 of the articles[12 15 29–33 40 42 43 46] and not currently in place for 10 of the articles.[16 28 34 36–39 41 44 45] For one article,[35] it was not possible to establish.

Quality assessment

The quality assessment of the included papers using each of the modified CASP criteria is shown in the online supplementary table S2. Sixty four per cent (14/22) of included articles were rated high quality[12 15 16 28 30 31 34–36 38–40 42 45] by the review team. All were judged to contribute conceptually to the synthesis and were included irrespective of the quality assessment, although the higher quality papers contributed significantly more to the analysis and synthesis.

Synthesis

We interpreted seven core analytic themes, six of which cut across barriers, motivators and/or enablers and 23 subthemes (table 1). The results are presented at the level of analytic core themes with linked subthemes, mapped against the constructs of barriers, motivators and enablers, as our aim was to develop a higher order thematic synthesis which goes beyond data reported in the primary studies.[17] We have used 'italics in quotation marks' to identify primary data quotes from participants, and 'plain font in quotation marks' to indicate the article's authors' interpretations. Table 2 includes illustrative quotes. The references for studies contributing to each of the subthemes are provided with each subtheme title.

Knowledge, awareness and risk perception

Awareness and knowledge of risk

Poor awareness and knowledge of the risks from SHS was identified as a barrier.[12 15 16 28 29 34–37 39–45] Conversely, awareness and knowledge of the risks acted as a motivator, with some participants 'aware'[35] and 'mindful'[40] of the dangers of exposing others, particularly children, to SHS. Exposure was reported as 'deadly' and 'dangerous',[41] with household members aware that exposure 'present[ed] a risk'[34] which motivated them to

Table 1 Core analytic themes and subthemes by barriers, motivators and enablers

Core analytic theme	Barriers	Motivators	Enablers
Knowledge, awareness and risk perception	Awareness and knowledge of risk	Awareness and knowledge of risk	
	Risk perception and acceptable risk		
	Knowledge of effective strategies		
	Denial of/challenges to risk messages		
		Protecting others' health	
		Protecting personal health	
Agency and personal skills/attributes	How social norms contribute to lack of agency		
	Gender imbalances		
	Structural factors		Structural factors
	Personal skills/attributes		Personal skills/ attributes
Wider community norms and personal moral responsibilities			Community norms
		Being a responsible parent	
		Guilt	
		Avoiding stigma	
Social relationships and influence of others	Maintaining social relationships		
	Influence of others	Influence of others	Influence of others
Perceived benefits, preferences and priorities	Perceived benefits of smoking		
		Perceived benefits of having a SFH	
	Personal preferences	Personal preferences	
	Priorities		
Addiction and habit	Addiction/habit		
Practicalities	Practical issues	Practical issues	Practical issues
			Practical strategies

SFH, smoke-free home.

make changes to their home smoking behaviours.[12 39] While exposure to SHS was largely recognised as being harmful, the specific risks associated with exposure,[12 16 29 39 45] the continuing risks in childhood or later,[12 29 36 39 41 45] and the risks in pregnancy[29 39] were often not appreciated or acknowledged. Health messages were considered to lack specificity in relation to risks associated with exposure,[12 39] and some participants expressed desire NOT to know as it would make them feel worse about exposing their children to SHS.[12]

Risk perception and acceptable risk

Caregivers were engaged in a process of weighing up risks of SHS exposure with other risks to their children's health and well-being, within the construct of good parenting.[12 16 29 30 32–35 39 42 43 45] This sometimes acted as a barrier to creating a SFH. Their choice to expose children was articulated as '…the rational option' and within this context presented as an acceptable level of risk.[34] On the one hand, there were risks of SHS exposure, sometimes perceived as transitory ('…only half an hour'[39]) and limited,[34 39] and on the other hand perceived risks of leaving a child unsupervised, with the associated '…near and present harms'[16] such as falling or being harmed by a sibling.[34] Although one participant felt that 'smoking in front of a child is just "not a rational" decision'.[42]

This perception changed over time and made maintenance of a SFH difficult in the longer term. When children were new-born, the risk from SHS exposure was perceived to be greater, and the risk of leaving them unsupervised lower. The rigidity of rules to keep the home smoke-free commonly relaxed as a child in the household grew older[12 29 30 35 39 43 45] as first they were considered to be more physiologically 'robust' and able to better tolerate SHS,[12 29 30 35 45] and second physical separation between smoker and inquisitive mobile toddler wanting to be with a caregiver became more difficult.[12 16 32 35 43] For some households, restricted outside space, for example, in a high rise flat with no balcony[12 16 32 33 42 43] limited caregivers choices for smoking away from children while closely supervising them, forming an important additional context for some of this balancing. The gradual transition back to

Table 2 Illustrative quotations

Knowledge, awareness and risk perception	
Awareness and knowledge of risk	**Barriers**: '*I know passive smoking is supposed to be worse than smoking itself, int it? I dunno I think it is? I'm sure it is, oh I don't know.*'[12] 'Mothers and their partners were unaware of the key health messages around the risks of passive smoking to pregnant women and their unborn babies.'[39] **Motivators**: '*…well, I decided to have the rule because cigarette smoke is deadly, it's dangerous. And nobody wants to be in a house where you inhaling cigarette smoke.*'[41] '*Well, I know it's not good for my children [to smoke around them]*'[28]
Risk Perception and acceptable risk	**Barriers**: '*I used to like not smoke where the baby was, and now I am smoking a bit more where the baby is, I think it's because she is that bit older. Because she is like two and a bit now, so I am like she is not a new born anymore, so it doesn't harm her as much, and I know it does but I don't smoke around her, do you know what I mean, I try not to, but occasionally I will have one.*'[35] 'Mothers are negotiating two competing discourses of mothering: not to expose their children to smoke versus the need for constant physical co-presence and the fear of leaving their children alone, if only for a short period of time, to have a cigarette.'[35] '*There's little point keeping them [children] totally away from cigarettes when they are exposed to twenty-times worse pollutants on the high street.*'[34]
Knowledge of effective strategies	**Barriers**: '*We have enough knowledge about protecting children from SHS exposure. I do not smoke near the child or in the child's room.*'[45] '*I don't let no one smoke inside the house, I'll smoke in the laundry but I will make sure like even though the smoke still gets through I will put a towel down like behind the door and leave the laundry door and the window like right open.*'[30]
Denial of/challenges to risk messages	**Barriers**: '*No one told me before that someone's smoking could be harmful to others; it is propaganda by some people*'.[45] '*Not being funny but I grew up in a house full of smoke, none of us had asthma.*'[34] '*People say that it [second-hand smoke] is quite bad for you. I don't know if I believe it's that bad for you. Not that bad.*'[34]
Protecting others' health	**Motivators**: '*If there's a new baby coming in the house we don't smoke.*'[30] '*I go in the back yard now since I've had the baby. I went in the kitchen with the other two, but once I had the baby it's right out in the yard.*'[39]
Protecting personal health	**Motivators**: '*I was real sick one time, I think I had the flu or pneumonia or something, the smoke kept messing with my breathing, I just felt like running everybody out of the house because all that smoke was getting to me. When you say you can't breathe the smoking don't help.*'[28]
Agency and personal skills/attributes	
How social norms contribute to lack of agency	**Barriers**: '*By smoking together we develop a connection of friendship and relationship ('guanxi'), which is important in the Chinese culture.*'[45] 'They (mothers) felt pressurized by the norms and expectations of their particular social environment(s) [which were in contrast to the wider social expectations of NOT smoking around children] to provide an uncritical environment [in the home] where people can smoke…'[38]
Gender imbalances	**Barriers**: Vietnamese-speaking men felt '*…no one has a right to tell me not to [smoke inside own house].*'[29] One English woman stated '*…what right have I got to tell him [husband] what to do?*'[12]
Structural factors	**Barriers**: (From a young person about older household members) '*…it just didn't feel it was my place to tell them [family members] what to do.*'[31] **Enablers**: '*…when it comes to my kids I'll do anything. Tell anybody to go somewhere else.*'[31] '*You chose to smoke. We choose not to smoke. Don't infringe on us because you do.*'[41] '*I do feel like a pain in the arse. But in the end I don't care really. I mean what can they say really. It's my house…*'[34]
Personal skills/attributes	**Barriers**: '*I haven't got full control of everyone coming into the house.*'[33] 'It was suggested that women required a very strong personality if they were to assert their desire to have a smoke-free home.'[31] **Enablers**: '*…for me to ask her to go outside when my son was born was just like chaotic for her.* *Just put up the nastiest fight ever and then I was just like well, you're gonna smoke in your house?* *I'm moving out. So we moved out and then she finally got the picture with the rest of my kids. Gotta go outside.*'[31]

Continued

Table 2 Continued

Wider community norms and personal moral responsibilities	
Community norms	**Enablers**: '*It's not something that's even discussed anymore, it's just…automatically assumed that you don't smoke in the house.*'[42]
Being a responsible parent	**Motivators**: '*So although you know it's [smoking] not a good thing, you look at ways it can be reduced, the effect it has on him [child].*'[34] 'Moral identities were constructed around being a caring parent.'[15] '*As long as they don't see the adults smoking, maybe the kids don't want to smoke or they're going to, what they see they're going to want to do…the kids want to follow adult leads.*'[28]
Guilt	**Motivators**: '*Guilt. No, just guilt. Knowing it's not good for non-smokers and kids.*'[32]
Avoiding stigma	**Motivators**: '*An' I hate going into people's houses while all the paintwork's yellow because they've done nothin' but smoke. I was just paranoid about the way other people smell, that I'd smell like that because I smoke you know. Because you do stink an' when I gave up I noticed people I'm like Jesus have you had a cigarette and they stink. An' I'm thinking God I must smell like that all the time and that's a big issue for me. A big issue.*'[35] '*I just come in one day, I opened the door and my house smelt of cigarettes […] I thought well how, how do you get rid of this nasty awful smell, oh I know don't smoke no more. And then I took my eldest son for his asthma review and she said you know he doesn't need inhalers anymore and then it just clicked.*'[12]
Social relationships and influence of others	
Maintaining social relationships	**Barriers**: (Re smoking visitors) '*I feel embarrassed and I say to myself it is one cigarette, it does not matter.*'[29] '*Bad, it makes you feel bad 'cause you want people to be comfortable when they come to see you but still you hate to hurt their feelings.*'[28] '*My mates stopped calling at mine because I wouldn't let them have a ciggie [inside].*'[38]
Influence of others	**Barriers**: (From a smoker about his wife's attempts to establish a SFH) '*Every time I lit a cigarette at home my wife would complain, but I pretended that I did not hear that she was talking. I knew she would stop her noise after sometime.*'[45] **Motivators**: '*One of my little boys, my baby boy, he was coughing and I was wondering, one day why he coughing so I took him to the doctor and the doctor asked me whether anyone in the home smokes and I said yes both of us. And he told me that we shouldn't smoke around him, and so that's how the [SFH] discussion came up.*'[28] **Enablers**: '*All my family are smokers but none of them smoke in the house round my kids. Yunno it's something that people respect me for.*'[34] *Well Oliver [son] wants to be a footballer and he is really good at football and at the moment he is dead set against smoking or anybody that smokes and he tells people as well. You know if someone comes in this house, although they know they can't smoke in this house, he'll always remind them.*'[35]
Perceived benefits, preferences and priorities	
Perceived benefits of smoking	**Barriers: '***He really likes to smoke. When he's on the computer, it's hard for him not to smoke, and he needs to be on the computer for work.*'[32] '*…and all you wanna do is scream at em [children] and you can't do that so you end up going into the kitchen, having a fag and then you sort it…*'[12]
Perceived benefits of having a SFH	**Motivators:** '*Instead of shouting and screaming at the kids, or doing anything worse, I just step out [of the house] and have a cigarette. I regain control and feel a bit stronger. My kids never get the brunt of my frustration then.*'[34]
Personal preference	**Barriers**: '*It's my house I'll do what I want.*'[42] **Motivators**: '*my mother…she definitely didn't have any smoking in the house, and I took that up from her.*'[41]
Priorities	**Barriers**: '*We have bigger problems to worry about, so I don't worry too much about the smoke.*'[42]
Addiction and habit	
Addiction/habit	**Barriers**: '*I try to avoid smoking at home, but sometimes I really cannot help myself and start smoking in front of my child. I really need some help* (a male smoker).'[45] '*…I don't think I could cope without it. […] It's been with you through thick and thin […] I was stressed out the first thing I needed to do was sit downstairs and have a fag […] yunno it's like putting on a woolly jumper in winter, you need to, it feels nice.*'[34]

Continued

Table 2 Continued

Practicalities	
Practical issues	**Barriers**: '*I think now I would rather just be, if we're going to continue to smoke, stand outside. But I think the problem is as well, without making an excuse, when it's cold and wet outside, if I go outside, Henry will want to be outside as well, he's following me so I probably don't want him outside because it's cold and wet or whatever and it's easy just to open the window and to sort of think he's through here playing with toys or whatever.*'[43] '*I tried doing that smoking outside…I weren't on my doorstep I was sat on the kitchen table… but the only reason why I did that was because my garden, like, there's that… alleyway type thing and then my garden and then my door, so you don't know who's coming round and then for it to be dark as well it is scary to go outside…*'[12] **Motivators**: '*Young child taking up residence, or being introduced into the family, or someone, if I had a family member that was just in bad health, asthma, bad asthma problems, you know then I would say no smoking in the house period.*'[28] **Enablers**: 'The ability for mothers to maintain a non-smoking home, was influenced both by the design of the homes, whether they lived in a flat, and whether they had access to outside space or gardens, and also by the place of their home within the neighbourhood.'[16]
Practical strategies	**Enablers**: '*I take a smoke if I'm going outside to take garbage.*'[32] 'A common strategy used by those who had banned smoking indoors was to make a comfortable environment outside to make it more inviting to smoke. Outside rooms or sheds provided several of the male participants with alternative ways to smoke 'inside'.'[37]

smoking near or around children within the home appeared to happen without discussion or negotiation.[12 39]

SHS exposure risk was also compared with other risks such as pollution[12 34 45] or weather[34 43] which were perceived as more harmful to children's health and well-being and provided a justification of why exposing children to SHS was '…safe enough' or '…not that bad'.[34]

Knowledge of effective strategies

Strategies to reduce exposure to SHS were frequently inadequate, reflecting poor knowledge of, or misconceptions around, effective approaches.[12 15 16 29 30 33–37 39 42–45] For example, caregivers restricted smoking to one room, increased ventilation, used air fresheners, asked or expected children to move away from the smoke, or smoked near an open window, believing that the actions taken were adequate[12 29 33 36 37 39 42 45] and that only 'visible smoke' was harmful.[29 42 45] The belief that these actions were sufficient to reduce harm undermined motivation to make the home completely smoke-free.[33 45]

Denial of/challenges to risk messages

Some participants denied the risks of SHS exposure.[12 15 29 34–36 38 42 43 45] In one article, participants cited role models (such as doctors) smoking or government messages as evidence of lack of risk.[45]

Participants' lived experience of the lack of (longer term) risk of SHS exposure where '…adverse health effects from smoking are seen as a possibility rather than a certainty'[38] or an immediate risk was found to be related to their assessing the risk to their own children as minimal.[12 15 34–36 38 43 45] This assessment also related to participants contesting healthcare professionals' views and public health messages when children were outwardly well.[12 29 43] This included suspicions that negative health effects were exaggerated by the media and healthcare professionals.[45] Some caregivers articulated the need for 'proof' that their smoking was harming their children,[34 43] even when their children were suffering from respiratory diseases associated with SHS exposure.[12 34 42] Some participants expressed active resistance in defying '…government dogma' about SFHs[38] by continuing to smoke in the home, and asking that their freedom to smoke be respected.[38]

Protecting others' health

Recognition of the harms of SHS was reported to be a motivator for change, with one of the most frequently cited motivators for the initiation and maintenance of home smoking rules being to protect the health of others.[12 15 16 28 29–36 38 39–46] This included unborn babies,[30] children,[12 15 16 29–32 34 35 38–46] grandchildren,[15 36 40 46] sick adults,[28 41] adults[36 43] and non-smokers.[33 35 40]

The desire to protect children was perhaps unsurprising given that the majority of studies explored home smoking behaviours with mothers/parents and the perception that 'protecting children from SHS in the home [is] generally being seen as more important than protecting adults'.[46] While protecting children in general was a motivating factor, the level of motivation for change was heightened when a baby was new-born.[15 28 29 30 31 39–42] This was apparent even if mothers had smoked previously around their children; the new baby prompted further positive attempts at change. Grandparents and other relatives were also

motivated to moderate their home smoking behaviours due to the presence of a new baby;[40] on request of their children who were thinking of starting a family[15] or considering leaving their child in the care of their parents.[40]

Three articles[31 39 40] indicated that significant changes to home smoking behaviours were typically only triggered by the physical presence of the baby in the house rather than during the pregnancy ('none of the participants had considered the need for pregnant women to avoid smoky places or people who were smoking'[39]) indicating a lack of awareness of risk. These same participants reported that they 'strongly and unequivocally supported the principle that new-born babies should not be exposed to cigarette smoke',[39] suggesting differences in risk perceptions between unborn and new-born babies and that this may influence motivation for change.

Motivation for creating a SFH was also triggered by a child being (newly) diagnosed with a SHS-related illness such as asthma, or if exposure to SHS within the home had or could exacerbate current health conditions.[12 28 34 41 42 44] However, Poland reported that few participants 'undertook restrictions pre-emptively in the absence of [child respiratory problems]' and that in some cases 'ample evidence of harm' was insufficient to motivate change.[42]

Protecting personal health

While household members, both smoking and non-smoking, were predominantly motivated to protect the health of others, a small number reflected, often hypothetically, that stopping smoking in the home may improve their own personal health.[12 28 36 45]

Agency and personal skills/attributes

Lack of agency and denial of agency were identified as barriers, while structural agency (agency embedded within specific roles, eg, that of mother), and particular personal attributes were identified as enablers. Lack of agency to control or change the smoking behaviour of others mainly related to shared living space within a household[12 32 42] but extended to private space in one article.[36]

How social norms contribute to lack of agency

Studies reporting how social norms contribute to an individual's lack of agency to make changes in household smoking were from communities where a high value was placed on social relationships, and where smoking functioned as a shared activity and was a positive glue in social relationships, work/business relationships, and at family events and celebrations.[16 29 30 31 36 38 45] The articles highlighted that in some cultures and subcultures, it remained normal to smoke, and that in societies where smoking is becoming increasingly denormalised, smoking is not denormalised everywhere. They demonstrate that social expectations of behaviour within a culture (eg, associated with politeness/hospitality with visitors)[29 45] can prevent household members from challenging others' smoking behaviours and thus result in a lack of agency to initiate or maintain a SFH. These expectations included ideologies about 'womanly behaviours'[36] such as the good/dutiful daughter in law or wife. This subtheme therefore linked closely to gender imbalance.

Gender imbalances

While 18 articles included men as participants,[12 15 28–33 35–37 39–42 44–46] the focus in most of the studies was on women's experiences. Gender imbalance was visible through women's (mainly) lack of agency in effecting change in male smoking behaviours in their households.[12 29 31 36 38 40 45]

Structural factors

Lack of agency was also explained by individuals living in someone else's home—usually adult children living with parents/in-laws or other extended family.[12 15 16 28 30–32 34–36 38–42 44] This situation arose, for example, in Chinese households where couples lived with the husband's parents.[36] Lack of agency in this situation related to how challenging a father-in-law over his smoking inside the house would breach the traditional role of being a good daughter-in-law and be viewed as a transgression of 'filial piety'[36] disrupting an essential commitment to the maintenance of family harmony. In other articles, adult household members faced barriers to change relating to their younger generational status[31 32 41 42] or the fact that they were unable to make a significant financial contribution to the household and therefore had no voice/power,[31] although this was not universal.[36]

Lack of agency was exacerbated by overcrowding (more smokers) and unemployment (spending more time in the home).[31 42] It was also intensified by fluid and unstable household composition where other adults regularly moved in and out.[12 42] Some caregivers felt that they lacked agency to enforce rules about home smoking as they were reliant on others for economic, social, emotional and practical support (such as childcare provision) which they felt may have been compromised if rules had been enforced.[12 31 36 38 40 44]

Conversely, leveraging the structural agency invested in the roles (and therefore rights) of primary caregiver/mother, home owner/head of household and non-smoker enabled the making and enforcing of home smoking restrictions. Referencing the presence of their children, and their role as primary caregiver to protect their children, provided some mothers with the necessary power base to introduce and enforce rules around home smoking.[16 30 31 34 36 39 40 41]

Leveraging the authority and rights invested in a home owner/head of household role was linked to respect for those roles (see 'social relationships and influence of others' theme).[28 30 34 39 41 42] Some articles included observations about the role of non-smoking

household members, where those individuals referenced their rights as non-smokers not to be subjected to SHS, enabling them to enforce household smoking rules.[41 42] This included children.[15 35 40 42] Invoking the mothering/home owner/non-smoker roles in these ways was most effective in contexts where not smoking around others was normalised.

Agency as a barrier was more commonly coded in articles where there was no SFL at the time of data collection but was still common across articles where there was SFL. This was rooted in continued normalisation of smoking in some communities and households and the importance of smoking as social glue, living in someone else's home, and persistent gender inequalities.

Personal skills/attributes

Having a strong personality, willpower, tenacity, assertiveness, self-discipline and willingness and energy to change including a preparedness to jeopardise family relationships were all described as enabling household members to initiate and enforce household smoking rules.[16 28 31 34 40 43] Conversely, the absence of personal qualities and skills such as motivation, assertiveness and negotiation contributed to lack of agency.[31 40]

Wider community norms and personal moral responsibilities

Community norms

Restrictions on smoking in public places was found to be associated with changing community norms regarding exposing others to tobacco smoke.[15 28 42] Norms regarding not smoking near others, particularly children, operated at three levels: the neighbourhood, household and individual—to enable initiation or maintenance of SFHs. Norms of not smoking near children, or not smoking indoors, shared by friendship groups or neighbourhoods facilitated SFHs.[15 28 29 31 35 39 40 42] At the household level, some articles found that well-established rules regarding not smoking inside the home were perceived as normal, and not questioned, both in smoking and non-smoking households.[28 34 41 42] Some participants had extended their own rules restricting smoking inside their homes to other people's homes, thus modelling this behaviour and supporting restrictions elsewhere.[15 35 40] This was sometimes couched in moral terms—of being a 'good' smoker, considerate of others[35 40] and respectful of the children.[31]

Being a responsible parent

The desire to perceive themselves and to be perceived by others as a responsible, risk averse, self-disciplined parent acted as a motivator for households, in particular mothers, to change their home smoking behaviours.[12 15 28–30 34–37 39 40 44 45] For smoking caregivers, the perceived ideal was for them to have a completely SFH; however, for those who were unable to achieve this, they employed risk reduction strategies[30 34–37 39] to reduce exposure to an 'acceptable level'.[34]

Smoking near children was 'not a clear cut issue'[35] for families and this 'risk management' allowed them to position themselves as 'morally responsible',[35] 'caring'[15] and 'considerate'[42] parents. Any inconvenience to the smoker as a result of making their home smoke-free or in the employment of risk reduction strategies was reportedly outweighed by their 'moral and caring obligations'[43] as a parent, and the overriding motivation to protect their children from harm. Linked with being a responsible parent was an underlying concern that children exposed to smoking at home would model smoking behaviour.[12 15 28 29 35 40 44 45]

Being a responsible parent was never coded as a barrier to SFHs but was coded as an enabler in articles where there was SFL at the time of data collection. This finding was reversed in articles where there was no SFL at the time of data collection. Similarly, smoking being normalised and acting as a barrier to a SFH was less evident in articles after implementation of SFL. These findings suggest that SFL may impact on behaviour to create and maintain a SFH via mechanisms of new community norms around smoking near children and constructs around good/considerate parenting.

Guilt

Intricately woven into the narratives around being a responsible parent were the feelings of guilt about being a smoker and exposing others, in particular children, to SHS.[12 32] While for some, guilt was a catalyst for change, for others even having acknowledged that smoking may be harmful to their children, the feelings of guilt did not alter home smoking behaviours.[29]

Avoiding stigma

Households were motivated to make smoke-free rules driven by a desire to live in a clean, odour-free environment, which was linked to a perceived stigma attached to the smell of smoke.[12 15 28–30 35–37 40–42 44 45] Households were motivated to restrict smoking in the home due to the perception that having a home which showed signs of smoke exposure (eg, nicotine stains) and which smelled of smoke was 'socially unacceptable'[40] and that there was 'stigma'[35] associated with having a smoky home, furnishings and clothing. While household décor was described by one article as the 'biggest emerging motivator',[12] this was not demonstrated across the articles within the current synthesis, rather it was the smell of smoke, which was 'instrumental'[41] in the initiation of both discussions about, and the implementation of, home smoking restrictions.

Social relationships and influence of others

Maintaining social relationships

In some situations, norms regarding social relationships prevented people from restricting smoking by others.[12 15 16 28 29 31–33 36 38 42 44 45] For example, many participants, but not all, were unwilling to or uncomfortable asking visitors not to smoke

inside.[12 15 16 28 29 31 32 33 38 44 45] This was considered to contravene etiquette, be ungracious, embarrassing, and carried fear of offending and of being rejected. The fear of rejection related to social identity as a smoker within an environment where smoking was normalised,[15] and for some a fear of being seen as a hypocrite (for smoking themselves).[12 38] In situations where smoking visitors were allowed to smoke inside the home, the maintenance of the social relationship was prioritised over protection of the child/ren given the brief transitory nature of most visitors. While concerns regarding etiquette in relation to visitors smoking were common, in some settings,[29 36 45] this was much more fundamental than a 'social nicety'; it was about the need to preserve social bonds, respect the status of others and to adhere to fundamental cultural practices. It was also expressed as 'respecting others need to smoke'.[31 42 44]

Negative social impacts of SFH rules was more commonly identified in articles before SFL but only coded in one article after implementation of SFL. This was also the case for feeling upset or bad or awkward about asking visitors not to smoke inside.

Influence of others

Other people, in particular family members, had the potential to influence home smoking behaviours in both positive and negative ways.[15 16 28–31 34–37 39–45] In households with at least one adult non-smoker, it was reported that in some cases the smoker themselves initiated changes;[42] however, frequently it was the non-smoker who instigated discussions[41] about home smoking and, in some cases, 'demand[ed]' that home smoking be restricted.[42] Children and grandchildren also played a role by expressing their dislike of smoking[30 40 41] which helped to motivate behaviour change.

Smoking household members' and visitors' acceptance of and compliance with household smoking rules was enabled by the normality and assumed nature of protecting others from SHS, particularly children,[28 31 35 39–42] and (for visitors) an expectation of respect[15 28 30 34 39–41] or asking for respect[28 44] for household rules and rule-makers. Several articles reported smoking household members not being affected or bothered by abiding by SFH rules,[15 16 28 34 37 43] although some compliance was accompanied by reluctance,[28 40 41] or driven by fear of reprisal.[28 40]

Positive influences on smoking household members' compliance with SFH rules included other members providing smokers with support and encouragement in their efforts to comply with rules[28 40 43] and children as 'active agents'[35] asking for and policing SFH rules based on concerns for their parents' and their own health.[15 35 40 42] Some studies reported non-smoking household members supporting other non-smoking members in attempting to create or maintain a SFH,[36 42] although these supporters were not necessarily reliable allies.[36] These observations were predominantly reported for households with a mix of smokers and non-smokers. In one article, households with a single smoker or single parent households had more stringent restrictions.[42]

Lack of support from household members was a barrier to implementing changes to home smoking behaviours.[16 28 29 31 40 41 43 45] Healthcare professionals, in particular doctors, were cited as a motivating factor and that receiving advice, in the form of a recommendation,[28 34 41] or as an explicit instruction[28 41] not to smoke in the home around children prompted discussions, and in some cases behaviour change. These discussions typically occurred when a family presented at the clinic with a child who had a potentially SHS-related illness or an exacerbation in a chronic condition linked to SHS exposure.

Perceived benefits, preferences and priorities

Perceived benefits of smoking

The perceived benefits of smoking acted as a barrier to establishing a SFH.[12 15 16 29–36 38 39 42] Benefits of smoking in the context of 'relationships with others' has been discussed earlier, but other personal/individual benefits were described including perceiving smoking as a reward or treat,[32 33 34] a consolation,[33] an aid to relaxation,[15 16 29 32–34 36] or concentration.[29] Having to go outside would detract from these perceived benefits. These benefits were described (by some mothers) within the context of balancing their own coping, with caring for children and good parenting. On one hand, smoking was constructed as reflecting an ethic of '… caring for self'[35] providing mothers with 'me time',[34] a "'little luxury' of having a 'moment's peace'"[34] and important emotional and social support from socialising with others who were smokers.[16 31 34 38] Mothers described this as beneficial to the family in 'coping'[34] and facilitating their good parenting, for example, managing stress and preventing them from shouting at their children.[12 30 33 34 39 42] This was linked to addiction and the need to smoke.

Perceived benefits of having a SFH

The initiation of a SFH was associated with unanticipated or unexpected benefits,[28 30 37 40 42 43] and these benefits were 'self-reinforcing'[37] in helping participants to maintain their smoke-free rules. For some household members, the initiation of a SFH helped them to cut down on the amount they smoked. It was rationalised that having to go outside 'postponed' or delayed smoking,[42] thus helping to remove the 'autonomic nature of smoking';[37] as well as being 'inconvenient'.[37] The positive reinforcement of cutting down helped motivate household members to maintain their smoke-free rules. In addition to helping to reduce their daily cigarette consumption, the initiation of a SFH may help some household members to quit smoking[12 28 30 42] which would in turn help to support longer term maintenance. For example, in the Jones *et al*[12] article,

participants who did not have SFHs reported that they were motivated to make their home completely smoke-free as it was perceived that it 'could be a manageable first step in the complex process of quitting' and that successfully implementing and maintaining strict home smoking rules might 'empower' them to make further positive changes to their smoking behaviours.

Five articles[28 34 37 40 42] reported other potential benefits to the initiation of a SFH, for example, that smoking outside helped facilitate 'personal'[42] or 'quiet'[40 42] time for the smoker with some reporting that they actively used smoking outside as a 'barrier' or to 'isolate' themselves from others.[42] These benefits helped to motivate household members to maintain their smoke-free rules.

Personal preferences

The personal dislike of and aversion to the smell of smoke (including among non-smokers and ex-smokers, and children) motivated establishment of SFHs.[30 36 40–42 45] In addition, some smokers who had grown up in smoking households had made a conscious decision to make their own home smoke-free as an adult given their aversion to SHS and the lack of choice around exposure as a child.[41 44] Others followed the SFH example set by their own parents.[41]

However, some participants were not willing to make a SFH. This was expressed in two ways: as not wanting to establish a SFH in my home, or in my home. The first set of observations included participants' determination to be in control of their own home/private space and able to do what they wanted there. This related to smokers' 'decision-maker' status in the household,[35 41] an expectation that others would respect their freedom or need to smoke, and a lack of self-consciousness, or concern for others' needs/wants about smoking.[15 31 33 38 42 45] The second and linked set of observations were about participants' perceptions of the meaning and identity of their home as somewhere private, comforting, relaxing and as the last place where you can choose to smoke uncriticised.[15 33 38] In some articles, the identity of the home constructed in this way was linked to participants' not having ever thought about establishing a SFH.[41 45]

Priorities

The transience and general chaos of some participants' home lives contributed to a situation in which initiating and maintaining a SFH did not feature, or did not take precedence over other priorities, which were often the product of very difficult social and economic circumstances.[12 16 32 42]

Addiction/habit

Addiction and habit were raised as barriers to having a SFH in 13 articles.[12 15 28 31–35 39 41–43 45] Addiction was presented as a general impediment to initiating a SFH[15 32 33 41] or was used to justify breaking existing rules.[28 35 39 45] A small number of articles included examples of participants articulating that their nicotine addiction affected their rational decision-making and capacity to convert understanding of risk and their good intentions into action.[34 35] For some respondents, quitting smoking was seen as a pre-requisite for a SFH, and their inability to quit due to their addiction was therefore constructed as a barrier.[32 34] Smoking indoors was reported as 'habitual' behaviour and something that they had always done and were unwilling to change,[12 32 41 42 45] or as an ingrained habit associated with other behaviours such as computer use, watching TV or after a meal,[12 32 41] both of which acted as a barrier to creating a SFH. The habitual and normalised use of smoking for stress management presented a major impediment to both the initiation and maintenance of SFH.[12 28 31–34 39] Smoking was described as an entrenched-coping mechanism, a familiar comforter and an automatic response to stress.

Practicalities

Practical issues

Having to go outside to smoke was reported as a barrier to initiating and maintaining a SFH, whereas for others this was a motivator as described above.[12 15 16 28 29 31–33 36–39 41–45] It was commonly viewed by participants as an inconvenience and was linked to wanting to smoke in comfort[12 15 31–33 41] and having to dress children for going outside.[32 43] Adverse weather posed a significant disincentive to smoking outside acting as a barrier to maintaining a SFH and driving the fluid application of household smoking rules,[12 16 28 29 31–33 37 39 42–44] as did unpleasant or unsafe surroundings.[12 16] Several articles included observations about the impact of limited or no private outside space on participants' capacity (including motivation) to establish a SFH.[12 16 32 33 42 43] Four articles[28 36 42 45] reported that households were prompted to initiate home smoking bans as they were concerned about the safety of smoking inside, particularly in bedrooms,[36] and the potential increased risk of fires and cigarette-related accidents. Changes in the household composition such as a partner moving in or out, a child taking up residence, or a relative moving in acted as a natural catalyst for reflection and potential changes in home smoking behaviours.[28 31 41 42]

Practical strategies

Strategies to enable making a SFH suggested by participants included environmental changes such as removing ashtrays and displaying 'no smoking' signs.[29 30 38 42 44] Homes with access to suitable, secure outdoor spaces supported people's attempts to have a SFH,[16 28 37 42] with some people designating a comfortable, covered outdoor space for smoking.[28 37] Other practical strategies included ensuring appropriate clothing for smoking outside was easily accessible,[32] letting children play outside while adults smoked,[16 34 43] or changing habits to incorporate smoking into routine outdoor

activities such as putting out the garbage.[32] Intrapersonal strategies included smokers quitting or reducing smoking; becoming informed about the risks of SHS to increase resolve; and seeing this change as an opportunity and looking for solutions, rather than seeing it as a problem.[32] Negotiating with other household members to make the decision and implement it[28 32 42 45] and engaging others (especially non-smokers) for support,[32] enabled implementation, as did having one unchanging rule which applied to everyone[28 30 34 41] and clear and consistent messages.[40 42 44] There were mixed views on whether to implement a SFH gradually (eg, partial bans first then a full ban) or abruptly, with both reported as successful approaches.[32 42 43 45] Tobacco control policies that reduced smoking were also considered to support the establishment of SFH.[15 45]

DISCUSSION

In this qualitative synthesis, we interpreted seven core analytic themes relating to the barriers, motivators and enablers for households creating and maintaining SFHs: knowledge, awareness and risk perception; agency and personal skills/attributes; wider community norms and personal moral responsibilities; social relationships and influence of others; perceived benefits, preferences and priorities; addiction and habit; and practicalities. The synthesis has highlighted the complexity faced by many households in creating and maintaining a SFH, the practical, social, cultural and personal issues that need to be addressed and balanced by households, and that while some of these are common across study settings, specific social and cultural factors play a critical role in shaping household smoking behaviours.

The increasing introduction of SFL has led to concerns that smoking may be displaced into the home. While at least one study[47] has reported increases in children's exposure to smoking in the home following SFL, others have reported reductions in children's cotinine levels,[10] reductions in childhood hospitalisations for respiratory tract infections,[48] and reductions in stillbirths and neonatal mortality[49] postimplementation of SFL. This synthesis may help explain these contradictory findings. The mechanisms underlying reductions in SHS exposure in the home may include an increased awareness of the harms of SHS combined with a shift in community norms regarding smoking behaviour and the acceptability of exposing others to SHS. By contrast, in other settings, the physical environment, with very restricted outside space, may severely limit the options for smoking away from children and outside the home, thus increasing smoking within the home.

Although the prevalence of SFHs is increasing,[10 11] the findings from this review highlight lack of understanding of SHS exposure and what constitutes a SFH, as well as the fluidity of home smoking rules and the challenge of capturing this fluidity in survey questions aiming to measure SFH prevalence. Asking a single question without further exploration around definition of SFH and transience of restrictions may overestimate the true number of SFHs. It is therefore important to explore fluidity as well as biochemically validate exposure where practical.

Strengths and limitations

We conducted a comprehensive search. Triangulation was achieved by involving multiple authors in extraction, analysis and interpretation to ensure that the synthesis incorporated the breadth and depth of experiences reported in the studies. The use of software for data coding presents an auditable pathway from the primary data to the findings. Our review synthesises data from 646 participants across different contexts and in locations with differing tobacco control policy. Even with this diversity, there was consistency in the findings across contexts as the core analytic themes interpreted were described in many of the included articles. Our review does, however, have some limitations. Twenty of the studies were conducted in high-income Western countries, with only two articles from a middle-income country[36 45] and none from a low-income country, potentially restricting the transferability of the review findings and the evidence base. Additionally, non-English language articles were excluded, further limiting generalisability of the findings. The majority of the studies focused on children's exposure to smoke in the home, with little exploration of risks to other vulnerable groups, including vulnerable adults or pregnant women and their fetus. It was not always possible to explore variation and draw comparisons across the different primary study contexts as these were not always described in detail by the authors. Throughout this review, potential research questions for future studies were identified (see figure 3).

Policy and practice implications

The interpretations included in this review are from across all studies and contexts in the included papers, and therefore need to be carefully and sensitively applied to households and communities based on their unique physical environments, for example, lack of safe outside space, and their social and cultural norms. As the papers were primarily from high-income countries, the findings may not be generalisable to middle-income and low-income countries.

Opportunities for delivering messages for households and communities include mass media campaigns, written resources and guidelines, as well as individual interactions between smoking households and professionals (professionals and other stakeholders who support smoking households). There is preliminary evidence that mass media campaigns specifically targeting secondhand smoke are effective in reducing smoking in the home, while campaigns focusing on smoking cessation are not.[50] It is important for professionals to give,

- Within the context of smoke-free homes, what do household members' understand about the mechanisms of exposure to secondhand smoke in addition to their knowledge of the health risks of exposure?
- What do adults (including pregnant women) who live in a household containing at least one daily smoker perceive as the risks of secondhand smoke to pregnant women and their unborn baby and how does this influence a households efforts to be a smoke-free homes?
- What do men who live in a household containing at least one daily smoker perceive are the barriers, motivators and enablers to establishing and maintaining a smoke-free homes, and how does this compare to women's perceptions?
- How does the presence of vulnerable adults (e.g. older people with chronic conditions) impact on a household's efforts to establish and maintain a smoke-free home?
- What do households (containing at least one daily smoker) successful at establishing and maintaining smoke-free homes describe as their key to success?
- What are the barriers, motivators and enablers of establishing and maintaining smoke-free homes in countries with high smoking prevalence and/or no smoke-free legislation?

Figure 3 Potential research questions for future studies.

and for households to receive, specific and evidence-based risk messages about SHS exposure, particularly risks for older children (as well as babies) and pregnant women. Messages need to make it clear that there is no safe level of SHS exposure, explain what a SFH is, how to make and maintain one, and what the potential benefits of having a completely SFH are. This includes clarity around the lack of efficacy of strategies such as burning candles and opening windows. A key message is that all adult members, rather than specific individuals, for example, mothers, of the household have a responsibility for establishing and maintaining a SFH.

In interacting with smoking households, health professionals need to consider SHS exposure and SFH in addition to smoking cessation. For example, if a smoker responds negatively to cessation advice, then the professional should consider exploring the topic of SHS exposure and SFHs. This exploration should include current home smoking rules and whether these are fluid and why. Within these discussions, professionals need to respect and recognise the complexity and challenging circumstances faced by some households, and should aim to prevent further stigmatisation of smoking households who are often doing their best in difficult circumstances. The barriers, motivators and enablers of SFH are likely to be unique to each household, in part relating to social and cultural norms relevant to that household. Professionals should build on positive changes people have already made in their homes, for example, not smoking in the home following the birth of a baby. Professionals might reassure households that others have created and maintained SFHs while successfully protecting important relationships within their family and social networks. Education and training of professionals should develop skills in advising on SFH-related practical strategies, for example, how to overcome weather-related barriers, to support households in having a SFH.

Developing intervention programmes

Content of SFH programmes should reflect key messages described above, and be informed by the current evidence base, aiming towards a completely SFH. Ideally, programmes should operate at multiple levels and target households and communities rather than simply placing the burden of responsibility on any one individual. Programmes might leverage the structural agency invested in certain roles (and therefore rights) within the household, for example, non-smoker, while recognising that individuals may have limited autonomy in some households or cultural contexts.[36] It is important that programmes recognise that individuals within households might require differing levels and types of support.

Programmes should consider using an assets-based approach,[43] harnessing the steps already made towards SFHs and valuing the motivation of households[12] to introduce SFH rules. This recognises that the vast majority of households have some knowledge and make some concessions towards having a SFH, for example, not smoking around a newborn, not smoking in children's bedrooms, and are doing the best they can.[38] This approach also aims to ensure that households are not further disempowered or stigmatised.[46] Programmes might also contain skills development components, in particular negotiation skills for household members.

CONCLUSIONS

Many households face complex practical, social, cultural and personal issues in creating and maintaining SFHs, which vary within and between contexts. The findings of this synthesis can inform policy and practice and future development of interventions aimed at increasing SFHs.

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Contributors MEP conceived the study idea, which was further refined by all authors. MEP, JML and LLJ developed the detailed methodology. MEP and JML undertook database searches and title and abstract review. MEP, JML and LLJ reviewed full-text articles, and undertook data extraction, quality

assessment, coding and synthesis, then drafted the manuscript, with conceptual input from JR and JW at key points. All authors contributed to the manuscript and approved the final version.

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