

REVIEW PAPER

Qualitative systematic review: barriers and facilitators to smoking cessation experienced by women in pregnancy and following childbirth

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Abstract

Aim. To explore barriers and facilitators to smoking cessation experienced by women during pregnancy and postpartum by undertaking a synthesis of qualitative studies.

Background. The majority of pregnant women are aware that smoking in pregnancy compromises maternal and infant health. Despite this knowledge, quit rates among pregnant women remain low, particularly among women in disadvantaged circumstances; disadvantage also increases the chances of living with a partner who smokes and returning to smoking after birth. A deeper understanding of what hinders and what helps pregnant smokers to quit and remain ex-smokers postpartum is needed.

Design. A synthesis of qualitative research using meta-ethnography.

Data sources. Five electronic databases (January 1990–May 2013) were searched comprehensively, updating and extending the search for an earlier review to identify qualitative research related to the review's aims.

Review methods. Following appraisal, 38 studies reported in 42 papers were included and synthesized following the principles of meta-ethnography. Over 1100 pregnant women were represented, the majority drawn from disadvantaged groups.

Results. Four factors were identified that acted both as barriers and facilitators to women's ability to quit smoking in pregnancy and postpartum: psychological well-being, relationships with significant others, changing connections with her baby through and after pregnancy; appraisal of the risk of smoking.

Conclusion. The synthesis indicates that barriers and facilitators are not fixed and mutually exclusive categories; instead, they are factors with a latent capacity to help or hinder smoking cessation. For disadvantaged smokers, these factors are more often experienced as barriers than facilitators to quitting.

Keywords: literature review, midwives, pregnancy, qualitative research, smoking, systematic review

Why is this research or review needed?

- Smoking in pregnancy compromises the health of both the baby and the mother. Social disadvantage increases the risk of smoking in pregnancy and reduces the chances of quitting.
- Little is known about how barriers and facilitators to smoking cessation are perceived and experienced by women.
- Qualitative studies of smoking in pregnancy and postpartum can shed a direct light on these perceptions and experiences.

What are the key findings?

- Disadvantaged smokers are faced with more barriers than facilitators when attempting to quit in pregnancy and remain ex-smokers after birth.
- ‘Barriers’ and ‘facilitators’ are not invariant dimensions of smoker’s lives, operating uniformly to support or inhibit smoking cessation.
- Women’s changing connections with the baby, alongside relationships with partners, family and friends and health professionals, all have the potential to encourage or discourage quitting and sustained quitting postpartum.

How should the findings be used to influence policy/practice/research/education?

- ‘Barriers’ and ‘facilitators’ should be seen as fluid and context-dependent; a barrier for one smoker may be a facilitator for another.
- Approaches should be client-centred and multifaceted, recognizing both the psychological vulnerability and the challenging circumstances that many pregnant smokers experience.

Introduction

The majority of adults, including pregnant women, are aware that smoking in pregnancy compromises the health of the baby (HEA 1999, Arnold *et al.* 2001) and a wide range of information and support is available to pregnant women to help them quit (Bauld 2009). However, the majority of pregnant smokers do not quit. Quit rates are much lower among women in disadvantaged circumstances; social disadvantage also increases the chances of living with a partner who smokes and returning to smoking after birth (Graham *et al.* 2010, Prady *et al.* 2012). In addition, social disadvantage is associated with an elevated risk of mental

illness; estimates suggest that approximately 50% of pregnant smokers have depression or another common mental disorder (Goodwin *et al.* 2007).

Background

A deeper understanding of what hinders and helps pregnant smokers to quit and remain ex-smokers postpartum is urgently needed. Qualitative studies of smoking in pregnancy and the months after birth are a rich resource, highlighting how barriers and facilitators are perceived and experienced by women themselves. However, such studies are typically small-scale and based on purposive locally based samples. Systematic reviews of qualitative research provide a way of integrating evidence collected across diverse settings and communities (Tong *et al.* 2012) and are being increasingly used to inform understanding and guide interventions (Flemming 2007, Garside 2014).

The paper presents the findings of a review of qualitative studies of smoking in pregnancy and after birth published over the last two decades (1990–2013). It extends an earlier review (Flemming *et al.* 2013) which, while focused on studies of women’s experiences of smoking in pregnancy, did not explicitly address barriers and facilitators to smoking cessation faced by women while they are pregnant and also excluded the papers which examined women’s experiences postpartum. For the 1990–2012 period, we used searches from this earlier review, supplementing by new searches covering 2012–2013. All other aspects – including data extraction, data coding, analysis and synthesis – are original to the review reported here.

The review**Aim**

To explore the barriers and facilitators to smoking cessation experienced by women during pregnancy and postpartum by undertaking a synthesis of qualitative studies.

Design

A synthesis of qualitative studies of smoking in pregnancy published between 1990–May 2013 was conducted using meta-ethnography (Noblit & Hare 1988). Meta-ethnography is an interpretative approach to research synthesis which enables conceptual translation between different types of qualitative evidence research and consists of four iterative stages (Table 1).

Table 1 Phases of meta-ethnography (adapted from Noblit & Hare 1988).

Phase of meta-ethnography	Processes involved
<i>Phase 1 Reading the studies</i>	Developing an understanding of each study's context and findings.
<i>Phase 2 Determining how the studies are related</i>	Comparing contexts and findings across and between studies, including looking for refutations
<i>Phase 3 Translating the studies into one another</i>	Mapping similarities and differences in findings and translating them into one another; the translations represent a reduced account of all studies. (First level of synthesis involving first and second-order constructs)
<i>Phase 4 Synthesizing translations</i>	Identifying translations that encompass each other and can be further synthesized; expressed as 'lines of argument'. (Second level of synthesis involving the development of third-order constructs)

Search methods

Searches were conducted for published and unpublished studies from 1990–May 2013. For the period up to 2012, searches for studies relating to smoking during pregnancy and postpartum had been undertaken for an earlier review (Flemming *et al.* 2013); a further search was conducted for the period January 2012–May 2013 (Table S1). Both used combinations of terms for 'pregnancy', 'postpartum', 'smoking', 'qualitative' devised by an information scientist (KA) and were conducted in electronic databases: CINAHL, MEDLINE, PsycINFO, Social Sciences Citation Index (SSCI), the Economic and Social Research Council (ESRC) and Google Scholar. Citation searching and consultation with the wider project team also occurred. For the current review, we also used PubMed's 'ahead of print' to locate papers yet to be indexed and publication alerts to inform us of papers published during the review after formal searches were completed.

For both searches, studies of smoking in pregnancy and after childbirth were selected for inclusion if they: (a) reported in English and were published in 1990 or later (to ensure the review was contemporaneous); (b) used a qualitative research method and (c) were conducted in a high-income country where, like the UK, cigarette smoking is

associated with social disadvantage. Studies focusing only on partners' and/or health professionals' views about pregnant women's smoking were excluded.

Search outcome

The updated search yielded 588 potentially relevant papers. Of these 579 were excluded; therefore eight studies reported in nine papers were included. In addition for this review, we included postpartum papers excluded from the earlier review ($n = 6$). We included all studies published from 1990 onwards from the earlier review (25 studies in 27 papers) (Flemming *et al.* 2013). This yielded a final set of 42 papers relating to 38 studies (Figure 1; Table 2).

Quality appraisal

All papers were appraised for quality (Hawker *et al.* 2002) by two reviewers, with disagreements in scoring resolved by consensus. The quality scores for papers ranged from 14–30 (Table S2). There was no *a priori* quality threshold and no papers were excluded on grounds of quality; assessment was undertaken to ensure transparency in the process.

Data abstraction

Relevant data were extracted from papers (aim, type and number of participants, methodology used, methods of data collection, analysis and results). Data were extracted by one reviewer (KF) and checked by another (DM) (Table 2).

Synthesis

Study characteristics

The 42 papers reported the experiences of 1100+ women aged 15–49 years. The participants were all pregnant women or mothers with young babies who smoked prior to pregnancy and went on to either quit or continue smoking. In line with the wider social patterning of smoking among women, many study participants lived in disadvantaged circumstances. In the 25 studies where socio-economic status was clearly reported, 17 reported all participants to be of low socio-economic status and eight reported some participants to be of low socio-economic status. Other studies either did not report this or provided only limited detail of employment status, educational level or occupational group. Other participant characteristics, including co-habitation

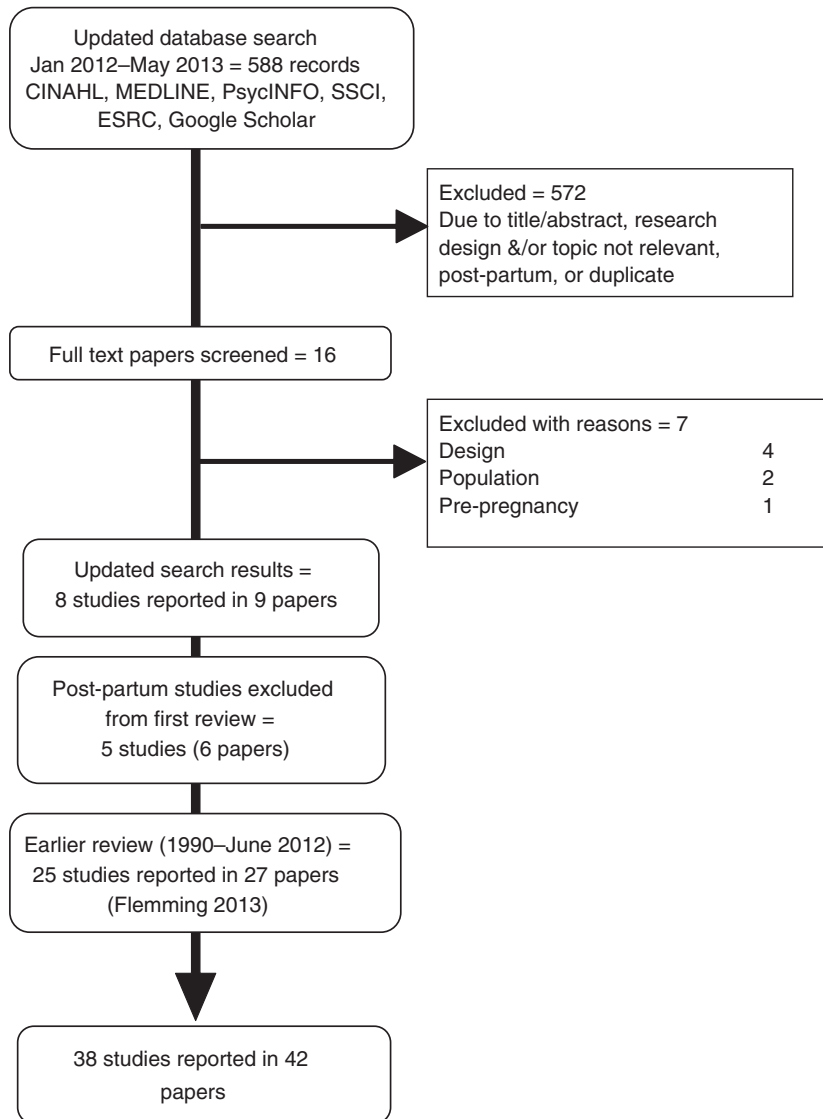


Figure 1 Flow chart of study inclusion and exclusion.

status and cultural/ethnic background, were inconsistently reported and reliable conclusions about their patterning could not be drawn.

The majority of studies were conducted in the USA (15 studies) or the UK (12 studies), with the remainder in Scandinavia, Australia and Canada. Of the 42 papers, eight were published between 1990–1999, 24 from 2000–2009 and 10 since 2010.

Synthesizing evidence from the studies

Evidence from 42 papers informed the synthesis. This was conducted using meta-ethnography (Noblit & Hare 1988), a widely used approach to qualitative synthesis (Flemming 2007), using ATLAS.ti Software to manage data (ATLAS.ti

2010). Meta-ethnography has four iterative phases (Table 1).

For Phase 1, the 42 papers were read in depth. Phase 2 involved line-by-line coding of each paper (KF), focusing on data (participant accounts and authors’ interpretations) relating to barriers and facilitators to quitting. The nine papers published in 2012/13 were coded first. This enabled findings from the most contemporary papers to dictate the formation of the coding structure, into which the remaining 33 papers were translated. Two of the papers included were PhD theses (Kennison 2003, Taylor 2010) and contained a larger volume of data than journal papers. While their findings were more expansive, their contribution to the codes was similar to shorter papers.

Table 2 Table of included studies.

Source paper (<i>n</i> = 42)	Country setting	Participants	Methodology	Indicative finding
Abrahamsson <i>et al.</i> (2005)	Sweden	17	Phenomenology	Five story types of how smoking is made sense of.
Arborelius and Nyberg (1997)	Sweden	13	Client-patient centred model	Aware of the potential risks for their foetus. Majority felt bad for smoking.
Bortorff <i>et al.</i> (2000)	Canada	27 (postpartum)	Narrative research	Five story lines identified: controlling smoking; being vulnerable to smoking; nostalgia for one's former self; smoking for relief; never having really quit.
Bortorff <i>et al.</i> (2006)	USA	28 (women & partners)	Grounded Theory	Women's engagement with tobacco reduction resulted in changes to established tobacco routines.
Borland <i>et al.</i> (2013)	Canada	29 (10 pregnant 19 postpartum)	Not reported	A cultural shift in practice is required to eliminate mixed messages, strengthen practice and encourage open channels of communication about smoking between women and their providers.
Bull <i>et al.</i> (2007)	UK (deprived & advantaged area)	38 (women & partners)	Not reported	Respondents felt smoking in pregnancy was undesirable for medical and social reasons.
Cottrell <i>et al.</i> (2007)	USA	50	Grounded theory	Participants aware of risks of smoking in pregnancy, quitting seen as either a welcome challenge or an undesirable burden.
Dunn <i>et al.</i> (1998)	USA	57	Not reported	Barriers to quitting: being around others who smoke; feelings of stress & boredom, addiction; smoking not dangerous.
Edwards and Sims-Jones (1998)	Canada	21	Symbolic Interactionism	Pregnancy as a context for smoking; social pressures on smoking behaviour.
Gaffney <i>et al.</i> (2008)	USA	86	Qualitative descriptive approach	Four major themes related to mothers' perceptions of a link between infant irritability and postpartum tobacco use: not knowing what to do; seeking renewal; seeking relief and evaluating self.
Goldade <i>et al.</i> (2008)	USA	44 (low income)	Longitudinal qualitative	Women perceived that a strong risk of harming the baby was posed by smoking while breastfeeding and received little support to continue breastfeeding despite an inability to stop smoking.
Greaves <i>et al.</i> (2007)	USA	Three couples	Case study approach as a secondary analysis to a grounded theory primary study	Power and control were important and unrecognized dimensions of women's tobacco reduction experiences.
Haslam and Draper (2001)	UK	40	Not reported	Quitting prevented by: other smokers, lack of will power, physical/psychological addiction.
Haugland <i>et al.</i> (1996)	Norway	33	Hermeneutic-phenomenological	Women received little written information & did not feel that health personnel cared about their smoking behaviour
Herberts and Sykes (2012)	UK	10	Grounded theory	Women perceived pregnancy as a direct barrier to quitting

Table 2 (Continued).

Source paper (n = 42)	Country setting	Participants	Methodology	Indicative finding
Hotham <i>et al.</i> (2002)	Australia	19	Not reported	Quitting barriers: Addiction; reliance on smoking for stress relief; smoking behaviour of others; lack of will power; fear of weight gain.
Howard <i>et al.</i> (2013)	UK	27 13 with and 14 without mental health disorders	Not stated	A barrier identified in the nested qualitative study was the prioritization of mental health over smoking cessation among women with mental health disorders.
Kennison (2003, 2009)	USA	19	Grounded theory	Pregnancy was the only context for thinking about smoking cessation.
Lawson (1993, 1994)	USA	20	Not reported	Women smoked to cope with increased weight gain; to deliver smaller infants.
Lendahls <i>et al.</i> (2002)	Sweden	24	Phenomenology	Women had established smoking patterns.
Lowry <i>et al.</i> (2004)	UK	Unknown – 12 groups	Not reported	Smoking more prevalent in women from deprived areas. Reasons quitting included: health of baby, but only during pregnancy.
Maclaime and Clark (1991)	UK	22	Not reported	Belief that it could harm unborn child but that this did not apply to them; acknowledged potential harm and felt guilty but did not give up.
Naughton <i>et al.</i> (2013a)	UK	20 (15 pregnant, 5 postpartum)	Grounded theory	Disengagement belief endorsement is common among pregnant smokers and enables the justification of continued smoking potentially hindering efforts to quit.
Naughton <i>et al.</i> (2013b)	UK	33	Not reported	Smoking cessation support delivered by text message is seen as highly convenient and may result in high levels of attention to the information communicated, especially if personalized and tailored.
Nichter <i>et al.</i> (2008)	USA	44 (low income) (pregnant on entry to study; followed up postpartum)	Longitudinal qualitative	The majority of women engaged in significant harm reduction efforts despite being entrenched in high risk smoking environments where they were provided with few messages to quit.
Nichter <i>et al.</i> (2007)	USA	53	Ethnography	Three categories of cigarette use: Quitters; Harm reducers; Shifters
Nguyen <i>et al.</i> (2012)	USA	24	Grounded theory	An important strategy to help women continue smoking cessation after pregnancy is to address the challenges of being a non-pregnant, non-smoker in a social network of smokers.
Pletsch <i>et al.</i> (2003)	USA	15	'Naturalistic descriptive qualitative approach'	Two themes: Living the Stressful Life; Personal Accountability for Smoking Cessation
Pletsch and Kratz (2004)	USA	15	'Longitudinal qualitative descriptive approach'	Women described losing their taste for cigarettes because of being pregnant.

Table 2 (Continued).

Source paper (<i>n</i> = 42)	Country setting	Participants	Methodology	Indicative finding
Pearos <i>et al.</i> (2012)	USA	65	'Qualitative component of a repeated measures, mixed methods observational study'	Interventions designed to prevent postpartum relapse to smoking may need to target a broader range of negative affect and mood management strategies to increase the likelihood of efficacy.
Quinn <i>et al.</i> (2006)	USA	38 (pregnant abstinent; postpartum abstinent and relapsed)	Depth interviews and learner verification activities	Findings revealed exceptional needs for coping and stress reduction strategies related to remaining abstinent postpartum. Women needed relapse-prevention materials geared towards specific stressors in their lives, such as reduced social support after their child is born.
Ripley-Moffitt <i>et al.</i> (2008)	USA	94 pregnant women (<30 weeks gestation) who were followed up postpartum	Grounded theory (qualitative component of an observational study)	Women who have easy access to cigarettes, rely on cigarettes to deal with stress, lack financial resources and resources for childrearing and who have low self-esteem, are at high risk of relapse.
Taylor (2010)	UK	18 (14 ante-natal, 4 postnatal)	'Cross-sectional qualitative study informed by a TPB framework' (sub-study in a PhD thesis)	The study demonstrated pregnant women's beliefs about using SSSs and NRT and how these can differ from the perceptions of health professionals who work in smoking cessation have about those beliefs.
Thompson <i>et al.</i> (2004)	UK	15	Not reported	Women tried to cut down despite being 'committed' smokers. Morning sickness helped.
Tod (2003)	UK	11	Naturalistic approach	Barriers to quitting: willpower; role of smoking; negative influence of family and friends; service issues; interpretation of facts.
Von Kohorn <i>et al.</i> (2012)	USA	24 (postpartum)	Not reported	Although most participants did not intend to resume smoking, their intentions may be stymied by their perceptions about second-hand smoke and by their overestimation of their control over smoking.
Wakefield <i>et al.</i> (1998)	Australia	14	Not reported	Aware of the negative risk of a low birth weight baby; life as a struggle; smoking as a rare pleasure.
Wigginton and Lee (2012)	Australia	11 (postpregnancy)	Not reported	Public health campaigns that focus on creating a social discourse that labels particular actions as shameful does not promote good health, but rather entrenches a classist culture of blame that makes it less likely that individuals will be able to find the support they need
Wood <i>et al.</i> (2008)	Australia	40	Not reported	Smoking inextricably linked with context of life
Ziebland and Fuller (2001)	UK	19	Not reported	Four strategies available to men with regard to the behaviour and attitudes to smoking in pregnancy were identified

The codes were compared, contrasted and provisionally grouped by two reviewers (KF, DM) into broad areas of similarity through reciprocal translation analysis (RTA) (Phase 3). This generated a reduced set of codes (translations) about barriers and facilitators that women experienced in pregnancy and postpartum. Following discussion among the reviewers (KF, DM, HG), 12 ‘translations’ were created (Table 3). Due to similarities in the papers’ findings, no refutational synthesis was undertaken.

Phase 4 focused on these translations; the reviewers examined and compared them to identify lines of argument (Table 3). These lines of argument capture recurring perceptions and experiences that hindered (barriers) and encouraged (facilitators) pregnant smokers to quit and to sustain their non-smoking status postpartum. Set in lives of chronic disadvantage, these recurring themes related to women’s understanding and negotiation of:

- their psychological well-being
- their relationships with statistically significant others
- their changing connection with the baby through and after pregnancy
- the risks of smoking

As the sections below discuss, barriers and facilitators do not constitute fixed and mutually exclusive categories of influence on women’s smoking behaviour. Three of the four factors – everyday relationships, relationship with the baby and perceptions of risk – can operate as both; they represent axes of women’s experience which can tilt in undermining or enabling ways. Women’s psychological well-being emerged

as a more consistently negative factor. In discussing barriers and facilitators, the phrase ‘as seen by the study participants’ is implied but not repeated each time.

Results

Psychological well-being

Smoking was (seen to be) protective of well-being in lives of chronic disadvantage and psychosocial stress. Many women were struggling financially; had unstable jobs and living situations, unsupportive relationships and faced the demands of other children (Arborelius & Nyberg 1997, Abrahamsson *et al.* 2005, Nichter *et al.* 2007, Taylor 2010). In these contexts, smoking had a dual function: providing a way of managing difficult lives (and chronic stressors in particular) and offering brief moments of relaxation (Pletsch *et al.* 2003).

Looking at the first of these dimensions, smoking was described as a resource for managing stress; attempting to quit was to place a fragile sense of well-being at risk (Maclaine & Clark 1991, Edwards & Sims-Jones 1998, Kennison 2003, Pletsch *et al.* 2003, Bull *et al.* 2007, Cottrell *et al.* 2007, Nichter *et al.* 2007, Wood *et al.* 2008, Herberts & Sykes 2012, Wigginton & Lee 2012, Howard *et al.* 2013):

(It) relieves stress psychologically at least. I have cut down, but I can’t stop. I smoke about 20 a day or maybe more, depending on my day or night...

(Hotham *et al.* 2002, p. 165)

Table 3 Translations and lines of argument.

Translations	Line of argument
Smoking and psychological well-being	<i>Psychological well-being</i>
Smoking in the context of social disadvantage	
The influence of partners	<i>Relationships with significant others</i>
Family and wider social contexts	
Social consequences of attempting to quit	
Perceived role of health professionals	
The role of being a mother	<i>Changing connections with the baby through and after pregnancy</i>
Smoking and breastfeeding	
Birth signals separation from the mother	
Resumption of smoking & protection of the baby	
Women’s appraisal of risk	<i>Risks of smoking</i>
Women’s responses to the appraisal of risk	

I would’ve [liked to have been able to quit] yes, the harm and everything but it is just too difficult a lot of stresses.

(Taylor 2010, p. 96)

The second support smoking offered was pleasure and comfort, a temporary respite from circumstances that were hard to escape or change. It brought psychological benefits, enabling women to ‘be themselves’, either alone or in the company of others (Arborelius & Nyberg 1997, Hotham *et al.* 2002, Lendahls *et al.* 2002, Kennison 2003, Cottrell *et al.* 2007, Wood *et al.* 2008, Psaros *et al.* 2012):

I felt calm. I know it didn’t do anything, but I felt calm.

(Psaros *et al.* 2012, p. 18)

Smoking was also perceived as controlling weight gain; for younger women this was seen as particularly important

in maintaining friendships and social standing (Lawson 1994, Dunn *et al.* 1998, Wakefield *et al.* 1998, Haslam & Draper 2001, Hotham *et al.* 2002, Lendahls *et al.* 2002):

It stops me from eating. If I don't have a cigarette, I'll have something to eat and I don't want that to happen.

(Hotham *et al.* 2002, p. 165)

While protective of well-being, continuing to smoke in pregnancy or postpartum – also undermined it, engendering guilt and disapproval (Maclaine & Clark 1991, Arborelius & Nyberg 1997, Edwards & Sims-Jones 1998, Ziebland & Fuller 2001, Hotham *et al.* 2002, Kennison 2003, Bottorff *et al.* 2006, Bull *et al.* 2007, Nichter *et al.* 2007, Wigginton & Lee 2012, Borland *et al.* 2013). For some women, disapproval could facilitate positive changes in their smoking behaviour; for others, it served as a barrier, invoking anxiety and encouraging women to conceal their smoking and/or their pregnancy status, (Maclaine & Clark 1991, Edwards & Sims-Jones 1998, Kennison 2003, Bottorff *et al.* 2006, Nichter *et al.* 2007):

I found that I was judged as a disgusting, uneducated, gutter rat. I found this by the way people would look, question my motives, make comments on my parental ability etc.

(Wigginton & Lee 2012, p. 9)

Relationships with partners, family, friends and health professionals

Smoking was the norm in the communities where the women lived; partners, family and friends were often smokers. However, while pregnant, women were expected to break the norm by quitting or cutting down. Health professionals (HPs) therefore provided an important potential source of support for smoking cessation.

Partners

Some women noted how their partners facilitated quitting, describing them as supportive in the way they changed their smoking habits; the couple had a shared understanding of the part each would play in reducing smoking (Kennison 2003, Thompson *et al.* 2004, Bottorff *et al.* 2006):

and so I quit ... he does smoke but he never smoked around me when I was pregnant, because he didn't want me smoking to begin with.

(Kennison 2003, p. 75)

More commonly women spoke of their partners as barriers to quitting. They described how living with a partner who smoked made it harder for them to attempt to quit (Edwards & Sims-Jones 1998, Tod 2003, Borland *et al.* 2013):

I don't know, I think I would have done a lot better if he had quit. Being at home and when you really wanted one, if he lit up then I would take one.

(Edwards & Sims-Jones 1998, p. 97)

When it was only the pregnant woman who changed their smoking behaviour, this affected the relationship. Women spoke of a loss of ease and intimacy with their partner, of being physically and socially separated from each other (Bottorff *et al.* 2006, Cottrell *et al.* 2007):

Since I don't smoke it's completely changed ... When we're hanging out together he'll stop the movie so he can go out and have a cigarette ... I have to stop everything so he can have a cigarette.

(Bottorff *et al.* 2006, p. 504)

The influence of partners could extend to the broader dynamic of the couple's relationship. Many women described partners who monitored their smoking through behaviours that they felt were controlling and abusive (Ziebland & Fuller 2001, Kennison 2003, Thompson *et al.* 2004, Bottorff *et al.* 2006, Cottrell *et al.* 2007, Greaves *et al.* 2007, Nichter *et al.* 2007). Some women felt compelled to cut down. While this could facilitate a reduction in smoking, it occurred in circumstances that were undermining and threatening. Partners were reported to be confrontational and persistent, demanding women quit smoking and controlling their access to cigarettes by removing cigarettes or refusing money to buy them (Thompson *et al.* 2004, Bottorff *et al.* 2006, Greaves *et al.* 2007):

I'm out of cigarettes and I'm broke 'cuz I'm not working anymore' ... to which he responded with, 'I don't care ... go dig though the penny jar, go get yourself some cigarettes, y'know, that's not my problem.

(Greaves *et al.* 2007, p. 328)

In these difficult relationships, women reported how their partners blamed them for potential harm to the baby, while simultaneously exposing them to second-hand smoke by continuing to smoke in their presence. They described, how partners would offer cigarettes during times of stress but, at other times, criticize them for smoking and failing to quit. This inequality could fuel existing tensions and resentments,

further eroding women's confidence and capacity to quit or reduce smoking (Ziebland & Fuller 2001, Kennison 2003, Bottorff *et al.* 2006, Cottrell *et al.* 2007, Nichter *et al.* 2007):

I feel quite angry because it wasn't supportive of me and I think one of the reasons possibly, I've gone back to it is that I'm living with someone who is carrying on smoking.

(Ziebland & Fuller 2001, p. 236)

Family and wider social contexts

Like partners, family and friends could act as both facilitators and barriers to quitting. Thus, some women noted how family and friends encouraged them to consider and attempt to quit, although their concern was typically limited to the months of pregnancy (Hotham *et al.* 2002, Kennison 2003, Thompson *et al.* 2004, Nichter *et al.* 2007, Wigginton & Lee 2012):

When I got pregnant she's always on me ... she basically helped me to quit when I was pregnant... After I had her ... she didn't care what I did...

(Kennison 2003, p. 77)

However, women spoke more often of family and friends as barriers to quitting. Smoking was part of these relationships at home, at work and in the community (Edwards & Sims-Jones 1998, Wakefield *et al.* 1998, Hotham *et al.* 2002, Thompson *et al.* 2004, Nichter *et al.* 2007, Wood *et al.* 2008). Quitting was seen to sever these important social connections (Cottrell *et al.* 2007, Nguyen *et al.* 2012):

I feel left out of some situations with my friends. I guess it's because they like go do things without me because they know I can't be around them while they smoke...

(Cottrell *et al.* 2007, p. 9)

Health professionals

Like partners, family and friends, HPs played an important role in women's smoking behaviour during pregnancy, but less so in the postpartum period. Again, this role could be positive and negative. Women who felt supported to quit smoking by their care providers described relationships based on mutual respect and shared expectations. Facilitating HPs were friendly, non-judgemental and used a systematic approach to support quitting (Maclaine & Clark 1991, Arborelius & Nyberg 1997, Dunn *et al.* 1998, Hotham *et al.* 2002, Kennison 2003):

He (GP) said, 'Well, you're going to have to give them up, how are we going to do this?' And I said, 'I'm not sure.' He talked to me and suggested things.

(Hotham *et al.* 2002, p. 167)

HPs who advised cutting down as an alternative to or step towards quitting were also viewed as supportive. Such advice was seen to signal an appreciation of their difficult lives and the stress that abrupt quitting may cause. However for some smokers, it acted as a barrier, weakening their resolve to quit (Maclaine & Clark 1991, Haugland *et al.* 1996, Dunn *et al.* 1998, Hotham *et al.* 2002, Lendahls *et al.* 2002, Pletsch *et al.* 2003, Nichter *et al.* 2007, Wigginton & Lee 2012, Naughton *et al.* 2013b).

While some women described HPs as facilitating quitting, most were seen as ambivalent or negative. Across the studies, HPs were described as superficial in their approach. Half-hearted support, combined with insufficient practical help and advice, were barriers to quitting (Maclaine & Clark 1991, Haugland *et al.* 1996, Haslam & Draper 2001, Lendahls *et al.* 2002, Naughton *et al.* 2013b, Wigginton & Lee 2012):

My doctor just tells me that it's really important for me to quit...and I want to quit too. If it were so easy, I would have done it already...I just say, 'Okay,' and that's the end of the conversation.

(Nichter *et al.* 2007, p. 760)

The changing connection with the baby through and after pregnancy

Women spoke of becoming pregnant as being the motivation to change smoking behaviour to protect their baby. After birth, those who had quit in pregnancy strove to remain ex-smokers, to be 'good mothers' who avoided the stigma of being mothers who smoked. They spoke about wanting to bring their children up in a smoke-free environment, maximizing opportunities for good health despite their disadvantaged circumstances (Edwards & Sims-Jones 1998, Bottorff *et al.* 2000, Lendahls *et al.* 2002, Kennison 2003, Nichter *et al.* 2008, Ripley-Moffitt *et al.* 2008):

I don't really want to start smoking again because it's expensive, but mostly it's because of my daughter. I look at my baby and I don't really want her to be smoking.

(Nichter *et al.* 2008, p. 1190)

Breastfeeding helped to facilitate sustained cessation. It required a continuing connection with the baby that smoking was seen to disrupt (Kennison 2003). Beliefs that smoking contaminated breast milk provided further motivation to remain quit (Edwards & Sims-Jones 1998, Kennison 2003, Goldade *et al.* 2008, Ripley-Moffitt *et al.* 2008):

I think it (smoking) can affect your breastmilk ... it gets not only into your lungs but it gets into your bloodstream and everything, so why wouldn't it get into your milk and go to the baby.

(Goldade *et al.* 2008, p. 236)

While expressing concern about the risks, women reported a lack of guidance on breastfeeding and smoking from HPs. Consequently, the resumption of smoking meant women stopped breastfeeding sooner than intended (Kennison 2003, Goldade *et al.* 2008):

I stopped breastfeeding. I was like, if I'm gonna be smoking and if it's gonna be in my milk giving it to them, then I can stop and just put 'em on formula.

(Kennison 2003, p. 118–9)

For many ex-smokers, quitting in pregnancy was viewed as a temporary change in smoking status, undertaken for the sake of the baby in pregnancy and while breastfeeding (Kennison 2003, Tod 2003, Lowry *et al.* 2004, Abrahamsson *et al.* 2005). A return to smoking was often seen as inevitable, particularly for those caring for a baby with little assistance from partners (Edwards & Sims-Jones 1998, Bottorff *et al.* 2000, Kennison 2003, Tod 2003, Quinn *et al.* 2006, Gaffney *et al.* 2008, Ripley-Moffitt *et al.* 2008, Psaros *et al.* 2012, Von Kohorn *et al.* 2012). There was a widespread expectation – among women and their social networks – that they would resume smoking once the baby was born (Edwards & Sims-Jones 1998, Bottorff *et al.* 2000, Kennison 2003, Nguyen *et al.* 2012). With the pregnancy over, some ex-smokers also spoke of wanting to reclaim their prepregnancy identity, to which smoking was central:

When she was born, I had a craving for my own self, for my old self prior to pregnancy and this self included cigarettes

(Bottorff *et al.* 2000, p. 131)

A process of drifting back to smoking emerged. It often began with borrowing of cigarettes in social situations or in times of stress, infrequent enough for the woman to believe it was controllable. Some women continued to view themselves as non-smokers who smoked occasionally at particular times

and contexts. For others, occasional smoking gave way to regular smoking, often with feelings of disappointment and guilt (Edwards & Sims-Jones 1998, Bottorff *et al.* 2000, Kennison 2003, Ripley-Moffitt *et al.* 2008):

I went to the Bingo that night. Everyone was playing ... and I started having a cigarette at the Bingo and I picked up smoking there.

(Edwards & Sims-Jones 1998, p. 97)

I feel really ashamed that I gave into something that I had stopped for a whole 9–10 months. I'm disappointed in myself. I thought I was a lot stronger.

(Ripley-Moffitt *et al.* 2008, p. 1362)

The risks of smoking

Women were aware of the evidence that smoking in pregnancy put the health of their baby at risk and broadly this awareness was a major motivator of quitting. However, it was often moderated in ways that reduced the perceived magnitude of the risk. In consequence, risk perceptions operated more as barriers than facilitators of quitting.

Three related aspects of women's perceptions of the risks of smoking emerged as particular barriers to quitting. First, risk was correctly interpreted as relating to the population of smokers as a whole; it was a disembodied risk, not a personal one. Its applicability to them was questioned and with it a belief in the need to quit (Maclaine & Clark 1991, Kennison 2003, Tod 2003, Abrahamsson *et al.* 2005, Nichter *et al.* 2007, Herberts & Sykes 2012, Naughton *et al.* 2013b):

You just don't think, you know, anything will happen to you, that's the thing, you know, you're not going to get cancer or bronchitis ... and stuff like that. You know, it happens to other people not you.

(Tod 2003, p. 62)

Secondly and relatedly, personal experience led smokers to question the robustness of the scientific evidence and therefore the magnitude of risk to their baby. Women who had smoked in previous pregnancies spoke of risks being exaggerated; their children appeared to be unaffected. Smokers pregnant for the first time drew on the experiences of other pregnant smokers to reach the same conclusion (Lawson 1994, Arborelius & Nyberg 1997, Dunn *et al.* 1998, Haslam & Draper 2001, Hotham *et al.* 2002, Len-

dahls *et al.* 2002, Tod 2003, Bull *et al.* 2007, Nichter *et al.* 2007, Taylor 2010, Wigginton & Lee 2012, Naughton *et al.* 2013b):

because I've seen so many people do it [smoke in pregnancy], then you use that against all the things they tell you that might go wrong.

(Naughton *et al.* 2013b, p. 29)

Third, low birth weight was a widely known risk of smoking in pregnancy; however, it was also seen as an advantage, easing labour and delivery (Lawson 1994, Haslam & Draper 2001, Hotham *et al.* 2002, Kennison 2003):

I want a baby that weighs five pounds or less, so I smoke. With a smaller baby I'll have a shorter and less painful delivery.

(Lawson 1994, p. 69)

In addition, quitting smoking was seen to bring risks to the baby. Some women noted that the stress of trying to quit could constitute a risk as great as the risk of smoking (Abrahamsson *et al.* 2005, Nichter *et al.* 2007, Wood *et al.* 2008, Wigginton & Lee 2012, Borland *et al.* 2013, Naughton *et al.* 2013b). Such perceptions were also cited in support of cutting down.

While downplaying risks, pregnant smokers remained concerned about the potential harm they were causing their baby (Maclaine & Clark 1991, Arborelius & Nyberg 1997, Dunn *et al.* 1998, Kennison 2003, Tod 2003, Abrahamsson *et al.* 2005, Bottorff *et al.* 2006, Nichter *et al.* 2007, Taylor 2010, Wigginton & Lee 2012):

I was guilty that I was smoking because I thought 'why can't I just give up for the sake of my baby's health, you know, I love this child and yet I'm harming it, but unfortunately I couldn't.

(Wigginton & Lee 2012, p. 7)

Discussion

Systematic reviews of qualitative studies provide rich insights into people's perspectives on their health and behaviour. To date, most reviews have had a broad focus on perceptions and experiences; barriers and facilitators may be identified but are not the primary concern (McDermott & Graham 2005, Mills *et al.* 2005). For example, our earlier review of smoking in pregnancy (Fleming *et al.* 2013) highlighted how smoking in pregnancy was shaped by the contexts of women's lives, including the

embeddedness of smoking in their lives and the importance of the couple's relationship. Some reviews provide a sharper focus on factors that work to support or undermine positive health behaviours (Shepherd *et al.* 2006, Gulliver *et al.* 2010), typically identifying factors as either a barrier or a facilitator.

Similarly our review focused on barriers and facilitators, however, among the disadvantaged population of pregnant smokers, 'barriers' and 'facilitators' did not feature as fixed and invariant dimensions of women's lives. Instead, barriers and facilitators were fluid and context-dependent, with a latent capacity to help or hinder smoking cessation.

Illuminating the salient contexts for smoking cessation in pregnancy and after birth, the four lines of argument can be set in a social ecological framework (Schneider & Stokols 2009). This perspective puts the individual at the centre, with behaviour shaped by intra-individual (cognitive and psychological) and environmental factors. Our synthesis suggests that the woman's smoking behaviour – and her attempts to quit – is influenced by individual-level factors particularly risk perceptions and her psychological well-being. Perceptions of the risks of smoking for the unborn child had the potential to facilitate quitting whereas perceptions acted primarily as barriers. The priority given to protecting psychological well-being emerged as a barrier; smoking was a resource and a relaxation. While continuing to smoke exposed women to additional psychological pressures – guilt and anxiety, disapproval and stigma – these feelings did not generally act to facilitate quitting. One potential barrier – nicotine dependence – did not emerge from the review; addiction was rarely mentioned in the studies.

Around the pregnant smoker is a set of interconnected relationships, each with the potential to encourage or discourage quitting and sustained quitting postpartum. In pregnancy, a woman's commitment to her baby provided a strong motivation to cut down and/or quit. After birth, breastfeeding maintained this connection; however, more generally, her changing connection to the baby militated against continued abstinence. Relationships with partners, too, could act as both facilitator and barrier. The studies provided evidence where partners helped women to quit and remain quit, through active support and by altering their own smoking behaviour. For other women, their partners were the most statistically significant barrier to successful quitting, particularly in controlling relationships and where the partner smoked. Family and friends were typically smokers who expected women to cut down or quit in pregnancy and then to revert to smoking postpartum.

HPs were variously seen as both helpful (e.g. by actively helping women to quit and by supporting cutting down) and unhelpful (e.g. a perfunctory approach). Across these sets of relationships, facilitative relationships were characterized by a woman-centred approach built on trust and respect; relationships without these qualities were seen as barriers to quitting.

As this summary suggests, our review indicates that disadvantaged pregnant smokers are faced with more barriers than facilitators (Table 4). Nonetheless, it provides a platform on which to develop policy and practice. It suggests the need for client-centred and personalized interventions, informed by and sensitive to the pregnant smoker's individual circumstances. Such interventions are likely to include

Table 4 Barriers and facilitators to smoking cessation in pregnancy and the postpartum period grouped by line of argument.

Line of argument	Barriers to quitting or remaining quit	Facilitators to quitting or remaining quit
Psychological well-being	Circumstances of disadvantage Smoking is integral to women's lives Stress of everyday life Cigarettes are a strategy for coping in lieu of other support Smoking gives pleasure and is key to a women's social interactions Smoking gives brief time out from responsibilities, or provides social support Boredom caused by disadvantaged social and economic circumstances Psychological or mental health is threatened by attempting to quit Concern over weight gain Social judgement for smoking Psychological discomfort caused by continued smoking	Social judgement for smoking Psychological discomfort caused by continued smoking
Relationships with partners, family, friends and health professionals	Smoking is a social norm among partner, family and friends Partners' double standards Reduction in smoking without support from their partner causes tension and resentment for women Lack of support from family Social isolation from partner and friends due to their continued smoking Lack of pressure to quit smoking from HP HP apply too much pressure for women to quit smoking HPs' ambivalent attitude to women's smoking, or lack of practical help	Partners are supportive and help women to reduce smoking or quit Compelled reduction in smoking caused by partners (leaves women feeling demoralized and threatened) Positive encouragement from family for quitting (although this temporary, only for pregnancy) Positive relationship with HP based on trust, being positive and mutual respect HP advising cutting down as a means to, or alternative to, quitting
The changing connection with the baby through and after pregnancy	The end of pregnancy Early cessation of breastfeeding Personal and social expectation that smoking would resume Stress of caring for a baby Prepregnancy stressors re-emerge Ability to protect the baby from second-hand smoke	Smoking was incompatible with being a good mother Breastfeeding
The risks of smoking	Refutation of risk as a result of personal knowledge Insufficient weight given to scientific knowledge Lack of understanding of specific risk factors, e.g. low birth weight Stress of quitting worse than continued smoking	Recognition of the need for harm reduction – cutting down to quit Concern caused by continued smoking

multifaceted approaches that recognize the disadvantaged and challenging circumstances, where many pregnant smokers live, their psychological vulnerability and therefore the centrality of the relationships – with family, friends and service providers – that sustain them.

There are some limitations to our review. Because systematic reviews of qualitative studies are a recent addition to evidence appraisal and synthesis, methods are still being refined (Noyes *et al.* 2008, Tong *et al.* 2012) and are seen to lack transparency (Atkins *et al.* 2008). We used meta-ethnography, one of the more established methods, which provides a structured approach to data coding and synthesis. In addition, we used computerized software (ATLAS.ti) to create ‘an audit trail’ and reported the review in line with the ‘Enhancing Transparency in Reporting the Synthesis of Qualitative Research’ (ENTREQ) guidance (Tong *et al.* 2012). We undertook quality appraisal of the studies included in the review, not as a tool for exclusion but to provide a transparent assessment of study quality. As with all assessments of quality in published papers, it is a judgement of the quality of reporting rather of conduct. Lower scores tended to arise from poor or unconventional reporting. While papers which were deemed as higher quality tended to contribute more to the review in terms of concepts and quotes, all papers contributed to some extent.

In addition, studies of smoking in pregnancy and after birth are likely to under-represent smokers who quit before or early in pregnancy, a group whose psychosocial circumstances are more favourable to successful and sustained cessation (Pickett *et al.* 2009). In consequence, the study participants in our review will be disproportionately drawn from women facing barriers to quitting: for example, those in poorer material circumstances and with poorer psychological health, less supportive family relationships and less positive encounters with healthcare providers. However, it is precisely this group of women who are most in need of support. Their perceptions and experiences are therefore an essential part of the evidence base for smoking cessation interventions.

Conclusion

We have systematically reviewed a large body of qualitative research on smoking in pregnancy and after birth conducted in societies where smoking is linked to social disadvantage. Our review indicates that social disadvantage may operate to influence smoking behaviour – both quitting in pregnancy and resumption postpartum – via the chronic stressors and cultural practices that accompany

it. These include limited economic resources and unsupportive domestic relationships. They also include social networks where smoking is the norm which, additionally, provide first-hand experience of apparently healthy babies born to pregnant smokers. Together, these barriers undermine motivation and constrain successful behaviour change.

Nonetheless, despite barriers associated with social disadvantage, the review suggests that pregnant smokers are open to quitting in pregnancy, particularly when supported by significant others – partners, mothers, friends, midwives and other health professionals – who help and applaud them.

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No conflicts of interest have been declared by the authors.

Author contributions

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (http://www.icmje.org/ethical_1author.html)]:

- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site.

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