

promoting access to White Rose research papers



Universities of Leeds, Sheffield and York
<http://eprints.whiterose.ac.uk/>

This is an author produced version of a paper published in **Nicotine and Tobacco Research**.

White Rose Research Online URL for this paper:
<http://eprints.whiterose.ac.uk/11061>

Published paper

Baxter, S., Everson-Hock, E.S., Messina, J., Guillaume, L., Burrows, J., Goyder, E. (2010) *Factors relating to the uptake of interventions for smoking cessation amongst pregnant women: a systematic review and qualitative synthesis*, Nicotine and Tobacco Research, 12 (7), pp. 685-694

<http://dx.doi.org/10.1093/ntr/ntq072>

Factors relating to the uptake of interventions for smoking cessation amongst pregnant women: a systematic review and qualitative synthesis

Susan Baxter, Emma Everson-Hock, Josie Messina, Louise Guillaume, Julia Burrows,
Elizabeth Goyder

Susan Baxter, University of Sheffield

Emma Everson-Hock, University of Sheffield

Josie Messina, University of Sheffield

Louise Guillaume, University of Sheffield

Julia Burrows, University of Sheffield

Elizabeth Goyder, University of Sheffield

Corresponding author:
Susan Baxter
Section of Public Health
School of Health and Related Research
University of Sheffield
Regent Court
30 Regent Street
Sheffield
S1 4DA
UK

Email: s.k.baxter@sheffield.ac.uk

Telephone: 0114 2220852

Fax: 0114 222079

Word count: 5970

Abstract

Introduction

The review had the aim of investigating factors enabling or discouraging the uptake of smoking cessation services by pregnant women smokers.

Methods

The literature was searched for papers relating to the delivery of services to pregnant or recently pregnant women who smoke. No restrictions were placed on study design. A qualitative synthesis strategy was adopted to analyse the included papers.

Results

Analysis and synthesis of the 23 included papers suggested ten aspects of service delivery that may have an influence on the uptake of interventions. These were: whether or not the subject of smoking is broached by a health professional; the content of advice and information provided; the manner of communication; having service protocols; follow-up discussion; staff confidence in their skills; the impact of time and resource constraints; staff perceptions of ineffectiveness; differences between professionals; and obstacles to accessing interventions.

Discussion

The findings suggest variation in practice between services and different professional groups, in particular regarding the recommendation of quitting smoking versus cutting down, but also in regard to procedural aspects such as recording status and repeat advice giving. These differences offer the potential for a pregnant woman to receive contradicting advice. The review suggests a need for greater training in this area and the greater use of protocols, with evidence of a perception of ineffectiveness/pessimism towards intervention amongst some service providers.

INTRODUCTION

There is strong evidence that smoking during pregnancy can pose considerable health risks for both mother and baby. It has been linked to tobacco-induced abortions, low birth weight, perinatal mortality, sudden infant death syndrome and pregnancy complications (Castles et al., 1999; DiFranza & Lew, 1995). While these risks are well documented, United Kingdom (UK) national statistics suggest that 17% of women continue to smoke throughout pregnancy (The Information Centre, 2006). These data also suggest that a greater proportion of pregnant smokers are in younger age groups and in routine or manual occupations. As these data are based on self-reported rates of smoking which are known to be lower than true rates (Gorber et al., 2009), the figures may under-estimate the numbers of pregnant women and babies exposed to the risks associated with tobacco use.

Internationally, there has been considerable investment in smoking cessation services, with quit programmes including smoking help lines, telephone counselling and individual support widely available via government services or charitable organisations. In the UK for example, NHS Stop Smoking Services are designed to provide specialist treatment by trained staff for smokers who want to quit. Developed from evidence of best practice, the NHS Stop Smoking Services utilise cognitive and behavioural techniques to provide intensive support (McEwen et al., 2006).

A recent study (Ussher et al., 2004) reported that 87% of pregnant smokers expressed a desire to quit, with 69% of respondents expressing an interest in receiving smoking cessation support in the form of face-to-face behavioural support and self-help materials. However, in contrast to these high rates of expressions of intent, only around 5% of pregnant smokers in the UK access the NHS Stop Smoking Services (Taylor & Hajek, 2001). This gap between

intention and access suggests that there may be a need to further examine pregnant women's uptake of available services.

Evidence suggests that smoking cessation interventions can lead to successful outcomes in pregnant women smokers. In a review of 32 papers, Bell et al. (2006) suggest quit rates of 23-51% at 52 weeks amongst pregnant women who set a quit date with the UK NHS stop smoking service. In a recent systematic review, Lumley et al. (2009) examined the outcomes of randomised controlled trials for smoking cessation interventions during pregnancy. The review reported evidence of a 6% absolute difference in smoking rates in those receiving an intervention relative to a usual care comparison. A systematic review and meta-analysis of intervention studies using bio-chemically verified measures only found that the method of delivery of the intervention was significant (Fiore et al., 2008). Person-to-person interventions were up to 1.8 times more effective than brief advice/self-help materials for pregnant smokers.

While the risks of smoking during pregnancy are well reported, and an intention to quit may be high, the low take up of available services by pregnant women smokers and difference in success rates between types of intervention needs further examination. This review therefore aimed to investigate factors enabling or discouraging the uptake of smoking cessation services by pregnant women smokers, to provide further insights regarding how services to this particular group may be enhanced.

METHODS

Inclusion criteria

The population under consideration was all women who smoke that are planning a pregnancy, are pregnant or have an infant aged less than twelve months. Papers were eligible for inclusion if they were published in English within the last 15 years. No restrictions were placed on study design. The review examined factors underpinning the delivery of interventions to this population from the perspective of staff, users and potential service users. We considered a broad definition of smoking cessation interventions to include brief advice or information provided by health professionals, in addition to specific programmes. This wider definition was used as contact with a health professional during pregnancy is an opportunity to give smoking cessation advice (McEwen et al., 2006). Also, health professionals may impact on the uptake of more specialist programmes by acting as a referral gateway or by information-giving.

Search strategy

The review team built upon the existing NICE search methods (National Institute for Health and Clinical Excellence, 2009) to adopt an emergent approach, which used several smaller, more targeted searches rather than a large single search. Retrieved citations were explored in order to inform further searches by the identification of useful terms, with searching continuing until the review team decided that no new useful ideas/evidence were being identified. Figure 1 illustrates the process of inclusion and exclusion that occurred during the searching iterations.

Relevant literature was identified via freetext searching of the following electronic databases: Science Citation Index and Social Science Citation Index via Web of Knowledge (no limits

applied); Maternity and Infant Care via OVID SP (no limits applied); PsycINFO via OVID SP (1990-2009); Embase via OVID SP (1990-2009, English); Medline via OVID SP (1990-2009, English); CINAHL via EBSCOhost (1990-2009); ASSIA via CSA (1990-2009, English); and British Nursing Index via OVID SP (no limits). See Box 1 for example search strings. The review encompassed four searching iterations with citation searching of included articles (using Web of Science Cited Reference search and Google Scholar), sifting the reference lists of included articles and sifting the reference lists of relevant systematic reviews, in addition to database searching.

Following each search iteration the results were downloaded into Reference Manager for sifting at abstract level. Papers for potential inclusion were obtained for full paper examination and data extraction. Inclusions and exclusions were checked by a second reviewer, and where consensus could not be reached, by a third reviewer. A particular feature of this review was the high number of papers initially identified as having potential for inclusion, were obtained as full papers, and yet were subsequently excluded. The focus of the review question on the delivery and uptake of services rather than the interventions themselves required scrutiny of many intervention studies, searching for those aspects describing delivery. These aspects were not reported in the paper abstracts, and often represented only a very small section of data.

RESULTS

Included papers

The searches identified 23 papers that met the inclusion criteria from the database of 2979 citations. Nineteen papers were identified through the primary database search, two via the secondary citation searching, one additional paper through scrutinising reference lists and one

paper by expert recommendation. Ten of the included papers reported qualitative data and ten reported quantitative cross-sectional data (surveys). An additional three papers provided narrative descriptions of issues relating to delivery of interventions in the findings section of randomised controlled trials.

The papers encompassed seven European studies (four UK, two Sweden, one France), with seven papers reporting data from the United States of America, five papers from Australia, two from New Zealand, one from South Africa and one international study. Eleven papers reported data from staff participants and eleven from pregnant or recently pregnant women. Only one paper reported data from both staff and service users. Of the staff participants, two papers reported data from midwives, one paper considered doctors, four papers included antenatal clinic midwife and doctor participants, one paper considered obstetricians and gynaecologists, two reported data from teams of four or five different professions, and two papers considered senior hospital staff. See Table 1 for details of study populations.

Quality issues

There is considerable debate regarding quality assessment of qualitative studies with no established study design hierarchy. Studies were assessed using the NICE (2009) criteria, which outlines 14 key questions to be considered when rating a qualitative study (see Box 2). The criteria are used to place studies in one of three bands: high quality where all or most of the criteria have been fulfilled; good quality where some of the criteria have been fulfilled or poor quality where few or no criteria are fulfilled. Of the ten qualitative papers, one was rated as high quality, six were rated as good quality, and three papers were rated as poor quality. The main limitation related to the use of single methods of data collection within all the included studies. Although the concept of reliability in qualitative research is controversial,

the use of and comparison of data from multiple methods (triangulation) is often considered to add strength/depth to the findings.

In addition to these ten qualitative studies, the paper set included ten cross-sectional studies and three narrative reports. Four papers provided no details regarding the design and construction of the survey tool (Bishop et al., 1998, Glover et al., 2008, Grange et al., 2006, Walsh et al. 1995). Three papers described a development phase (Clasper & White 1995, Cooke et al., 2001, Ussher et al. 2006). One paper reported that they used a survey that had been adopted in a previous study (Cooke et al., 1998) and one described the development of the tool from a review of the literature (Jordan et al., 2006). All these studies used self-report measures, creating opportunities for bias due to incomplete or inaccurate recall of events, and the use of largely untested measurement instruments. Also, in relation to staff participants, self-report of behaviour may be very different to actual behaviour. The three studies reporting findings only as narrative rather than data, rated as poor for quality, although it was felt that they should be included in the review as they contributed helpful insights.

Data analyses

Due to the nature of the included papers, a qualitative synthesis strategy was adopted. Methods to amalgamate qualitative studies are developing, based on the innovative work of Stern and Harris (1985) who first described the technique of “qualitative meta-synthesis”. In this review we drew on principles of thematic synthesis (Thomas & Harden, 2008) to analyse data from the included papers. Each study was read and line-by-line coded according to its meaning and content to establish core themes. These themes were then further analysed in a process akin to meta-synthesis (Walsh & Downe, 2005) whereby themes from individual papers are compared and contrasted to further develop key themes across the studies.

Analysis and synthesis of the included papers suggested ten aspects of service delivery that may have an influence on the uptake of interventions to stop smoking in pregnancy (see Box 3).

1. Broaching the subject of smoking

Broaching the subject of smoking is a necessary precursor to discussing interventions, and seven papers describe the frequency with which this may occur during consultations. Anderson et al. (2002) describe “variation” amongst pregnant women in the USA regarding whether smoking cessation had been discussed with them. Similarly McCurry et al. (2002) found that “most” pregnant women smokers reported being asked about their smoking behaviour “however not all”. Grange (2006) surveyed women in France a few days after delivery. They reported that 76% of those who were smoking at the start of pregnancy said that they had been asked about their tobacco consumption by a clinician or midwife and 21% of continuing smokers during pregnancy reported that they had not been questioned on the subject.

In a survey of maternity service staff in Britain, Clasper and White (1995) reported a much higher rate of 96% of participants agreeing that they routinely asked about the smoking status of pregnant women. Glover et al. (2008) found similar figures of 92% of GPs and 82% of midwives in New Zealand, and Cooke et al. (1998) in Australia reported a figure of 83% of staff agreeing that they assessed smoking status. Everett et al. (2005) in a survey of doctors in South Africa report a more mixed picture of practice, with some doctors not noting smoking status during a consultation, or giving cessation advice only where there was a known health problem.

Five papers may help to explain why not all health professionals discuss smoking status with all pregnant women. Abrahamsson et al. (2005) outline the experiences of midwives in Sweden. This study describes health professionals sometimes avoiding the issue of smoking due to previous experiences of attempted persuasion or information-giving having a negative impact on the relationship between the midwife and the pregnant woman. The study highlights the importance to participants of establishing a good mutual relationship, and building co-operation and respect for what the woman wanted. The authors suggest that midwives perceive a potential conflict between discussing smoking in pregnancy and increasing a woman's sense of guilt.

McCleod et al. (2003) describe midwives' perceptions that asking women about smoking status was challenging, although the perception of pregnant women in the study was that it should be a part of a midwife's job. Lowry et al. (2004) describe the crucial role of establishing good relationships between women and health professionals in smoking cessation programmes. Katz et al. (2008) provide supporting narrative evidence regarding the concerns staff have in respect to the potential for discussion of smoking to damage relationships. The authors describe that adjustments were made to 5% of the programme in terms of changing topic from personal smoking to environmental smoke "if a woman simply did not want to discuss their experiences on this issue further or the facilitator thought the relationship might be jeopardised." Lando et al. (2001) describe how staff delivering an intervention programme struggled to actively engage women in the discussion of issues pertaining to smoking. Also, how many paediatricians prefer to discuss environmental tobacco smoke rather than maternal smoking.

2. The provision of information

Cooke et al. (1998) found that 81% of staff in an Australian antenatal clinic described themselves as providing education regarding the risks/effects of smoking, with 54% reporting giving out pamphlets, 10% offering a video on smoking, 57% giving counselling on methods to quit, 29% a self-help quit booklet, 15% negotiated a quit date and 42% offered a referral on to other services. Clasper and White (1995) report 96% of UK hospital practitioners declaring that they explain the risks of smoking to pregnant women, with 67% offering stop smoking advice. Glover et al. (2008) examined the likelihood of staff recommending particular interventions and found that nicotine replacement therapy recommendation was low (34% of GPs and 31% of midwives would recommend) with their perceptions of which interventions were most effective impacting on advice.

A survey of women in France (Grange et al., 2006) found that 53% of women who had continued to smoke during pregnancy reported receiving no information about the benefits of giving up smoking, and 77% said that they had not received an information leaflet. Minimal advice was reported by 16%. Anderson (2002), in a focus group study of pregnant women smokers in the USA, reports the perception that there had not been “a thorough attempt to explain what smoking was doing to the baby, how quitting lowers risks, and how to go about trying to quit”. In an interview study (Arborelius & Nyberg, 1997) nine of the thirteen Swedish women stated that they would have given up if they had been given proof that smoking was dangerous or that the baby would be harmed. McCurry et al. (2002) report participants’ perception that they had been advised rather than strongly persuaded to give up smoking. Nichter et al. (2007) similarly describe women’s views that they received no messages that were helpful, describing it as being “just a policy” for health professionals to ask and give a pamphlet.

One paper (Everett et al., 2005) reports concerns from staff regarding the quality of advice and information that they offer. In this study of doctors, participants characterised their approach as mostly exhorting women to stop smoking, which they were aware was inadequate.

3. The manner of communication

Anderson et al. (2002) describe women's perceptions that their health professional was "preaching" or "nagging", which resulted in counterproductive discussions. Also, some reported that they had been insulted by the professional's condescending tone, and had left the consultation feeling resentful. Arborelius and Nyberg (1997) similarly describe the perception that a midwife should not be authoritarian, and should not exhort, pressure or nag. Two study participants made positive comments in particular about midwives they had encountered who were friendly and never negative. A UK study (Lowry et al., 2004) similarly reports that women are particularly sensitive to the approach and tone used by a professional, being disparaging of anything "preaching" or "hard hitting". They emphasise the importance of an approach that is "ongoing support" rather than "nagging". Also, the authors describe the perception of mixed messages, with professionals nagging them to quit but not following through this advice with enthusiasm or empathy. Tod, (2003) echoes this perception of the negative effective of advice given in a judgemental manner. A fear of being judged by an advisor was reported to be a barrier to attending a stop smoking course by 37% of respondents in an internet survey (Ussher et al., 2006).

Only one study reporting staff perceptions includes data relating to the method of communication between staff and pregnant women smokers. Everett et al. (2005) describes

how five of the fifteen South African doctors expressed the view that a more caring and empathetic approach could improve communication.

4. Service protocols

Four papers outline the potential significance of whether or not a service has well-defined procedures in place that detail the care that should be provided for pregnant women smokers. A survey by Cooke et al. (1998) associates having a policy/procedure in place with a greater number of smoking interventions offered by healthcare staff in Australia (effect size = 0.1, $p < 0.01$). Hartmann et al. (2007) report that only 20% of staff working in prenatal care in the USA said that they have a written protocol for smoking cessation. Clasper and White (1995) found a low figure of 6% of staff using guidelines covering advice and help which should be given to pregnant smokers. Everett et al. (2005) suggested that South African doctors were unaware of available guidelines.

5. Follow-up

The review suggests the significance of not only initial enquiries regarding smoking status, but also the role of follow-up discussion of smoking and any reduction attempts. Arborelius and Nyberg (1997) report women's positive views of midwives who systematically ask about smoking and keep a record of consumption. McCleod et al. (2003) in contrast report UK midwives' concerns that continued asking about smoking could have a negative effect on women who may not be ready to make changes. The same study however found that some women valued the ongoing enquiries throughout their pregnancy, highlighting that approaches need to be tailored to individuals. It suggests that repeated enquiry should be associated with the extent to which women were ready to make changes. The Nichter et al.

(2007) paper contains data from one participant who reported that she was aided in her quitting attempts by regular telephone calls she received from a telephone help line.

Clasper and White (1995) suggest that around 95% of UK health professionals record smoking status in a pregnant woman's case notes. However, only 49% reported that they monitor or review smoking status throughout the pregnancy. Glover et al. (2008) in New Zealand provide figures of 98.5% of midwives and 84.5% of GPs reporting that they routinely record the smoking status of patients. Grange et al. (2006), in the only study describing women's perceptions, report that 84% had not been asked about their attempts to give up. Narrative in the Lando et al. (2001) study comparing two interventions in the USA describe the tendency for practitioners to stop discussing smoking once a woman had quit, opening up the possibility of relapse.

6. Staff confidence in their skills

Abrahamsson et al. (2005) describe concerns amongst midwives in Sweden regarding their competence to deal with the challenge of broaching the subject of smoking in pregnancy. McCleod et al. (2003) similarly use the term "challenging" to describe efforts to ask about and support pregnant women smoking. Everett et al. (2005) describe doctor's concerns that they are ill-equipped and lack knowledge in particular regarding how to motivate pregnant women to cease smoking. These themes are echoed in a survey by Walsh et al. (1995) who report that lack of staff training in counselling smokers was rated as very important by 49% of nurses, and 34% of medical staff in Australian antenatal clinics. Also, work by Cooke et al. (1998) describes participants rating themselves as "more willing than able" to counsel for smoking cessation, and a lack of training as being an important barrier to providing smoking cessation interventions. The authors report an association between having recent training in

smoking intervention and an increased number of smoking interventions offered to women (effect size = 0.13, $p < 0.001$).

A UK survey (Clasper & White, 1995) similarly reports staff concerns regarding a lack of knowledge and skills, with 53% of the hospital midwives, community midwives, GPs and obstetricians perceiving being insufficiently trained. More training and more time were the factors mentioned most commonly as ways to make their smoking cessation counselling more effective. Bishop et al. (1998) describe a tendency for staff to use personal experience of smoking, quitting or non-smoking to influence the content of their consultations. Hartmann et al. (2007) report in their survey of USA staff working in prenatal care, that 48% had no formal training in smoking cessation intervention, and 9% reported a lack of confidence in their personal intervention skills. Jordan et al. (2006) describe clinicians being unsure of where to send patients for further treatment, however only a small number (3%) identified low confidence/perception of ineffective intervention as a barrier to using a smoking cessation method. Lando et al. (2001) describe the need for staff and service providers to be “psychologically readied to deliver an intervention”, and that developing the skills and comfort level to carry out an intervention successfully took time.

7. The impact of time and resource constraints

Four papers (Bishop et al., 1998; Glover et al., 2008; Clasper & White, 1995; Cooke et al., 1998) identify lack of time as a key barrier to effective consultations with pregnant women smokers. Hartmann et al. (2007) similarly identify time constraints as the most commonly acknowledged barrier to intervention. The Jordan et al. (2006) survey of obstetrician and gynaecologist participants in the USA in contrast, reports only 10% identifying lack of time as a constraint.

Lowe et al. (2002) collected data from medical superintendents and senior midwives at hospitals enrolled in a smoking cessation programme in Australia, but currently not providing the intervention. The staff interviewed were “not convinced” that they could overcome the barriers of staff time and lack of administrative support. In another qualitative study, Everett et al. (2005) reported that the doctor participants perceived that their efforts would be more effective if they had more time for discussion during consultations. Supporting this, a narrative discussion of the implementation of two interventions in the USA (Lando et al., 2001) describes lack of staff time as one of the key hindrances to programme delivery.

In addition to the time constraints reported above, six surveys, one qualitative study and narrative study findings make reference to staff concerns regarding limited resource availability. Walsh et al. (1995) report that 39% of nurses and 24% of medical staff in their study in Australia identified too few staff as a “very important” barrier to their involvement in providing smoking cessation programmes. This is echoed by Lando et al. (2001) in narrative findings outlining how the use of temporary staff, and decrease in nursing staff had impacted on the provision of a smoking cessation intervention.

Cooke et al. (1998) describe a lack of good quality materials as a barrier to smoking cessation. Bishop et al. (1998) echo these findings, with participants in this study also describing a lack of patient education materials. Lowe et al. (2002) describe perceptions of a lack of administrative support, and Everett et al. (2005) report that doctors in their South African study declared that they would only be receptive to the introduction of smoking cessation interventions if it brought additional staff in to the system, and was independently administered and funded.

8. Staff perceptions of ineffectiveness

The review suggests that staff may perceive interventions to have limited effectiveness, with pessimism regarding the potential for their input to effect any change. Bishop et al. (1998) report that antenatal clinic staff perceived that lack of client motivation was an immovable barrier to them effecting any change. Clasper and White (1995) in the UK found that only 56% of the staff they surveyed viewed smoking cessation counselling given by health professionals as reducing levels of smoking in pregnant women. Hartmann et al. (2007) similarly describe 68% of staff working in prenatal care identifying lack of patient interest as a barrier to intervention. Jordan et al. (2006) report 7% of staff perceiving pregnant smokers as not being responsive to advice, with 6% reporting previous failures as being a barrier for them to providing intervention.

Cooke et al. (1998) also describe pessimism about the effectiveness of smoking advice. Walsh et al. (1995) report 25% of nurses and 21% of medical staff identified pessimism about the effectiveness of smoking advice as a “very important” barrier to them being involved in providing smoking cessation programmes. In relation to this pessimism, the Glover et al. (2008) survey reports that 33 of 147 GPs and 74 of the 203 midwives indicated that they knew very little about the effectiveness for pregnant women of cessation treatments.

Abrahamson et al. (2005) describe staff pessimism regarding their potential to effect change, previous experiences of having negative responses from women when the subject of smoking had been broached, and the perception that “informing does not work”. Everett et al. (2005) similarly outline frustration among the doctor participants at their lack of success in encouraging women to stop smoking, with their patients having other competing and often more important health needs associated with low socio-economic status.

9. Differences between professionals

Several papers describe differences in typical practice between professional groups. Cooke et al. (1998) found differences between doctors and midwives in terms of their likelihood of referring on to other services (midwives were more likely to refer on $p < 0.001$). Also, midwives were more likely to advise clients to gradually reduce, whereas doctors were more likely to advise clients to quit by abrupt cessation ($p < 0.01$).

Glover et al. (2008) identified differences between midwives and GPs in terms of the percentage who recorded smoking status (98.5% midwives, 84.5% GPs), and the likelihood of asking about smoking status at first visit (GPs 92%, midwives 82%). As with the Cooke et al. study, this work also suggested that doctors were more likely to advise women to stop smoking completely, whereas midwives were more likely to advise cutting down initially with a view to stopping (80% versus 20% relative risk (RR) = 2.86, confidence interval (CI) = 2.18-3.74). GPs were also more likely to give stop smoking advice at each antenatal visit as opposed to only discussing it if it was raised by the woman (69% versus 47%, RR = 1.45, CI = 1.2-1.75).

10. Obstacles to accessing interventions

Four papers outline specific barriers and facilitators in regard to accessing stop smoking programmes. Katz et al. (2008) describe the intervention issues encountered during a randomised controlled trial in the USA via data collected at a telephone debriefing with a sample of participants. As described previously, some participants were unable to give a reason for not attending the offered sessions. However, 24% of those who did not attend any sessions reported that the sessions being too long was a significant obstacle. Of those who attended one to three sessions, 17% similarly identified the sessions being too long as a reason

for their limited attendance. Of this group, 17% also reported that the timing of the sessions was wrong in relation to their pregnancy/delivery or that they only attended when they also had a clinic appointment. Lack of time to attend appointments was also a factor reported as a constraint by 40% of women in the Ussher et al. (2006) paper.

The Solomon and Flynn (2005) paper reports on the implementation of a telephone support intervention. The authors identified that 22% of referrals were never reached by telephone, even allowing for eight attempts at initiating the calls. In addition, 22% received only one contact. Ussher et al. (2006) in an internet survey of pregnant and recently pregnant smokers found that women's fear of failure was a significant obstacle to attending a course. Among the participants, 54% agreed or strongly agreed that they were afraid that they would disappoint themselves, and 27% agreed or strongly agreed that disappointing their stop smoking advisor was a barrier to attending a course.

Pregnant women smokers in the Tod (2003) study described how their mobility to attend smoking cessation services was very limited due to a lack of transport and alternative child care. They reported that only domiciliary or very local services would be suitable for them, and suggested that the provision of crèche facilities, appointment systems or telephone counselling could be suitable service delivery options.

DISCUSSION

This review has considered the delivery of services for pregnant women smokers, and identified 23 papers reporting ten elements that may be significant in regard to uptake of available services. It has included data relating to both brief advice given during routine health professional consultations, and also specialist smoking cessation programmes.

The papers suggest that a high proportion (but not all) staff involved in antenatal care routinely ask about smoking status. Qualitative papers describe the proportion as “variation”, and “most but not all”. The surveys report 76%, to 96% routine inquiry. **Clinical guidelines in the countries covered by this review are increasingly emphasising the need for professionals to determine the smoking status of pregnant women presenting in healthcare settings (see for example Flanedy et al., 2005; NICE, 2008). Many countries are also now adopting the 5A’s (ask, advise, assist, assess and arrange) brief intervention into their guidelines for health clinicians (see for example McRobbie et al., 2008; Flenady et al., 2005).**

These changes may have gone some way to increasing routine enquiry rates. However, the existence of policies does not inevitably lead to knowledge or adherence. One study in this review suggests a low figure of 6% of staff using available guidelines. It should be noted that the lowest figure for enquiry regarding smoking is from pregnant women report, with the others all from professional report with inherent issues regarding reliability of these self-ratings. The review highlights that an intention to ask is not always translated into practice, with concerns regarding damaging the relationship between professional and pregnant woman impacting on practice. Time constraints and differences between professional groups may also impact on routine enquiry rates.

The data suggest that record keeping practices may be inconsistent (around 85%-95% self-report that smoking status would be recorded), together with lower follow up recording throughout pregnancy. **As with routine enquiry, many professional guidelines are now including the need to continue advice and monitoring at every antenatal visit (for example Flenady et al., 2005).** The record-keeping of staff however is dependent on accurate patient

self-reporting. Studies indicate that many pregnant women are reluctant to disclose smoking status, with the suggestion that deception rates could be as high as 23% (Price et al., 1991). It has been reported that clinician interaction skills are key in accurate disclosure (Melvin et al. 2000), suggesting the need for suitable training.

The review highlights a perception of limited skills and knowledge regarding advising on smoking cessation. The papers also report variation in practice and some dissatisfaction amongst pregnant women regarding the content and level of advice and information and disparity in regard to whether women have received information leaflets. Work in Italy (Charrier et al. 2006) suggests that further research regarding the form and content of information may be required. There has been the suggestion in this review that a thorough/strongly persuasive explanation should be provided, with the inclusion of evidence or “proof” of the potential harm.

Studies report that the tone and approach used may impact on a woman’s willingness to consider smoking cessation. In contrast to the suggestion above of strongly persuasive explanations, “preaching” or “hard hitting” interactions can be perceived as acting as a barrier to a woman considering stopping or reducing smoking. Considerable expertise seems to be required to find the right balance between a persuasive explanation, and a non-judgemental approach that is sensitive to perceptions of stigma associated with smoking. This highlights the requirement for enhanced skills and knowledge via training for all health professionals interacting with pregnant women. Countries included in the review have attempted to address issues of clinician training via online programmes (Colorado Department of Public Health, 2009), educational toolkits (Chapin & Root, 2004) and via competency statements (Ministry of Health, 2007). Training in motivational interviewing techniques is also increasingly being

suggested (Hassell & Von Rhaden, 2007). A study in France (Decroisette et al., 2006) however, found that 70% of obstetricians, midwives and gynaecologists did not have any specific training in tobaccoology.

Survey data suggests variation in practice between different professional groups regarding the recommendation of quitting smoking versus cutting down, but also in regard to procedural aspects such as records and repeat advice. There is the suggestion that midwives have greater concerns regarding maintaining the relationship between themselves and the pregnant woman, and are more likely to recommend cutting down rather than quitting initially. These differences may indicate different professional ethos and approaches, however offer the potential for a pregnant woman to receive contradicting advice.

Further consideration of professional roles may be indicated, with smoking cessation counselling requiring health professionals to move from a traditional medical model to one of health education (Kosenko, 1989). It has been highlighted that a consultation with a health professional is an opportunity for advice and intervention (McEwen et al. 2006). However, currently in the UK smoking cessation counselling would not be considered a routine part of a midwife's role. While professional standards in many countries require mandatory recording of smoking status, this review indicates that the content and manner of advice given, and follow-up enquiry will impact on the uptake of any interventions available.

In regard to aspects of specific interventions that may be barriers or facilitators to uptake, the data suggest that the length of individual programme intervention sessions may be influential. Also, the limitations of telephone advice lines are highlighted in terms of the problems of achieving contact. One study suggests that transport considerations and child care for other

siblings are important in enabling pregnant women to take up any smoking cessation intervention that may be offered. Further research exploring these specific barriers and how they might be addressed seems warranted.

The evidence underpinning this review is from qualitative and cross-sectional studies, including only one high quality qualitative study, together with six good quality qualitative studies. The cross-sectional studies report data from surveys almost exclusively designed for the study and largely un-tested, with potential for bias due to self-report and retrospective recall. The review included papers from the last fifteen years, with considerable changes having occurred over that time, such as smoke-free policies in public places, together with a huge growth in resources freely available via the internet. **Many countries have introduced new professional guidance and changed their policy position on aspects such as the recommendation of nicotine replacement therapy.**

CONCLUSIONS

While recognising these limitations, the review has identified a number of aspects that may impact on smoking cessation service uptake. It highlights the challenges for healthcare staff of providing advice and intervention to pregnant women smokers, with concerns regarding damaging the professional-patient relationship and lack of skills/knowledge. This suggests a need for greater support for staff via protocols and/or further training, together with clarification of professional roles. The perception of ineffectiveness and pessimism amongst some staff has the potential to become a cycle of self-fulfilling prophecy, as past experiences of failure impact on interactions with current and future clients. In order to address this, further research and dissemination of available evidence regarding the effectiveness of

different interventions for pregnant women would enable practitioners to provide evidence-based advice and recommendations regarding smoking cessation.

Funding

This review was funded by the National Institute for Health and Clinical Excellence (NICE) for the purposes of informing public health guidance. The interpretation, analysis and views expressed are those of the authors and not necessarily those of NICE.

Competing interests

None

REFERENCES

Abrahamsson, A., Springett, J., Karlsson, L., Hakansson, A., Ottosson, T., Abrahamsson, A., Springett, J., Karlsson, L., Hakansson, A., & Ottosson, T. (2005). Some lessons from Swedish midwives' experiences of approaching women smokers in antenatal care. *Midwifery*, 21, 4, 335-345.

Anderson, R. & Anderson, R. (2002). Making the sale: communicating the importance of smoking cessation to pregnant patients. *West Virginia Medical Journal*, 98, 1, 18-21.

Arborelius, E. & Nyberg, K. (1997). How should midwives discuss smoking behaviour in pregnancy with women of low educational attainment? *Midwifery*, 13, 210-215.

Bell, K., McCullough, L., Greaves, L., Bauld, L., Mulryne, R., Jateganokar, N. & DeVries, K. (2006). *NICE Rapid Review: The Effectiveness of National Health Service Intensive Treatments for Smoking Cessation in England*. London: National Institute for Health and Clinical Excellence.

Bishop, S., Panjari, M., Astbury, J., Bell, R., Bishop, S., Panjari, M., Astbury, J., & Bell, R. (1998). A survey of antenatal clinic staff: some perceived barriers to the promotion of smoking cessation in pregnancy. *Australian College of Midwives*, 11, 3, 14-18.

Castles, A., Adams, K., Melvin, C., Kelsch, C. & Boutlon, M. (1999). Effects of smoking during pregnancy: five meta-analyses. *American Journal of Preventive Medicine*, 16, 208-215.

Chapin, J. & Root, R. (2004) Improving obstetrician-gynecologist implementation of smoking cessation guidelines for pregnant women: An interim report of the American College of Obstetricians and Gynecologists. *Nicotine and Tobacco Research*, 6, Suppl 2, S253-257.

Charrier, L., Serafini, P., Stroppiana, G., Zotti, C., Charrier, L., Serafini, P., Stroppiana, G. & Zotti, C. (2006). Smoking habits and smoking cessation in pregnancy: a study in Piedmont region. *Annali di Igiene*, 18, 5, 407-415.

Clasper, P, & White, M. (1995). Smoking cessation interventions in pregnancy: practice and views of midwives, GPs and Obstetricians. *Health Education Journal*, 54, 2, 150-162.

Colorado Department of Public Health and Environment, Women's Health Unit. (2009). Smoking Cessation Information. Available from:
<http://www.cdphe.state.co.us/pp/womens/opsmoking/SmokingandPregnancy.html>. Accessed 25/3/10.

Cooke, M., Mattick, R., Campbell, E., Cooke, M., Mattick, R., & Campbell, E. (1998). The influence of individual and organizational factors on the reported smoking intervention practices of staff in 20 antenatal clinics. *Drug & Alcohol Review*, 17, 2, 175-185.

Cooke, M., Mattick, R., Walsh, R., Cooke, M., Mattick, R., & Walsh, R. (2001). Differential uptake of a smoking cessation programme disseminated to doctors and midwives in antenatal clinics. *Addiction*, 96, 3, 495-505.

Decroisette, C., Decroisette, E., Gazaille, V., Touraine, F., Bonnaud, F. (2006). Smoking cessation in the pregnant women: descriptive study in Limousin. *Gynecologie, Obstetrique & Fertilité*, 34, 5, 397-402.

DiFranza, J. & Lew, R. (1995). Effect of maternal cigarette smoking on pregnancy complications and sudden infant death syndrome. *Journal of Family Practice*, 40, 385-394.

Everett, K., Odendaal, H., Steyn, K., Everett, K., Odendaal, H., & Steyn, K. (2005). Doctors' attitudes and practices regarding smoking cessation during pregnancy. *South African Medical Journal*, 95, 5, 350-354.

Flenady, V., New, K., MacPhail, J. for the Clinical Practice Guideline Working Party on Smoking Cessation in Pregnancy (2005). *Clinical Practice Guidelines for Smoking I n Pregnancy*. Centre for Clinical Studies, Mater Health Services, Brisbane.

Fiore, M., Jaen, C., Baker, T., Bailey, W., Benowitz, N., Curry, S., Dorfman, S., Froelicher, E., Goldstein, M., Heaton, C., Henderson, P., Heyman, R., Koh, H., Kottke, T., Lando, H., Mecklenburg, R., Mermelstein, R., Mullen, P., Orleans, C., Robinson, L., Stitzer, M., Tommasello, A., Villejo, L. & Wewers, M. (2008). *Treating Tobacco Use and Dependence: 2008 update* (clinical practice guideline). Rockville, MD: US Department of Health and Human Services, Public Health Service.

Glover, M., Paynter, J., Bullen, C., Kristensen, K., Glover, M., Paynter, J., Bullen, C., & Kristensen, K. (2008). Supporting pregnant women to quit smoking: postal survey of New Zealand general practitioners and midwives' smoking cessation knowledge and practices. *New Zealand Medical Journal*, 121, 1270, 53-65.

Gorber, S., Schofield-Hurwitz, S., Hardt, J., Levasseur, G., & Tremblay M. (2009). The accuracy of self-reported smoking: a systematic review of the relationship between self-reported and cotinine-assessed smoking status. *Nicotine & Tobacco Research*, 11, 1, 12-24.

Grange, G., Vayssiere, C., Borgne, A., Ouazana, A., L'huillier, J., Valensi, P., Peiffer, G., Aubin, H., Renon, D., Thomas, D., Lebargy, F., Grange, G., Vayssiere, C., Borgne, A., Ouazana, A., L'Huillier, J., Valensi, P., Peiffer, G., Aubin, H., Renon, D., Thomas, D., & Lebargy, F. (2006). Characteristics of tobacco withdrawal in pregnant women. *European Journal of Obstetrics, Gynecology, & Reproductive Biology*, 125, 1, 38-43.

Hartmann, K., Wechter, M., Payne, P., Salisbury, K., Jackson, R., Melvin, C., Hartmann, K., Wechter, M., Payne, P., Salisbury, K., Jackson, R., & Melvin, C. (2007). Best practice smoking cessation intervention and resource needs of prenatal care providers. *Obstetrics & Gynecology*, 110, 4, 765-770.

Hassell, H. & Von Rahden, O. (2007). Training for midwives in motivational interviewing. *Journal of Public Health*, 15, 441-445.

Jordan, T., Dake, J., Price, J., Jordan, T., Dake, J., & Price, J. (2006). Best practices for smoking cessation in pregnancy: do obstetrician/gynecologists use them in practice? *Journal of Women's Health*, 15, 4, 400-441.

Katz, K., Blake, S., Milligan, R., Sharps, P., White, D., Rodan, M., Rossi, M., Murray, K., Katz, K., Blake, S., Milligan, R., Sharps, P., White, D., Rodan, M., Rossi, M., & Murray, K. (2008). The design, implementation and acceptability of an integrated intervention to address multiple behavioral and psychosocial risk factors among pregnant African American women. *BMC Pregnancy & Childbirth*, 8, 22, doi:10.1186/1471-2393-8-22.

Kosenov, E. (1989). Anti-smoking propaganda among pregnant women. *Sovetskoe Zdreavookhranenie*, 3, 39-41.

Lando, H., Valanis, B., Lichtenstein, E., Curry, S., McBride, C., Pirie, P., & Grothaus, L. (2001). Promoting smoking abstinence in pregnant and postpartum patients: A comparison of 2 approaches. *American Journal of Managed Care*, 7, 7, 685-693.

Lowe, J., Balanda, P., Stanton, W., Del, M., O'Connor, V., Lowe, J., Balanda, P., Stanton, W., Del Mar, C. & O'Connor, V. (2002). Dissemination of an efficacious antenatal smoking cessation program in public hospitals in Australia: a randomized controlled trial. *Health Education & Behavior*, 29, 5, 608-619.

Lowry, R., Hardy, S., Jordan, C., Wayman, G., Lowry, R., Hardy, S., Jordan, C., & Wayman, G. (2004). Using social marketing to increase recruitment of pregnant smokers to smoking cessation service: a success story, *Public Health*, 118, 4, 239-243.

Lumley, J., Chamberlain, C., Dowswell, T., Oliver, S., Oakley, L. & Watson, L. (2009). Interventions for promoting smoking cessation during pregnancy. *Cochrane Database of Systematic Reviews*, 3. Art. No.: CD001055. DOI: 10.1002/14651858.CD001055.pub3.

McCurry, N., Thompson, K., Parahoo, K., O'Doherty, E. & Doherty, A. (2002) Pregnant women's perception of the implementation of smoking cessation advice. *Health Education Journal*, 61, 1, 20-31.

McEwen, A., Hajek, P., McRobbie, H., & West, R. (2006). *Manual of smoking cessation: a guide for counsellors and practitioners*. Oxford: Blackwell.

McLeod, D., Benn, C., Pullon, S., Viccars, A., White, S., Cookson, T., & Dowell, A. (2003). The midwife's role in facilitating smoking behaviour change during pregnancy. *Midwifery*, 19, 4, 285-297.

McRobbie, H., Bullen, C., Glover, M., Whittaker, R., Wallace-Bell, M., Fraser, T. (2008). New Zealand smoking cessation guidelines. *Journal of the New Zealand Medical Association*, 121, 1276, 57-70.

Melvin, C., Dolan-Mullen, P., Windsor, R. et al. (2000). Recommended cessation counselling for pregnant women who smoke: a review of the evidence. *Tobacco Control*, 9, Suppl III, 80-84.

Ministry of Health (2007). *Smoking Cessation Competencies for New Zealand*. Ministry of Health: Wellington.

National Institute for Health and Clinical Excellence (2009). *Methods for the Development of NICE Public Health Guidance: Second Edition*. NICE: London.

National Institute for Health and Clinical Excellence (NICE) (2008). *Smoking cessation services in primary care, pharmacies, local authorities and workplaces, particularly for manual working groups, pregnant women and hard to reach communities. Public Health Guidance PH10*. NICE: London.

Nichter, M., Nichter, M., Muramoto, M., Adrian, S., Goldade, K., Tesler, L., & Thompson, J. (2007). Smoking among low-income pregnant women: An ethnographic analysis. *Health Education & Behavior*, 34, 5, 748-764.

Price, J., Desmond, S., Roberts, S. et al. (1991). Comparison of three antismoking interventions among pregnant women in an urban setting: a randomized controlled trial. *Psychological Reports*, 1, 68, 595-604.

Solomon, L., Flynn, B., Solomon, L. & Flynn, B. (2005). Telephone support for pregnant smokers who want to stop smoking. *Health Promotion Practice*, 6, 1, 105-108.

Stern, P. & Harris, C. (1985). Women's health and the self-care paradox: a model to guide self-care readiness – clash between the client and nurse. *Health Care for Women International*, 6, 151-163.

Taylor, T. & Hajek, P. (2001). *Smoking Cessation Services for Pregnant Women*. London, Health Development Agency.

The Information Centre (2006). Statistics on smoking: England, 2006. The Information Centre, Lifestyles Statistics. Bulletin 2006/13/HSCIC. Available at <http://www.ic.nhs.uk/webfiles/publications/smokingeng2006>. Accessed 18 July 2009.

Thomas J, & Harden A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, 8, 45, doi: 10.1186/1471-2288-8-45.

Tod, A. & Tod, A. (2003). Barriers to smoking cessation in pregnancy: a qualitative study. *British Journal of Community Nursing*, 8, 2, 56-64.

Ussher, M., Etter, J., West, R. (2006). Perceived barriers to and benefits of attending a stop smoking course during pregnancy. *Patient Education and Counseling*, 61, 3, 467-472.

Ussher, M., West, R. & Hibbs, N. (2004). A survey of pregnant smokers' interest in different types of smoking cessation support. *Patient Education and Counseling*, 54, 67-72.

Walsh, D. & Downe, S. (2005) Meta-synthesis method for qualitative research: a literature review. *Journal of Advanced Nursing*, 50, 204-211.

Walsh, R., Redman, S., Brinsmead, M., Arnold, B., Walsh, R., Redman, S., Brinsmead, M. W., & Arnold, B. (1995). Smoking cessation in pregnancy: a survey of the medical and nursing directors of public antenatal clinics in Australia. *Australian & New Zealand Journal of Obstetrics & Gynaecology*, 35, 2, 144-150.

Box 1. Example search strings

```
(Anti smoking or antismoking).ti.  
AND  
(Pregnan* or prenatal or pre natal or antenatal or ante natal or post natal or postnatal).ti.  
(smoking adj (cessation or intervention)).ti.  
AND  
(Pregnan* or prenatal or pre natal or antenatal or ante natal or post natal or postnatal).ti.  
(tobacco adj (cessation or intervention)).ti.  
AND  
(Pregnan* or prenatal or pre natal or antenatal or ante natal or post natal or postnatal).ti.  
((quit* or stop*) adj (smoking or smoker)).ti.  
AND  
(Pregnan* or prenatal or pre natal or antenatal or ante natal or post natal or postnatal).ti.
```

Box 2. Quality indicators for qualitative studies

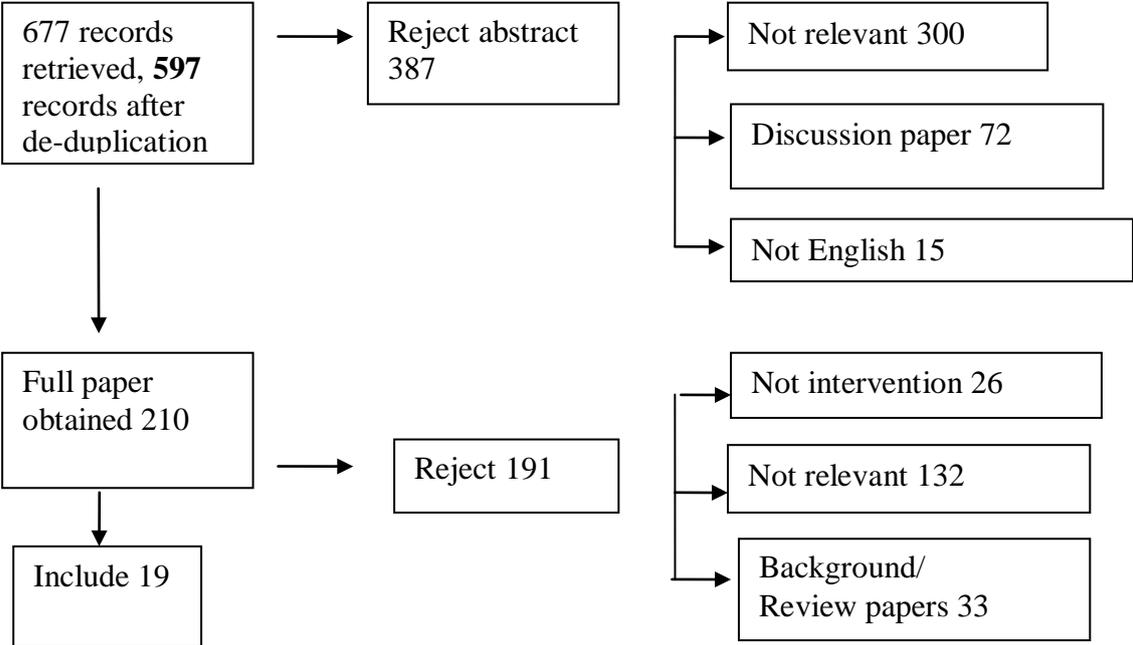
1. Is a qualitative approach appropriate?
2. Is the study clear in what it seeks to do?
3. How defensible is the research design?
4. How well was the data collection carried out?
5. Is the role of the researcher clearly described?
6. Is the context clearly described?
7. Were the methods reliable?
8. Is the data analysis sufficiently rigorous?
9. Are the data rich?
10. Is the analysis reliable?
11. Are the findings credible?
12. Are the findings relevant?
13. Are the conclusions adequate?
14. How clear and coherent is the reporting of ethics?

Box 3. Key themes in the literature

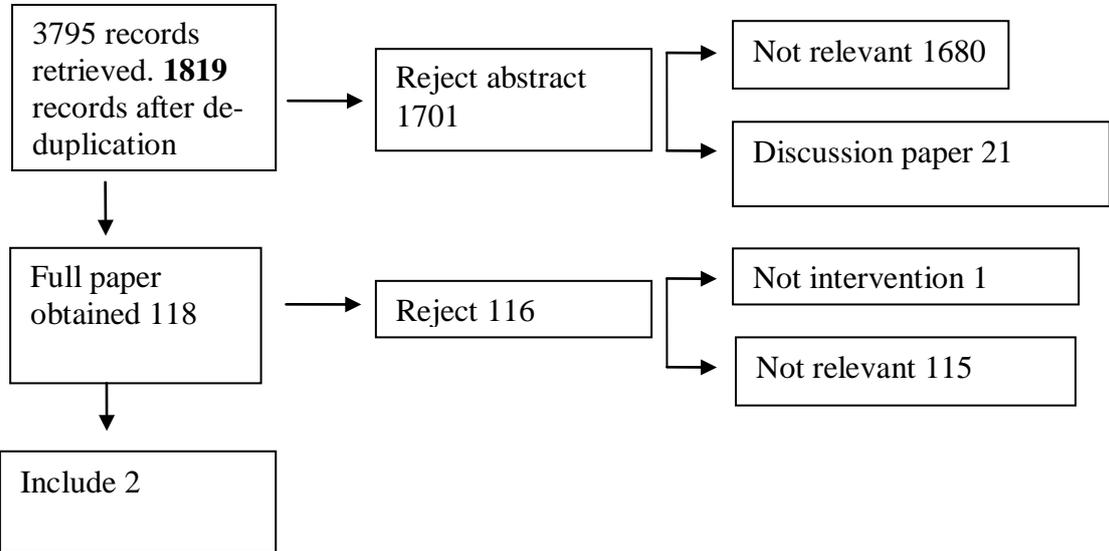
1. Whether or not the subject of smoking is broached by a health professional
2. The content of advice and information provided
3. The manner of communication
4. Use of service protocols
5. Follow up discussion
6. Staff confidence in their skills
7. The impact of time and resource constraints
8. Staff perceptions of ineffectiveness
9. Differences between professionals
10. Obstacles to accessing interventions.

Figure 1. The process of inclusion and exclusion

Search iteration 1



Search iteration 2



Search iteration 3 & 4

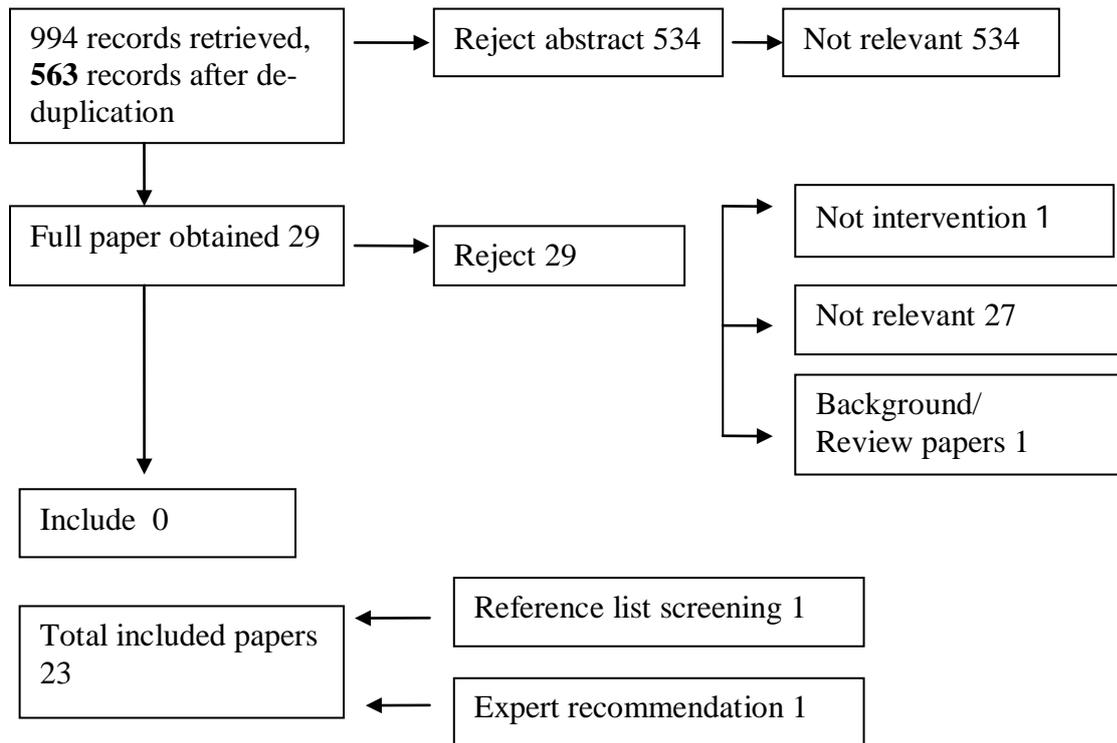


Table 1. Characteristics of the studies included in the review

Authors (date)	Population	Study design	Brief summary of findings
Abrahamsson et al. (2005)	N=24. Sweden. Midwives. 2-24 years experience in antenatal work. All female. Age 27-61. All had been involved in recent training as part of a smoke free project including motivational interviewing training.	Qualitative interview study 20 conducted in person 4 via telephone	Avoiding the issue of smoking was linked to previous experiences of persuasion or information giving having a negative influence on the relationship between midwife and pregnant woman, or having a lack of competence to deal with the situation. Staff emphasised the importance of informing the women to better understand how smoking influenced the baby's wellbeing. However staff experience was that this "informing" did not work. The mutual relationship was seen as a tool that would encourage the woman to think over the smoking issue. A conflict between information-giving which had the potential to increase women's sense of guilt and encouragement. Emphasis on the need to build co-operation by respect for what the woman wanted.
Anderson (2002)	N=26. USA. Pregnant women who were smoking. Described as primarily lower income, lower educated women, most in their 20s. Nearly half had other children.	Qualitative focus group study	Variation in whether smoking cessation had been discussed by physicians. None of the participants described a thorough attempt to explain what smoking was doing to the baby, how quitting lowers risks, and how to go about trying to quit. Some women insulted by condescending tone and left feeling resentful. Discussions often reported as counter-productive due to perceptions of preaching or nagging. Descriptions of physicians requesting cutting down only.
Arborelius & Nyberg (1997)	N=13. Sweden. Women who had smoked during pregnancy and given birth during previous few months. Age 20-38. All low level of educational attainment. Skilled, unskilled	Qualitative interview study	Nine women stated they would have given up if they had been given proof that it was dangerous or that the baby would be harmed. Ten women stated that the midwife should not be authoritarian, and not exhort, pressure or nag. Two women reported positive experiences with midwives who were friendly and never negative, who systematically asked about smoking and kept a record of their consumption.

workers + 5 unemployed.

Bishop et al. (1998)	N=39. Antenatal clinic staff. Australia. 13 midwives, 26 doctors. Data collection as part of a three year smoking intervention study.	Survey study including scaled and free text responses	Perception of a lack of skills and knowledge amongst staff regarding smoking cessation. A tendency for staff to use personal experience of smoking, quitting or non-smoking to influence the content of consultations. Perception of lack of patient motivation as an immovable barrier. A lack of time and the clinic setting perceived as barriers against counselling smokers. Also, a lack of patient education materials. The importance of public education messages emphasised, although reports of misinterpretation of messages such as a low weight baby being beneficial.
Clasper & White (1995)	N=497. UK Hospital midwives = 253, community midwives = 74, GPs = 149, obstetricians = 21.	Survey	96% of participants reported that they routinely asked about the smoking status of pregnant women when they saw them the first time. 95% reported that they recorded the status. 96% reported that they explained the risks. 67% reported that they advised pregnant smokers on how to stop. 49% reported that they monitored or reviewed smoking status throughout pregnancy. Midwives significantly more likely to carry out all these activities than doctors ($p < 0.01$). The use of guidelines covering advice and help which should be given was 6%. 28% of professionals thought they had good skills in smoking cessation counselling. 26% reported that they enjoyed giving counselling. 60% reported that it was difficult. 53% reported that they were insufficiently trained. GPs reported smoking cessation counselling to be the least difficult and perceived themselves to be the most trained ($p < 0.01$). More training and more time were the factors mentioned most commonly as ways to make their counselling more effective (no numbers provided). 56% reported that smoking cessation counselling given by health professionals reduced the smoking of pregnant smokers.
Cooke et al. (1998)	N=204. Australia. Antenatal clinic staff 120 midwives, 84	Survey scaled responses	83% of staff reported assessing smoking status. 81% reported providing education regarding risks/effects of smoking. Midwives significantly more likely than doctors to offer written materials ($p < 0.01$). Midwives

doctors. Average 12 years experience working in obstetrics. 9% smokers.

significantly more likely than doctors to refer on ($p < 0.001$). Doctors significantly more likely than midwives to advise clients to quit by abrupt cessation rather than gradual reduction ($p < 0.01$). Participants perceived themselves as more willing than able to counsel for smoking cessation ($p < 0.001$).

Barriers to smoking cessation – lack of good quality materials, lack of training, lack of teamwork, lack of time, and pessimism about the effectiveness of smoking advice. 17% of the sample had been offered in service training on smoking cessation activities in the past 18 months and 11% had attended a programme. Midwives more likely than doctors to report being offered training in smoking cessation interventions ($p < 0.05$). 66% reported training and support for clinic staff was inadequate. Practitioner ability in terms of counselling about smoking cessation and having recent training for smoking intervention positively predicted the number of smoking interventions offered ($R^2 = 0.13$ $p < 0.01$). Organisational factors such as having a policy/procedure in place positively predicted the number of smoking interventions offered ($R^2 = 0.10$ $p < 0.01$). Work pressure positively predicted the number of smoking interventions offered ($R^2 = 0.04$ $p < 0.0001$).

Cooke et al. (2001)	N=182. Antenatal clinic staff. Australia. Data part of an intervention study. 118 midwives, 64 doctors. 23 smokers. Mean length of clinical experience = 10 years.	Survey scaled responses	Midwives were more likely than doctors to initially adopt (ever use) at least one of the programme components (58% versus 22%). Median number of components of the programme used in the last month was one for midwives and nil for doctors. Most commonly used component was the quit smoking pack. More than three quarters of midwives and doctors reported that lack of time, lack of teamwork, lack of training and lack of high quality programmes act as barriers to the use of smoking cessation education.
Everett et al. (2005)	N=15. Doctors in public sector hospitals. South Africa.	Qualitative interview study	Doctors reported that while smoking was important that their patients had other competing health needs of a low socio-economic status population. Doctors were unaware of available clinical guidelines for counselling pregnant women or the evidence regarding effectiveness of interventions.

Generally their approach consisted of exhorting women to stop smoking. They were aware this was inadequate but felt ill-equipped to counsel women. Participants reported that their efforts would be more effective if they had more time for discussion, a more in-depth understanding of how to motivate patients, and attractive resources to distribute. Some doctors did not note smoking status during consultation, gave cessation advice only where there was a problem, or made initial enquiries but did little to monitor or review the situation. Approach limited to repeatedly giving advice. All doctors expressed frustration regarding their lack of success in encouraging women to stop smoking. 5 respondents expressed the view that a more caring and empathetic approach could improve communication. Most of the doctors expressed a positive attitude to training in best practice guidelines and the distribution of a self help guide for women. Doctors reported staff would be receptive to the introduction of a smoking cessation intervention only if it brought additional staff in to the system, was independently administered and funded, and cast doctors and midwives in a supportive rather than primary role.

Glover et al. (2008) N= 147 GPs. N = 203 midwives. New Zealand. 82% European, 71% aged 35-54 years, 99% midwives female, 46% GPs. Responses for all regions of NZ. Survey

98.5% of midwives and 84.5% of GPs reported that they routinely recorded the smoking status of patients on the patient record. GPs more likely to ask about smoking status than midwives at first visit (92% versus 82% RR 1.12 CI 1.03-1.21). A key reason given for not asking was the short time available. Other respondents reported that they didn't see pregnant women till late in pregnancy so didn't ask. Several GPs commented that recording smoking status was the responsibility of the practice nurse and that they usually only saw a woman once to confirm pregnancy. 94% of GPs and 90% of midwives reported usually asking pregnant women who smoked if they wished to stop. GPs significantly more likely than midwives to report advising patients to stop smoking completely. Midwives more likely to advise cutting down initially with a view to stopping (80% versus 20% RR 2.86 CI 2.18-3.74). GPs more likely to give stop smoking advice at each antenatal visit as opposed to only discussing it if raised by the woman (69%

versus 47% RR 1.45 CI 1.2-1.75).

The likelihood of recommending particular treatments compared favourably to perceptions of which were the most effective. 33 GPs and 74 midwives indicated that they knew little about the effectiveness for pregnant women of the list of cessation treatments. Differences in treatments recommended by GPs and Midwives. No difference in regard to NRT patches, but GPs less likely to refer for acupuncture or hypnotherapy. GPs more likely to refer to Quitline (RR 1.2 CI 1.09-1.31). Two thirds of GPs and just over one third of midwives reported undertaking training in smoking cessation.

Grange et al. (2006)	N=979 post-partum women. France. 18% smoked during pregnancy, 13% gave up during pregnancy.	Survey scaled response	76% of women who smoked at the start of pregnancy said that they had been asked about their tobacco consumption by a clinician or midwife. Minimal advice only was given in 16% of cases. Among the women who did not give up smoking 21% said they had not been questioned on the subject, 53% reported they had not been given any information about the benefits of stopping smoking, and 84% had not been asked about their attempts to give up smoking. 77% of these women said they had not been given an information leaflet, 91% had not been offered a specialised consultation.
Hartmann et al. (2007)	N=549. USA. Staff working in prenatal care. 50% obstetricians, 18% midwives, 15% family physicians, 13% nurses, 4% assistants.	Survey scaled responses	48% reported having had no formal training in smoking cessation intervention. 20% reported having a written protocol for smoking cessation. 90% reported at least one resource available. The most commonly acknowledged barriers to intervention were time constraints (71%), lack of patient interest (68%), limited effectiveness of interventions (39%), lack of confidence in personal intervention skills (9%). Providers reporting at least one material counselling resource were more likely to be associated with best practice (OR 9.6) Having a written protocol to identify staff responsibility was associated with best practice (OR 2.5).
Jordan et al. (2006)	N=125 Obstetricians/ Gynaecologists. USA. Male 59%, White 80%,	Survey scaled responses	The vast majority of respondents perceived no barriers preventing them from using the 5As smoking cessation method. A lack of time was identified by 10%. Not knowing where to send patients for treatment was

non smokers 80%, working in suburban locations 53%. Average 15 years of experience, average age 46. 76% worked in private practice.

identified by 10%. Other barriers reported - pregnant smokers not being responsive to suggestions (7%), lack of reimbursement for service (6%), previous failures (6%), low confidence/perception of intervention ineffectiveness (3%), not area of expertise/perception smokers don't want to quit/fear of offending (2%), other (4%).

Katz et al. (2008)

N=1044. USA. Black/African-American or Latina. Resident in District of Columbia Over 18 years of age, English speaking, pregnancy less than 28 weeks gestation. Smokers only = 54%, smokers and depressive symptoms = 11%, smoking and partner violence = 5%, all 3 risks = 6%. Subsection of 152 women also completed telephone debriefing after study.

Randomised controlled trial (randomisation method not described)

Adjustments were made to the content of the intervention in terms of violence and smoking after a few months due to difficulties in delivering this content and the risk of increased drop outs. "If a woman simply did not want to discuss their experiences on this issue (smoking or partner violence) further, or if the facilitator thought the relationship might be jeopardised, they were instructed to alter delivery". "For the active smoking component, which focussed on both smoking cessation and significant reduction, the facilitators were instructed to pursue a harm reduction strategy and to cover the environmental tobacco smoke topic instead". 71% of smoking sessions fully completed. 5% of sessions on smoking had content omitted and 5% of sessions were changed to environmental smoke risk rather than active smoking.

Telephone debriefing – 17/152 had not attended any sessions. Reasons – 41% the researcher had not informed or advised them to come back, 29% did not feel they needed/wanted to participate, 24% the sessions were too long. 18/152 had attended 1-3 sessions. Reasons – 22% not sure why or did not know why they did not attend any more, 17% sessions too long, 17% timing in relation to pregnancy/delivery wrong, or only participated when went to the clinic.

Lando et al. (2001)

N=306 + 2055. USA. Current and recent (within 30 days prior to conception) women

Compares findings from a RCT and a controlled before

In a large percentage of sessions forming part of the delivery intervention counsellors were unable to actively engage women in discussion of issues pertaining to smoking. Experience of provider resistance and problems with the logistics of implementing and maintaining the intervention in a busy and

	<p>smokers. Mean age 28 + 24 years 44% + 26% had not smoked in the previous 7 days. RCT - 88% Caucasian, 82% married or living with partner, 64% employed full time, 17% college graduates. No demographic detail for CBA study.</p>	and after study	<p>rapidly changing health care setting. Difficulties in system complexities and staff and provider attitudes. Staff and providers had to be “psychologically readied to deliver the intervention” developing the skills and comfort to perform the intervention took time. Providers often stopped discussing smoking once a woman had quit. Many paediatric providers preferred to discuss environmental tobacco smoke rather than maternal smoking “since the baby not the mother was the patient”. Other hindrances – lack of time, use of temporary staff, decrease in nursing staff and a shift from individual visits to group visits.</p>
Lowe et al. (2002)	<p>Medical superintendents/ midwives. Australia. Specific number of staff interviewed not provided. 35 intervention hospitals.</p>	Telephone interview part of intervention study	<p>Hospitals not providing the programme at follow up reported that they were “not convinced” that they could not overcome barriers of staff time to provide the service and a lack of infrastructure support by administration. 5 hospitals reported discontinuing the programme due to the inability to obtain supplies of the self-help booklet (no individual responsible for maintaining supplies or following up orders).</p>
Lowry et al. (2004)	<p>Reported as 9 focus groups in abstract, 12 elsewhere in paper. UK. Number of participants not provided. Described as “mainly women from deprived areas, social class C2D and E”.</p>	Qualitative focus group study to inform development of a smoking cessation programme	<p>The relationship between woman and health professional is crucial in regard to how receptive they will be to messages and support. Women particularly sensitive to approach and tone used being disparaging of anything “preaching” or “hard hitting”. A perception of “mixed messages” with professionals nagging them to quit but not following through with enthusiasm or empathy. Perception of the need for ongoing support rather than ongoing “nagging”. Supporting women needs to take account of the context of their lives such as role of cigarettes in coping with boredom, problems and routine.</p>

McCleod et al. (2003)	<p>N=11. Women within 4 months of giving birth. New Zealand, North Island. All smoked at conception, 4 stopped during pregnancy, 4 reduced, 3 continued to be regular smokers. Age 21-36. 11 European ethnicity, 2 Maori.</p> <p>N=16 midwives New Zealand, North Island. 9 had received smoking cessation training, four had been in control arm of the study, three had been in breast feeding training arm of the study. 7 non smokers, 7 ex smokers, 2 smokers. Years in practice - 1 less than 5, 6: 5-10 years, 2: 16-20 years, 7: more than 20 years.</p>	<p>Qualitative interview study part of larger Midwifery Education for Women who smoke (MEWS) intervention study</p>	<p>Midwives reported that asking women and supporting women in making changes was challenging. The intervention study used a laminated card listing six statements describing a woman's smoking status which was reported as useful by the midwives. There were concerns that asking about smoking could damage the relationship with a woman. Women reported that asking about smoking was a part of a midwives job. Midwives report difficulty in identifying women who would be receptive to support and those who would resent any advice. Concerned about the effect that continual asking could have on women who may not be ready to make changes. Some uncertainty about asking and how to deliver the information by midwives. Motivational interviewing had been part of the intervention and was reported as helpful by one midwife. Women perceived the importance of brief enquiry at every visit, valuing being able to tell the midwife that they had succeeded in making changes no matter how small. Also, the importance of involving a partner.</p>
McCurry et al. (2002)	<p>N=15. Pregnant women. Resident within one health board in Northern Ireland. Age 16-38 years. Described as "committed</p>	<p>Qualitative interviews</p>	<p>Most women reported that health professionals had at sometime asked about their smoking behaviour, however not all. Women felt that they had been advised rather than strongly persuaded to give up smoking. It appeared that GPs took a minimal role in any further smoking cessation intervention. Most women had been given leaflets and books, information about clinics</p>

smokers” although most had managed to cut down since becoming pregnant.

and help lines although only a few reported being offered personal support by their midwife. None of the women reported that they had received help in developing a quit plan.

Nichter et al. (2007)

N=53. USA, large city. Low income women. 4th or 5th month of pregnancy. All smoking at the time of pregnancy, 64% had continued to smoke during pregnancy, although all had attempted to reduce at some point. 62% Anglo American, 21% Mexican-American, 11% African-American, 6% multi-ethnic. Most women in “high stress relationships”, one quarter in positive, stable relationships.

Qualitative interviews part of a larger longitudinal study

One participant reported that she was aided in her quitting attempts by regular phone calls she received from a telephone helpline which showed that somebody else was interested. Perception of mixed messages from a doctor. Encouraged cutting down but also said if quitting was stressful that she should stop trying to quit as stress could harm the baby more. Most women had received advice from their doctor to quit but the majority reported that they received no messages that were helpful. Several described it being “just a policy” to ask and give a pamphlet.

Solomon & Flynn (2005)

N=948 women referred for the programme. USA

Uptake data only

22% of referrals were never reached by telephone. After 8 attempts the support person stopped initiating calls. 22% received only 1 telephone contact which the authors attribute to women accepting the referral when offered but later declining when contacted. Additional participation losses due to disconnected telephones (no figures provided).

Tod (2003)	N=11. Pregnant women smokers. UK. Age: 19-38	Qualitative interviews	Perception of a negative effect of advice given in a judgemental manner. Perception of being judged led women to continue smoking as they were upset and saw it as a position of defiance. Women's mobility to attend smoking cessation services was affected by a lack of transport and alternative child care. Only domiciliary or very local services were accessible. The provision of crèche facilities, appointment systems or telephone counselling was suggested.
Ussher et al. (2006)	N=443. Pregnant smokers and ex smokers. 88% North America and UK.	Internet survey	At any time in your pregnancy has a physician told you that you should stop smoking "yes" – 65%. At any time in your pregnancy has a nurse told you that you should stop smoking "yes" – 51%. At any time in your pregnancy has a midwife told you that you should stop smoking "yes" – 31%. I am afraid I would disappoint myself if I failed "agree or strongly agree" – 54%. I do not tend to seek help for this type of thing "agree or strongly agree" – 41%. I do not have access to such a course "agree or strongly agree" - 40%. I would not have time to attend the appointments "agree or strongly agree" – 40%. I am afraid the stop smoking advisor would judge me for smoking "agree or strongly agree" – 37%.
Walsh et al. (1995)	N=140. 83 Medical directors. 108 Nursing directors. Australia. 66% clinics in rural city or town, 26% in city suburb, 8% inner city.	Survey scaled responses	16 barriers to antenatal staff involvement in smoking cessation programmes were identified. 4 barriers rated as "very important" by the highest percentage of staff were lack of staff training in counselling smokers (nursing 49% medical 34%), lack of time (nursing 40% medical 31%) too few staff (nursing 39% medical 24%) and pessimism about the effectiveness of smoking advice (nursing 25% medical 21%). Other factors were lack of staff teamwork (24% nurses 25% medical) staff believing pregnant smokers not interested in counselling (23% nursing 20% medical) staff unfamiliar with role expected of them (21% nursing 16% medical), staff being smokers themselves (21% nursing 18% medical), staff believing preventive medicine not part of their role (21% nursing 3% medical).