Smoking cessation during pregnancy
A person-centred approach among disadvantaged women in South Africa

Zainonisa Petersen
The most common way people give up their power is by thinking they don’t have any

Alice Walker, author and poet
Abstract

Smoking remains a leading cause of premature, preventable death in South Africa killing 44 000 South Africans each year. Through the introduction of comprehensive tobacco control policies, the South African government has tried to reduce the death toll and a significant reduction in tobacco use has been recorded since its peak in the 1990’s. Smoking among women, however have remained unchanged, which calls for actions. Pregnant mothers are specifically vulnerable as their smoking detrimentally affects their own health as well as the health of their babies. This thesis gives an account of the role the antenatal care system could play in reducing the burden caused by cigarette smoking.

The overall aim was to contribute to an understanding of how a person-centred approach to smoking cessation among disadvantaged pregnant women with high smoking rates may influence smoking behaviour. The specific objectives were to confirm the high smoking rates of the target population, assess their readiness to quit, explore existing barriers and promoting factors towards smoking cessation efforts within the public antenatal health care system, and to qualitatively assess the attitudes and perceptions of disadvantaged pregnant women regarding a person-centred smoking cessation intervention.

The high smoking rates of the target population was confirmed based on a cross-sectional study at antenatal clinics in four main cities of South Africa. It focussed on the prevalence of smoking during pregnancy and used the stages of change theory to identify their readiness to quit. Additional questions concerned pregnancy related disease experiences, socio-economic determinants of continued smoking as well as attitudes towards the existing clinic services and its possible role in smoking cessation. A qualitative interview study analyzed more in-depth barriers for two-way communication between pregnant mothers and midwives. Both these studies informed the design and development of a person-centred smoking cessation intervention delivered at four public sector antenatal clinics in Cape Town. The intervention was subjected to a comprehensive evaluation based on a combination of quantitative and qualitative measures. This thesis utilizes data from the qualitative process assessment part, comprising individual interviews and focus group discussions with pregnant women during the implementation period of the intervention.

The survey results pointed out a high prevalence of smoking of 46% amongst disadvantaged pregnant women, with varying readiness for behaviour change. Most women were in the contemplation stage of behaviour change and thus ready to quit. Many of the women felt positive about the role of the midwife as an antenatal care provider, but they did not have confidence in midwives concerning encouraging or supporting women to change addictive behaviour be it smoking, alcohol or other illegal substances. The qualitative research highlighted the need for revised curricula
for health education and counselling. The analysis illustrated how the current situation created tension between clinic staff and pregnant women making women feel unworthy and thus leaving little room for changing behaviour. The in-depth interviews and the focus group discussions provided an analytical account of how the person-centred approach in this population was perceived by the women themselves. It illustrated that a multifaceted intervention programme, using peer counsellors and educational material designed specifically for a given target population, can successfully bring about behaviour change. The intervention succeeded in shifting women’s perceptions of hopelessness into feelings of being empowered to face their addictions and competent to make a change. Though the intervention meant greater rapport with the midwives, involving peer counsellors was rated highly by the participating women. The women reported having used the educational material and attached a great value to the appropriateness of the material to their life situations, and the effectiveness of having it combined with counselling from a peer counsellor. This qualitative evaluation showed the importance of a multifaceted intervention approach, in helping women identify with their behaviour change.

The thesis highlights the importance of designing smoking cessation interventions that are specific to the needs of target populations. When smoking cessation efforts are included into routine antenatal services it is important that the target group inform the nature and specific components of the intervention.

Key words: Stage of change theory, smoking, cessation interventions, peer counsellor
Original Papers

This thesis is based on the following papers:


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Introduction

The harm caused by smoking during pregnancy has been well documented in research and includes increased risk of perinatal mortality and morbidity such as miscarriage, premature birth and low birth-weight (Hammoud et al, 2005). Smoking during pregnancy is also associated with a higher risk of respiratory infections, such as asthma and bronchitis in the infant, which is exacerbated by maternal and paternal smoking during infancy (Jaakola & Gissler, 2004). Maternal smoking during pregnancy is a proven predictor of asthma and wheeze in children. Mothers who continue smoking beyond the first trimester deliver smaller babies who are at greater risk of having adverse respiratory outcomes in childhood (Prabhu et al, 2010). The risk of sudden infant death syndrome is also increased among the offspring of women who smoke during pregnancy (Ingall & Cropley, 2010). The effects of smoking in pregnancy is also evident later in life, with low birth-weight being associated with coronary heart disease, type 2 diabetes, and being overweight in adulthood (Doherty et al, 2009).

The majority of women, who smoke at the beginning of their pregnancies, try to alter their smoking behaviour (Erbert & Fahy, 2007). However, only 20-30% of women who smoked at the beginning of their pregnancy will abstain for the duration of their pregnancy and half of these women will relapse within 6 months of giving birth (Lemola & Grob, 2008). This means that current smoking cessation interventions in pregnancy are not effective in achieving short- or long-term quitting.

There are marked socioeconomic differences between women who continue to smoke in pregnancy and those who quit. Women who successfully quit smoking during pregnancy are more likely to have a positive social environment, including being married or in a stable co-habiting relationship (Graham et al, 2006). Women who continue to smoke are more likely to be poor, unemployed, have low education, be young, live without a partner and have low social support (Haslam & Lawrence, 2004; Graham et al, 2006; Ebert & Fahy, 2007;). There is a significantly higher prevalence of smoking in pregnancy in several ethnic minority groups, which is in accordance with their social and material deprivation (Hunt, 2003; US DHHS, 2004). Jakab (2010) states that smoking among women in many high income countries are declining, a quarter of women originally from low to middle income countries living in the European region are smoking, and that prevalence among this group of women is still rising. Furthermore, in countries like the UK and Sweden, those who smoke during pregnancy are likely to be among the socially disadvantaged (young, single, or having low income).

Thus, despite their knowledge of the harm, many women continue to smoke throughout their pregnancy because they are not ready to deal with the physiological, psychological and emotional changes associated with quitting. Socio-economically disadvantaged smokers view smoking as a way to relieve anxiety and depression associated with family responsibility, despite being aware that smoking does not actually deal with the problems (Irwin et al, 2005).
Studies focusing on women’s experiences of being exposed to smoking cessation interventions have shown mixed results, with some groups of women feeling criticised by health professionals who address their smoking behaviour (McLeod et al, 2003; Rollnick et al, 2002). A review of the literature pertaining to women’s smoking habits during pregnancy and interventions to change behaviour points to a strong need for midwives to take a woman-centered approach in dealing with addiction (Erbert & Fahy, 2007). In the review it is also emphasised that midwives need to address smoking from a broader socio-political context. They have to understand why women smoke, what meaning smoking has for them and the community they live in as well as their attitudes to and experience of quitting. Women need to feel that their views on smoking and other general health issues are valued in order for them to start considering changing their smoking behaviour. Other studies have also underscored the importance of involving the women themselves in deciding on the mode and focus of quit interventions, with the midwife supporting them to maintain their own general health and not only focusing on the health of their babies (Griffiths et al, 2005).

Midwives regard smoking cessation education and counselling with pregnant women as one of their key roles in caring for women (McLeod et al, 2003). Due to midwives’ direct and prolonged involvement with pregnant women, they have been found to adopt smoking cessation activities more freely than other antenatal staff members (Cooke et al, 2001). However, qualitative studies have shown that the extent to which midwives are able to prioritize smoking cessation varies (McLeod et al, 2003). Many midwives feel ineffectual in talking to women about smoking and they lack information in the steps involved in effective smoking cessation. They often refrain from talking about smoking in the fear that they might be ineffective, having little confidence in their ability to deal with addictions. This is further complicated by lack of time, staff shortages, inadequate training in counselling and an inability to deal with patient resistance to quitting (Webster et al, 2002). However, pregnancy does provide a window of opportunity to promote smoking cessation and midwives are aware of the possibilities they have to facilitate behaviour change (DiClemente et al, 2000). To alleviate their dilemma, midwives need to become more skilled in counselling, and to understand the behaviour change cycle pregnant women go through with regards to smoking cessation (McLeod et al, 2003; Lai et al, 2010). Webb (2009) has suggested that combining principles of Motivational Interviewing and advice based on stage of change through frequent brief interventions improves the midwife’s role of facilitating behaviour change. Printed educational material has been found effective but need to be tailored to the cultural norms of the target group to be perceived as credible, understandable, relevant, and remembered.

Following a review of more than 6000 peer-reviewed articles and abstracts on smoking cessation published between 1975 and 1999, a Clinical Practice Guideline for Treating Tobacco use and Dependence was compiled (US Public Health Service Report, 2000) Three types of counselling were found to be especially effective; practical counselling; social support as part of antenatal clinic visits; and social
support arranged outside of antenatal clinic visits. The ‘5 A’s Smoking Cessation Clinical Practice Guideline was thus specifically adapted for use with pregnant women and is currently promoted as best practice for brief smoking cessation counselling by antenatal care providers (USPH, 2000). The guideline recommends that a 10-15 minute counselling session by trained providers and the provision of self-help education materials designed for pregnancy become a standard component of routine antenatal care. Such interventions are expected to increase the usual quit rate to about 15% (Melvin et al, 2000). The guideline also outlines the five A’s approach which means that the counsellor should Ask about smoking at every patient visit, Advise every smoker to stop, Assess the client’s readiness to quit, Assist clients to assess whether they’re ready to quit or not, Arrange for follow-up visits and discuss the subject of smoking at every subsequent visit (ACOG, 2002).

In South Africa, consistent smoking cessation counselling and promotion of smoking cessation still receives little attention from public sector antenatal care staff. Doctors and midwives routinely identify smokers as such on their clinic folders, but they appear to be unaware of best practice guidelines and therefore do not have the skills to support women in their attempts to quit (Everett et al, 2005). Midwives also acknowledge that they have an authoritarian style in delivering smoking cessation counselling and that they do not have appropriate printed material to either give to women or to use themselves as a guide to counselling women about smoking and quitting (De Feijter, 2003; Paijmans, 2003; Everett et al, 2010a).

This thesis aims to contribute to a discussion of smoking cessation amongst disadvantaged pregnant women. It does so firstly by investigating the socio-demographic characteristics that place such vulnerable women at risk of smoking and continued smoking during pregnancy. Secondly, it gives a detailed account of women’s experiences of the public sector antenatal care system before and during a person centered intervention programme and the implications this has for behaviour change during pregnancy. It concludes with suggestions on how the public antenatal care services in South Africa could be used more effectively for decreasing the high smoking rates, and other substance abuse rates, observed among disadvantaged pregnant women.
Background

Smoking policies and laws in South Africa

Prior to the 1990s there were no formal efforts by the ruling government to reduce the impact of tobacco use in the South African population. Annual per capita consumption of tobacco steadily increased during the 20th century until it peaked in the 1980’s at 1650 cigarettes per adult per annum (Van Walbeek, 2005). After 1994 the new government’s Department of Health made tobacco control a priority of the new South African government. The Department of Health was strongly supported by a number of anti-tobacco non-governmental organisations. This included organisations such as the National Council Against Smoking, the Heart Foundation of South Africa and the South African Cancer Association. Legislation passed in 1999 included warnings on cigarette packaging, banning of tobacco advertising, sponsorship and promotions, restriction of smoking in enclosed public places, prohibiting the sale of tobacco products to those less than 16 years of age and setting maximum limits on nicotine and tar yields of cigarettes (Tobacco Product Amendment Act, 1999). Coupled with these tobacco control policies the government introduced sharp increases in excise tax on cigarettes since 1993 (Van Walbeek, 2002). This increased the retail price of a packet of 20 cigarettes from R2.55 in 1993 to about R12.50 a pack in 2005, and by 2010 a pack of cigarettes cost R25. Excise taxes also contributed to the precipitous drop in annual per capita cigarette consumption to less than 800 cigarettes per adult per annum, mainly due to reduction in the prevalence of smoking and smokers’ decreased cigarette intake (Van Walbeek, 2002; 2005).

A number of South Africa’s leading anti-tobacco activists played a significant role in lobbying towards the drafting of the WHO Framework Convention on Tobacco Control (FCTC) in 2002 (Mackay et al, 2006). The FCTC was the first health related convention formulated by the WHO and aimed to address worldwide tobacco issues such as the health risks, the protection of non-smokers, advertising, smuggling, taxation, age restrictions for purchasing and trade. The FCTC continues its resistance to the tobacco industry by efforts to weakening its political power and helping to end its unethical marketing practices with worldwide regulation and legislation; and by exposing the strategies and tactics employed by the multinational tobacco companies (WHO, 2005; Crowley & Turnbull, 2008).

Two amendments to the Tobacco Products Control act of South Africa, which dramatically increased smoking fines and cracked down on tobacco companies were passed in 2007 and 2008. Both Acts were signed into law in September 2009 (SA Press Assoc, 2009). Smoking became illegal in “partially enclosed” public places such as covered patios, verandas, balconies, walkways and parking areas and in premises and private homes used for commercial childcare activities, schooling or tutoring. Fines for smoking or allowing smoking in a non-smoking area increased with immediate effect. The Acts also made it illegal for adults to smoke in a car where there is a child under 12. The Ministry of Health is currently (2010) finalizing regulations that will
apply to these amendments. Additional changes in the law include compulsory use of picture-based health warnings on tobacco packaging, further restriction on smoking in certain outdoor areas, an introduction of self-extinguishing cigarettes to reduce the risk of fires. Regulations prohibiting the use of the terms 'low-tar', 'light' and 'mild' and requiring that tobacco manufacturers disclose the harmful additives used in the manufacturing process are also expected.

Smoking behaviour trends in South Africa
The legislation and amendments introduced since 1993 has had a profound influence on the smoking rates in the country. The prevalence of adult smoking in South Africa decreased in the past decade, from 32% in 1995 to 22% in 2006 (SA Press Assoc, 2009). The South African Demographic and Health Surveys of 1998 and 2003 also showed marked differences over a 5 year time-period (Peer et al, 2009). The following table summarizes the fluctuations in prevalence for males and females of different ethnic background from 1998 to 2008.

Table 1. Prevalence of smoking among men and women from different ethnic backgrounds (Source: South African Advertising Research Foundation’s All Media Products Survey, 2008)

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Males %</th>
<th>Females %</th>
<th>All %</th>
</tr>
</thead>
<tbody>
<tr>
<td>African</td>
<td>40</td>
<td>33</td>
<td>35</td>
</tr>
<tr>
<td>White</td>
<td>39</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>Mixed ancestral</td>
<td>57</td>
<td>52</td>
<td>48</td>
</tr>
<tr>
<td>Asian/Indian</td>
<td>54</td>
<td>56</td>
<td>47</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>35</td>
<td>38</td>
</tr>
</tbody>
</table>

As seen from the table the pattern of smoking differed significantly between ethnic groups and men have reduced in smoking prevalence more than women. There was no significant reduction in the prevalence of smoking among women between 1998 and 2008 and the women who still smoked the most were women of mixed ancestral descent (39%).

Sharp increase in cigarette taxes was also an important strategy specifically targeting smoking young people who are more responsive to increase in prices than older people (Van Walbeek, 2002). According to the Global Youth Tobacco Survey the smoking prevalence among youth aged 11-17 years declined from 33% in 1999, to 23% in 2000 (Swart et al, 2003). The results from this survey also found that school students from mixed ancestral descent had the highest smoking prevalence (37.4%) and that girls in this group smoke almost as much as boys, 35.9% and 37.3% respectively. A recommendation from the study was that special attention be given to these female youth as there could be serious implications for them, their reproductive health, and the health of their offspring.
The first Demographic and Health Survey showed that the mixed ancestral group had the highest smoking prevalence, and that 40% of women in this group were smoking, followed by women of European descent (27%), women of Asian descent (9%) and women of African descent (5%) (Steyn et al, 2002). Later, a hospital-based cross-sectional study highlighted a growing concern about the high rates of preterm labour and abruptio placentae among women of mixed ancestral descent. This was associated with a smoking rate of 46% among women of mixed ancestral decent, as observed in this hospital based study (Odendaal et al, 2001). On the basis of these findings, researchers identified pregnant women of mixed ancestral descent as being a priority target group for a smoking cessation intervention.

Thus, the high smoking rates found among disadvantaged pregnant women of mixed ancestral descent informed the South African government about the need for a smoking cessation intervention for this population. The fact that this group mainly make use of public sector antenatal clinics, and deliver their babies at these maternal obstetric units suggested antenatal clinics to be ideal sites for interventions among this specific group of pregnant women. However, no in-depth research about pregnant women’s knowledge of the harm caused by smoking, and their attitudes towards smoking cessation counselling had yet been conducted. This knowledge gap highlighted the need to develop a person-centered smoking cessation intervention that could be evaluated both in terms of its effectiveness in influencing the smoking rates and its acceptance among the targeted population.
Objectives

Overall objectives
The overall objective of this thesis is to contribute to an understanding of person-centred approaches to smoking cessation among disadvantaged pregnant women with high smoking rates and their role in influencing smoking behaviour.

Specific objectives
- To confirm the high smoking rates of the target population and assess their readiness to quit (Paper I)
- To investigate existing barriers and promoting factors towards smoking cessation efforts within the public antenatal health care system (Papers I & II)
- To qualitatively evaluate disadvantaged pregnant women’s attitudes towards and perceptions of a person-centred smoking cessation intervention (Papers III & IV)
The study context

The Smoking Cessation in Pregnancy Project

The Smoking Cessation in Pregnancy Project involved a number of sub-studies providing material for a number of postgraduate degrees. Table 2 gives a scheme of all the studies that contributed to the overall project. It includes the formative research as well as the research to evaluate the impact of the developed intervention. Data from all the formative studies were used to design the intervention specifically targeting disadvantaged women of mixed ancestral descent. The table also indicates the delineation between the studies included in this thesis and other scientific investigations included in the overall project.

Table 2. Studies included in the Smoking Cessation in Pregnancy Project.

<table>
<thead>
<tr>
<th>Formative Research</th>
<th>Design</th>
<th>This PhD thesis</th>
<th>Other Masters’ and PhD studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualitative and Quantitative</td>
<td>• Cross-sectional survey among 796 pregnant women</td>
<td>• (A) In-depth interviews with 10 pregnant women (Famke van Lieshout, MSc)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• In-depth interviews with 13 pregnant women</td>
<td>• (B) In-depth interviews with 8 midwives (Kathy Everett, PhD study)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (C) Cross-sectional survey with 81 midwives (Eva de Feijter, MSc)</td>
<td>• (D) In-depth interviews with midwives (Jeske Pajjmans MSc)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (E) In-depth interviews with health-care managers and doctors (Kathy Everett, PhD study)</td>
<td>• (F) Development of the intervention using intervention mapping (Kathy Everett, PhD study)</td>
</tr>
<tr>
<td>Implementation of the intervention</td>
<td>Quantitative outcome evaluation</td>
<td>2006 = Usual care</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Baseline survey</td>
<td>• Mid-point survey</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• End-point survey (Kathy Everett, PhD study)</td>
<td>2007 = Intervention</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Baseline survey</td>
<td>• Mid-point survey</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• End-point survey (Kathy Everett, PhD study)</td>
<td>• In-depth interviews with pregnant women</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Follow-up interviews with the same women</td>
<td>• Focus group discussions with pregnant women</td>
<td></td>
</tr>
</tbody>
</table>
The overall study commenced with the exploratory sub-study (A) involving in-depth interviews with pregnant women highlighting the limited knowledge they had about smoking in general and during pregnancy. In-depth interviews with midwives were also conducted (B) to explore their attitudes to smoking cessation counselling. The main findings of the studies were that more research was required to understand the dynamics of disadvantaged women and midwives providing antenatal care regarding attitudes to smoking during pregnancy. This led to the national cross-sectional study with pregnant women and another qualitative interview study with pregnant women of mixed ancestral decent. Both are part of this PhD and will be reported later (Papers I and II). A second survey (C) aimed at midwives was conducted simultaneously and at the same clinics and described their attitudes to smoking, smoking cessation and counselling. Only 58% of midwives reported discussing smoking at every visit and 58% reported that they felt they had sufficient knowledge to educate and counsel women about smoking cessation (de Feijter, 2003). A further set of midwives, who were not involved in the cross-sectional study were interviewed by means of semi-structured interviews (D) to explore the role of the midwife with regards to smoking counselling and their style of communication with pregnant clients during antenatal care. The main findings of the interview study with midwives were that they utilised strategies that did not take the women’s readiness to change into consideration. Furthermore, midwives acknowledged that they used counselling approaches that were often prescriptive, judgemental and aggressive, and that this led to resistance in pregnant women to change their behaviour (Everett-Murphy et al, 2010a). Midwives also reported that they had little faith that pregnant women are truthful in their self-reported smoking habits and that they had no faith in their own efforts to encourage behaviour change (Paijmans, 2003). These finding highlighted the failure of the public sector antenatal services in supporting pregnant women to quit smoking during pregnancy. However, in-depth interviews with doctors (E) providing care to pregnant women illustrated that doctors did not take full advantage of the opportunity pregnancy offers to initiate behaviour change (Everett, 2005) and that they did not perceive smoking counselling as within their scope of work.

The formative studies used a combination of qualitative and quantitative research methods and resulted in the analysis and documentation of a rich knowledge base regarding smoking prevalence, knowledge about smoking and the needs of disadvantaged women for smoking cessation initiatives. Studies A-D directed the development of an intervention suitable to the lifestyle of the target group (E) and was based on Intervention Mapping, which systematically describes the process of developing and evaluating health promotion programmes (Bartholomew et al, 1998). This approach was originally developed to assist health promotion practitioners to; 1) perform a needs assessment, 2) identify performance objectives, determinants and change objectives, 3) decide on intervention methods and strategies before 4) developing the actual intervention elements and 5) to plan for an overall evaluation design before 6) adopting and implementing the intervention.
The components of the intervention

The intervention mapping, informed by the formative research led to the development of an intervention programme led by Katherine Everett-Murphy (unpublished data). The intervention included the following components:

*Training of midwives in person-centred communication*

Prior to the delivery of the intervention all midwives involved in the study were trained in person-centred communication and a brief form of Motivational Interviewing (MI). Midwives were familiarised with the 5 A’s (ask, advise, assess, assist and arrange) and trained in how to deliver an intervention in a 5-10 minute period. Half-day training sessions were offered to all the midwives and staff nurses providing antenatal care at the intervention sites. To ensure that all midwives were trained and to account for different working shifts, three training sessions were held at each clinic. This was followed by refresher training later in the intervention year. Training was also provided to nursing staff based at the tertiary hospital to which women with high risk pregnancies were referred. To familiarise midwives with the most important component for them, the 5 A’s, laminated A-3 colour posters detailing the 5 A’s was posted on the examination and consultation rooms. This was also used as a reminder to use them during each consultation.

*Training of peer-counsellors in person-centred communication*

Peer counsellors selected for this study were lay women from the local community with similar life circumstances and experiences as the target population. Peer counsellors, can be defined as “any health worker carrying out functions related to health care delivery; trained in some way in the context of the intervention, and having no formal professional or paraprofessional certificate or degree in tertiary education” (Lewin et al, 2005). In this case the peer counsellors were trained to counsel pregnant smoking women by using person-centred communication, based on the key principles of MI. Their training was extensive, with weekly meetings with the research team for debriefing and information sharing. The peer counsellors also received intermittent counselling from an experienced psychologist to help them deal with their daily experiences of counselling women from a very deprived environment.

*Pamphlets/newspapers for pregnant women, their partners and families*

Two pamphlets, in the form of popular tabloid newspapers familiar to the target population, were produced (Figure 1). One was issued to all participating women and contained general information about the effects of smoking and other drug use. It was directed mainly towards the pregnant women’s partners and families and focussed on how to best support a pregnant woman in her quitting efforts. Though the 2nd newspaper was more specifically targeting pregnant women in the pre-contemplation stage of behavior change, it was distributed to all participating women as a means of providing them with valuable information. The aim of this newspaper was to move
women from a stage where they were not seriously considering quitting, to one where they were ready to make an attempt to quit. This was done by using a real-life story of the effects of smoking during pregnancy. The aim was to draw women’s attention to smoking but also to encourage and provide hope. Both newspapers, available in both English and Afrikaans versions, contained valuable information about the effects of smoking, as well as alcohol and drug use during pregnancy.

A 7-day quit guide

A quit guide was developed to provide practical advice on how to deal with the complications of quitting, craving and relapse (Figure 2). The guide provided concrete information on the steps of quitting over a seven-day period. It was issued to all participants who had made a decision to quit either before or at the time of their first antenatal visit to quit. It was only after discussing smoking and establishing whether a woman had progressed to or moved beyond the pre-contemplation stage that the peer counselor issued the Quit Guide to her. The quit guide, available in English and Afrikaans, also used illustrations and photos of people from this community, so that women could relate to it.
The delivery of the intervention

The midwives and the peer counsellors had specific roles in the delivery of the intervention. To be able to capture the pregnant women’s views the data collection for the qualitative process evaluation took place parallel to the intervention. Table 3 describes the roles of the peer counsellors and the midwives together with the timing of the data collection.

Table 3. The delivery of the intervention and it’s relation to the data collection for the qualitative process evaluation.

<table>
<thead>
<tr>
<th>Scheduled visits</th>
<th>Midwife’s role</th>
<th>Peer counselor’s role</th>
<th>Data collection for the qualitative process evaluation</th>
</tr>
</thead>
</table>
| First clinic visit | • Asks about smoking  
• Advises woman to quit  
• Refers woman to peer counselor | • Explains intervention  
• Assesses smoking  
• Provides woman with educational material  
• Goes through the material  
• Assists where needed  
• Makes appointment to see woman again  
• Provides the woman with a Quit Guide if she is ready to quit  
• Arranges for follow-up appointment | |
| Follow-up visit | • Asks about smoking | • Checks quitting progress for those wanting to quit and those who quit after the first visit  
• Discusses educational material and other matters  
• Discusses any emotional issues raised by pregnant women | • Sits with peer counsellors to select possible candidates for in-depth interviews  
• Makes contact with women to explain study  
• Sets time and date for interviews |
| Subsequent clinic visits | • Asks about smoking | • Checks progress and make appointments with women.  
• Discusses other matters important for the women | • Schedules a 2nd in-depth interview with the same women during their 3rd trimester |
| Subsequent visits | • Same as above | • Same as above | • Sits with the peer counsellors to select women for the focus group discussions |
Theoretical framework

Health behaviour theories are useful tools when planning an intervention study. They provide valuable insight into the key factors that influence behaviour and give theoretical guidance on what data that is needed for deciding the most suitable design for the targeted behaviour (De Vries & Mudde, 1998). The Smoking Cessation in Pregnancy Project was informed by several health behaviour theories; the trans-theoretical model, which incorporates stages of change theory, and builds on the Health Belief model; the social leaning theory and the theory of planned behaviour. The trans-theoretical model will be described in detail with indications of how the other theories informed the design, the analysis and the evaluation of the project. The theoretical basis for using motivational interviewing as a person centred communication approach will be presented as well as some theoretical assumptions about gender roles and female smoking.

The Trans-theoretical Model of Change

Stages of Change

The first construct of the trans-theoretical model assumes that behaviour change is a dynamic process involving five distinct motivational/behavioural stages (Figure 3). Most individuals move back and forth between stages several times before they successfully may quit temporarily or for good. Individuals in the pre-contemplation stage do not want to change their behaviour either because they fear the complications associated with quitting, or they are in denial that smoking causes harm. Those in the contemplation stage are thinking about changing their behaviour; however, they are not ready to commit themselves to making a change. They are apprehensive about changing the behaviour possibly because they have tried in the past and failed. Individuals in the preparation stage are ready to change their behaviour and plan to do so within the next month. These individuals may need assistance with problem solving and social support and are most prone to be influenced by interventions based on counselling and the like. Individuals in the action stage are actively changing the behaviours, while those in the Maintenance stage are maintaining a change in their behaviour. This stage can last anywhere from six months until the rest of the individual’s life. Support for relapse prevention is necessary at this time.
### Process of change

The second construct of the Trans-theoretical model looks at the process of change, which includes the following overt and covert activities people use to progress through the five stages of change described earlier (Velicer et al, 1995; Glanz et al, 1997). These activities comprise:

- **Conscious raising** – involves becoming aware of the harm in smoking and its consequences
- **Self-re-evaluation** – assessing one’s feelings about smoking and quitting
- **Self-liberation** – choosing and committing to change a behaviour counter
- **Conditioning** – substituting smoking with healthier behaviours
- **Stimulus control** – avoiding places, people and events that elicit smoking
- **Contingency management** – rewarding oneself or being rewarded by others for making a behaviour change.
- **Helping relationships** – involves developing therapeutic alliance with someone in order to talk about the difficulties of quitting. This process involves being open and trusting about smoking and quitting.

---

<table>
<thead>
<tr>
<th>Progress</th>
<th>Stages</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-contemplation</td>
<td>Denying that habits and addictions are destructive. No intention to change behaviour in the next 6 months</td>
</tr>
<tr>
<td></td>
<td>Contemplation</td>
<td>Recognising and understanding the extent of the problem but not yet there. Strongly inclined to change behaviour in the next 6 months.</td>
</tr>
<tr>
<td></td>
<td>Preparation</td>
<td>Starting to draw up a plan to change behaviour that will take effect in the near future, usually 1 month.</td>
</tr>
<tr>
<td></td>
<td>Action</td>
<td>Implementing the plans made to change behaviour. Behaviour has already been incorporated for at least 6 months.</td>
</tr>
<tr>
<td></td>
<td>Maintenance</td>
<td>Making efforts to avoid relapse. Behaviour change has already taken place for more than 6 months and the chance of relapse is minimised.</td>
</tr>
</tbody>
</table>

Figure 3. Stages of change and their characteristics. Adapted from Prochaska & DiClemente (1986).
• *emotional relief* – expressing one’s feelings about the experience of quitting. This allows the individual to vent frustrations and anger related to the difficulties associated with the quitting, but also to express how good one feels about achievements
• *environmental re-evaluation* – assessing how smoking affects one’s physical environment
• *interpersonal control* – involves making efforts to avoid people or social situations that encourages smoking.

**Decisional balance**

The third construct of the Trans-theoretical model looks at the individual’s weighing of the pros and cons of changing behaviour (Prochaska & Velicer, 1997). If the pros of changing behaviour significantly outweigh the cons, individuals are more inclined to change. This is also illustrated by the Theory of Planned Behaviour’s construct of ‘subjective norms’. Intentions to change behaviour are often also influenced by the individuals’ beliefs about how significant people in their lives view the behaviour and how strongly individuals are motivated to either comply with the norm, or reject the expectations of society (Connor & Sparks, 1995).

**Self-efficacy**

The last construct, self-efficacy, has two parts in the Trans-theoretical Model, confidence and temptation. If people are able to resist their temptation to relapse into the problem behaviour, it increases their confidence in being able to cope with the changed behaviour. Similarly, if they have low self-confidence in their ability to change their behaviour for good, they are more likely to give into temptation. This construct is strongly influenced by the Health Belief Model and the Theory of Planned Behaviour, which describe the ‘perceived behavioural control’. These are the factors outside the individual’s control that may affect her behaviour and intention to make a change. These theories state that individuals are more committed to make a behaviour change when their perceptions of behavioural control are high (Strecher & Rosenstock, 1997).

**Person-centred communication**

A person-centred method of counselling can be defined as a method by which the health provider starts with the individual’s situation as a guide to communication, rather than directing the individual towards a previously determined objective (Arborelius & Bremberg, 1994). Many health providers have an authoritarian style of counselling, which fails to consider people’s ambivalence about choosing between courses of action (Rollnick & Miller, 1995). When Social Learning Theory is applied in counselling, attention is paid to discussing models of the desired behaviour, to helping people record their behaviour, facilitating them to make their own decisions and giving feedback about the their efforts (Arborelius, 1996).
**Motivational interviewing**

One example of person-centeredness is the Motivational Interviewing (MI) technique. This technique recognizes the fact that people who need to change their behaviour due to the risk it poses for their own health are at different levels of readiness to change. Some people may never have thought about changing their behaviour as they never personalised their actions, while others may have a strong desire to change their behaviour but have a history of failing and therefore feel ambivalent about making any more attempts. MI is non-judgemental, non-confrontational and non-adversarial (Rollnick et al, 2007). An attempt is made to increase the individual’s awareness of possible harm and helping them see their behaviour and the problem behaviours of others in a different way. MI is based on four basic principles;

- expressing empathy - creating the feeling that someone cares
- developing discrepancy - allowing the individual to examine his/her current lifestyle compared to how it could be if behaviour change takes place
- rolling with resistance - accepting that the individual’s reluctance to change is a natural process
- supporting self-efficacy - accepting the client autonomy while continuing to motivate them to persist with the behaviour change

**Gender and female smoking**

The importance of taking gender into consideration when studying the socio cultural aspects of smoking behaviour has been emphasised by many scholars. Nichter et al (2010a; 2010b) has for example looked at smoke free households and the way in which women are negatively influenced by smoking as a result of the high smoking rates of men. These women have very little power to even change rules regarding smoking within their own homes. However, they do feel that the participation of the government through community wide bans of household smoking could be effective.

The quote below encapsulates the situation of many women of low socioeconomic status fighting tobacco addiction, including the targeted group of women described in this thesis.

> “Women in extraordinary circumstances of poverty, violence, severe depression, chronic stress, oppressive racial or sexual discrimination and other immobilizing forces are in physical and emotional survival mode which precludes cessation” (Christen, 1998)

Gender roles are theoretical constructs that refer to a set of culturally specific social and behavioural norms that are considered to be socially appropriate for individuals of a specific gender (Parsons, 1996). These gender roles are socially constructed but continuously changing, and evident in the different pathways leading to addiction as well as in the needs for interventions (Sarin & Selhore, 2008). According to Rosenbaum (1980) women’s initiation into any form of drug use is most often
related to their relationships with men (a father, boyfriend, or spouse that smokes). Others have shown that addiction manifests itself differently in the lives of males and females due to the gender based social organization of societies and cultures (Anderson & Bondi, 1998). Thus, in many settings women are more likely than men to deal with their addiction because of family and work responsibilities. Similarly males may be more open and relaxed about starting to smoke, since smoking in many contexts is regarded as an acceptable behaviour for men but not for women. In the Smoking Cessation in Pregnancy Project the notion of gender as a social construct was incorporated in both the formative and evaluative qualitative studies. The norms surrounding smoking in the communities where the targeted women lived were explored. This meant trying to understand the meaning that they ascribed to smoking, the importance it had for them as well as their beliefs about the effects of smoking.

In summary the theoretical framework that guided the project relied greatly on Prochaska and DiClemente’s Trans-theoretical model (1986) and Stages of Change Theory (Velicer et al, 1995). The understanding of the social context, with particularly difficult life circumstances and specific cultural gender norms, related both to smoking and other addictive drugs informed the development of the intervention analysis as well as the interpretation of the actual process of behavioural change.
Methods

Combining qualitative and quantitative approaches

Qualitative methods started to gain prominence in health research during the 1980s mainly in response to the drawbacks of questionnaire type surveys, which were considered time-consuming, expensive, and not suitable for providing in-depth understanding of a phenomenon (Weinreich, 1996; Marshall, 2005). This led to a polarisation between traditional, quantitative techniques on the one hand, and qualitative methods, on the other. During the second half of the 1990s, attempts were made to highlight the complementarities of the two types of approaches and emphasise the potential for synergy in a general development context (White, 2002). Condelli and Wrigley (2004) identified the best research design as one that uses a mixed method design. This design usually begins by using quantitative methodologies to measure magnitude or determinants of health related states, which are later enhanced with qualitative measures of key processes involved in understanding the phenomena under study. When evaluating interventions the quantitative measures can tell us the extent of change that an intervention have resulted in while the qualitative approach can tell us how the intervention worked and was perceived as well as how specific components were valued and why.

In this thesis a quantitative survey determined the magnitude and the determinants of smoking among disadvantaged pregnant women while qualitative in-depth interviews and focus group discussions provided data on how the target population perceived the situation prior to and after an intervention. Others were responsible for a quantitative outcome evaluation identifying the intervention success in terms of changes in smoking prevalence and its determinants. Thus, by combining the two methodological approaches, the overall project obtained a rich understanding of pregnant women’s feelings and reactions towards the intervention components as well as the role of the intervention for behavioural change.

The studies included in this thesis were conducted over a period of 6 years. Data for the first quantitative study was collected from disadvantaged pregnant women of mixed descent residing in five cities in South Africa by means of a questionnaire. The second qualitative study was conducted among the same subgroup of women but limited to those attending three antenatal clinics within Cape Town. The last two studies used different qualitative research approaches to evaluate an intervention programme at four antenatal clinics and a tertiary hospital in Cape Town. Table 4 gives an overview of the design of the different studies included in this thesis and the relationship between objectives, data sources, sampling of informants, analysis and papers written.
Table 4. An overview of the quantitative and qualitative research designs used in the different studies

<table>
<thead>
<tr>
<th>Specific objectives</th>
<th>Study design</th>
<th>Data sources</th>
<th>Informants</th>
<th>Analysis</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>To confirm the high smoking rates of the target population and assess their readiness to quit</td>
<td>Quantitative</td>
<td>Self-administered questionnaire</td>
<td>Representative sample of women attending antenatal clinics (n=796)</td>
<td>Descriptive – quantitative</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>Cross-sectional</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To investigate existing barriers and promoting factors towards smoking cessation efforts within the public antenatal health care system</td>
<td>Quantitative</td>
<td>Self-administered questionnaire</td>
<td>Representative sample of women attending antenatal clinics (n=796)</td>
<td>Descriptive – quantitative</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>Cross-sectional</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Qualitative</td>
<td>In-depth interviews</td>
<td>Purposive sample of women attending three antenatal clinics in Cape Town (n=13)</td>
<td>Analytical – interpretive Grounded theory</td>
<td>II</td>
</tr>
<tr>
<td></td>
<td>Interviews</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To evaluate disadvantaged pregnant women’s attitudes towards and perceptions of a person centred smoking cessation intervention</td>
<td>Qualitative</td>
<td>In-depth interviews</td>
<td>Purposive sample of women attending four intervention clinics in Cape Town (n=13) Follow-up of the same women (n=10)</td>
<td>Descriptive – interpretive Content analysis</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td>Interviews</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group discus- sions</td>
<td>Focus group discussions</td>
<td>Purposive sample of women from four intervention clinics in 8 focus group discussions (n=41)</td>
<td>Descriptive – interpretive Content analysis</td>
<td>IV</td>
</tr>
</tbody>
</table>
Data sources and analysis

The study population consisted of women of mixed ancestral descent attending public sector antenatal clinics in five main cities in South Africa, namely Cape Town, Kimberley, Johannesburg, Pretoria and Port Elizabeth. These cities were selected as they are home to the majority of women of mixed ancestral descent (Statistics SA, 2001). Data was collected from women attending Maternal Obstetric Units (MOU’s) for antenatal care. The clinics included in the sample were those clinics that predominantly provided care to women of mixed ancestral descent. A list of all such clinics in the four cities was obtained from the health care authorities in each province.

A power calculation had shown that a sample size of 800 was required to detect the previously established smoking prevalence at 47% (Steyn at al, 1997), and to ensure a 95% confidence level that the sample estimate would be similar to that of the study population. The sampling frame for the cross-sectional study is presented in Table 5.

Table 5. The sampling frame for the cross-sectional survey

<table>
<thead>
<tr>
<th>City</th>
<th>Number of clinics predominantly visited by women of mixed ancestral descent</th>
<th>Total sample of women per city</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cape Town</td>
<td>18</td>
<td>500</td>
</tr>
<tr>
<td>Kimberley</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Port Elizabeth</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Johannesburg and Pretoria</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Total Sample</td>
<td>29</td>
<td>800</td>
</tr>
</tbody>
</table>

To determine the number of women per clinic, a proportionate sample was used. For each clinic the total number of patients per week determined how many women from that clinic would be included. The sample size per clinic also determined the frequency with which clinics were visited, for example clinics with a high patient-turnover were visited on several occasions while smaller clinics were visited only once. An attempt was made to select women by utilising a systematic random sampling approach, by either selecting women from the waiting room or selecting them from the folders, which were placed in the administration room as women arrived at the clinic. Random selection from the waiting room was complicated in the sense that some clinics were overcrowded and women stood around inside and outside the clinic. Random selection from the clinic folder was also challenged by midwife’s unwillingness to change their routines to accommodate the need of the research team. The most efficient way of selecting women thus became to invite groups of women to a private room specifically prepared for data collection. The fieldworkers briefly explained the nature of the study to women, how women would be selected and what would be expected of them.
Once women agreed to complete the survey, the study was explained in more detail and a written consent form was completed. After that the consenting women were asked to fill the questionnaire while they were waiting to be seen by the midwife or doctor. After completion of the questionnaire women received an incentive, which included baby products and one of the field workers checked whether all parts of the survey were completed correctly. Consequently, the respondents constitute a volunteer sample of women attending antenatal clinics. Although the questionnaire was self-administered four trained fieldworkers were present in the room at all times to attend to queries women may have. Table 6 summarises and justifies the inclusion criteria for the study.

Table 6. Justification of the inclusion criteria used in the survey.

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women of mixed ancestral descent</td>
<td>High smoking rates among this group</td>
</tr>
<tr>
<td>First antenatal visit for current pregnancy</td>
<td>All women participating should have received the same amount of information</td>
</tr>
<tr>
<td>16 years of age or older</td>
<td>According to South African laws pregnant girls younger than 16 are referred</td>
</tr>
<tr>
<td>Positive pregnancy test</td>
<td>Women sometimes visit the clinic to have a pregnancy test. To avoid</td>
</tr>
<tr>
<td>HIV negative</td>
<td>Only women who tested negative for HIV were included. Women were tested for</td>
</tr>
<tr>
<td>Less than 28 weeks of pregnancy</td>
<td>Women too far into the pregnancy may already have changed their smoking</td>
</tr>
</tbody>
</table>

The questionnaire had been developed, based in part on the findings from an in-depth interview study previously conducted among the target population (Van Lieshout, 2001). That study had indicated poor knowledge of the potential effects of smoking on the foetus and that most women cut down on their smoking rather than quit completely. The informants had also revealed challenges in the relationship between pregnant women and clinic staff and given some ideas of possible future intervention programmes. A workshop with midwives and experienced quantitative researchers had been conducted in order to formulate additional suitable questions to determine smoking related knowledge and beliefs of disadvantaged pregnant women. Participants were also asked to report on their alcohol and drug use. An important part of the questionnaire aimed to group women according to their stage of behaviour change. The questionnaire also included questions on women’s views about clinic services and their preferences for intervention methods and materials.
The questionnaire was piloted amongst twenty-five women attending antenatal clinics at two pilot sites, one antenatal clinic and high risk clinic at a hospital.

All questionnaires were coded by the fieldworkers. The data were entered into a database (SAS computer software) and cleaned by checking for outliers and inconsistencies. Univariate analysis was done using SAS version 8.2. To provide descriptive statistical information two-by-two tables were constructed and subjected to chi-squared tests.

Barriers and promoting factors to smoking cessation (Papers I and II)

Data sources and analysis

The questionnaire described above included both closed and open-ended questions to allow women to express further their attitudes to smoking cessation. All the open-ended responses to the survey questionnaire were coded and coding lists were created. Figure 4 illustrates the order in which questions were posed to establish women’s attitudes towards smoking and the factors they perceived as either barriers or promoting factors for quitting.

![Figure 4. Focus areas for exploring barriers and promoting factors to smoking cessation.](image-url)
The results from the survey gave rise to further questions leading to the development of a qualitative interview study focussing specifically on the relationship between the pregnant women and the midwives. An important question was to explore the barriers to honest disclosure of smoking status that the survey data had revealed.

The qualitative study was based on a Grounded Theory approach aiming at the construction of a theory through coding, categorising, defining and interpreting phenomena. It was seen as an ideal way of understanding the relationship between midwives and pregnant women (Dahlgren et al, 2004). The methodology builds on continuous interaction with the target group and acquiring information also about their social context, as well as the clinic setting (Lincoln & Guba, 1985; Glesne & Peshkin, 1992). Performing in-depth qualitative interviews meant that the researcher entered the field on a regular basis to become familiar with the clinic operation and the dynamics of the relationship between pregnant women and midwives.

Informants were pregnant women of mixed ancestry decent living in communities with high smoking rates. Women were recruited from three public sector antenatal clinics situated within their community. Only women who were smoking at the time of recruitment or who had very recently quit were approached for participation.

Purposive sampling was used where a tentative analysis of the first interview set the grounds for selection of consecutive candidates to be interviewed. The study aimed at maximum variation sampling in order to capture the views of women at different stages of behavioural change, degrees of smoking, ages and marital status.

All interviews were conducted by the same interviewer (the author of this thesis), in either English or Afrikaans, depending on the home language of the participant. With the help of a clinic nurse, women who smoked or had quit were approached in the waiting room in a discreet manner. The nature of the study and the interviews were briefly explained to women and permission to interview them were sought. Once women agreed to be interviewed they were given an information sheet explaining the study in detail, as well as a written consent form. The interviews took place in a separate, private room in the clinic. Interviews were tape-recorded and the duration of each ranged from 45 minutes to one hour. On the first day of data collection only one interview was conducted and immediately transcribed. The second interview, the characteristics of the 2nd participant, the mode of interview and the questions to be asked, were a result of the analysis outcome of the first interview. After this interview and its analysis, three interviews were conducted; interviewing was again halted to allow for analysis and reflection. This process was repeated until saturation was reached (see Figure 5).
Grounded Theory as an analytical approach was developed by Glaser and Strauss to study the social processes involved in the interaction between individuals or groups and their environment (Glaser, 2001; Dahlgren et al, 2004; Dew, 2007). The approach consists of a set of steps that includes: open coding, axial coding, selective coding and the development of categories and one or more core categories. The ultimate aim is to link categories in such a way that a more abstract theory is developed to describe the phenomenon or process under study (Strauss & Corbin, 1990). The study resulted in a model that described the dynamics of the midwife-patient relationship and the consequences of the existing relationship for transparency and positive behaviour change. Table 7 gives an example of the analytical procedure moving from text, via open codes to categories.

Table 7. The analytical process.

<table>
<thead>
<tr>
<th>Excerpt from interviews</th>
<th>Open/substantive codes</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>The nurses are nice to me. They never say anything rude, they basically just look at the folder, tell you to stop and out you go. We don't talk much, I just listen. But she was very upset when I said that I started smoking again. She said 'you people don't know how much you are harming your babies, what are you thinking each time you light a cigarette?' Next time I'll just say that I have quit or that i have cut down.</td>
<td>Unapproachable, One-way communication, Reprimanding, Objectifying</td>
<td>Didactic caregiver, Lack of transparency, Concealing truth, Fear being judged</td>
</tr>
</tbody>
</table>

Figure 5. The Grounded Theory approach to data collection and analysis.
METHODS

Women’s attitudes and perceptions of the intervention
(Papers III and IV)

Data sources and analysis
The qualitative evaluation was based on interviews and focus group discussions with women attending the clinics involved in the intervention. The first study (Paper III) included in-depth interviews with the pregnant women about their experience participating in the intervention. To ensure purposive sampling for maximum variation of ‘ideal candidates’ to be interviewed the main researcher worked closely with the peer counsellors. They had great insight about women’s behaviour change, family setup and social circumstances, as well as on concomitant drug/alcohol use, all of which were seen as influencing behaviour change. By continuously informing peer counsellors of the ‘types’ of informant needed they facilitated the sampling process. In total thirteen women were interviewed at their first antenatal visit. After informing women of the nature of the study and providing them with detailed written information, permission was sought in writing by means of a consent form. Interviews were mostly conducted in Afrikaans, the mother tongue of most of the women interviewed.

The same study participants were interviewed at two points in time. The first research contact was at their first antenatal visit, which also marked the first time they were exposed to the intervention. The follow-up interviews took place in either the last trimester or shortly after delivering their babies. This was to ensure that the women had been exposed to the intervention on several occasions. Three women could not be reached for a second interview as they had moved away and could not be traced. All interviews were performed by the same interviewer (the author of this thesis). The initial interviews took place at the antenatal clinics shortly after being approached for participation. Most of the follow-up interviews took place in the participant’s home, as this was more convenient for women in their last trimester or for those with new-born babies. Table 8 gives a summary of the content areas covered in the initial and follow-up interviews.

Table 8. Content areas for the initial and follow-up interviews.

<table>
<thead>
<tr>
<th>Initial interviews</th>
<th>Follow-up interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Views about smoking and quitting</td>
<td>• Changes in views about smoking and quitting</td>
</tr>
<tr>
<td>• Smoking use in the community</td>
<td>• Changes in knowledge about smoking and quitting</td>
</tr>
<tr>
<td>• Knowledge about smoking and quitting</td>
<td>• Changes in feelings about smoking and quitting</td>
</tr>
<tr>
<td>• Specific knowledge about effects of smoking</td>
<td>• Actual behavioural change</td>
</tr>
<tr>
<td>• Attitudes towards antenatal clinic services and midwives</td>
<td>• Changes in attitudes towards antenatal staff</td>
</tr>
<tr>
<td>• Feelings about smoking and self-efficacy to quit</td>
<td>• Views of the intervention and its role in behaviour change.</td>
</tr>
<tr>
<td>• Initial responses to intervention</td>
<td></td>
</tr>
</tbody>
</table>
The interview data were analyzed using a content analysis approach aiming at understanding the meaning that the intervention had to the exposed women. An important characteristic of qualitative Content Analysis is that the method focuses on manifest as well as the latent content of communication (Graneheim & Lundman, 2004). The categories describe what is in the text (what women are saying), while the themes represent the interpretation of the underlying meaning of, in this case, women’s perceptions of the intervention. All interviews were coded by two researchers, and the final themes were developed an agreed upon by the whole research team involved in this specific study. An example of the analytical process is given in Table 9.

<table>
<thead>
<tr>
<th>Theme</th>
<th>A shift in communication style</th>
<th>Experiencing the benefits of openness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Feeling valued and respected</td>
<td>Concerns and fears acknowledged</td>
</tr>
<tr>
<td>Sub-categories</td>
<td>_</td>
<td>_</td>
</tr>
<tr>
<td>Codes</td>
<td>Own responsibility, own choice, proud about quitting meth</td>
<td>Acknowledging difficulty, quitting is difficult, uncertainty, fear relapse</td>
</tr>
</tbody>
</table>

The second study (Paper IV), was based on focus group discussions and explored more in detail how each intervention component had worked, how it could be improved and women's ideas of future smoking cessation interventions at antenatal clinics.

The purpose of the sampling process was to reach both those women who were still smokers and those who had decided to quit after being exposed to the intervention. The peer counsellors also facilitated this sampling process since they were well informed about the social and behavioural characteristics of the women.

In total eight focus groups discussions were performed with homogenous groups in terms of smoking status, four groups of smokers and four groups of quitters. All groups were moderated by the author of this thesis and assisted, in some of the discussions, by one co-moderator belonging to the research team. The data collection period lasted three and half months. The first focus group was conducted at the antenatal clinic, however to increase privacy and confidentiality, the remaining seven focus group discussions were conducted at the researcher’s place of work. The focus group was structured using visual prompts (Table 10), in the forms of pictures with different scenes depicting smoking issues at home, in the community and the clinic.
Table 10. Visual Prompts used in the focus group discussions.

<table>
<thead>
<tr>
<th>Discussion area</th>
<th>Prompts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes to smoking</td>
<td>• 3 pictures:</td>
</tr>
<tr>
<td></td>
<td>• A nightclub where everyone smokes</td>
</tr>
<tr>
<td></td>
<td>• A grandfather smoking with a child on his lap</td>
</tr>
<tr>
<td></td>
<td>• A park with young and old walking, with smoking signs in the background</td>
</tr>
<tr>
<td>Views about the antenatal visit in relation to</td>
<td>• 2 pictures:</td>
</tr>
<tr>
<td>smoking counselling</td>
<td>• A midwife sitting at a desk and loads of paperwork between her and the client, and a fearful woman on the other side of the table.</td>
</tr>
<tr>
<td></td>
<td>• A midwife, smiling, making eye contact and actively engaging with the woman</td>
</tr>
<tr>
<td>Views about the printed material</td>
<td>• The newspaper for the pregnant woman</td>
</tr>
<tr>
<td></td>
<td>• The newspaper for the family</td>
</tr>
<tr>
<td></td>
<td>• The Quitguide</td>
</tr>
</tbody>
</table>

Data for this study was also analysed using a content analysis approach described earlier (Graneheim & Lundman, 2004). However, this time the focus of the analysis was on the role of each of the components with an overall theme embracing the role of the intervention as a whole.

Ethical considerations

Permission to conduct the research was formally obtained from the Research Ethics Committee of the University of Cape Town’s Health Sciences Faculty. Permission was also granted by the provincial directors of health, the clinic superintendants at all antenatal clinics involved in the project. Midwives and doctors in charge at each antenatal clinic were consulted regarding the dates and nature of the fieldwork. Inclusion criteria for all the participants were carefully explained to all the antenatal staff involved in the study. Informed written consent was obtained from all the pregnant women and midwives interviewed and all information were treated as confidential. The consent forms and all research material were made available in both English and Afrikaans.

To inform the community about the outcomes of the research and the pilot intervention, a Research day was held at the two biggest antenatal clinics and participants and antenatal staff was formally invited to the event. The focus was on reporting back study results to the community but participants were also offered free health testing and counselling.

All the research and intervention materials have continuously been made available to stakeholders who also have been consulted throughout the data collection and intervention period. Stakeholders to the study included; pregnant women and midwives at the selected clinics, local clinics (Midwife Obstetric Units), department of Health, provincial departments of health and the Medical Research Council.
Results

What influenced women’s readiness to change? (Paper I)

Studies prior to the cross-sectional survey conducted in 2002 had shown that disadvantaged women of mixed ancestral descent had high smoking rates. Hospital studies also alluded to the fact that women of mixed ancestral descent did not stop smoking during pregnancy. The cross-sectional survey was conducted to allow for a detailed examination of the smoking habits of pregnant women in this specific group across five cities of South Africa.

Out of the 802 women who were approached at the antenatal clinics, 796 women completed the questionnaire, reaching a response rate of 99.3%. Women were identified as smokers, quitters or non-smokers. Figure 6 gives a break-down of the sample according to their self reported smoking status.

![Figure 6. Smoking status of disadvantaged women attending public sector antenatal clinics (N=796).](image)

Using Prochaska and DiClemente’s stages of change model (DiClemente et al, 2000), we could differentiate stage of behavioural change among smokers and quitters. As seen from Table 11 we observed that one third of the smokers had no intention to quit at their first antenatal visit (when the questionnaire was completed), while more than one third said that they intended to quit. Many had already tried quitting and were preparing to quit completely within a month from the interview. A significant proportion of the quitters had stopped smoking more than 6 months prior to their first antenatal visit and many of them had not smoked at all for more than 6 months. This implies that the majority of quitters had stopped smoking long before the pregnancy and that their quitting had little to do with being pregnant or having planned a baby. In this sample of pregnant women, few women had quit during this pregnancy.
### Table 11. Smoking pattern according to stage of change theory (N=482).

<table>
<thead>
<tr>
<th>Stage of behavioural change</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-contemplation (no intention to quit)</td>
<td>103</td>
<td>21.4</td>
</tr>
<tr>
<td>Contemplation (intention to quit within 6 months from interview)</td>
<td>132</td>
<td>27.3</td>
</tr>
<tr>
<td>Preparation (intention to quit within 1 month of interview and at least 1 attempt have been made)</td>
<td>130</td>
<td>27</td>
</tr>
<tr>
<td>Action (not having smoked for at least 6 months)</td>
<td>45</td>
<td>9.3</td>
</tr>
<tr>
<td>Maintenance (not having smoked for more than 6 months)</td>
<td>72</td>
<td>15</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>482</td>
<td>100</td>
</tr>
</tbody>
</table>

In order to understand the smoking practices of this group of women, questions were asked about some background and behavioural characteristics. Table 12 shows a comparison between smokers, quitters and non-smokers. As seen the mean age for all three groups was similar. Quitters and non-smokers had a higher proportion (59.5% and 59.9% respectively) of present partners than women who smoked (56.8%). A significantly higher proportion of non-smokers and quitters than smokers had education beyond primary school (7 years of education), as nearly half of the smoking sample had completed only primary school level. Significantly fewer smokers than quitters and non-smokers had planned their pregnancies. The highest proportion of women who were financially supported by partners was among the quitting group. Although a small proportion of women reported to be non-drinkers at the time the survey was administered, significantly more smokers than quitters and non-smokers were current drinkers. Significantly more smokers than quitters and non-smokers were also classified as problem drinkers according to the CAGE questionnaire, which is a widely used screening tool for problem drinking (Kitchens, 1994).
Results

Table 12. A comparison of the socio-demographic characteristics of smokers, quitters and non-smokers

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Smokers n=365</th>
<th>Quitters n=117</th>
<th>Non-smokers n=314</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean maternal age in years (SD)</td>
<td>24.9 (6.2)</td>
<td>24.8 (6.7)</td>
<td>25.3 (6.1)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/living together</td>
<td>56.8</td>
<td>59.5</td>
<td>59.9</td>
</tr>
<tr>
<td>Unmarried</td>
<td>43.2</td>
<td>40.5</td>
<td>40.1</td>
</tr>
<tr>
<td>Level of education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal education</td>
<td>0.3</td>
<td>1.7</td>
<td>0.3</td>
</tr>
<tr>
<td>Completed 7 years of education</td>
<td>48.9</td>
<td>30.8</td>
<td>28.3</td>
</tr>
<tr>
<td>Completed 12 years of education</td>
<td>50.8</td>
<td>67.5</td>
<td>71.4</td>
</tr>
<tr>
<td>Planned pregnancies</td>
<td>43.0</td>
<td>58.1</td>
<td>53.5</td>
</tr>
<tr>
<td>Current pregnancy no.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st pregnancy</td>
<td>34.6</td>
<td>41.4</td>
<td>44.6</td>
</tr>
<tr>
<td>Subsequent pregnancies</td>
<td>65.4</td>
<td>58.6</td>
<td>55.4</td>
</tr>
<tr>
<td>% Current drinkers</td>
<td>13.2</td>
<td>6.0</td>
<td>6.1</td>
</tr>
<tr>
<td>CAGE positive women (problem drinkers)</td>
<td>11.0</td>
<td>4.3</td>
<td>4.5</td>
</tr>
</tbody>
</table>

As illustrated in Figure 7 a high proportion of women reported to have insufficient knowledge about smoking and quitting. Yet only 55% of the women said that they were willing to talk to the midwife about smoking even though a high proportion had reported that they had confidence in the midwife.

Figure 7. Smokers perceptions regarding smoking and the role of midwives as facilitators for smoking cessation.
Table 13 indicates women’s preferred methods for smoking cessation interventions. Women chose intervention methods that included social interaction over others highlighting a need to talk about their addiction. Using only simple pamphlets were regarded the least popular intervention method.

<table>
<thead>
<tr>
<th>EFFECTIVE intervention methods</th>
<th>Smokers N=365 %</th>
<th>Quitters N=117 %</th>
<th>Non-smokers N=31 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pamphlets</td>
<td>19.8</td>
<td>22.9</td>
<td>31.5</td>
</tr>
<tr>
<td>Talks by female quitters</td>
<td>44.4</td>
<td>48.6</td>
<td>49.6</td>
</tr>
<tr>
<td>Video on smoking</td>
<td>45.3</td>
<td>50.5</td>
<td>49.6</td>
</tr>
<tr>
<td>Group counselling with midwife</td>
<td>38.0</td>
<td>46.8</td>
<td>53.8</td>
</tr>
<tr>
<td>Individual midwife counselling</td>
<td>46.5</td>
<td>48.2</td>
<td>53.1</td>
</tr>
<tr>
<td>Support groups</td>
<td>58.4</td>
<td>60.5</td>
<td>65.4</td>
</tr>
</tbody>
</table>

What were the main barriers and promoting factors for smoking cessation? (Papers I & II)

The most common barriers found in the cross-sectional study presented earlier included; unplanned and unsupported pregnancies (see Table 12), lack of specific knowledge regarding the harm caused by smoking, and lack of time to speak to the midwife (see Figure 7). These barriers were further explored in the in-depth interviews with pregnant women where their views on smoking and quitting and their perceived possibilities for behaviour change were explored. The main outcomes focused on their feelings about the current situation but also included their perceptions about an ideal antenatal care.

The *unworthy woman*

The qualitative analysis resulted in one core category “the unworthy woman” which described how the overall current pre-intervention situation was perceived by the women. They felt that they were neither seen nor heard which led to lack of communication and trust. Figure 8 gives an overview of the categories supporting the core category, described further below.
• Conflicting social and medical expectations
For the women interviewed there existed a struggle between what they believed they could accomplish and cope with and what others expected them to do regarding smoking. From a personal perspective women felt that partners and family members did very little to support them in their efforts to stop smoking. Women expected close relatives to help, either by being sensitive to their attempts to change their behaviour or by quitting themselves. They also perceived the counselling offered by the midwives, and sometimes the doctors, as prescriptive and judgemental and therefore they did not feel encouraged or supported to quit smoking.

• Limited personal capabilities
Consequently women in this group had a low self-efficacy to change their smoking behaviour. Women battled with their own need to satisfy “significant others” in their lives, and the health care staff. This created anxiety when thinking about quitting, both at home as well as when they attended the clinic for antenatal visits. All the women interviewed reported that they were not offered any tools to change their behaviour.
• Didactic caregivers
Women described their relationship with the midwife as a one-way conversation where the midwife did all the talking. Some women accepted this as the rule and were unaware that they in fact had the right to give their opinions. Most women reported to never have asked the midwife any questions other than whether they were pregnant or not, how far the pregnancy had proceeded and when the baby was due. All other queries were either directed to the clerk or to other pregnant women in the waiting room. When asking women why this was the case they all said that they felt nervous with the midwife, that they did not want to waste her time and that there was in fact very little time for them to ask questions after the midwife had spoken and examined them.

• Lack of transparency and trust
All informants reported that they had never been entirely open with the midwife, neither during the first antenatal visit nor the follow-up visits. Women either hid the fact that they were smoking (as well as drinking and other drug use) or they were not accurate about their daily consumption. Even those who had managed to quit reported that they had not told the midwife the truth at the first antenatal booking. They did not feel that the midwife actually had a real interest in what they had to say. The women reported that ‘they told the midwife ‘what she wanted to hear’.

The dream of becoming visible
Since the women were painting a picture of what was lacking today in the relationship with the antenatal care their descriptions of the ideal situation became the opposite, i.e. what they wanted was to become worthy and visible. The prerequisites for that would be to be met with congruent medical and social expectations, to be counselled by a supportive caregiver that would enhance their personal capabilities which in turn would lead to increased transparency and trust.

They expressed a need for a midwife that would guide them through quitting or at the least provides tools for quitting before judging them. Women also felt disheartened by the lack of interest in ‘them’ as persons since the midwives focussed predominantly on the baby. They would like to see this change. The social context was also acknowledged with an emphasis on how the anxiousness about quitting would decrease if their partners and other families understood how hard it is to quit and were involved in supporting them to quit smoking. This would allow for greater transparency in the midwife-client relationship as women would feel that they had an important role to play in their home, in the consultation room and in the health of their unborn babies.
How did pregnant women experience the intervention? (Papers III & IV)

In both the in-depth and focus group discussions women talked about smoking as a social problem. Smoking was described as the norm in their community and they had little confidence that anything could be done to change the mindset of people. Prior to the intervention the women had very little faith that a smoking cessation intervention could be effective and this belief was based on their experience of smoking laws that are not implemented, smoking restrictions that are not adhered to and information from health care providers that nobody listened to. Women also reported battling with the expectation of others to quit, without receiving any concrete help from midwives or their family and partners. This was in line with the results presented in Paper II that emphasised the difficulty of the ‘unworthy woman’ to quit. In the focus group discussions women also talked about their addiction to other drugs, such as methamphetamine, and how they struggled to deal with and overcome such addiction on their own. Methamphetamine is the most common drug among this population (Plüddeman et al, 2010). Thus, much of the impact of the intervention was related to this social context.

The in-depth interviews (Paper III) allowed women to discuss and reflect on their own experiences of dealing with the problem of smoking and other addictions. Throughout the intervention phase it became evident that women started to questioning the norms related to smoking, alcohol and drug use in their community. Figure 9 summarises the most important findings related to the process of change that women exposed to the intervention had undergone.
Paper III showed that a multifaceted smoking intervention programme can increase intentions to quit. Providing educational material appropriate to women’s stage of change and their social context and offering continuous social support allowed women to start questioning the normative smoking behaviour prevailing in their community. Questioning and seeking new answers enabled optimal use of the antenatal counselling sessions. The additional benefit of being “seen” and “heard” also had the potential of increasing confidence in dealing with other types of addictions. The most significant finding of this study is captured in the last theme illustrating a transformation from feeling a sense of hopelessness about quitting to feeling competent to change behaviour.

The above finding is also supported by the main findings of Paper IV where focus group discussions conducted towards the end of the intervention phase explored further the significant role of the different components of the intervention as illustrated in Figure 10.

![Figure 10. The joint role of the intervention components as well as it’s separate contributions to change.](image-url)
The core theme “making identification with change possible” refers to the capacity of each of the components to relate directly to the targeted women’s lives. They could identify with the impulse for change they got to reflect on the smoking behaviours just by being asked in a respectful manner about smoking by the midwife, they recognized themselves in the stories told in the newspaper, which became a visible reminder both for themselves and their families, they could identify with the difficulties of quitting smoking described in the quit guide but they could also envisage themselves as managing to follow the recipe through the support of a compassionate peer counsellor. For the first time these women felt that a concerted effort had been made to deal with the problem of smoking during pregnancy and related drug use and this made them feel strong.
Methodological considerations

The value of information depends on its trustworthiness and it is argued that the validity of the information will be greater if quantitative and qualitative approaches to data collection and data analysis are combined (Marsland et al, 2004). The four important dimensions of trustworthiness can be found in both qualitative and quantitative research methods, though often referred to differently. Internal validity or Credibility refer to our confidence in the “truth” of the findings and whether the study measured what it intended to measure. External validity or Transferability determine whether we can apply the findings to other groups of people or settings. Reliability or Dependability involve the question of whether findings will be the same if the same questions are posed in similar contexts while Objectivity or Confirmability refer to our certainty that the findings have been determined by the data collected, rather than by pre-existing knowledge, biases, motivations or pre-understandings of the researchers (Kolbe & Burnett, 1991; Madill et al, 2000).

The quantitative survey (Paper I) was conducted to confirm known high smoking rates in the target population but also to investigate the determinants for continued smoking. The questionnaire used was developed especially for women attending antenatal clinics and was based on initial in-depth interviews with a small sample of pregnant women, midwives and doctors. To increase the reliability the questionnaire, it was piloted several times to ensure that all questions are understandable. It was translated into Afrikaans (the predominant language spoken by the target population) from English and back translated into English to ensure consistency between the Afrikaans and English versions. The questionnaire was self-administered, but trained fieldworkers were present to support the women in completing the questionnaire by clarifying any uncertainties that they experienced. The sample size calculations for the survey was based on smoking prevalence figures previously recorded in pregnant women of mixed ancestral decent (Steyn et al, 1997). As described in the method section it was proportional to the number of pregnant patients seen per clinic in order to approximate a representative sample of these women in the cities studied as closely as possible. However since it was not possible to draw a completely random sample of pregnant women in each clinic the representivity of the sample is slightly reduced.

For the qualitative studies credibility was strived for through a prolonged engagement with the study settings and the participants. Triangulation of data sources is another technique to ensure credibility. In addition to in-depth interviews and focus group discussions with pregnant women the researcher had also been involved in interviews with midwives and spent much time at all the antenatal clinics observing both pregnant women and midwives. Triangulation in investigators meant that several investigators with different competence were involved both in data collection and analysis. Though one interviewer conducted most of the interviews and the focus group discussions other researchers involved in the study assisted with the analysis. Peer debriefing also took place where the team of researchers met to discuss and work on the preliminary interpretation of the data. This allowed for input and comments...
from both those familiar to the study and the target population and those representing more of an outsider view.

The issue of transferability was handled through keeping an audit trail of the data collection and the analytical process. In the papers this is presented by indicating how the analysis progressed from text, via coding and eventually to categories, a core category or themes. A system of record-keeping was adhered to, where all open codes, observations, notes and summaries of analysis were kept to allow other researchers to be able to follow the trail.

Being aware of one’s bias and pre-understanding is essential for the confirmability of any study. In qualitative studies it may be difficult to leave out your pre-understanding of the problem as well as the social context. In this study efforts were made to ‘bracket’ this pre-understanding by being aware of it, acknowledging that it does affect the research questions but trying to put it aside especially during data collection.

For the two qualitative studies that were part of the process evaluation (Papers III and IV) the peer councillors assisted the researcher to identify women both for in-depth interviews and focus group discussions. Through the emergent design of qualitative studies (data collection and preliminary analysis taking part in parallel) efforts were made to avoid that this meant having women overly positive towards the intervention as informants.
Discussion

The need for cessation programmes and the potential power it has in improving the lives of smokers and those exposed to the danger of smoking is best described by the following quote; “Cessation programs change individual lives, reshape social norms and community values, and foster a world where children are less likely to casually experiment with cigarettes and where adults gain confidence in their ability to quit.” (Shafey et al, 2009 p.80). This thesis highlights the need of specifically designed interventions for disadvantaged women with limited education and particular risks of indulging in addictive risk behaviours. Prevailing antenatal counselling methods in the South African context have failed thus far to address the high smoking rates among this group of women by means of smoking cessation programmes. The studies provide an understanding of the smoking trends of women of mixed ancestral origin and indicate possible determinants of smoking habits. Most importantly the thesis explores how an intervention driven by Prochaska and DiClemente’s stage of change theory, and a person-centred approach based on best practice guidelines for smoking cessation counselling is perceived by the participating women themselves.

Stages of behavioural change

The quantitative survey (Paper I) showed that one third (27.5%) of the pregnant women were in the contemplation stage during their first trimester. During the first antenatal booking, many of these women merely needed a confirmation of the pregnancy before making a decision to stop smoking. An almost even percentage of women (27%) reported to be in the preparation stage and had already made quit attempts. However, a large number of women (21%) had no intention to quit. For these women, smoking during pregnancy was a sensitive issue and needed to be dealt with in a manner that made quitting appealing and within reach. It became obvious that the initial antenatal visits were crucial to make women of all stages of behavioural change aware of the long-term benefits of quitting for themselves, their unborn and their immediate family.

Showing that so many women were in the contemplation or a preparation stage had implications for designing the intervention components. It illustrated the need to include intervention materials designed to fit the large number of women who had a strong desire to quit and who may already have made quit attempts. The survey data also showed that women had generalised knowledge that smoking in pregnancy was unhealthy, but that they did not understand the magnitude of the risk for themselves, their pregnancy or their babies. The qualitative follow-up study (Paper II) further emphasised the lack of trust in the clinic system that the women felt. A one-way relationship between midwives and pregnant women resulted in lack of transparency and a reluctance to disclose information about smoking as well as other addictions. It became obvious that the antenatal care would have to make efforts to ensure that women with an intention to quit did not go through the clinic system unnoticed,
that they get the support they needed, and that women in the preparation stage be encouraged and supported to make a decisive choice to quit and to remain quitters throughout and after the pregnancy. Any intervention at the antenatal clinics would also need to avoid overlooking those women with no intention to quit, either because they are not open about their smoking habits at the initial visit or because they are not followed up effectively. These women would need to be informed about the harm of smoking and the benefits of quitting in a supportive and non-judgemental manner.

The studies clearly indicated that antenatal staff in general has very limited knowledge of the implications of stages of behavioural change for their work with smoking cessation during pregnancy. They had been thought to practice a uniform counselling approach regardless of their levels of knowledge about smoking and how heavily they smoked. A recent Cochrane Review that included 41 trials to investigate the effectiveness of designing interventions for smoking cessation during pregnancy specifically based on women’s stage of change have given inconclusive results (Cahill et al, 2010). Four of the trials compared the same intervention, one arm being stage-based and the other being similar in all aspects except not being stage-based and showed no increase in effectiveness in the stage-based interventions. Eighteen trials compared a stage-based intervention with normal care found better success rate among the stage-based intervention group. Thirteen trials compared stage-based individual counselling with interventions not taking stages of change in account showed similar success rates for both groups. In short, the review showed that stage-based interventions are not necessarily more successful than interventions not stage based, however intervening in some way is better than routine care. The review proposes more research into stage-based interventions and highlights the need for pregnancy specific interventions as opposed to routine care. The authors see pregnancy as the ideal time for smoking cessation as it offers a window of opportunity due to concerns of the double burden of disease (harm to the mother and the unborn baby).

The studies in this thesis used a stage based approach but did not specifically evaluate its role in comparison to other types of approaches. However, the results clearly indicate that the women appreciated that their personal situation with regard to their preparedness to change was considered. It also indicated the even those women that were in the pre-contemplation stage (no intention to quit) were prone to reflect on their smoking behaviour by being informed about the health benefits of quitting rather than being given a quit date when they had not even considered quitting. Similarly, midwives became more confident about the positive impact they might have on women who smoked since they knew how to approach women at different stages of behavioural change, it also illustrates how women become confident and empowered to talk about their reality and seek help for their addictions. By revealing their problems to the peer counsellor women started to; acknowledge their true feelings; put their lives into perspective; restructure their thinking about smoking and pregnancy; started to try to solve their own problems; communicate
their concerns and frustrations, and made efforts change their smoking behaviour as well as influence their “significant others” to facilitate quitting.

A person-centred approach

All studies included in this thesis pointed to the need of a person-centred intervention to be instituted at public sector antenatal clinics serving women with high smoking rates. The first two papers highlighted the shortcomings at the antenatal clinics with regards to effective counselling methods and a lack of priority to the plight of many heavy smokers. These two papers recommended the introduction of guidelines to assist midwives in their counselling efforts. Midwives were seen as having an important role to play in smoking cessation counselling along with the clinical antenatal care that they provide. The majority of women preferred interventions with a social support component, even if the availability of the midwives to facilitate such time consuming care was questionable in the minds of the pregnant women. This led to the selection of the 5 A’s Smoking Cessation Clinical Practice Guideline as the basis of the planned intervention (Fiore, 2000). This guideline, which was adapted for the use with pregnant women by the American College on Obstetricians and Gynaecologists, is currently regarded as the best practice for brief cessation counselling by antenatal staff (ACOG, 2001). This was regarded as being within the scope of the duties of the antenatal staff, and after training and piloting it was found that the brief intervention could be delivered in as little as 5 minutes.

The qualitative process evaluation (Papers III and IV) illustrated how the 5A guideline was used by the staff and with the women selected for the qualitative interviews. The quantitative outcome evaluation (Everett-Murphy et al, 2010b) confirmed these results by showing that the midwives consistently delivered the first two steps of the guideline before referring women to the trained peer counselor, who had more time to assess the situation for each pregnant woman. The use of the 5 A´s was complemented by training the midwives and the peer counsellors in brief Motivational Interviewing (Miller et al, 1992; Miller & Rollnick, 2002). Implementing this non confrontational person-centred approach in the area of smoking during pregnancy contributed to the change in attitudes of the midwives described by the pregnant women. A recent review investigating the effectiveness of MI for smoking cessation, indicated that interventions that adopt the MI approach can be effective (Fiore et al, 2007; Heckman et al, 2010). A central concept of Motivational Interviewing is the person’s right to autonomy and respect for his or hers ideas and opinions while the counselor at the same time shows an interest in the persons situation evoking ideas and own reasons for change. This is in line with a Swedish study exploring pregnant and post-pregnant women’s ways of making sense of pregnancy smoking. The paper concluded that there is a need for health education to move away from information transfer to information exchange. The study shows that, exploring a woman’s ‘story type’ places the counsellor in a better position to support her appropriately and at the
same time increases her self-esteem (Abrahamsson et al, 2005). A ‘story types’ refers to the way in which a woman makes sense of smoking during pregnancy, depending on her knowledge, concerns, rationalizations and prejudices. Such a shift in attitude and process has been described by Byrne et al (2006) after having trained UK nurse staff to use Motivational Interviewing to address sexual health issues.

The qualitative process evaluation also highlighted the important role that the stage-specific educational material had for a person centred approach. The women described how the newsletter and the quit guide became important also to motivate partners, family and friends to quit smoking just by laying around in the house. Several studies have shown the impact that the habits and attitudes of peers and close family have on the smoking pregnant women’s possibility to quit (Bottorff et al, 2005; Koshy et al, 2010). Smoking is often described as a social activity that in a partnership often become a couple specific activity. The educational material thus provided a concrete tool for the pregnant women to increase awareness of the risk of smoking and benefits from quitting among her significant others and her close environment. This is in line with other studies that have illustrated the beneficial effects of combining different types of interventions that in different ways try to illustrate the change cycle that people go through when trying to quit smoking. Thus, our results are supported by the New Zealand Guidelines for smoking cessation (National Advisory Committee on Health and Disability, 2002 p.3) that conclude that ‘success in quitting smoking depends less on any specific type of intervention than on delivering personalised empathic smoking cessation advice.’

Others have emphasised the need for developing culturally appropriate interventions designed for specific populations. Kreuter et al (2003) for example showed that tailored health messages stimulate greater cognitive activity when people are trying to change behaviour. Success in positive behaviour change could be achieved by doing research on the social and cultural effects on tobacco use when designing and implementing interventions and policies (Nichter et al 2010b). Due to the complexity of quitting during pregnancy we need to have a deeper understanding of the reasons women smoke and the meanings they attach to quitting, and culturally appropriate intervention methods could facilitate such an understanding (Nichter, 2006). Thus, intervention methods (educational material or counselling) are more effective when they are relevant to the target group. In this specific intervention the peer counsellor was by far the most preferred, and a crucial component of the intervention. This can be seen as a direct result of the personalised stance peer counsellors took in advising them about the harms of smoking, assisting them and arranging for follow-up visits. Some only needed encouragement to become quitters while others needed more step-by-step assistance to quit or cut down their smoking dramatically. Overall it was women’s appreciation of being involved in an intervention that was targeted specifically to them in its design, presentation and delivery that made a difference. Women felt strongly about the inclusion of peer counsellors that was from the same community as themselves, spoke the same language, had negative
smoking experiences during previous pregnancies and who knew what ‘smoking’ meant in this community. The “expensive” educational material in the form of the newsletters and a quit guide made the women and their families feel proud. The fact that all the intervention components pointed in the same direction made it possible for the women to identify with change.

In summary the process evaluation pointed to some important mechanisms through which this type intervention can influence pregnant women’s ability to quit or reduce their cigarette smoking. The quantitative outcome evaluation (Everett-Murphy et al, 2010b) showed a difference in quit rate of 7.7% between the intervention and the non-intervention group. This was regarded a fairly moderate success but comparable with results from the latest Cochrane review which showed an average improvement rate of 6.4% in smoking cessation interventions in pregnancy (Lumley et al, 2009). It should also be mentioned that the outcome evaluation also observed an 11.8% improvement in the reductions rates for the intervention group and that the intervention seemed to have reached even the heaviest smokers.

Remaining challenges within the health care system

The greatest challenges within the South African public antenatal care system are lack of sufficient number of staff to deal with a multitude of pregnancy related issues and limited time to deal with them. The midwives are faced with regularly meeting heavy cigarette smoking among women of mixed ancestral decent, high rates of teenage pregnancies, frequent alcohol and drug abuse, and women exposed the severe violence. The high rates of gangsterism prevalent in this community allow only for limited contact with the women’s partners and drug habits of the partners are therefore rarely addressed. The lack of time and resources leave little space for effective counselling to take place. Women do not approach the midwife for help as they are fully aware of the challenges midwives are facing. The limited time they have available for a consultation and their lack of training in communication skills reinforces an authoritarian and didactic style of counselling. These factors cause resentment about their job, which is reflected in their interaction with pregnant women. One of the studies within the Smoking Cessation in Pregnancy Project, and termed in this way everywhere else in the thesis further explored the role of midwives. Midwives were characterised into a typology of scolders, carers or friends and the traditional form of relationship between midwife and pregnant woman was described in terms of dominant midwives and a passive pregnant mothers which posed a barriers to addressing smoking habits (Everett-Murphy et al, 2010a).

However, the qualitative process evaluation showed that a person-centred intervention can cause an attitudinal shift in pregnant women from feeling ‘unworthy’ to ‘feeling visible’. In the first qualitative study prior to the delivery of the intervention women had a sense of being unworthy, in that their opinion were not considered and concern for their own health was not expressed by midwives. The educational material and counselling used in the intervention however focussed on the benefits
of quitting for the baby and the mother. This is important as it implies that health to the mother includes remaining smoke-free after the birth and not only for the duration of the pregnancy (Jakab, 2010). The women exposed to the intervention reported feeling able to express their concerns in conversations with the midwives. This means that the introduction of peer counsellors as part of the intervention also changed the situation for the midwives. They were relieved of a great pressure and the pregnant women reported that the midwives seemed much more relaxed during consultations, were more respectful and approachable and referred women to the counselor with confidence. As a result, women became less afraid of talking to the midwife during consultations and freely asked pregnancy related questions. All women in the study suggested that the problems perceived by women in their community and the chaotic working conditions of the midwives necessitated the appointment of peer counsellors in all public sector antenatal clinics. Other programmes that have made use of peer counsellors have supported the evidence of the important role that skilled peer counsellors can play in a wide spectrum of health promotion fields such as HIV and breastfeeding (Nkonki et al, 2010, Daniels et al, 2010). Today the Department of Health in South Africa has recognised the supportive role peer counsellors could play and has suggested the use of peer counsellors for future smoking cessation interventions. The process evaluation included in this thesis further illustrated that peer counsellors can be introduced within the antenatal care with very little disruption of the existing routines. The results indicated that all actors (midwives, doctors and nurses) welcomed and appreciated the presence of the peer counsellors and the role they had to play in supporting women to deal with their smoking. They also acknowledged the added benefit of them being able to deal with a wider array of addictions and social problems.

Recommendations
Tobacco legislation has been on the forefront of the South African government since 1992, and this has resulted in a decline of smoking prevalence also amongst South African women of mixed ancestral descent. However the prevalence of smoking among pregnant women in this group is still extremely high (47%) and poses an important public health concern. This qualitative assessment has illustrated that an intervention that employ trained peer counsellors to assist midwives to deliver a brief intervention with the help of educational material specifically tailored for the target population can be successful and easily adopted by both midwives and pregnant women.

The recommendations from this thesis are that all nurses be trained in brief motivational interviewing and to deliver an adapted form of the ACOG guideline. To engage peer counsellors targeting a broad spectra of health related issues during pregnancies would further increase the possibility of making a real difference. The specifically designed educational material used for smoking cessation for the intervention evaluated was crucial but could in future interventions be expanded to address multiple risk behaviours in pregnancy.
The Researcher

Fifteen years ago I had grand plans to become an anthropologist in very remote countries. A combination of financial constraints, family responsibilities and a bit of reality changed that. While working at the Medical Research Council library on a part-time basis I befriended a Dutch student, Famke van Lieshout and this led to my first research job at the Health promotion unit and then at the Chronic diseases of Lifestyle unit, but little did I know that this is where I’d be for a decade to follow.

It was with my very first introduction to the research field, as a fieldworker interviewing school children for the Global Youth Tobacco Survey, that I started developing a passion for talking to people and finding out about their lives, and analysing what they had to see. I saw this as a way of giving a voice to those who seldom have one, and this uplifted my spirit. What was more rewarding was that the research that I conducted involved people from my own community. Like the research participants in all my sub-studies, I was unaware of the extent of the problems in my community, which is why I felt so passionate about being in a position to make a change.

During the data collection for the last two sub-studies, I was pregnant myself and it was interesting interviewing other pregnant women about their behaviour during pregnancy, this undoubtedly allowed me a deeper involvement in the interviews, but it also made the women more aware of my existing knowledge of what they were currently going through.

My time as a masters and PhD student at Umea University has enriched my life so much; I have made friends who will be true friends for life even though we don’t see one-another daily. I have met such beautiful people in Umea, both professionally and personally, and the kindness and open-heartedness of many people will stay with me always.

I am now at a point in my life when I am given the opportunity to apply the skills that I have learnt over the past few years, and I hope that I will apply it intelligently and effectively. I am one-and-a-half months away from defending my thesis and I am extremely relieved, however, also extremely sad this chapter of my life will soon come to an end.
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