An Intervention to Support Postpartum Women to Quit Smoking or Remain Smoke-Free

Jochen René Thyrian, PhD, Wolfgang Hannöver, PhD, Julia Grempel, Dipl-Psych, Kathrin Röske, Dipl-Psych, Ulrich John, PhD, and Ulfert Hapke, PhD

Effectiveness studies among pregnant and postpartum women indicate that pregnancy and the postpartum period provide a window of opportunity to promote smoking cessation and smoke-free families. Yet, there is a lack of information about interventions that are portable to routine care. The goal of this article is to describe the structure, basic strategies, and the application of a smoking cessation and relapse prevention intervention for postpartum women in the general population. By using the stages of change concept and motivational interviewing, a classification of current and former smokers is given, and basic strategies and techniques are described to counsel women postpartum with regard to smoking. J Midwifery Womens Health 2006;51:45–50 © 2006 by the American College of Nurse-Midwives.

keywords: smoking cessation, relapse prevention, postpartum

INTRODUCTION

Counseling women to quit smoking is an important component of health care, particularly during pregnancy and the postpartum period. Smoking during pregnancy is associated with low birth weight, miscarriage, spontaneous abortion, and ectopic pregnancy.1,2 Exposure to environmental tobacco smoke has been linked to lower respiratory tract infections, otitis media, pulmonary function changes, asthma exacerbations, sudden infant death syndrome, and leukemia3–7 in infants and children. Most environmental tobacco smoke exposure in infants and young children is due to parental smoking.8 The postpartum period is of special importance because 48% of the women who quit during the course of pregnancy relapse in the first 6 months after giving birth.9

Studies among pregnant10–13 and postpartum women14–16 indicate that pregnancy and the postpartum period provide a window of opportunity to promote smoking cessation and smoke-free families.17–19 Recommendations for interventions include promoting cessation before and at the beginning of pregnancy, fostering interventions early in pregnancy, helping spontaneous and assisted quitters to remain tobacco free postpartum, aiding smokers in late pregnancy, and involving the partner of the female smoker.17 Although most studies have reported promising results of smoking cessation within clinical trials, little is known about intervention strategies that can be implemented in routine care. Many studies are conducted under artificial conditions not comparable with everyday routine care. For example, the setting in which an intervention takes place is often established especially for the trial, there are incentives for people to participate, and participation is voluntary. To ensure the internal validity of the study, control for a series of factors is necessary. Thus, the generalizability of the results to routine care is questionable. Finally, reports of scientific studies emphasize the presentation of efficacy data, but detailed information about the intervention itself is often missing. The reader learns that the intervention was effective but does not have a clear picture as to what was done. This article describes the structure, strategies, and the application of a smoking cessation and relapse prevention intervention for postpartum women, which was successfully applied in an intervention trial.

STUDY DESIGN

The design and results of the intervention have been described in detail elsewhere.20,21 To summarize, the intervention study was a randomized controlled trial with a 2-factorial design and follow-up visits at 6, 12, 18, and 24 months. The baseline assessment took place between May 2002 and March 2003, and was conducted on the maternity wards of six hospitals in Mecklenburg-Westpomerania, Germany (MW), a rural and the most northeastern federal state of Germany, adjacent to the Baltic Sea in the north and the Polish border in the east. Maternity wards were chosen to ensure that a representative sample of women would participate in the intervention. Most children are born in hospitals in the region, and there were no alternative hospitals for giving birth.

Postpartum women were screened by a study assistant 1 to 3 days after giving birth. Women were asked about smoking status at the beginning of their pregnancy and their willingness to participate in the study. Women who indicated that they had smoked and who gave informed consent were randomized either to a control or intervention group. Participating women were mailed questionnaires 4 to 6 weeks after giving birth. Questions included sociodemographics, the pros and cons of smoking, the self-efficacy to quit smoking or to stay smoke-free, processes of change, partner support, child health, and questions about the pregnancy. The intervention group received an initial face-to-face-counseling at home immediately after the baseline

Address correspondence to Jochen René Thyrian, Institute of Epidemiology and Social Medicine, Ernst-Moritz-Arndt University Greifswald, Walther-Rathenau-Str. 48, 17489 Greifswald, Germany. E-mail: thyrian@uni-greifswald.de
assessment and two follow-up counseling sessions by phone 4 and 12 weeks later. The control group received usual care and self-help booklets. Follow-up assessments of both groups were conducted by phone 6, 12, and 18 months after the intervention.

The intervention was based on the Transtheoretical Model (TTM) of behavior change, and the counselors were trained experts in Motivational Interviewing (MI). Weekly group supervisions were held to enforce information exchange between the counselors, to maintain the quality of the intervention, and to ensure adherence to the study protocol. Face-to-face and phone counseling sessions were tailored to data obtained from the baseline assessment and planned to last up to 45 minutes. A self-help manual providing tailored information was given to each subject at the initial counseling. To control intervention delivery, counseling sessions were tape recorded with the participant’s consent.

During the study, 3343 women gave birth in the study region. Eighty-three percent (n = 2790) were screened; of these, 1128 (40%) indicated that they had smoked before pregnancy. Eight hundred sixty-nine women gave informed consent and were enrolled in intervention (n = 418) or control (n = 451) groups. Six hundred forty-two women (71%) participated in the baseline assessment, 345 (76%) in the control, and 297 (71%) in the intervention group. At the 6-month follow-up, 317 women from the control group (92%) and 265 from the intervention group (89%) were reached. Results from the 6-month follow-up indicated that the intervention showed a statistically significant effect on smoking status after 6 months (P = .009). Preliminary results show there were more women tobacco abstinent in the intervention group than in the control group (40% versus 31%), and fewer women who relapsed (14% versus 20%). Finally, fewer women in the intervention group who smoked during pregnancy continued smoking (44% versus 49%). There was no significant difference in the percentage of women who quit smoking after the intervention (2% versus 1%).

**STRUCTURE OF THE INTERVENTION**

The intervention is based on principles of Motivational Interviewing and is delivered individually, face-to-face, and tailored to the stages of change as defined by the Transtheoretical Model of behavior change. The Transtheoretical Model involves identifying qualitatively different stages representing behavior change on a temporal dimension. Precontemplation is the stage in which people are not intending to take action in the foreseeable future, usually measured as the next 6 months. They are often characterized in other theories as resistant or unmotivated or as not ready for health promotion programs. Preparation is the stage in which people are intending to change in the next 6 months. They are more aware of the pros of changing but are also acutely aware of the cons. This balance between the costs and benefits of changing can produce profound ambivalence that can keep people stuck in this stage for long periods of time. We often characterize this phenomenon as chronic contemplation or behavioral procrastination. Precontemplation is the stage in which people are intending to take action in the immediate future, usually measured as the next month. They have typically taken some significant action in the past. These individuals usually have a plan of action.

According to the transtheoretical model, appropriate counseling for behavior change will differ on the basis of the stage as well as the woman’s motivation to change. Different aspects of nonsmoking, smoking, and changing smoking behavior would be addressed, depending on whether the woman is in the precontemplation or preparation stage. The majority of the women in this study were either in precontemplation for abstinence (38%) or precontemplation for smoking (44%); therefore, the intervention described is most elaborated for these stages of change.

**BASIC STRATEGIES OF THE INTERVENTION**

The underlying strategies of the intervention are based on motivational interviewing, a technique that is a brief psychotherapeutic intervention meant to increase the likelihood of a client’s considering, initiating, and maintaining specific change strategies to reduce harmful behavior. Motivational interviewing is founded on principles of motivational psychology, client-centered therapy, and stages of change in natural recovery from addiction. The strategies used include 1) expressing empathy, 2) developing discrepancy, 3) rolling with resistance, and 4) supporting self-efficacy.

Expressing empathy is the underlying basis for each contact. The counselor uses reflective listening and open questions to express acceptance of (but not agreement with) each woman’s situation. For example, the smoker may describe her life as stressful, and cigarette smoking gives her an opportunity to take a break and relax. The counselor would reflect that life is stressful and that the woman sometimes needs a break. Without making judgmental...
statements, the counselor asks whether the woman can describe other ways to take a break and relax.

Developing discrepancy between present behavior and important personal goals or values is achieved by systematically asking the women to identify the pros and cons of smoking and the pros and cons of not smoking. In doing this, mothers may express ambivalence about the tensions of caring for the child’s health versus smoking for their own pleasure, relaxation, etc. The perception of such discrepancies drives behavior change. In this context, it is very important that most of the talking is done by the woman and that the arguments are presented by the woman and not to the woman. Counselors must avoid imposing answers or solutions.

It is important when a woman reacts by defending her arguments rather than just talking about them that the counselor realizes that there is resistance, and he or she needs to shift the approach. For example, when the woman wants to learn about the consequences of smoking, very often her reactions are, “I (or my best friend) restarted smoking after my (or her) first child and it did not develop asthma.” Or when talking about the motivation to change, she might say, “I would like to stay smoke-free, but my partner (or my job) ….” Instead of confronting the woman with epidemiologic evidence about elevated health risks and advice to stop smoking, the counselor would respond better to resistance with the following: “Tell me what you think about smoking postpartum. Tell me more about how your partner (or job) affects your smoking.”

Whenever possible, the counselor needs to enhance the woman’s confidence in her own ability to change or maintain the change (supporting self-efficacy). The counselor can support women who quit smoking during pregnancy by talking about the successful abstinence for the course of their pregnancy. Similarly, women who did not stop smoking, but reduced their consumption during pregnancy or during the time on the maternity ward can be congratulated for this. These experiences serve as examples of the woman’s ability to change. Counselors should talk about them to raise a woman’s belief in her own ability to accomplish a change.

### Stage-Dependent Strategies of the Intervention

An overview about techniques to counsel ex-smokers dependent on the stage of change is given in Table 1.

### Precontemplation Abstinence (“I Smoke and Do Not Want to Change!”)

Women in precontemplation abstinence comprised 38% of the study population. They are characterized by 1) being unaware of the problem behavior, 2) being rebellious, 3) showing resignation, or 4) rationalizing their behavior. This taxonomy is artificial because many women show parts of all four types, but these distinctions help to structure different approaches to deal with women in precontemplation abstinence. For women who are not aware of the consequences of smoking for their health and the health of the newborn baby (type A), the main focus is on providing them with up-to-date information on the consequences of smoking and exposure to environmental tobacco smoke. If there are further questions about smoking, the counselors answer them but are careful not to push the women to a decision to change. These interventions may be very brief.

Rebellious precontemplators (type B) know about the consequences of their behavior, but their main focus is on not liking to be told what to do. These situations may, at times, appear tense, but with the counselor’s understanding that no one can force the woman to change, the situations become more pleasant for the counselor and the woman. The intervention focuses on the woman’s personal concerns about her health or her child’s health in relation to smoking.

Resigned precontemplators (type C) seem to be overwhelmed by the problem and have given up on the possibility of change. Comments from these women are that they did not manage to stop during pregnancy (perhaps they were successful for a day or so), that no one helped them, or that they were obviously too “weak.” With these

<table>
<thead>
<tr>
<th>Table 1. Intervention Strategies for Counseling Ex-Smokers Dependent on the Stage of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage of Change</strong></td>
</tr>
<tr>
<td><strong>Definition</strong></td>
</tr>
<tr>
<td><strong>Intervention strategies</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
women, the focus is on talking about the minimal success they made and on strengthening their self-efficacy. These women are told that relapse is very common in the addiction field and is not mainly due to a lack of will power or a personality flaw. Talking about the relapse she experienced (reason, situation, etc.) gives her the opportunity to see even minimal success and to identify the barriers that hindered her from being successful.

The rationalizing precontemplator (type D) knows everything about smoking but minimizes the personal relevance. She simply does not believe that these consequences are true for her. She frequently refers to examples such as smoking during pregnancy and not bearing an underweight baby or having had a smoking aunt that was 95 years old, etc. There is the temptation to argue with these women, but the counselor should rather acknowledge that there are compelling reasons for the woman to think this way. Instead of arguing, the focus is on elaborating the personal advantages and disadvantages of smoking. The goal is to initiate deeper reflection with regard to smoking.

In general, sessions with women in precontemplation last from 5 up to 45 minutes. From the counselor’s perspective, the most crucial point with these women is not to expect too much change. Behavior change is not easy and often needs much time. The counselors must be aware that they can facilitate change but will fail to impose change.

**Contemplation Abstinence (“I Smoke, But I Want to Change in the Foreseeable Future!”)**

Women in contemplation comprised 7% of the study population. They have realized that smoking is a behavior they would like to change. They have not actually made a commitment to become a nonsmoker, but they struggle with their ambivalence. Women in contemplation abstinence, for example, feel that the individual reasons for not smoking are growing stronger. The decisional balance of the pros and cons of smoking might tip in favor of not smoking. Women in this stage are very open to information and discussing the topic of smoking. The goal of interventions for women in this stage is to help them move from a balanced state of pros and cons of smoking to the decision to quit. The techniques used to achieve this are 1) to provide new information about smoking and breastfeeding and consequences of environmental tobacco smoke exposure, 2) to elaborate on the woman’s view of the pros and cons of abstinence and smoking, 3) to concentrate on the positive aspects of not smoking, 4) to increase self-efficacy by affirming the accomplishment of former quit attempts, and 5) to listen carefully to identify social resources that may help the woman to become smoke-free (nonsmoking partners, friends, etc.).

**Preparation Abstinence (“I Smoke, But I Plan to Quit!”)**

The preparation stage of change can be described as the stage in which the woman is ready and committed to take action. For women in preparation abstinence (5% of the study population), the goal of the intervention is 1) to give support for the decision, 2) to explore opportunities to receive social support, 3) to identify other supporting resources, 4) to support the work on an abstinence plan, 5) to set a stop day, and 6) to recommend (if applicable) nicotine replacement therapy.

**Precontemplation Smoking (“I Do Not Smoke Any More and I Will Not Start Again!”)**

Women in precontemplation smoking comprised 44% of the study population. They are nonsmokers who do not intend to start smoking again. The main goal of the intervention is, therefore, to prevent relapse by supporting the decision not to smoke and exploring the women’s perceptions of the advantages of abstinence. Stressors and relapse situations can be identified and possible reactions or coping strategies can be examined specifically for these situations. Women in this stage are very open to the intervention, and counseling is very pleasant. They can be asked to talk about the role of smoking in their life before pregnancy and how they quit. By systematically addressing strategies to quit smoking, such as stimulus control (getting rid of ashtrays, etc.), information gathering (consequences of smoking/environmental smoke exposure), alternative behaviors to smoking (drink a glass of water, etc.), creating a new image (being a nonsmoker now), (self-) reinforcement (“my partner is proud of me,” “I feel better”), social support (“my friends do not smoke around me,” etc.), environmental support (awareness of nonsmoking areas), the intervention aims at further improving the woman’s skills to remain smoke-free.

**Contemplation Smoking (“I Do Not Smoke Any More, But I Think About Starting Again in the Foreseeable Future!”)**

Women in contemplation (5% of the study population) have realized that they show a behavior they would like to change. They have not actually made a commitment, but they struggle with their ambivalence to return to smoking. Women in contemplation smoking, for example, feel that one reason for not smoking has disappeared, such as the consequences of smoking for the pregnancy, and the individual reasons for smoking are growing stronger. The decisional balance for nonsmoking might tip in favor of smoking. Women in this stage are very open to information and discussing the topic of smoking. The goal of interventions for women in this stage is to help the woman move from a balanced state of pros and cons of nonsmoking to the decision to continue abstinence. The techniques used to achieve this are the same used for women in contemplation abstinence: 1) to provide new information about smoking and breastfeeding and consequences of exposure to environmental tobacco smoke, 2) to elaborate on the woman’s view of the pros and cons of tobacco abstinence and smoking, 3) to focus on the positive aspects of nonsmoking,
4) to increase self-efficacy by affirming the accomplishment of former quit attempts or being smoke-free so far, and 5) to listen carefully to identify social resources that could help to remain smoke-free (nonsmoking partners, friends, etc.).

The biggest resource for counseling women in this stage is that they usually have been smoke-free for most of their pregnancy. This is a valuable experience for them, and the counselor can focus on this.

Preparation Smoking (“I Do Not Smoke Any More, But I Plan to Start Again!”)

Women in preparation smoking (1% of the study population) are committed to start smoking again. They are treated like women in precontemplation abstinence. The only difference for women in precontemplation abstinence is that these women are not smoking at the moment. Special emphasis is given to the emotional value of smoking and to the autonomy of the woman’s decision to start smoking again.

Intervention strategies for counseling smokers are given in Table 2.

APPLICATION FIELD AND EXPERIENCES

This intervention was developed as a proactive, population-based intervention targeting women in the postpartum period. The results of an intervention study show that women who received the intervention were less likely to relapse. Categorizing women into different stages of intention to change and applying the basic principles of motivational interviewing helped to address the issue of smoking with all women. The counselors did not experience general resistance to talking about smoking among study participants; however, this could be due to self-selection of women into the study. It might be argued that we did not experience resistance because we only counseled women who were willing to receive an intervention. However, we targeted a population-based sample of women, the participation rate was 71% among the women who were assigned to the intervention group, and 89% of them also participated in the 6-month follow-up. This finding indicates that such a proactive approach can effectively reach many women.

The basic principles and strategies of Transtheoretical Model and Motivational Interviewing are easy to learn; we offered a curriculum of approximately 16 hours. With increasing experience over time and weekly supervision, the counselors felt increasingly more confident in applying the techniques. The efficiency of their counseling sessions increased with increasing number of counseling sessions and increasing participation in supervision sessions. The tape recordings of the counseling sessions have not yet been analyzed; therefore, we do not have data to confirm whether this feeling of improvement is mirrored in the quality of the counseling sessions. However, the results show that the intervention was effective.

The study design was chosen to derive recommendations for transferring this intervention into routine care and was accomplished by training professionals to work with women postpartum. When considering other professionals who have contact with postpartum women and who already have skills in counseling techniques, midwives could be an important professional group to learn and apply this intervention. They see smoking and exposure to environmental tobacco smoke as prominent health threats and report that they address smoking routinely, including giving advice to stop smoking.25 Furthermore, a study has shown that midwives trained in an intervention technique addressed smoking more often and were more confident about having

Table 2. Intervention Strategies for Counseling Current Smokers Dependent on the Stage of Change

<table>
<thead>
<tr>
<th>Stage of Change</th>
<th>Precontemplation Abstinence</th>
<th>Contemplation Abstinence</th>
<th>Preparation Abstinence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
<td>No intention to quit in the next 6 months</td>
<td>Intention to quit sometime during the next 6 months</td>
<td>Intention to quit in the next 4 weeks</td>
</tr>
<tr>
<td>Intervention strategies</td>
<td>- Explore concerns about health</td>
<td>- Talk about the emotional value of smoking</td>
<td>- Provide support for the decision not to smoke</td>
</tr>
<tr>
<td></td>
<td>- Explore concerns about the child’s health</td>
<td>- Provide information about the consequences of smoking</td>
<td>- Explore opportunities to receive social support</td>
</tr>
<tr>
<td></td>
<td>- Provide information about the consequences of smoking and</td>
<td>- Provide information about the consequences of exposure to</td>
<td>- Find examples of nonsmokers and smoke-free environments</td>
</tr>
<tr>
<td></td>
<td>exposure to environmental tobacco smoke</td>
<td>environmental tobacco smoke</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Provide information about smoking and breastfeeding</td>
<td>- Provide information about smoking and breastfeeding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Find a role model for not smoking</td>
<td>- Find examples for nonsmokers and smoke-free environments</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Emphasize the autonomy of the decision not to smoke</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Work out an abstinence plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Set a stop day</td>
</tr>
</tbody>
</table>

Journal of Midwifery & Women’s Health  •  www.jmwh.org 49
an effect on the women's smoking. Even the women not motivated to change acknowledged the midwives' role in addressing smoking behaviour. We conclude that midwives should learn effective intervention strategies, such as the brief smoking interventions described here, to further strengthen their work.

This study is part of the project "Research Collaboration in Early Substance Use Intervention (EARLINT)" and was funded by the German Ministry of Education and Research (grant 01EB0120) and by the Social Ministry of Mecklenburg-West Pomerania. The original study was approved by the universities' ethics review boards, and written informed consent was obtained from all participants.

REFERENCES


