Midwifery 30 (2014) 427–431

Contents lists available at ScienceDirect

Midwifery

journal homepage: www.elsevier.com/midw

Can we modify the enrollment in a postpartum smoking cessation intervention in Spain?

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ARTICLE INFO

Article history:
Received 12 September 2012
Received in revised form
19 April 2013
Accepted 21 April 2013

Keywords:
Smoking cessation
Pregnancy
Relapse
Post partum

ABSTRACT

Objective: it is known that very few women who continue to smoke at the time of delivery stop smoking during the postpartum period. Discovering strategies that can be incorporated during pregnancy to help improve women's participation in postpartum interventions could increase the number of women non-smokers. The aim of this study is to identify the predictors of participation by pregnant women smokers in a postpartum smoking cessation intervention.
Design: a cross-sectional study was carried out amongst women smokers who had attended to give birth.
Setting: women attended the University Clinical Hospital 'Lozano Blesa' of Zaragoza (Spain) who were smokers before pregnancy and reported at delivery to have continued smoking during pregnancy were eligible and were invited to participate in the study.
Findings: 2044 women completed the questionnaire 24 hours after giving birth. The smoking prevalence during pregnancy was 18.2% ($n=372$) and 62.9% of them ($n=234$) participated. The logistic regression model provided five significant predictors for women who participated: intention to breast feed, having less of an urge to smoke the first cigarette of the day before pregnancy, having reduced consumption during pregnancy by 50% or more, having received advice and being willing to get help.
Conclusions and implications for the practice: the factors associated with participation show aspects that can be modified by maternal and child health professionals. Advice to stop smoking, received during pregnancy, encourages participation in a postpartum intervention. From the point of view of public health, the huge increase in the prevalence of smoking women poses the need to take advantage of the pregnancy as an opportunity for giving up smoking definitely. It would be necessary to identify what programmes of smoking cessation have better results in pregnant women and to know how to motivate health professionals to implement them.

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Introduction

Smoking during pregnancy increases the risk of adverse health outcomes for the mother and fetus (U.S. Department of Health and Human Services, 2001). Despite this, approximately half of women smokers continue to smoke during pregnancy. In high-income countries, an estimated 6–22% of women smoke during pregnancy and, at the moment of delivery, smoking prevalence in pregnant women remains high (Nichter et al., 2010).

The postpartum period is considered to be a window of opportunity for preventive interventions to introduce healthy behaviours because there is contact with maternal and child health professionals for an extended period of time (McBride et al., 2003; Hoedjes et al., 2010). Postpartum smoking exposes the infant to Second-Hand Smoke (SHS), which is associated with

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http://dx.doi.org/10.1016/j.midw.2013.04.006

a range of health problems in children, including a higher risk of sudden infant death syndrome, acute respiratory infections, ear infections, and more severe asthma (Department of Health and Human Services, 2006; López et al., 2008). In addition, the mother also exposes herself to the health risks associated with continuing to smoke.

Some interventions during post partum has been proposed in the past few years to get better smoking cessation rates in women, but it has been suggested to use more effective motivational approaches to achieve consistent behaviour change (Ershoff et al., 2000). Proactive interventions during post partum, using resources on Motivational Interviewing (MI) and relapse prevention may reduce the probability of relapse in recent quitters and helps female smokers to make progress in the behavioural process of change (Jiménez-Muro et al., 2013).

The majority of smoking cessation postpartum interventions have had limited participation, between 50% and 70%, because it is difficult to recruit pregnant women to this type of study (Ruggiero et al., 2003). Some barriers have been described like 'lack of time' (Ussher et al., 2006) or a decreasing interest after having a healthy newborn because the mothers are less aware of the adverse effects of SHS on their infants (Ashford et al., 2010). Discovering strategies that can be incorporated during pregnancy to improve women's participation in postpartum interventions could achieve better results and increase the number of non-smoking women. The aim of this study was to identify the predictors of participation by pregnant women smokers in a postpartum smoking cessation intervention in Spain.

Methods

Design and study setting

This is a cross-sectional study in pregnant smokers, which is part of the main study designed as a randomised controlled trial (RCT). The RCT was a population-based intervention study designed for women at the end of pregnancy. Motivational interviewing and relapse prevention was used to achieve the aims of this intervention (Miller and Rollnick, 2002). The target population was women who attended the University Clinical Hospital 'Lozano Blesa' of Zaragoza (Spain) to give birth between January 2009 and March 2010. All women were asked to complete a structured questionnaire to determine sociodemographic characteristics and smoking behaviour during pregnancy. We designed a questionnaire on smoking, after reviewing the literature, since there was not a previous model to collect all aspects included in this study. All women were asked to complete the structured questionnaire and the interviews were conducted 24 hours after giving birth by the same person. The inclusion criteria for the intervention study were: to be a current smoker (having smoked during pregnancy) or a recent quitter (having stopped smoking at the beginning or during pregnancy) and agree to participate; women included in the study were randomly assigned to one of the two groups (control and intervention). Measurements and results of smoking cessation intervention have been published elsewhere (Jiménez-Muro et al., 2013).

For the present study we only included those women that had smoked during pregnancy and were smokers at the point of giving birth. Women who reported having stopped smoking during pregnancy were excluded.

Data collection

The sociodemographic variables studied were age, nationality, employment status and educational level; the pregnancy-related variables were parity and self-reported intention to breast feed; the smoking-related variables considered were age at onset and the two items from the Fagerström Test that best reflect nicotine dependence: cigarettes smoked daily and time until the first cigarette of the day ('less than 30 minutes' or 'more than 30 minutes') before pregnancy. In all women smokers who said that they had reduced their consumption during pregnancy we calculated the decrease using the following formula: [(cigarettes smoked daily before pregnancy−cigarettes smoked daily during pregnancy)/cigarettes smoked daily before pregnancy] × 100. The reduction was then classified into two categories: 'reduced by 50% or more' or 'reduced by less than 50%'. The smoking status was determined by self-reporting and carbon monoxide (CO) in exhaled air (less than 6 ppm to be considered a non-smoker).

The perception of risk to SHS and exposure of the newborn (NB) was assessed using the categories 'none', 'little', 'moderate' and 'high'. These variables were combined into two categories in the subsequent analysis: none and little into 'low perception' and moderate and high into 'high perception'. All women were asked whether they had received advice to stop smoking during pregnancy ('It is very important to stop smoking for your health and your baby') and whether they would be willing to get help to stop smoking.

The Clinics Ethics Committee authorised this research and written informed consent was obtained from every woman.

Data analysis

A descriptive analysis was performed for the total sample, and also separately for the two groups of women: those who participated and those who did not participate. These groups were compared using a bivariable analysis by means of an ANOVA test and χ^2. The level of statistical significance was established at a two-sided p-value of less than 0.05. A multivariable analysis was performed by using a binary logistic regression model including all significant variables in the bivariable analysis except the variables 'Cigarettes smoked daily before pregnancy' and 'Cigarettes smoked daily during pregnancy' because they could have an interaction with the variable 'Reduction by 50%'. In this model the outcome variable was whether the woman participated or not in the intervention.

Findings

A total of 2044 women answered the questionnaire 24 hours after given birth. The smoking prevalence at the time of giving birth was 18.2% ($n=372$); 62.9% of them ($n=234$) agreed to participated and 37.1% ($n=138$) did not agree to participate in the postpartum smoking cessation intervention (Fig. 1).

Characteristics of women who still smoke at the time of giving birth are in Table 1. A percentage of 95.3% (359) reduced their consumption during pregnancy: 66.1% (246) reduced their consumption 50% or more and 33.9% (126) less than 50%. Women who reduced by 50% or more had CO levels of 3.84 ppm compared to those who reduced by less than 50% with CO levels of 6.06 ppm ($p<0.001$).

The women who agreed to participate in the postpartum smoking cessation intervention were more likely employed, had a higher educational level and were more likely to intend to breast feed. They smoked, prior to becoming pregnant, fewer cigarettes daily, had less of an urge to smoke their first cigarette of the day and had reduced consumption by 50% or more during pregnancy. They had a higher perception of the risk of exposure to SHS, received advice to stop smoking during pregnancy and were willing to get help (Table 1).

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