Smoking Cessation During Pregnancy and Relapse After Childbirth in Canada

Nicolas L. Gilbert, MSc,[1,2] Chantal R.M. Nelson, MPH, PhD,[1] Lorraine Greaves, PhD[3,4]

[1]Maternal and Infant Health Section, Public Health Agency of Canada, Ottawa ON

[2]Département de médecine sociale et préventive, Université de Montréal, Montreal QC

[3]British Columbia Centre of Excellence for Women's Health, Vancouver BC

[4]School of Population and Public Health, University of British Columbia, Vancouver BC

Abstract

Objective: This analysis was undertaken to determine the rates and determinants of smoking cessation during pregnancy and smoking relapse after childbirth in Canada.

Methods: We used data from the Maternity Experiences Survey, a cross-sectional study of mothers who gave birth to a singleton baby in Canada in 2006. A total of 1586 mothers who smoked occasionally or daily before pregnancy were included in the analysis.

Results: The rate of smoking cessation during pregnancy was 53.0% (95% CI 50.3% to 55.7%). Higher pre-pregnancy smoking frequency, Inuit origin, being aged ≥ 35 years, lower education, not attending prenatal classes, lack of social support, stress before or during pregnancy, and living with a smoker were independently associated with higher risk of continued smoking, while First Nations (off-reserve) origin was associated with a lower risk. Among those who had quit smoking, 47.1% (95% CI 43.5% to 50.6%) relapsed postpartum. Living with a smoker, not having breastfed, and having stopped breastfeeding were independently associated with a higher risk of relapse.

Conclusion: This study highlights the need to tailor smoking cessation and prevention interventions for some high-risk groups of women.

Résumé

Objectif : Cette analyse a été menée pour déterminer les taux et les déterminants de l'arrêt tabagique pendant la grossesse et de la rechute post-partum au Canada.

Méthodes : Nous avons utilisé les données de l'Enquête sur l'expérience de la maternité, soit une étude transversale sur des mères ayant accouché à la suite d'une grossesse simple au Canada en 2006. En tout, 1 586 mères ayant fumé occasionnellement ou quotidiennement avant la grossesse ont été incluses dans l'analyse.

Résultats : Le taux d'arrêt tabagique pendant la grossesse était de 53,0 % (IC à 95 %, 50,3 % - 55,7 %). Une consommation de cigarettes plus élevée avant la grossesse, être d'origine inuite, être âgée de 35 ans ou plus, être moins scolarisée, la non-participation à des cours prénataux, le manque de soutien social, le stress avant ou pendant la grossesse et la cohabitation avec un fumeur étaient associés de façon indépendante à un risque accru de poursuite du tabagisme, tandis que le fait d'être issue des Premières Nations (hors-réserve) était associé à un risque moindre. Parmi les mères qui avaient cessé de fumer, 47,1 % (IC à 95 %, 43,5 % - 50,6 %) ont recommencé à fumer après l'accouchement. La cohabitation avec un fumeur, ne pas avoir allaité et avoir cessé d'allaiter étaient associés de façon indépendante à un risque accru de rechute.

Conclusion : Cette étude souligne la nécessité d'adapter les interventions d'abandon et de prévention du tabagisme aux groupes de femmes exposées à des risques élevés.

Key Words: Smoking cessation, smoking relapse, pregnancy

Competing Interests: None declared.

Received on May 26, 2014

Accepted on August 21, 2014

J Obstet Gynaecol Can 2015;37(1):32–39

INTRODUCTION

Smoking during pregnancy is associated with increased risks of preterm birth,[1–3] intra-uterine growth restriction and low birth weight,[1,4] stillbirth,[5] and sudden infant death syndrome.[2,6,7]

Smoking in pregnancy has declined steadily in Canada in recent years. The reported rate of women smoking during pregnancy fell from 21.8% (95% CI 20.5% to 23.1%) among women who gave birth between 1992 and 1996 to 12.3% (95% CI 11.2% to 13.5%) among those who gave birth between 2005 and 2008.[8] Among Canadian women who gave birth in 2006, younger age (< 24 years), lower household income, living in rural areas, being born in Canada, and unwanted pregnancy, among other factors, were associated with a higher risk of smoking during pregnancy.[9,10]

The Society of Obstetricians and Gynaecologists of Canada recommends that counselling be offered to pregnant women who smoke to help them quit smoking.[11] There is evidence that multi-component interventions, including aspects such as counselling, motivational interviews, and tailored information, are effective in decreasing the risk of continued smoking throughout pregnancy.[12]

Women who do quit smoking during pregnancy are at high risk for relapse; approximately one half of women who quit during pregnancy relapse within one-year postpartum.[13–15] Social support, decreased self-efficacy, partner smoking, personal coping strategies, and stress have been documented as predictors of smoking relapse after delivery.[12]

Little is known about the population-level determinants of smoking cessation and relapse from a national perspective. Such information may help to tailor and focus smoking cessation and interventions to prevent relapse. We undertook this analysis to determine the rates and determinants of smoking cessation during pregnancy and smoking relapse after childbirth in Canada.

METHODS

We used data from the Canadian Maternity Experiences Survey (MES)[9] for this analysis. The MES was a cross-sectional survey conducted by the Public Health Agency of Canada (PHAC) and Statistics Canada of 6421 mothers aged 15 years or older who gave birth to a singleton baby in Canada in 2006. First Nations mothers living on reserve and institutionalized mothers were excluded. Participants were interviewed in 2006 or 2007. Interviews took place five to 14 months after the birth of their child, but were completed within nine months postpartum for 96.9% of participants. Women who participated in MES were asked about their smoking at three time points:

1. in the three months before pregnancy or before they realized they were pregnant;
2. during the last three months of their pregnancy; and
3. at the time of the survey.

Stress before or during pregnancy was determined from the following question:

> Thinking about the amount of stress in your life during the 12 months before [baby's name] was born, would you say that most days were: not stressful, somewhat stressful or very stressful?

Social support during pregnancy was determined from the following question:

> During your pregnancy, how often was support available to you when you needed it? (None of the time, a little of the time, some of the time, most of the time, or all of the time)

Postpartum depression was determined using the Edinburgh Postnatal Depression Scale,[16] based on 11 questions about the mother's feelings.

A total of 1586 MES participants smoked occasionally or daily before pregnancy or before they realized they were pregnant, yielding a weighted smoking rate of 22.0%. These women constituted the study sample.

The MES was stratified by province or territory and by the woman's age. Smaller populations, the territories, and younger women (aged < 20 years) were oversampled. Each respondent was assigned a sampling weight calculated within weighting classes, which generally corresponded to the strata used to draw the sample. The 6421 MES respondents were thus weighted to represent 76 508 women, which is considered a nationally representative sample.

Data were analyzed using SAS 9.1 software (SAS Institute Inc., Cary, NC). Weighted rates of smoking cessation and relapse were calculated. Simple logistic regressions were used to estimate unadjusted odds ratios, and variables showing an association at $P < 0.1$ with the outcome were included in multiple logistic regression models to calculate adjusted odds ratios. Variables were retained in multiple regression models as long as their P value remained below 0.1. The variance and 95% confidence interval of rates and odds ratios were determined by bootstrap method using Bootvar, an SAS program developed by Statistics Canada.

The MES was reviewed and approved by Health Canada's Research Ethics Board.