

Changes in Smoking During Pregnancy in Ontario, 1995 to 2010: Results From the Canadian Community Health Survey

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Abstract

Objective: The objectives of this study were (1) to examine changes in smoking behaviour across time in pregnant women in Ontario (relative to non-pregnant women and men) and (2) to assess whether, among pregnant women, changes across time vary as a function of sociodemographic characteristics.

Methods: This study used data from the Canadian Community Health Survey. The study sample included 15- to 49-year-old residents of Ontario. Multivariable logistic regression, with interactions between time period and the characteristic of interest, was used to examine whether changes varied across time according to (1) group (pregnant women, non-pregnant women, men; two-year intervals, 2001 to 2010) and (2) pregnant subgroup (maternal age, maternal marital status, maternal education; 1995 to 2000 [n = 3745], 2001 to 2005 [n = 5084], and 2006 to 2010 [n = 2900]).

Results: A decrease in the prevalence of smoking across time was seen in all groups but was smaller in pregnant women than in non-pregnant women (23.5% vs. 30.8%). Among pregnant women, interactions between time period and maternal age, maternal marital status, and maternal education were statistically significant. The prevalence of smoking during pregnancy decreased in older, married, and more highly educated women, but increased in younger women (by 8.2%) and less educated women (by 12.8%). Although the prevalence of smoking during pregnancy decreased in unmarried women, the change was smaller than in married women.

Conclusion: Although the prevalence of smoking in pregnant women is decreasing over time, the decrease is smaller than that in non-pregnant women. Pregnant subgroups particularly resistant to change include younger, unmarried, and less educated mothers. These findings suggest there are subgroups that should be targeted more deliberately by public health interventions.

J Obstet Gynaecol Can 2014;36(10):878–884

Key Words: Pregnancy, smoking, demographics, time trends

Competing Interests: None declared.

Received on April 1, 2014

Accepted on June 6, 2014

Résumé

Objectif : Cette étude avait pour objectif (1) d'examiner les modifications des comportements quant au tabagisme avec le temps chez les femmes enceintes de l'Ontario (par comparaison avec les femmes n'étant pas enceintes et les hommes) et (2) de chercher à déterminer si, chez les femmes enceintes, ces modifications avec le temps variaient en fonction de caractéristiques sociodémographiques.

Méthodes : Dans le cadre de cette étude, nous avons utilisé des données tirées de l'Enquête sur la santé dans les collectivités canadiennes. L'échantillon d'étude englobait les résidentes de l'Ontario dont l'âge se situait entre 15 et 49 ans. Une régression logistique multivariée (tenant compte des interactions entre la période et la caractéristique d'intérêt) a été utilisée pour chercher à déterminer si les modifications variaient avec le temps en fonction (1) du groupe (femmes enceintes, femmes n'étant pas enceintes, hommes; intervalles de deux ans, 2001-2010) et (2) du sous-groupe de grossesse (âge maternel, état matrimonial maternel, niveau de scolarité maternel; 1995-2000 [n = 3 745], 2001-2005 [n = 5 084] et 2006-2010 [n = 2 900]).

Résultats : Bien qu'une baisse de la prévalence du tabagisme avec le temps ait été constatée dans tous les groupes, cette baisse était plus faible chez les femmes enceintes que chez les femmes n'étant pas enceintes (23,5 % vs 30,8 %). Chez les femmes enceintes, les interactions entre la période et l'âge maternel, l'état matrimonial maternel et le niveau de scolarité maternel étaient significatives sur le plan statistique. La prévalence du tabagisme pendant la grossesse connaissait une baisse chez les femmes plus âgées, mariées et disposant d'un niveau de scolarité supérieur, tandis qu'il connaissait une hausse chez les jeunes femmes (de l'ordre de 8,2 %) et chez les femmes disposant d'un niveau de scolarité inférieur (de l'ordre de 12,8 %). Bien que la prévalence du tabagisme pendant la grossesse ait connu une baisse chez les femmes n'étant pas mariées, cette modification a été de plus faible envergure que chez les femmes mariées.

Conclusion : Bien que la prévalence du tabagisme chez les femmes enceintes connaisse une baisse avec le temps, cette baisse est de plus faible envergure que chez les femmes n'étant pas enceintes. Parmi les sous-groupes de femmes enceintes particulièrement résistantes au changement, on trouvait les femmes plus jeunes, non mariées et disposant d'un niveau de scolarité inférieur. Ces résultats semblent indiquer que certains sous-groupes devraient être ciblés de façon plus délibérée par les interventions de santé publique.

INTRODUCTION

Smoking is the leading cause of preventable morbidity and premature mortality worldwide.¹ The risks of smoking are compounded during pregnancy because smoking negatively affects both maternal health and fetal health.²⁻⁴ In order to gauge the success of public health programs aimed at reducing the prevalence of smoking during pregnancy, information is needed on changes in smoking behaviour over time and, in particular, on subgroups of pregnant women who may need more targeted interventions.

Our study had two objectives. Our first objective was to examine changes in smoking behaviour between 2001 and 2010 in pregnant women in Ontario relative to non-pregnant women and men. By making comparisons with non-pregnant women and men, we aimed to assess whether potential changes are specific to pregnant women or are reflective of trends in the general population. Our second objective was to assess whether changes in smoking behaviour among pregnant women between 1995 and 2010 varied as a function of their sociodemographic characteristics. By examining potential sources of heterogeneity among pregnant women, we aimed to understand which subgroups are more resistant to change.

One of the goals of the Ontario Tobacco Strategy of the Ontario Ministry of Health and Long-Term Care is to eliminate smoking during pregnancy. Initiatives implemented towards this end have included developing informational resources and smoking cessation programs for pregnant women (in 2001), increasing the price of tobacco (in 2003), and establishing the Smoke-Free Ontario Act (in 2006).^{5,6}

However, few studies have attempted to track the success of Ontario Tobacco Strategy efforts across time. Data from the Canadian Perinatal Surveillance System reports of 2008⁷ and 2013⁸ suggest that the rate of smoking during pregnancy in Canada has decreased; these findings are consistent with studies from other countries.⁹⁻¹¹ However, it is unclear to what extent these trends reflect changes in pregnant women specifically or changes in all women of child-bearing years or in the general population.^{12,13} Several studies have noted that smoking has declined among non-pregnant women of reproductive age at rates similar to the decline seen in pregnant women.^{11,12} To evaluate the success of the Ontario Tobacco Strategy goal to target pregnant women specifically, information is needed on how trends in smoking behaviour among pregnant women in Ontario compare with those observed among non-pregnant women and men.

Related to this, there is a growing body of evidence that pregnant women of different sociodemographic subgroups differ with respect to changes in smoking behaviour across time.^{11,14} An Australian study found that while the proportion of women who smoked during pregnancy declined overall between 1994 and 2007, it declined more in older mothers than in teenage mothers.¹⁴ Moreover when changes were examined in relation to socioeconomic status, the greatest decline (67.9%) was found in the highest socioeconomic group.¹⁴ These analyses suggest that, among pregnant women, certain sociodemographic subgroups may be more or less amenable to public health efforts to reduce smoking. To help the Ontario Tobacco Strategy and other public health campaigns target their efforts at appropriate subgroups, information is needed on changes in smoking over time in subgroups of pregnant women in Ontario.

METHODS

This was a secondary analysis of the Canadian Community Health Survey (CCHS). Each cycle of the CCHS was a cross-sectional survey that was representative of Canadians 12 years and older living in private dwellings. Access to the Research Data Centres Program was obtained through the Social Sciences and Humanities Research Council. For this study, data were obtained from Cycles 1.1 (2001 to 2002), 2.1 (2003 to 2004), 3.1 (2005 to 2006), and 4.1 (2007 to 2008) and from the 2009 and 2010 annual components of the CCHS.

CCHS methodology has been described in detail elsewhere.¹⁵ Briefly, the CCHS sample was allocated to provinces and territories according to population size and, within provinces, proportionally to the square root of the population size of health regions. Two sampling frames were used. The primary sampling frame was borrowed from the Labour Forces Survey, which employs a multi-stage stratified cluster design to select a representative sample of households. One individual was randomly chosen from 82% of households; two people were randomly chosen from the remainder. The secondary sampling frame employed random digit dialling, with one individual randomly chosen from households.¹⁵ Each questionnaire in the CCHS was divided into a 35-minute common content section and a 10-minute optional content section containing questions requested by the particular health region in which it was implemented. All questions for this study were from the common content section.

The population for the CCHS was individuals residing in Canada at the time of data collection, excluding individuals

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