

Vaccination Patterns in Pregnant Women During the 2009 H1N1 Influenza Pandemic: A Population-based Study in Ontario, Canada

Ning Liu, MB, MSc,¹ Ann E. Sprague, RN, PhD,^{2,3} Abdool S. Yasseen III, MSc,³ Deshayne B. Fell, MSc,^{2,3} Shi-Wu Wen, MD, PhD,^{3,4} Graeme N. Smith, MD, PhD,⁵ Mark C. Walker, MD, MSc²⁻⁴

ABSTRACT

Objectives: Influenza vaccination rate among pregnant women has typically been low, and there is little population-based information on predictors of vaccination uptake within this group. This study aimed to evaluate the rate of influenza vaccination in pregnant women during the 2009 H1N1 influenza pandemic and explore predictors associated with receiving vaccination during pregnancy.

Methods: We conducted a retrospective population-based cohort analysis involving women who gave birth in an Ontario hospital between November 2, 2009 and April 30, 2010. Rates of influenza vaccination were calculated according to maternal, obstetrical, behavioural and neighbourhood characteristics. Women who received influenza vaccination during pregnancy were compared with women who were not vaccinated using log-binomial regression to calculate adjusted relative risks (aRR) and 95% confidence intervals (CI).

Results: Among 56,654 women who gave birth in the study period, 42.6% had received influenza vaccination during pregnancy. Vaccine uptake was lower among women: of age <20 (aRR=0.80, 95% CI: 0.76-0.84), in lower socio-economic status (aRR=0.93, 95% CI: 0.90-0.96), without an antenatal care provider (aRR=0.72, 95% CI: 0.59-0.88), who did not initiate antenatal care in a timely manner (aRR=0.93, 95% CI: 0.91-0.96), who smoked during pregnancy (aRR=0.92, 95% CI: 0.89-0.95), and with a history of preterm birth (aRR=0.97, 95% CI: 0.94-1.00). An increased vaccination rate was observed among women with medical co-morbidities (aRR=1.10, 95% CI: 1.07-1.13) and with family physicians (vs. obstetricians) as antenatal care providers (aRR=1.08, 95% CI: 1.06-1.10).

Conclusion: We identified the prenatal population that may benefit from targeted public health intervention strategies to improve future vaccination rates for this priority vaccination group.

Key words: Influenza vaccination; pregnant women; H1N1

La traduction du résumé se trouve à la fin de l'article.

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Pregnant women are at an increased risk of influenza infection, and once infected also face an elevated risk of illness, complications and death.¹ Evidence from seasonal influenza epidemics and influenza pandemics consistently demonstrate disproportionately high morbidity and mortality among pregnant women.²⁻⁴ In the 2009 H1N1 pandemic, despite their composition of only 1% of the population of the United States, pregnant women accounted for 5% of influenza A (H1N1)-related death in the country.² In the Canadian population, hospital admission rates for influenza illness among healthy pregnant women in non-pandemic influenza seasons were about five times higher than those among non-pregnant women.³

Routine influenza vaccination in pregnant women of all trimesters has been recommended by the World Health Organization (WHO), the United States Advisory Committee on Immunization Practices (ACIP), and the National Health and Medical Research Council of Canada.^{5,6} These recommendations were based on a lack of evidence demonstrating any harmful effects of inactivated influenza vaccination on maternal or fetal health in vaccine safety studies,⁷⁻⁹ and the growing evidence showing that maternal vaccination against influenza could potentially benefit not just the mother but also the infant during the latter's first few months of life.^{7,10}

Despite these recommendations, the vaccination rate in pregnant women has typically been low. In the United States, the vaccination rate during pregnancy was estimated to be from less than

1% to 12.8% before 2003,¹¹ and from 12-24% during the 2005-2008 influenza seasons.¹² No comparable estimates of pre-2009 H1N1 pandemic immunization rates are currently available for Canada.

In the 2009 H1N1 influenza pandemic, health authorities unanimously identified pregnant women as one of the priority groups to be vaccinated against H1N1, and all pregnant women were encouraged to get influenza vaccine, regardless of their stage of pregnancy.^{13,14} The H1N1 influenza vaccination rate was reported to be 46.6% among women with recent live births in 10 states in the United States, 37.1% in a French population randomly recruited

Author Affiliations

1. Institute for Clinical Evaluative Sciences, Toronto, ON
 2. Better Outcomes Registry & Network (BORN) Ontario, Ottawa, ON
 3. Ottawa Hospital Research Institute, Ottawa, ON
 4. Department of Obstetrics and Gynecology, University of Ottawa, Ottawa, ON
 5. Department of Obstetrics and Gynecology, Queen's University, Kingston, ON
- Correspondence:** Dr. Ann Sprague, Better Outcomes Registry & Network (BORN) Ontario – Scientific Office, Box 241, The Ottawa Hospital - General Campus, 501 Smyth Rd., Ottawa, ON K1H 8L6, Tel: 613-737-7600, ext. 6011, Fax: 613-737-8402, E-mail: asprague@bornontario.ca

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from 3 maternity hospitals, 6.9% to 10.3% in antenatal clinics in Western Australia, 37.4% to 39.9% in the 2010 Canadian Community Health Survey, and 72% among 402 women in the province of Alberta.¹⁵⁻¹⁹ In Ontario, Canada, the 2009 H1N1 vaccination campaign started on October 26, 2009 for high-priority groups, including pregnant women, and soon after was offered free of charge to every resident in the province.

Understanding the underlying barriers to maternal vaccination and identifying characteristics of pregnant women with low vaccination rates can aid in the development of targeted public health strategies for future influenza vaccination programs. Although several studies have tried to identify barriers existing at the patient, provider and organizational levels,^{16,18-27} to date, there is little population-based information on vaccination uptake in pregnant women of different characteristics.

By using a population-based cohort of women who gave birth during the 2009 H1N1 pandemic season, this study aims to evaluate the influenza vaccination rate among pregnant women of different characteristics, and to identify predictors that can cause low vaccination uptake.

METHODS

Study design and population

We conducted a population-based retrospective cohort study among women who gave birth to a live born or stillborn infant (≥ 20 weeks' gestation and ≥ 500 grams) in all hospitals in the Canadian province of Ontario between November 2, 2009 and April 30, 2010, using data from Better Outcomes Registry & Network (BORN) Ontario's birth record database.

The BORN database is a province-wide, Internet-based timely data collection system. It collects labour, birth and early postpartum information from both hospitals and midwifery groups in Ontario, and includes clinical, demographic and health behavioural information of all women who come to an Ontario hospital to give birth, through chart abstraction and patient interview. In 2009, more than 97% of all Ontario hospital births were included in the system.

Measures

The primary outcome was whether a woman received influenza vaccine (H1N1, seasonal or both) during pregnancy. Vaccination status and type of vaccine received (H1N1, seasonal or both) was confirmed on admission for birth from either the documentation in the patient's chart, the antenatal record or by asking the woman whether she had received influenza vaccine at any time during the current pregnancy. Women who received any kind of influenza vaccine were considered vaccinated.

Other information extracted from the database included maternal demographics (age, area of residence, and rural or urban status denoted by postal codes), obstetrical characteristics (month of delivery, parity, multifetal pregnancy, high-risk medical comorbidity, history of preterm birth, pre-existing health problems), prenatal health behaviours (antenatal visit in the first trimester, smoking during pregnancy) and type of primary prenatal health care provider.

We linked individual birth records to the 2006 Canadian Census data by geocoding maternal postal codes into dissemination areas

(DAs – the smallest unit of census geography), and obtained neighbourhood-level information on highest level of attained education, median family income, employment level, proportion of recent immigrants, and proportion of Aboriginal residents for each woman based on the DA in which she lived. All neighbourhood-level variables were converted into quintiles prior to analysis with the exception of proportion of Aboriginal residents, which used 10% of the population of the DA being Aboriginal residents as the cut-off ($>10\%$ versus $\leq 10\%$).

Analysis

Characteristics of women with missing information on vaccination were compared with women who had complete information using the chi-square test statistics to determine if there were any differences between the two groups.

We calculated the influenza vaccination rates and their 95% confidence intervals (CI) for women of different demographic, behavioural and clinical characteristics, and compared the vaccination rates among different groups by calculating unadjusted relative risks (uRR) along with their 95% CIs.

To examine the association between influenza vaccination and each independent predictor while controlling the potential influence from other predictors, we employed a log binomial regression model, which can produce unbiased risk estimates for common outcomes ($\geq 10\%$),²⁸ for multivariate analysis. The model was constructed by using influenza vaccination status as the dependent variable, and all identified characteristics as the independent variables.

RESULTS

A total of 64,293 pregnant women presented at Ontario hospitals for delivery during the six-month study period. Information on whether they had been immunized against influenza was unavailable for 7,638 of them (11.9%). The percentage of women who delivered in November was higher in the group with missing information on influenza vaccination than in the one with complete vaccination information (21.1% vs. 15.9%, $p < 0.001$). Other differences (age, rurality, smoking status, parity, high-risk co-morbidity, neighbourhood variables) between women with missing information and those with complete information were minor and not directly meaningful.

Of the remaining 56,654 (88.1%) women in our dataset, 21,773 (38.4%) received only H1N1 vaccine, 283 (0.5%) received only seasonal influenza vaccine, 2,033 (3.6%) received both vaccines, and 45 (0.1%) reported having received influenza vaccination but were unsure which type of vaccine was administered. Altogether, 24,134 (42.6%) of women received at least one type of influenza vaccine (H1N1, seasonal, or both).

The vaccination rate varied substantially across women with different demographic and obstetric characteristics: 29.8% among pregnant women < 20 years old and 47.8% among those aged 35-39 years; 35.9% among women with a history of preterm birth compared to 43.1% among those without; 42.0% among women without any medical co-morbidity in comparison to 49.0% among those with one or more; 32.9% among women who did not initiate antenatal care in the first trimester in contrast to 43.7% among those who did; and 36.4% among smokers compared to 43.4% among non-smokers. The vaccination rates among women with no

Table 1. Vaccination Rates and Relative Risks of Influenza Vaccination Among Pregnant Women of Different Characteristics

Characteristics	N (%)	Vaccination Rate per 100 Women (95% CI)*	Unadjusted RR (95% CI)	Adjusted RR (95% CI) †
Maternal age (years)				
<20	2079 (3.7)	29.8 (27.9-31.8)	0.68 (0.64-0.73)	0.80 (0.76-0.84)
20-24	7496 (13.2)	32.5 (31.5-33.6)	0.74 (0.72-0.77)	0.85 (0.82-0.87)
25-34	34,857 (61.5)	43.9 (43.4-44.4)	1	1
35-39	9969 (17.6)	47.8 (46.8-48.8)	1.09 (1.06-1.12)	1.06 (1.03-1.08)
≥40	2252 (4.0)	44.8 (42.7-46.8)	1.02 (0.97-1.07)	1.02 (0.98-1.06)
Public health region of residence				
North West	1036 (1.9)	41.2 (38.2-44.3)	1.05 (0.97-1.13)	1.02 (0.95-1.10)
North East	2158 (3.9)	48.5 (46.3-50.6)	1.23 (1.18-1.30)	1.11 (1.06-1.17)
Eastern	6814 (12.2)	56.6 (55.4-57.8)	1.44 (1.40-1.49)	1.16 (1.12-1.19)
Central East	17,207 (30.9)	37.8 (37.1-38.6)	0.96 (0.94-1.00)	0.95 (0.92-0.97)
Toronto	12,372 (22.2)	39.3 (38.4-40.1)	1	1
South West	7207 (12.9)	43.5 (42.4-44.7)	1.11 (1.07-1.15)	1.05 (1.02-1.09)
Central West	8896 (16.0)	44.7 (43.6-45.7)	1.14 (1.10-1.17)	1.03 (1.00-1.06)
Parity				
0	24,785 (43.9)	42.4 (41.7-43.0)	1	1
1	19,985 (35.4)	45.3 (44.6-46.0)	1.07 (1.05-1.09)	1.03 (1.01-1.05)
≥2	11,735 (20.8)	38.4 (37.5-39.3)	0.91 (0.88-0.93)	0.92 (0.90-0.95)
Month of delivery				
November	8995 (15.9)	36.5 (35.5-37.5)	1	1
December	9240 (16.3)	46.8 (45.8-47.8)	1.28 (1.24-1.33)	1.16 (1.13-1.20)
January	9667 (17.1)	48.0 (47.0-49.0)	1.31 (1.27-1.36)	1.18 (1.15-1.21)
February	8909 (15.7)	46.3 (45.3-47.4)	1.27 (1.22-1.31)	1.16 (1.12-1.19)
March	10,176 (18.0)	41.2 (40.2-42.1)	1.13 (1.09-1.17)	1.06 (1.03-1.10)
April	9667 (17.1)	36.9 (35.9-37.9)	1.01 (0.97-1.05)	1.00 (0.97-1.03)
Type of antenatal care provider				
None	222 (0.4)	18.9 (14.0-24.7)	0.46 (0.35-0.60)	0.72 (0.59-0.88)
Family physician	15,641 (28.5)	47.5 (46.7-48.2)	1.15 (1.12-1.17)	1.08 (1.06-1.10)
Midwife	4116 (7.5)	33.1 (31.7-34.6)	0.80 (0.76-0.84)	0.86 (0.83-0.89)
Nurse practitioner	330 (0.6)	42.1 (36.7-47.7)	1.02 (0.90-1.15)	1.04 (0.94-1.15)
Obstetrician/Gynecologist	34,412 (62.7)	41.4 (40.9-41.9)	1	1
Other	188 (0.3)	45.7 (38.5-53.2)	1.10 (0.95-1.29)	1.05 (0.91-1.21)
Area of residence				
Urban	49,751 (87.8)	42.1 (41.6-42.5)	1	1
Rural	6891 (12.2)	46.4 (45.3-47.6)	1.10 (1.07-1.13)	1.00 (0.97-1.03)
History of preterm birth				
No	52,108 (92.7)	43.1 (42.7-43.5)	1	1
Yes	4132 (7.3)	35.9 (34.4-37.4)	0.83 (0.80-0.87)	0.97 (0.94-1.00)
Smoking during pregnancy				
No	48,138 (88.4)	43.4 (42.9-43.8)	1	1
Yes	6303 (11.6)	36.4 (35.2-37.6)	0.84 (0.81-0.87)	0.92 (0.89-0.95)
Multifetal pregnancy				
No	55,572 (98.1)	42.5 (42.1-43.0)	1	1
Yes	1082 (1.9)	45.5 (42.5-48.5)	1.07 (1.00-1.14)	1.00 (0.95-1.06)
Antenatal visit in first trimester				
No	6177 (13.5)	32.9 (31.7-34.1)	0.75 (0.72-0.78)	0.93 (0.91-0.96)
Yes	39,706 (86.5)	43.7 (43.2-44.2)	1	1
Missing	10,771	44.0 (43.1-45.0)	1.01 (0.98-1.03)	1.03 (1.01-1.06)
Maternal medical co-morbidity‡				
No	51,191 (92.6)	42.0 (41.6-42.4)	1	1
Yes	4062 (7.4)	49.0 (47.5-50.6)	1.17 (1.13-1.21)	1.10 (1.07-1.13)
Neighbourhood education quintiles				
1 (Lowest)	11,538 (20.9)	41.6 (40.7-42.5)	0.82 (0.79-0.84)	0.85 (0.83-0.88)
2	10,684 (19.3)	40.5 (39.6-41.5)	0.80 (0.77-0.82)	0.85 (0.83-0.88)
3	11,289 (20.4)	40.2 (39.3-41.1)	0.79 (0.77-0.81)	0.87 (0.85-0.89)
4	11,276 (20.4)	40.7 (39.8-41.6)	0.80 (0.78-0.82)	0.88 (0.86-0.90)
5 (Highest)	10,494 (19.0)	50.9 (50.0-51.9)	1	1
Neighbourhood employment level				
1 (Lowest)	11,578 (20.9)	37.5 (36.6-38.4)	0.83 (0.80-0.86)	1.00 (0.97-1.03)
2	11,400 (20.6)	42.2 (41.3-43.1)	0.93 (0.91-0.96)	1.03 (1.00-1.06)
3	10,660 (19.3)	43.1 (42.1-44.0)	0.95 (0.92-0.98)	1.02 (0.99-1.04)
4	11,308 (20.5)	45.7 (44.9-46.7)	1.01 (0.98-1.04)	1.01 (0.99-1.04)
5 (Highest)	10,335 (18.7)	45.3 (44.3-46.2)	1	1
Proportion of recent immigrants in the neighbourhood				
1 (Lowest)	9773 (17.8)	47.1 (46.1-48.1)	1	1
2	9358 (17.0)	47.2 (46.2-48.3)	1.00 (0.97-1.03)	0.98 (0.95-1.00)
3	8358 (15.2)	46.7 (45.7-47.8)	0.99 (0.96-1.02)	0.96 (0.93-0.99)
4	9714 (17.7)	43.8 (42.8-44.8)	0.93 (0.90-0.96)	0.91 (0.88-0.93)
5 (Highest)	17,760 (32.3)	35.3 (34.6-36.0)	0.75 (0.73-0.77)	0.83 (0.81-0.86)
Neighbourhood median family income quintiles				
1 (Lowest)	13,589 (24.6)	37.2 (36.4-38.0)	0.71 (0.69-0.73)	0.93 (0.90-0.96)
2	10,646 (19.3)	40.3 (39.4-41.3)	0.77 (0.74-0.79)	0.94 (0.92-0.97)
3	11,325 (20.5)	42.3 (41.4-43.2)	0.80 (0.78-0.83)	0.96 (0.93-0.99)
4	11,235 (20.3)	44.5 (43.6-45.4)	0.85 (0.82-0.87)	0.97 (0.95-1.00)
5 (Highest)	8486 (15.4)	52.6 (51.5-53.7)	1	1
Proportion of Aboriginal residents in the neighbourhood				
Low (<10%)	53,494 (96.8)	42.7 (42.3-43.1)	1	1
High (≥10%)	1762 (3.2)	43.0 (40.7-45.4)	1.01 (0.95-1.06)	1.00 (0.94-1.05)

* Statistically significant differences (p<0.001) in vaccination rates were found in all identified characteristics, except in the proportion of Aboriginal residents in the neighbourhood (p=0.77).

† All independent variables were included in the multivariate model.

‡ Maternal medical co-morbidity is defined as having insulin-dependent diabetes, non-insulin-dependent diabetes, asthma, heart disease or chronic hypertension.

antenatal care provider (18.9%) or with a midwife as antenatal care provider (33.1%) were lower than those among women with an obstetrician/gynecologist (41.4%), a family physician (47.5%), or a nurse practitioner (42.1%) as their antenatal care provider. A gradient in vaccination uptake was observed among women of different neighbourhood income quintiles (37.2%, 40.3%, 42.3%, 44.5% and 52.6%, respectively, from the lowest to the highest neighbourhood income groups), and among women from neighbourhoods with different proportions of recent immigrants (35.5%, 43.8%, 46.7%, 47.2% and 47.1%, respectively, for neighbourhoods ranking from the highest to the lowest proportion of recent immigrants). There was also almost a 10% absolute difference in the vaccination rate between women from the lowest versus those from the highest neighbourhood education quintile (41.6% vs. 50.9%).

After adjusting for all the covariates, vaccine uptake was lower among women: of age <20 (aRR=0.80, 95% CI: 0.76-0.84); without an antenatal care provider (aRR=0.72, 95% CI: 0.59-0.88); who did not initiate antenatal care within the first trimester (aRR=0.93, 95% CI: 0.91-0.96); who smoked during pregnancy (aRR=0.92, 95% CI: 0.89-0.95); with a history of preterm birth (aRR=0.97, 95% CI: 0.94-1.00); and in a neighbourhood of higher proportion of recent immigrants (aRR=0.83, 95% CI: 0.81-0.86), lower education quintile (aRR=0.85, 95% CI: 0.83-0.88), or lower income quintile (aRR=0.93, 95% CI: 0.90-0.96). An increased vaccination rate was observed among women with medical co-morbidities (aRR=1.10, 95% CI: 1.07-1.13) and those with family physicians (vs. obstetricians) as antenatal care providers (aRR=1.08, 95% CI: 1.06-1.10).

DISCUSSION

To our knowledge, this is the largest population-based cohort study to date investigating multiple determinants associated with influenza vaccine uptake among pregnant women. The large sample size and the high vaccination rate enable us to explore the association between vaccination status and multiple predicting factors of different domains and produce stable risk estimates. The observed vaccination rate of 42.6% is comparable to the Statistics Canada estimation for pregnant women all over the country (37.4% to 39.9%) using the 2010 Canadian Community Health Survey data,¹⁷ and the United States monthly survey data in 10 states for the same period (46.6%).¹⁵

Our finding that women from a neighbourhood of lower income, lower educational level, and higher concentration of recent immigrants had lower vaccination rates is consistent with previous surveys using individual-level SES measures.^{16,18,21,23-26} Since the influenza vaccine was provided to all Ontarians free of charge, cost of vaccine would not have had influence on vaccine uptake. Thus the difference in vaccination rates among women of different SES likely reflects differences in access to medical information, medical care and personal beliefs regarding vaccine benefits and risks.¹⁶ We presume that women from neighbourhoods of higher income and higher education level had a better knowledge of the potential benefits of influenza vaccine and a better understanding of the possible high risk of being infected during pregnancy, which is consistent with other studies.^{16,18,24-26}

We found that women's vaccine uptake was lower in neighbourhoods with a higher proportion of recent immigrants. Race/ethnicity was consistently reported in studies conducted in other countries^{16,26} to be correlated with influenza vaccine uptake during

pregnancy. Other investigators hypothesized that the disparity in vaccination rate between different ethnic groups was a result of low accessibility to information among foreign populations.¹⁶ Considering the multicultural setting of Canada, we add that the language barrier among new immigrants may be the reason for insufficient access to information on the vaccine campaign and influenza-related knowledge. A previous study indicated that the lack of available language translation may lead to low acceptance of physicians' offer of influenza vaccination among pregnant women.²⁹

Although the Society of Obstetricians and Gynaecologists of Canada encouraged obstetricians to offer vaccines for all pregnant women during the 2009 H1N1 influenza pandemic,³⁰ our results showed that women who had antenatal care with family physicians had greater likelihood of getting vaccine than those with obstetricians. This disparity may stem from the practice pattern of health providers. A Canadian survey²⁷ in 2003-2004 influenza season showed that 41% of the obstetricians did not provide influenza vaccination at their office; and that obstetricians were less likely than family physicians to consider it their responsibility to discuss, recommend or offer influenza vaccination, but more likely to say it was the local public health unit's responsibility to vaccinate pregnant women. In Canada, obstetricians attend more than 60% of all births, and are often the only health care provider pregnant women contact later in pregnancy. It is important to add influenza vaccination and influenza prevention activities into obstetricians' routine preventive care practice.

The significantly lower vaccination rates among women without prenatal care providers and women who did not start antenatal visit in the first trimester can be explained from two perspectives. Women who did not have a first trimester antenatal care visit or did not have antenatal care at all could have lost the opportunity of getting useful information on vaccination from providers. This also reflects women's health-related behaviours in general, as the variable "smoking during pregnancy" did in our analyses. It is highly possible that women who were slow in taking antenatal care and those who smoked during pregnancy had a greater tendency to forgo beneficial health behaviours such as getting a vaccine.

Vaccine uptake can also be affected by women's medical and obstetrical condition. Our finding that women with obstetrical co-morbidities were more likely to have had vaccine is in contrast to a study conducted by Freund et al., which indicated a lower vaccination rate in this group.¹⁶ During previous pandemics,⁴ pregnant women with underlying co-morbidities were found to be at significantly greater risk of influenza-associated morbidity and mortality than their healthy counterparts. There is a large body of literature documenting the safety of administering influenza vaccination to pregnant women; none has shown that influenza vaccine uptake could increase adverse birth outcomes.⁷⁻¹⁰ Such messages need to be clearly delivered to maternal care providers and pregnant women to reduce unnecessary concerns.

Our study has several limitations. Only pregnant women with a hospital delivery were included in our study. Although less than 2% of Ontario births take place at home under midwifery care, it is still possible these mothers would have different characteristics from our cohort. Also, women with pregnancy loss (miscarriage, termination of pregnancy) during the first 20 weeks of pregnancy were not included by the data source used for this study. The higher proportion of missing vaccination information among women

who gave birth in November is another limitation. Although it is unlikely the characteristics of women giving birth in different months would be different, we acknowledge our cohort slightly under-represents women who gave birth in November. Moreover, our study population is a birth cohort rather than a cohort of pregnant women. Considering the time when the Ontario H1N1 vaccination program started and the accrual window of our study population, almost all women in the vaccination group were immunized in their 2nd or 3rd trimester. Therefore the vaccination rate observed in our study may not represent the vaccination situation in the entire population of pregnant women. A further limitation of the current study lies in the inability of a large administrative database to capture all important variables that can influence vaccine uptake. These variables include pregnant women's safety concerns and doubts regarding the effectiveness of vaccine, their perception of the risk of getting influenza during pregnancy, and physician recommendation to receive vaccine.^{21-24,26,27}

The influenza vaccination rate we observed is suboptimal as more than half of the pregnant women have not received any kind of influenza vaccine. Many factors are associated with influenza vaccination during pregnancy, including potentially modifiable behavioural factors among both pregnant women and practitioners, and static demographic and clinical characteristics of pregnant women. These demographic and clinical factors indicate subgroups of the prenatal population that should be prioritized in future public health intervention strategies to increase vaccination uptake. Patient-level behavioural factors – such as an early start of antenatal visits – can be changed through health education programs that increase women's awareness, and health care providers' practice patterns can be changed through training and removing organizational barriers.

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RÉSUMÉ

Objectifs : Les taux de vaccination contre la grippe sont généralement faibles chez les femmes enceintes, et il existe peu de données populationnelles sur les prédicteurs du recours à la vaccination dans ce groupe. Nous avons voulu évaluer le taux de vaccination antigrippale chez les femmes enceintes durant la pandémie de grippe H1N1 de 2009 et explorer les prédicteurs associés à la vaccination durant la grossesse.

Méthode : Nous avons mené une étude de cohorte rétrospective dans la population des femmes ayant accouché dans un hôpital de l'Ontario entre le 2 novembre 2009 et le 30 avril 2010. Les taux de vaccination contre la grippe ont été calculés selon des caractéristiques maternelles, obstétriques, comportementales et du quartier. Nous avons comparé les femmes ayant reçu le vaccin contre la grippe durant leur grossesse aux femmes n'ayant pas été vaccinées, en calculant les risques relatifs ajustés (RRA) et les intervalles de confiance (IC) de 95 % par régression log-binomiale.

INFLUENZA VACCINATION IN PREGNANT WOMEN

Résultats : Sur les 56 654 femmes ayant accouché durant la période de l'étude, 42,6 % ont reçu le vaccin contre la grippe durant leur grossesse. Le recours au vaccin était plus faible chez les femmes de <20 ans (RRa=0,80, IC de 95 % : 0,76-0,84), de faible statut socioéconomique (RRa=0,93, IC de 95 % : 0,90-0,96), sans fournisseur de soins prénatals (RRa=0,72, IC de 95 % : 0,59-0,88), n'ayant pas amorcé les soins prénatals à temps (RRa=0,93, IC de 95 % : 0,91-0,96), ayant fumé pendant leur grossesse (RRa=0,92, IC de 95 % : 0,89-0,95) et ayant des antécédents d'accouchement avant terme (RRa=0,97, IC de 95 % : 0,94-1,00). Un taux de vaccination accru a été observé chez les femmes ayant des comorbidités médicales (RRa=1,10, IC de 95 % : 1,07-1,13) et chez celles ayant un médecin de famille (plutôt qu'un obstétricien) comme fournisseur de soins prénatals (RRa=1,08, IC de 95 % : 1,06-1,10).

Conclusion : Nous avons cerné la population prénatale qui pourrait bénéficier de stratégies d'intervention de santé publique ciblées afin d'améliorer les taux de vaccination futurs dans ce groupe prioritaire sur le plan vaccinal.

Mots clés : vaccins antigrippaux; femmes enceintes; H1N1