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Influenza vaccination uptake amongst pregnant women and maternal care providers is suboptimal

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ABSTRACT

Objective: To assess the uptake of influenza vaccination by pregnant women and maternity care providers and explore their attitudes towards influenza vaccination.
Design, setting and participants: Cross-sectional survey administered in a Victorian tertiary level public hospital to 337 pregnant women and 96 maternity care providers.
Results: 31.3% of patients planned to or had received influenza vaccination this year, but only a quarter had received education about influenza. Women were more likely to receive influenza vaccination if they had been vaccinated in the last two years (RR 4.5, 95% CI: 3.1–6.4, $p < 0.001$), received education about influenza (RR 2.3, 95% CI: 1.6–3.2, $p < 0.001$) or believed that they were at high risk of influenza-related complications while pregnant (RR 2.0, 95% CI: 1.4–2.7, $p < 0.001$). While only 56.8% of maternity care providers believed pregnant women were at high risk of influenza-related complications, 72.9% would recommend influenza vaccination to all pregnant women. Of the maternity care providers studied, 69% planned to or had been vaccinated in 2011, with this group more likely to recommend vaccination to their patients (RR 2.0, 95% CI: 1.3–3.0, $p < 0.001$). Significantly more maternity care providers indicated that they would routinely recommend influenza vaccination than the proportion of patients who reported receiving education.
Conclusions: Influenza vaccination rates in pregnant women are low, reflecting inadequate patient education despite most maternity care providers indicating that they would routinely recommend influenza vaccination. Increasing influenza vaccination uptake by women in pregnancy will require better education of both women and maternity care providers.

1. Introduction

Pregnant women are at increased risk of severe illness from influenza compared with healthy non-pregnant individuals [1,2]. This was particularly evident during the H1N1/09 pandemic, in which a Victorian study of 43 hospitalised pregnant women showed large proportions of women admitted for both respiratory complications, including pneumonia and respiratory failure, and pregnancy complications, such as a four-fold rise in pre-term labour [1]. A similar United States study of 34 women in the same H1N1/09 pandemic concluded that pregnant women had a greater than four-fold increase in hospitalisations compared to the general population [2]. In both case series, the risk of morbidity and mortality from influenza infection appeared to increase with length of gestation.

Limited data exists on the safety and efficacy of influenza vaccination in pregnancy, with few studies of reasonably small, selected populations published. However, available literature suggests that influenza vaccination is safe and effective for pregnant women [3–5], with a 36% reduction in respiratory illnesses [6]. Likewise, the vaccination appears safe for the foetus, with no increased risks of congenital abnormality or miscarriage [3–5]. Evidence is also

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emerging that maternal influenza vaccination confers protection for infants in the first 6 months of life, with a 41% risk reduction in laboratory-confirmed influenza virus [7] and a 45-48% reduction in influenza hospitalisations [8].

National policies on influenza vaccination in pregnancy vary widely around the world, reflecting the uncertainty surrounding its safety and efficacy. In Australia, the National Health and Medical Research Council recommends that all pregnant women who will be in their second or third trimester during the influenza season, including those in their first trimester of pregnancy at time of vaccination, should receive the inactivated trivalent influenza vaccine [9]. This vaccine is available free-of-charge to all pregnant women under the Australian National Immunisation Programme.

Despite data demonstrating an increased risk of influenza-related complications, and national recommendations for influenza vaccination, coverage levels in pregnant women are still amongst the lowest for any group considered at high risk for influenza-related complications [10]. United States seasonal influenza vaccination rates in pregnant women have ranged between 10% and 15% [11], while a recent West Australian study demonstrated a H1N1/09 influenza vaccination rate of only 6.7% [12]. However, Australian-specific data remains scarce.

The objectives of this report were to assess uptake of influenza vaccination among pregnant women and maternity care providers, and to explore their attitudes towards influenza vaccination.

2. Methods

A cross-sectional survey was conducted at Monash Medical Centre (Clayton, Victoria), a public metropolitan tertiary hospital with about 3500 births per annum. The study took place over a three-week period (27 April 2011 to 18 May 2011). The study was approved by the Southern Health Human Research Ethics Committee.

Pregnant women (patients) attending the general antenatal clinics were approached by one of the investigators (AL or AAH) and asked to complete an anonymous, self-administered questionnaire while waiting for their appointment. Completed questionnaires were then returned directly to the investigators or submitted via a dedicated box in the clinic. Participation was voluntary. The antenatal clinics consisted of general and high-risk clinics such as Diabetes & Endocrine Clinics, Twins Clinic and Maternal Foetal Medicine Clinic.

The patient questionnaire was developed in English, Mandarin and Vietnamese, the three most common languages spoken by women attending the antenatal clinics. Data was collected on patient demographics (age, country of birth, religion), childhood vaccination, number of pregnancies, co-morbidities, influenza vaccination in the past two years, plans for influenza vaccination this year, motivations or barriers to vaccination, perceived risk of influenza-related complications in pregnancy, and influenza education received.

Maternity care providers working at the same hospital were also approached to complete a similar questionnaire. Obstetricians (consultants, registrars, and residents) and midwives were eligible to complete the survey. They were approached at various settings in the hospital including antenatal clinics, maternity wards and during staff education sessions. Data collected in this group included demographics (age, occupation, years of practice), whether the respondent had received influenza vaccination in the past two years, plans for influenza vaccination this year, motivations or barriers to vaccination, perceived risk of influenza-related complications in pregnancy, and which pregnant women they would recommend the influenza vaccination for.

Table 1
Comparison of responses between pregnant women and maternity care providers.

Questionnaire responses	Pregnant women (%)	Maternity care providers (%)
	$n = 337$	$n = 96$
Received influenza vaccine in past 2 years	37	74
Received/plan to receive influenza vaccine this year	31	69
Perceived risk of serious influenza-related complications in pregnancy	***n* = 333**	***n* = 95**
Low	28	10
Medium	20	34
High	15	57
Main reasons to be vaccinated against influenza[a]	***n* = 105**	***n* = 66**
To protect self from influenza	63	96
To protect baby from influenza	6	61[b]
Doctor/midwife recommended it	21	n/a
Employer recommended it	n/a	21
Main reasons not to be vaccinated against influenza[a]	***n* = 162**	***n* = 30**
Worried about safety of vaccine	40	17
Don't think I'm at risk for getting influenza	22	30
Received it last year, so don't need/want it this year	4	0
Concerned about side effects of vaccine	24	27
Doctor says I don't need it	4	n/a
Don't like getting needles	10	10
Other reasons	14	17

n/a: not applicable.
[a] More than one response allowed.
[b] Maternity care providers indicating personal vaccination 'to protect my patients from getting influenza'.

Data were analysed using STATA 11 (Stata-Corp, College Station, TX, USA). Student's t tests and χ^2 tests were used where appropriate. Risk ratios (RR) and 95% confidence intervals (CI) were calculated for questionnaire responses between groups. Statistical significance was accorded when $p < 0.05$.

3. Results

3.1. Pregnant women

Three hundred and thirty seven patient questionnaires were completed (95% in English, 4% in Mandarin and 1% in Vietnamese). This may not reflect the ethnic breakdown of women attending the antenatal clinics, as most of the women were literate in English regardless of ethnicity. Of the women approached, 337/355 (95%) returned their forms.

The mean (±SD) age of participating woman was 30.7 ± 5.6 years. 109 (32.5%) of women were primigravid. 171 (51.5%) women were born overseas (22.9% from Western Pacific region and 17.2% from South East Asia). 132 (43%) women described their religion as Christian, 33 (11%) Hindu, 44 (14%) recorded other religions and 98 (32%) were atheist. The most common self reported pre-existing medical conditions were diabetes ($n = 47$, 3.9%), obesity ($n = 31$, 9.2%), asthma ($n = 39$, 11.6%), smoking ($n = 34$, 10.1%) and heart disease ($n = 1$, 0.3%).

Table 1 summarises the responses from pregnant women and maternity care providers regarding vaccination uptake. Only 105 (31%) women planned to or had received influenza vaccination this year. Overall, 50 (15%) women were aware they were at high risk of influenza-related complications. Only a quarter of women had received education on influenza from any healthcare provider, with more than half of these by their general practitioner. Obstetricians