Flu Immunization During Pregnancy in South Carolina

Introduction

The Centers for Disease Control and Prevention (CDC) recommends flu vaccination for all women who are or will be pregnant during flu season (early October to late March)[1]. In South Carolina (SC), the Pregnancy Risk Assessment Monitoring System (PRAMS) is used to examine and understand women's behaviors and attitudes before, during and after pregnancy. PRAMS has been collecting data in SC since 1992[2].

PRAMS surveys are mailed to a sample of women who have recently given birth in SC. New versions of the survey are released every three to four years. The most recent survey included the following questions regarding flu vaccination[2]:

- During the 12 months *before the delivery* of your new baby, did a doctor, nurse or other health care worker *offer* you a flu shot or *tell* you to get one?
  - ☐ No
  - ☐ Yes
- During the 12 months *before the delivery* of your new baby, did you *get* a flu shot?
  - ☐ No
  - ☐ Yes, before my pregnancy
  - ☐ Yes, during my pregnancy

This report examines the most recent full phase of data available about flu vaccination during pregnancy in SC (years 2012-2015; n = 3,191; weighted n = 211,383). Additionally, flu shot status was investigated by sub-populations to see which groups may most benefit from an intervention. The following demographics were examined: maternal age group; maternal education; maternal race/ethnicity; pregnancy intention; and annual household income. SAS 9.4 software[3] was utilized to obtain prevalence estimates and 95% confidence intervals (CIs) via survey analysis procedures.

Results

During the 12 months *before the delivery* of your new baby, did a provider *offer* you a flu shot or *tell* you to get one?

Approximately 23% of women in SC reported they were not offered or told to get a flu shot by a health care provider during the 12 months before the delivery of their most recent baby.

Among women who reported they were told to get a flu shot, significantly more had higher educational attainment and a higher annual household income than those who reported not being told to get a flu shot (Table 1).

There were no significant differences by age group, race/ethnicity or pregnancy intention in regards to being offered or told to get a flu shot by a provider in the 12 months before delivery (Table 1).

Table 1. Demographic distribution of responses to the question, "During the 12 months before the delivery of your new baby, did a doctor, nurse or other health care worker *offer* you a flu shot or *tell* you to get one?" (PRAMS 2012-2015)

Demographic Characteristics	No % (95% CI)	Yes % (95% CI)
AGE GROUP		
<20	12.2 (7.2-17.2)	8.5 (6.3-10.7)
20-29	56.4 (49.8-63.0)	54.3 (50.8-57.8)
30-39	30.1 (24.2-36.1)	34.9 (31.6-38.2)
40+	1.2 (0.2-2.3)	2.3 (1.3-3.3)
EDUCATION		
<High school	23.2 (17.2-29.1)	14.8 (12.1-17.6)
HS/GED	27.6 (21.3-33.9)	21.6 (18.5-24.7)
Some college	**31.7 (25.6-37.8)**	**33.1 (29.8-36.4)**
College graduate	**17.5 (13.1-22.0)**	**30.4 (27.3-33.5)**
RACE/ETHNICITY*		
NH White	57.0 (50.4-63.7)	59.9 (56.4-63.4)
NH Black	30.2 (23.9-36.5)	28.9 (25.5-32.2)
Other	12.8 (8.3-17.2)	11.2 (9.0-13.5)
PREGNANCY INTENT		
Intended	41.6 (34.9-48.3)	48.1 (44.5-51.7)
Unintended	58.4 (51.7-65.1)	51.9 (48.3-55.5)
ANNUAL HOUSEHOLD INCOME		
$52,000 or less	**80.4 (75.3-85.4)**	**66.7 (63.4-70.0)**
More than $52,000	**19.6 (14.6-24.7)**	**33.3 (30.0-36.6)**

*NH = Non-Hispanic; Other includes: Hispanic, American Indian, Chinese, Japanese, Filipino, Other Asian, Hawaiian, Alaska Native, Other race, Multi-racial; **Bold: significantly different**

During the 12 months *before the delivery* of your new baby, did you *get* a flu shot?

Approximately 53% of women in SC did not receive a flu shot within the 12 months before delivering their most recent baby. Approximately 12% received a flu shot before pregnancy and 36% during pregnancy.

Among those who reported receiving a flu shot before or during their most recent pregnancy, significantly more women had an intended pregnancy, higher educational attainment, and a higher annual household income than those who reported not getting one before or during pregnancy. There were no significant differences by age group and race/ethnicity in regards to receiving a flu shot before or during pregnancy (Table 2).

Table 2. Demographic distribution of responses to the question, "During the 12 months *before the delivery* of your new baby, did you *get* a flu shot?" (PRAMS 2012-2015)

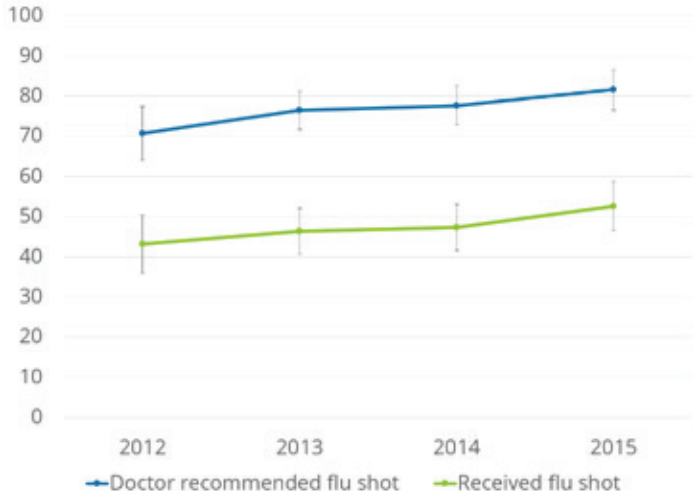
Demographic Characteristics	No % (95% CI)	Yes, before or during % (95% CI)
TOLD TO GET A FLU SHOT		
Yes	**61.4 (57.1-65.7)**	**93.5 (91.2-95.7)**
No	**38.6 (34.3-42.9)**	**6.5 (4.3-8.8)**
AGE GROUP		
<20	10.5 (7.5-13.6)	7.9 (5.2-10.6)
20-29	58.2 (53.8-62.5)	51.0 (46.6-55.5)
30-39	**29.9 (26.0-33.8)**	**38.4 (34.2-42.7)**
40+	1.4 (0.6-2.2)	2.6 (1.3-4.0)
EDUCATION		
<High school	18.4 (14.8-22.0)	14.2 (10.7-17.6)
HS/GED	27.4 (23.3-31.5)	18.4 (14.6-22.1)
Some college	34.2 (30.1-38.3)	31.7 (27.7-35.8)
College graduate	**20.0 (16.7-23.2)**	**35.7 (31.6-39.9)**
RACE/ETHNICITY*		
NH White	55.8 (51.4-60.2)	62.0 (58.5-67.5)
NH Black	31.9 (27.7-36.1)	26.3 (22.2-30.5)
Other	12.3 (9.6-15.0)	10.7 (7.7-13.7)
PREGNANCY INTENT		
Intended	**39.7 (35.3-44.1)**	**53.9 (49.3-58.6)**
Unintended	**60.3 (55.9-64.7)**	**46.1 (41.4-50.7)**
ANNUAL HOUSEHOLD INCOME		
$52,000 or less	**80.6 (77.3-84.0)**	**58.4 (54.0-62.8)**
More than $52,000	**19.4 (16.0-22.7)**	**41.6 (37.2-46.0)**

*NH = Non-Hispanic; Other includes: Hispanic, American Indian, Chinese, Japanese, Filipino, Other Asian, Hawaiian, Alaska Native, Other race, Multi-racial; **Bold: significantly different**

Are there differences by birth year?

Between 2012 and 2015, there was no significant difference in the prevalence of those who were offered or told to get a flu shot by a health care provider during the 12 months before the delivery of their most recent baby or in the prevalence of those who received a flu shot either before or during pregnancy by birth year (Figure 1).

Figure 1. Flu Shot Recommendation Prevalence Estimates by Birth Year, 2012-2015



Conclusions

In general, significantly less women with lower educational attainment and lower annual household income reported knowing about or getting a flu shot within the 12 months before delivery, compared to those with higher educational attainment and higher annual household income. These two populations generally overlapped; approximately 95% of those with less than a high school education had an annual household income of $52,000 or less, compared to approximately 25% of college graduates with the same annual household income level.

The importance of flu vaccination during pregnancy should be stressed in schools, work and prenatal care settings. Selected vaccines, including flu vaccine, are available in SC DHEC health departments at no cost to adults over 19 years old who are uninsured or underinsured. Please see www.scdhec.gov/Health/Vaccinations/DHECVaccineEligibility/ for more information.

References

[1] Guidelines for Vaccinating Pregnant Women. CDC. http://www.cdc.gov/vaccines/pubs/preg-guide.html

[2] SC PRAMS. 2012-2015. Division of Surveillance, Bureau of Health Improvement and Equity, SC Department of Health and Environmental Control.

[3] SAS 9.4. SAS Institute Inc., Cary, NC, USA.