Vaccine 33 (2015) 1659–1663

Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Low uptake of influenza vaccine among university students: Evaluating predictors beyond cost and safety concerns

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ARTICLE INFO

Article history:
Received 3 November 2014
Received in revised form 2 February 2015
Accepted 16 February 2015
Available online 26 February 2015

Keywords:
Influenza
Vaccines
Influenza vaccine
University
Student

ABSTRACT

Introduction: Annual influenza vaccine coverage for young adults (including college students) remains low, despite a 2011 US recommendation for annual immunization of all people 6 months and older. College students are at high risk for influenza morbidity given close living and social spaces and extended travel during semester breaks when influenza circulation typically increases. We evaluated influenza vaccine uptake following an on-campus vaccine campaign at a large, public New York State university.
Methods: Consecutive students visiting the University Health Center were recruited for a self-administered, anonymous, written survey. Students were asked about recent influenza vaccination, barriers to influenza vaccination, and willingness to get vaccinated to protect other vulnerable individuals they may encounter. Frequencies and proportions were evaluated.
Results: Of 653 students approached, 600 completed surveys (92% response proportion); respondents were primarily female (61%) and non-Hispanic white (59%). Influenza vaccine coverage was low (28%). Compared to coverage among non-Hispanic white students (30%), coverage was similar among Hispanic (30%) and other race/ethnicity students (28%) and lowest among non-Hispanic black students (17%). Among the unvaccinated, the most commonly selected vaccination barriers were "Too lazy to get the vaccine" (32%) and "Don't need the vaccine because I'm healthy" (29%); 6% of unvaccinated students cited cost as a barrier. After being informed that influenza vaccination of young, healthy people can protect other vulnerable individuals (e.g., infants, elderly), 71% of unvaccinated students indicated this would increase their willingness to get vaccinated.
Conclusions: Influenza vaccine uptake among college students is very low. While making vaccine easily obtained may increase vaccine uptake, college students need to be motivated to get vaccinated. Typically healthy students may not perceive a need for influenza vaccine. Education about vaccinating healthy individuals to prevent the spread of influenza to close contacts, such as vulnerable family members, may provide this motivation to get vaccinated.

1. Introduction

In 2010, the United States Centers for Disease Control and Prevention (CDC) recommended that all persons in the United States aged 6 months and older receive the influenza vaccine annually [1]. The expansion of the recommendation from specific targeted populations to a universal recommendation primarily impacted healthy 18–49 year-olds, who previously had not been included in the routine recommendation for influenza immunization. Findings from the 2009 H1N1 influenza pandemic [2] and the preliminary data from the 2013–2014 influenza season [3,4] highlight the potential for severe influenza infection and death among young adults. However, influenza vaccine coverage among young adults, including limited evidence on college students [5,6], lags behind that of other age groups [7–9].

Data are limited regarding barriers to influenza vaccination of college students, and the available information focuses mainly on standard constructs of vaccination behavior (e.g., based on the

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http://dx.doi.org/10.1016/j.vaccine.2015.02.033
0264-410X/

Health Belief Model) [10–13]. College students present a unique population in terms of access to health care, perceived and actual risk of disease, and ability to transmit influenza. The Patient Protection and Affordable Care Act has improved insurance coverage of college-aged individuals, however, this population does not typically seek preventive services such as vaccines, and in-school access to preventive services is not consistent across colleges and universities. While there is often a low perception of the severity of influenza disease among young adults [10–13], recent influenza seasons have impacted this population more severely [2–4]. In a study of 3249 college students in Minnesota over the 2002–2003 influenza season, 37% reported an influenza-like illness in the period November 2002–April 2003. Compared to students with a non-ILI upper respiratory infection, students with ILI had a greater burden of missed classes, poor academic performance on exams or assignments, and time ill (including class days missed, days in bed, and days of illness) [14]. Because of the close contact with other students and extended holiday breaks where students may be around family members at greater risk of influenza (e.g., elderly relatives, young children), there is a greater risk of transmission and spread of influenza, especially if individuals are asymptomatically infected. Recent efforts to understand asymptomatic influenza infection have documented substantial proportions of individuals with laboratory findings indicative of influenza infection without presentation of symptoms [15–17].

We conducted a survey at a large, public New York State university to evaluate influenza vaccine coverage among college students and identify the major barriers. Additionally, we sought to identify if additional education about the implications of influenza infection, including transmission to high-risk individuals, would change perceptions of the need to receive influenza vaccine.

2. Methods

2.1. Survey

In February and March, 2013, a cross-sectional study was conducted, with data collection occurring through a self-administered, anonymous, written survey administered and collected in the University Health Center. Surveys were designed to be completed in less than 15 min, with most questions presented with categorical response options for selection. The study was approved by the University's Institutional Review Board; the requirement for signed informed consent was waived to maintain anonymity. Study procedures were conducted in accordance with the Declaration of Helsinki. Study participants were provided a small token of appreciation (e.g., stress ball) for participation in the study.

The survey measured self-reported receipt of influenza vaccine within the current influenza season, as well as reasons for not receiving influenza vaccine. Awareness of influenza vaccine availability on campus and financial barriers (e.g., insurance coverage, willingness to pay for influenza vaccine) were assessed. Finally, participants were queried regarding their potential exposure to vulnerable populations (infants, elderly, seriously ill family members) during the holiday break between semesters, and their knowledge and attitudes regarding influenza vaccination of young and healthy individuals to help protect vulnerable populations.

2.2. Study sample

University Health Center attendees, defined as either those presenting for medical appointments (e.g., for acute care illness visits, reproductive health examinations) or accompanying someone to an appointment, were recruited in the Health Center waiting area.

Table 1
Influenza vaccine coverage, overall and by selected demographic characteristics, among students surveyed at a large, public New York State university, 2013.

	N	%	Vaccinated		Not vaccinated		$\chi 2$
			n	%	*n*	%	*p*-value
Gender							
Female	367	61.3	99	27.0	268	73.0	0.534
Male	232	38.7	68	29.3	164	70.7	
Missing	1	–	–	–	–	–	
Race/Ethnicity							0.0784
White Non-Hispanic	351	58.6	106	30.2	245	69.8	
Black Non-Hispanic	90	15.0	15	16.7	75	83.3	
Hispanic	86	14.4	26	30.2	60	69.7	
Other	72	12.0	20	27.8	52	72.2	
Missing	1	–	–	–	–	–	
Age							0.018
18–20	320	53.5	102	31.9	218	68.1	
21–25	231	38.6	49	21.2	182	78.8	
26 and older	47	7.9	15	31.9	32	68.1	
Missing	2	–	–	–	–	–	
Insurance coverage							0.237
University	101	16.9	22	21.8	79	78.2	
Parent's	437	73.1	125	28.6	312	71.4	
Other	60	10.0	20	33.3	40	66.7	
Missing	1	–	–	–	–	–	
Did you see any vulnerable populations* over the semester break?							0.029
Yes	500	83.8	147	29.4	353	70.6	
No	97	16.3	18	18.6	79	81.4	
Missing	3	–	–	–	–	–	

* Defined as children less than 5 years of age, pregnant women, elderly adults aged 65 years and older, or seriously ill family members (e.g., with heart, lung or kidney disease, diabetes or weekend immune system)