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Factors associated with differential uptake of seasonal influenza immunizations among underserved communities during the 2009–2010 influenza season

David Vlahov, R.N., Ph.D,
Center for Urban Epidemiologic Studies, New York Academy of Medicine, 1216 Fifth Avenue, New York, NY 10029. Dean and Professor, School of Nursing, University of California, San Francisco, 2 Koret Way, N-319C, San Francisco, CA 94143, Ph: 415 476 1805

Keosha T. Bond, MPH, CHES,
Project Director, Center for Urban Epidemiologic Studies, New York Academy of Medicine, 1216 Fifth Avenue, New York, NY 10029, Ph: 212-822-7277

Kandice C. Jones, MPH, and
Research Analyst, Center for Urban Epidemiologic Studies, New York Academy of Medicine, 1216 Fifth Avenue, New York, NY 10029, Ph: 212-419-3583

Danielle C. Ompad, PhD
Interim Director and Epidemiologist, Center for Urban Epidemiologic Studies, New York Academy of Medicine, 1216 Fifth Avenue, New York, NY 10029, Ph: 212-419-3589. Associate Research Professor, Department of Nutrition, Food Studies, and Public Health, New York University Steinhardt School of Education, Culture and Human Development, 35 West Fourth Street, 10th Floor, New York, NY 10012

David Vlahov: David.Vlahov@nursing.ucsf.edu

Abstract

Influenza vaccination coverage remains low and disparities persist. In New York City, a community-based participatory research project (Project VIVA) worked to address this issue in Harlem and the South Bronx by supplementing existing vaccination programs with non-traditional venues (i.e., community-based organizations). We conducted a ten minute survey to assess access to influenza vaccine as well as attitudes and beliefs towards influenza vaccination that could inform intervention development for subsequent seasons. Among 991 participants recruited using street intercept techniques, 63% received seasonal vaccine only, 11% seasonal and H1N1, and 26% neither; 89% reported seeing a health care provider (HCP) during the influenza season. Correlates of immunization among those with provider visits during influenza season included being U.S.-born, interest in getting the vaccine, concern about self or family getting influenza, an HCP's recommendation and comfort with government. Among those without an HCP visit, factors associated with immunization included being U.S. born, married, interest in getting the vaccine, understanding influenza information, and concern about getting influenza. Factors associated with lack of interest in influenza vaccine included being born outside the U.S., Black and uncomfortable with government. In medically underserved areas, having access to routine medical care and understanding the medical implications of influenza play an important role in enhancing uptake of seasonal influenza vaccination. Strategies to improve vaccination rates among Blacks and foreign-born residents need to be addressed. The use of non-traditional venues to provide influenza vaccinations in underserved communities has the potential to reduce health disparities.

Keywords

influenza; vaccination; community-based participatory research; health disparities

INTRODUCTION

Persistent racial and ethnic disparities have been well documented for adult influenza vaccination [1–5]. Factors that have been cited for this disparity include lack of interest in getting the vaccine [2], attitudes such as mistrust in government [2; 6], and reduced or lack of access, whether it be related to vaccine supply, cost or limited skills in navigating health care settings [5; 7; 8]. Recommendation from a health care provider can contribute to accepting and receiving immunizations [9–12], provided that the person has access to a clinician during the period that vaccine is available.

Approaches to reach and engage ethnically-and racially-diverse communities have taken different forms. Clinicians in community and hospital clinics have made a concerted effort to encourage immunization among patients with positive results for those who attended clinics but without information about how these efforts impacted overall community rates of immunization [13; 14]. Health departments have conducted direct immunization outreach events and joint events where they have worked with community partners such as faith based organizations and multi-service agencies; the results have been mixed [15–17].

Residents of Harlem and the South Bronx in New York City (NYC) are predominantly lower income, black and/or Hispanic [18]; these communities are medically-underserved [19]. Rates of influenza immunization in New York City (NYC) have remained well below the Health People 2020 goal of 90% coverage for noninstitutionalized adults [20; 21]. In 2009, the estimated immunization rates for adults over age 50 in East Harlem, Central Harlem and the South Bronx were 33.8%, 47.7%, and 38.6%, respectively [22]. Further, Central Harlem has one of the highest influenza- and pneumonia-related death rates in the city (41.2 deaths per 100,000 as compared to 27.1 death per 100,000 for NYC as a whole) [23].

Building on a community based-participatory research (CBPR) model in place for a decade and described previously [24; 25], we turned our attention to addressing the persistent problem of low rates of influenza immunization in these communities. The Harlem Community Academic Partnership (HCAP), a model of CBPR, is a coalition of 30 community-based organizations, four academic partners and the city health department. The HCAP Board takes on an issue and forms an intervention workgroup (IWG) with community and academic leadership to first study and then intervene on health issues. For this topic, HCAP formed the Vaccine Intervention Work Group (VIWG) to develop a model that would increase influenza immunization rates in disadvantaged communities. The collaboration between the members of the VIWG lead to the development of Project VIVA (Venue Intensive Vaccination for Adults), a community-based demonstration project, that was created as a model to supplement existing immunization programs in communities with low immunization rates.

During the course of developing our 2009–2010 influenza season survey, H1N1 influenza entered the community creating considerable media attention and the need to simultaneously provide two separate influenza vaccines: seasonal and H1N1 [26]. Here, we summarize the data on rates of immunization for seasonal influenza by demographic, attitudinal and health care utilization variables.

METHODS

Study population

Harlem and the South Bronx are communities with a long history of low immunization rates and a lack of access to preventive medical interventions in established medical centers. The reasons for selection of these communities, defined geographically, are several. First, Harlem and the South Bronx are distinct geographic entities and are characterized as disadvantaged: >20% of the population residents have incomes below the federal poverty line [18]. Second, these two areas represent two minority groups, Latinos and African-Americans, which have traditionally been underserved [19]. Third, both Harlem and the South Bronx has been the subject of considerable study which has demonstrated an excess in morbidity and mortality compared to the overall US population [27–29].

Data Collection

To evaluate the intervention, surveys were administered annually in the spring, which coincides with the end of the most intense influenza immunization interest and activities of NYC Department of Health and Mental Hygiene (DOHMH). We sampled residents using a street-based intercept technique in several high pedestrian traffic neighborhood areas in Harlem and the South Bronx [7]. In street-based intercepts, participants were first approached and asked if they would be willing to complete a survey. Persons were eligible to participate if they were 18 years of age or older, spoke English or Spanish, and could provide informed consent. After participants provided oral informed consent, trained outreach workers administered a brief, anonymous survey.

The survey assessed: a) sociodemographic characteristics, including age, gender, race, marital status, and health insurance; b) access to health care; c) immunization history; d) general health; e) trust in government and social agencies. The survey lasted approximately 10 minutes and was administered in English and Spanish. The Institutional Review Board of The New York Academy of Medicine approved the study.

Data Analysis

For the current analysis, we utilized data collected at the end of the 2009–2010 influenza season (i.e., from Feb 2010 to July 2010) to identify factors that influenced uptake of immunizations. As earlier work highlighted the importance of a health care provider's recommendation, we compared those who saw a health care provider (HCP) in the past year to those who did not. The purpose was to collect information that could shape an information campaign to health care providers and a community mobilization campaign that could reach those who did not have or did not access primary care providers. Frequency distributions were generated for demographic, utilization of health services including contact with a primary care provider, attitudes toward vaccines and uptake of vaccines. Cross tabulations of vaccine uptake by these other variables were analyzed separately for those who did or did not go to a primary care provider during the 2009–2010 influenza season using bivariate associations were compared using χ^2 statistics. Multivariate logistic regression was used to determine factors associated with a lack of interest in taking seasonal influenza vaccine, with odds ratios and 95% confidence intervals guiding interpretation. All analyses were performed using SAS software, Version 9.2 for Windows (SAS Corp., Cary, NC).

Results

Overall, of the 991 participants, the median age was 40 years old, 44% were male with 17% over age 50 years old. 63% U.S. born, 55% Hispanic, 45% Black, 40% married.

Approximately 6% had incomes below $10,400 per year, 40% lived alone, 86% owned or rented houses or apartments, and 91% had some form of health insurance with 57% having Medicaid (data not shown).

Table 1 shows seasonal influenza immunization by demographic characteristics. Among those who went to a HCP in the past year being older than 50, born in the U.S. and housing type were significantly associated with influenza immunization. Among those who did not go to a provider, immunizations was associated with being born in the U.S. and having a life partner (i.e., being married or having a common law spouse or domestic partner). Of particular note having health insurance was not significantly associated with immunization, although among those with no primary provider visit in the past year, those with health insurance were more likely to have been immunized.

Table 2 shows rates of immunization by interest and experience with influenza immunizations. Among those with a HCP visit, those immunized were more like than those not immunized to have an interest in taking both the seasonal and H1N1 immunization and to have had the HCP recommend the seasonal and H1N1 immunization. Receipt of routine medical care, medically indicated for immunization were not significant. Among those without a primary provider visit during influenza season, those who received vaccine were more likely to be interested in taking a seasonal or H1N1 immunization and receive routine medical care as compared to those without a HCP visit. Medical indication for influenza immunization was not associated with getting an immunization among those who were not seen by a HCP in the past year.

Table 3 shows rates of immunization by attitudes and beliefs about the vaccine and government. Among those with a HCP visit in the last year, those immunized were more likely to be concerned that they or their immediate family would get seasonal influenza, felt that the H1N1 pandemic influenced their decision to get immunized; and expressed comfort with government as compared to those who were not immunized. Among those without a HCP visit, those who received vaccine were more likely than those who did not to understand seasonal influenza information, be concerned that they or their immediate family would get seasonal influenza, and felt that the H1N1 pandemic influenced their decision to get immunized; no differences were seen for comfort with government.

With interest in getting a seasonal influenza vaccine seen as influencing actual uptake and potentially modifiable through intervention, table 4 presents a multivariable model constructed to identify factors associated with lack of interest in taking influenza vaccine. The lack of interest in taking the vaccine was not associated with a lack of concern about getting influenza, a primary provider recommending the influenza vaccine or gender. However, lack of interest in taking the vaccine was associated with being Black, born outside the U.S. and discomfort with government.

Discussion

Previous efforts at outreach to improve rates of influenza immunizations among underserved minority communities have been limited. In a systematic review of 56 studies published between 1990 and 2006 evaluating influenza immunization programs in different settings, more than half examined immunization within the context of primary care setting or large scale regional program and few looked at ethnic/racial differences in immunization rates. These programs had variable success but were limited since they targeted people already connected to the healthcare system [30]. Our data shows that those reporting limited or no comfort with the government was not likely to receiving the influenza vaccination.

The role of interest in getting the influenza vaccine was an important predictor of immunization. This was true irrespective of whether the participant saw primary health care provider during influenza season or not. Enhancing interest can be the subject of attention for efforts by both health care providers and community outreach efforts. Those most likely to express a lack of interest include the more underserved groups including Blacks and the foreign born. Being uncomfortable with government is a factor that has been reported before [31–33]. and it provides an important entry point for health departments to partner with community-based participatory research efforts as they are non-governmental and may be seen as more credible with information about the vaccine.

Earlier studies have reported the importance of a health care providers' recommendation for uptake of the influenza vaccine [9; 10], and this was observed here. Of note, low interest in getting the vaccine among those who saw their health care providers during influenza season was offset in part by a provider recommending that the patient take the vaccine. However, not all providers recommended vaccine. This is an important focus for community-based participatory efforts, to not just refer residents to their health care providers, but to work with providers to recommend and provide influenza vaccine to their patients.

About 40% of persons who did not have a health care visit in the past year received the vaccine. This is likely a testament to important role of alternative delivery settings such as health department clinics and outreach through immunizations delivered through community-based organizations and pharmacies. Community-based approaches addressing the accessibility and interest in influenza immunization in marginalized communities have been effective in increasing awareness and the uptake of the vaccine [34]. While the overall uptake of the seasonal vaccine was high in this sample, approaching 74%, the fact that the study was performed in 2009, when two vaccines (seasonal and H1N1) were circulating, might have been influential over the receptivity of the seasonal vaccine.

Community-based participatory approaches are needed to educate communities about the importance of seeing their providers during the influenza vaccination season. But for those who receive routine medical care outside of traditional influenza season, convenient alternative arrangements should be developed. Community mobilization can work to encourage referrals to providers, encourage providers to recommend and provide influenza vaccine, and encourage those who cannot or will not go to primary providers during influenza season, to assist development of and referral to convenient alternatives within the community.

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Table 1

Demographic Correlates of Seasonal Flu among those with and without Health Care Provider (HCP) Visit during the 2009–2010 influenza season, Harlem and the South Bronx, NYC

	HCP visit			**No HCP Visit**		
	Seasonal Flu Vaccine			**Seasonal Flu Vaccine**		
	Yes	**No**	**p-value**	**Yes**	**No**	**p-value**
	N	**N**		**N**	**N**	
	697	**185**		**41**	**68**	
Female	56.8%	55.1%	0.689	56.1%	48.5%	0.444
Age > 50	20.8%	5.9%	<.001	17.1%	1.6%	0.208
Born in the continental USA	65.8%	54.3%	0.004	78.0%	55.4%	0.018
Racial/ethnic background						
Black	45.5%	43.2%	0.587	48.8%	47.1%	0.862
Hispanic or Latino	54.5%	56.8%		51.2%	52.9%	
Marital Status						
Single/Divorced/Separated/Widowed	58.5%	63.0%	0.279	48.8%	70.1%	0.027
Married / Common Law/Domestic	41.5%	37.0%		51.2%	29.9%	
Number of people in household						
Yourself	39.4%	39.1%	0.181	36.6%	50.7%	0.354
Two	34.7%	40.8%		22.0%	17.9%	
Three or more	25.9%	20.1%		41.5%	31.3%	
Type of housing						
Own or Rent	86.2%	92.8%	0.018	78.0%	73.1%	0.567
Other	13.8%	7.2%		22.0%	26.9%	
Current residence						
East Harlem	36.0%	29.4%	0.192	30.3%	30.2%	0.097
Central Harlem	39.5%	39.9%		27.3%	47.2%	
Bronx	24.4%	30.8%		42.4%	22.6%	
Health insurance	95.1%	94.5%	0.752	67.5%	50.0%	0.078

Table 2

Seasonal & H1N1 Vaccine Experience Predictors of Seasonal Flu among those with and without Health Care Provider (HCP) Visit during the 2009–2010 influenza season, Harlem and the South Bronx, NYC

	HCP Visit			No HCP Visit		
	Seasonal Flu Vaccine			Seasonal Flu Vaccine		
	Yes	No	p-value	Yes	No	p-value
	N	N		N	N	
	697	185		41	68	
Interested in taking a seasonal flu immunization	53.3%	7.7%	<.001	71.4%	21.7%	<.001
Receives routine medical care	98.3%	96.2%	0.091	87.8%	50.0%	<.001
Medically indicated for flu immunization	35.3%	35.1%	0.973	15.0%	25.0%	0.330
Primary recommend seasonal flu immunization	96.7%	80.5%	<.001			
Interested in taking H1N1 immunization	25.6%	7.9%	<.001	28.1%	6.0%	0.009
Primary recommend H1N1 immunization	84.0%	68.8%	<.001			

Table 3

Seasonal & H1N1 Surrounding Beliefs Predictors of Seasonal Flu among those with and without Health Care Provider (HCP) Visit during the 2009–2010 influenza season, Harlem and the South Bronx, NYC

	HCP Visit			No HCP Visit		
	Seasonal Flu Vaccine			Seasonal Flu Vaccine		
	Yes	No	p-value	Yes	No	p-value
	N	N		N	N	
	697	185		41	68	
Understand seasonal flu information	97.0%	98.9%	0.194	100.0%	80.6%	0.004
Concerned about getting seasonal flu	84.7%	65.2%	<.001	81.6%	41.0%	<.001
Concern about immediate family getting seasonal	84.6%	72.7%	<.001	78.4%	48.4%	0.003
H1N1 influence seasonal decision	67.8%	7.7%	<.001	57.9%	3.3%	<.001
Comfort w/ government	73.2%	55.7%	<.001	58.3%	45.7%	0.517
Government working in best interest	95.0%	94.8%	0.934	66.7%	63.6%	1.000

Table 4

Predictors of Lack of Interest in getting the Seasonal Flu Vaccine during the 2009–2010 influenza season, Harlem and the South Bronx, NYC

	OR	95% CI	
Gender			
Female	ref	ref	ref
Male	1.12	0.68	1.85
Racial/ethnic background			
Hispanic or Latino	ref	ref	ref
Black	3.19	1.71	5.92
Age	0.97	0.95	1.00
Born in the continental USA			
Yes	ref	ref	ref
No	4.11	2.19	7.72
Comfort w/ government			
comfortable	ref	ref	ref
uncomfortable	2.12	1.20	3.76
Concerned about getting seasonal flu			
No	ref	ref	ref
Yes	1.62	0.87	3.02
Health care provider recommended seasonal flu vaccine			
Yes	ref	ref	ref
No	1.43	0.56	3.69