Published in final edited form as:

Vaccine. 2013 January 2; 31(2): 287–290. doi:10.1016/j.vaccine.2012.10.108.

Correlates of seasonal flu vaccination among U.S. home health aides

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Keywords

Home health aides; flu vaccination; epidemiology; disparities; National Home Health Aide Survey; survey

Introduction

In the United States, home health aides include a group of paraprofessionals that provide direct health care services such as changing bandages and dressing wounds, as well as delivering medications to the elderly, convalescents, or individuals with disabilities either at the patient's home or in a residential care facility [1]. These workers also provide personal care such as bathing, dressing, and grooming as required by the patient [1]. Despite their direct and close proximity to vulnerable and sick populations, many of these workers receive very little education about infectious disease control and vaccination [2–3]. Given the U.S. is experiencing an increasingly aging population and a shift in patient care to non-hospital settings [4], there will likely be an increase in demand for this health worker population and a need to understand their vaccination practices.

Current U.S. national studies on seasonal flu vaccination prevalence rates indicate that among U.S. healthcare workers, vaccination remains low at 44.8% with individuals employed as health diagnosing and treating practitioners having the highest rates (52.3%), and other healthcare support occupations (e.g. Birth Attendants, Morgue Attendants, Phlebotomists, Patient Transporters) having the lowest (32.0%). In the same study, seasonal flu vaccination rates were highest for white collar workers other than healthcare workers (24.7%), and lowest for farm workers (11.7%) [5]. These sustained low immunization rates in the U.S. healthcare workforce are perplexing, given that (1) Medicaid in most States

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CONFLICT(s) OF INTEREST / DISCLOSURE STATEMENT

The authors wish to express that they have no financial or other relationships that might lead to a conflict of interest.

provides subsidy for influenza vaccine, (2) evidence for influenza vaccine being efficacious, and (3) systematic reviews of effective methods to increase immunization rates have been well documented [4,6]. Evidence from tailored interventions to increase seasonal influenza vaccination suggests that each individual and agency has their own values and internal structures that influence vaccination rates [6].

As the number of home health aide professionals increases in the United States, understanding seasonal flu vaccination rates within this workforce is paramount. In the present study we sought to describe seasonal flu vaccination rates in a nationally representative sample of U.S. home health aides and examine correlates for receipt of flu vaccination to inform the development of a tailored vaccination intervention among home health aides.

Methods

Data Source and Sample

The 2007 National Home Health Aide Survey (NHHAS) conducted by the National Center for Health Statistics includes the first nationally representative sample of U.S. home health aides with information on job characteristics, family life, client relations, organizational commitment and job satisfaction, workplace environment, work-related injuries, and demographics [7].

Home health aides employed by agencies that provided home health and/or hospice care were identified and selected through a complex, multistage sampling probability design. A total of 3,377 interviews of aides working in agencies providing home health and/or hospice care completed a computer-assisted telephone interviewing system to collect the survey data. The unweighted response rate among persons in the sample was 79% (3,377/4,279) [7].

Measures

Influenza vaccination status was assessed in the NHHAS interview by response to the question: “During the past 12 months, have you received a flu shot?” Aides were asked to specify their job title, including home health aide, home care aide, hospice aide, personal care attendant, or other licensed nursing assistant. The category of “other licensed nursing assistants” includes health aides that have formal licensed training and provide basic patient care such as feeding, bathing, dressing, grooming, or moving patients under direction of nursing staff [1]. We operationalized self-reported socio-demographic variables as follows: age (under 25 years; 25–34 years old; 35–44 years old; 45–54 years old; and 55 years and older), gender (male/female), race (White, Black, and Other), Hispanic ethnicity (Hispanic/non-Hispanic), educational attainment (less than a high school diploma; graduated high school/attained GED; attended college or technical school; or graduated college or technical school); marital status (married/living with a partner; divorced, widowed, separated; or single), family income (less than \$20,000; \$20,000–\$29,000; \$30,000–\$39,000; \$40,000–\$49,000; \$50,000 or more), primary language (English/Spanish or Other); and health insurance status (yes/no). Health insurance status was operationalized from respondents answering in the affirmative to one of the following two survey questions: 1) “Are you currently participating in health insurance plan available from {AGENCY}?”; or 2) “Covered by other plan; covered by Medicare or Medicaid or other government insurance?”.

Data Analysis

Given the complex sample survey design of the NHHAS, descriptive statistics and univariable and multivariable logistic regression models were calculated with the SPSS 19

(IBM Co, Chicago, IL) Complex Sample module to take into account sample weights and design effects. The protocol was approved by the institutional review board of the Harvard School of Public Health.

Results

There were a total of 3,377 survey participants 20 years and older who reported working as a home health aide in the 2007 NHHAS (representing an estimated 160,720 U.S. home health aides; Table 1). The overall prevalence of reported influenza vaccination for all home health aides during the survey period was 43.9%. The prevalence of reported influenza vaccination among all health aides was highest among other licensed nursing assistants (68.2%), and lowest among home health aides (41.3%). For all home health aides, influenza vaccination rates were lowest for aides aged 35–44 years old (36.7%), male (40.7%), Black (34.5%), Hispanic (43.1%), less than a high school education (32.6%), never married (38.6%), less than \$20,000 in family income (41.5%), without health insurance (33.9%), and non-native English speaker (40.1%).

In the multivariable model (Table 2), self-reported flu vaccination was significantly associated with all health aide occupations, including home health, home care, hospice, and personal care attendant (Adjusted odds ratio, AOR = 0.42; 95% CI [0.20–0.85], 0.41; [0.17–0.99], 0.50; [0.26–0.97], 0.53; [0.26–0.99]) when compared to other licensed nursing assistants. Additionally, Black health aides vs. White (AOR = 0.56 [0.33–0.94]) and those without health insurance vs. with health insurance (AOR = 0.63 [0.40–0.99]) were significantly less likely to report receiving a flu shot.

Discussion

We found the prevalence of flu vaccination among all U.S. health aides to be low overall (44%), with aides employed in home health and home care occupations reporting the lowest rate of influenza vaccination. Findings from the present study are consistent with other national self-report influenza vaccination receipt studies where self-reported flu shot rates were low among all U.S. health care providers including health aides [5,8–9]. We also found health aides of Black race were significantly less likely to report receipt of a seasonal flu vaccine as compared to their White health aide counterpart. Racial and ethnic disparities in vaccination rates in the general population are not a new finding [11], however somewhat surprising for the home health aide workforce given one would expect the rates for this paraprofessional workforce to be at least similar across race and ethnicity due to their healthcare training, albeit limited. Uninsured health aides were also significantly less likely to report flu vaccination as compared to those with health insurance.

The aging U.S. population and changes in the health care delivery system are likely to increase the demand for health aides in various short and long-term health settings including private homes. Currently there are few and often brief training programs for home health aides that may not provide sufficient training in infectious disease control, sanitation and hygiene, all of which are skills critical to patient care particularly among vulnerable populations such as the elderly [10]. Developing targeted effective vaccination campaigns among specific health aide worker groups are needed to improve vaccination rates among home health aides.

The NHHAS is limited by the self-reported nature of the respondent's flu vaccination status; however, previous studies have shown the sensitivity and specificity of self-reported adult influenza vaccination to be reliable measures [12]. Additionally, due to the cross-sectional nature of the NHHAS, no temporal causality could be examined. The 2007 NHHAS data is

slightly dated however previous studies using other national datasets for flu vaccination rates [5] suggests that these trends are consistent over time with similar healthcare occupations. Another limitation is the homogeneity of the sample, which leads to a lack of variance in the assumed predicting factors and, therefore, to a higher probability of statistically not significant results. Despite these limitations, the ability to use large sample sizes, the nationally representative nature of the database and the timely assessment make these NHHAS data uniquely useful for assessing the prevalence of flu vaccination by U.S. home health aides, including specific health aide subpopulations. Health education programs on the availability, cost, effectiveness and safety of the influenza vaccine (as well as other issues of protection and prevention of influenza transmission and exposure) are critical to the health and protection of the home health aides themselves, as well as their respective patients and communities [13]. Agencies employing home health and/or hospice aides may consider developing tailored health education programs and providing flu vaccination resources to their employees.

Acknowledgments

The authors would like to thank the statisticians and scientists at the National Center for Health Statistics for their assistance with the survey's complex sampling scheme: Dr. Lauren D. Harris-Kojetin, Dr. Christine Caffrey, and Dr. Roberto Valverde. The authors also acknowledge the consultation of Dr. Miguel Marino from the Department of Biostatistics at the Harvard School of Public Health.

SOURCES OF FUNDING

Funding support to accomplish the research was largely supported by the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) grant T32 AR055885 (PI: Katz) to the Clinical Orthopedic and Musculoskeletal Education and Training (COMET) Program at Brigham and Women's Hospital, Harvard Medical School and Harvard School of Public Health (Trainee: Dr. Caban-Martinez) and the Harvard School of Public Health – Liberty Mutual Research Institute for Safety Postdoctoral Research Fellowship program (Trainees: Dr. Arlinghaus and Dr. Reme).

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Table 1

Seasonal Influenza Vaccination Coverage Estimates in US Home Health Aides by Occupation Type and Socio-demographic Correlates: the 2007 U.S. National Home Health Aide Survey

Occupational and Socio-demographic Characteristics	Sample N	Estimated U.S. Home Health Aide Population	Overall Vaccination Coverage [95% CI]
Total All Health Aides	3,377	160,720	43.9 [38.9–49.1]
Health Aide Title / Occupation			
Home Health Aide	1,866	99,008	41.3 [34.3–48.8]
Home Care Aide	133	11,559	43.4 [27.6–60.7]
Hospice Aide	372	6,898	48.8 [38.8–58.9]
Personal Care Attendant	938	37,180	46.0 [38.5–53.6]
Other licensed nursing assistant	68	6,075	68.2 [52.5–80.6]
Age			
Under 25 years	153	8,126	39.7 [20.6–62.6]
25–34 years old	544	27,504	44.1 [33.8–54.9]
35–44 years old	786	34,350	36.7 [27.2–47.3]
45–54 years old	1,010	45,846	43.9 [35.0–53.3]
55 years and older	884	44,894	50.0 [39.3–60.8]
Gender			
Female	3,251	150,541	44.1 [39.0–49.4]
Male	103	7,995	40.7 [23.5–60.5]
Race			
White	2,377	85,099	50.3 [43.2–57.3]
Black	719	55,678	34.5 [26.6–43.2]
Other	258	17,759	43.2 [29.2–58.4]
Hispanic Ethnicity			
Hispanic	235	13,046	43.1 [26.7–61.1]
Non-Hispanic	3,118	144,940	44.2 [39.0–49.5]
Education			
Less than High School or GED training	424	23,732	32.6 [23.1–43.8]
High School / GED	1,695	71,190	44.3 [38.4–50.4]
Some college or trade school	1,105	54,135	48.7 [40.9–56.6]
College graduate or postgraduate	125	9,431	42.1 [23.4–63.5]
Marital Status			
Married or living with partner	2,095	80,767	43.0 [35.8–50.4]
Widowed, divorced, or separated	862	51,364	48.2 [38.9–57.6]
Never Married	391	26,342	38.6 [27.3–51.3]
Family Income			
Less than \$20,000	100	8,709	41.5 [22.8–63.0]

Occupational and Socio-demographic Characteristics	Sample N	Estimated U.S. Home Health Aide Population	Overall Vaccination Coverage [95% CI]
\$20,000–\$29,000	1,420	66,628	41.6 [35.9–47.5]
\$30,000–\$39,000	642	32,886	49.6 [38.6–60.5]
\$40,000–49,000	430	17,345	49.2 [35.3–63.2]
\$50,000 or more	658	26,726	46.8 [35.3–58.7]
Health Insurance Status			
Yes	2,879	119,651	47.2 [41.3–53.2]
No	475	38,885	33.9 [25.7–43.1]
Primary Language			
English	3,212	147,478	43.9 [38.6–49.4]
Spanish or Other	117	9,684	40.1 [27.3–54.4]

All estimates have a relative standard error <30% indicating they meet NCHS standards of reliability and precision (NCHS, 2008).

Table 2

Univariable and Multivariable Logistic Regression of self report of Seasonal Flu Vaccination Among Home Health Aides: the 2007 U.S. National Home Health Aide Survey

Variables	UOR [95% CI] [†]	AOR [95% CI] [‡]
Health Aide Occupations (<i>ref = other licensed nursing assistant</i>)		
Home Health Aide	0.33 [0.16–0.70]	0.42 [0.20–0.85]
Home Care Aide	0.36 [0.15–0.84]	0.41 [0.17–0.99]
Hospice Aide	0.45 [0.22–0.92]	0.50 [0.26–0.97]
Personal Care Attendant	0.40 [0.19–0.82]	0.53 [0.26–0.99]
Age (<i>ref = 55 years and older</i>)		
Under 25 years		0.64 [0.21–1.94]
25–34 years old		0.91 [0.47–1.74]
35–44 years old		0.63 [0.32–1.28]
45–54 years old		0.87 [0.50–1.51]
Gender (<i>ref = males</i>)		
Female		1.16 [0.49–2.77]
Race (<i>ref = White</i>)		
Black		0.56 [0.33–0.94]
Other		0.79 [0.42–1.46]
Health Insurance Status (<i>ref = Yes, Insurance</i>)		
No		0.63 [0.40–0.99]

[†]UOR = Unadjusted odds ratio with the 95% confidence interval (CI);

[‡]AOR = Adjusted odds ratio with its 95% CI.