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Nurse Practitioners' Attitudes and Knowledge about Influenza Immunization

Kim Curry, PhD, ARNP, Christina Humphreys, BSN, RN

ABSTRACT

Influenza remains a leading cause of death nationally and internationally. Annual influenza immunization for healthcare workers has been recommended since 1984. Despite this, many healthcare workers do not receive the immunization. Nurse practitioners (NPs) are key primary care providers in the U.S. healthcare system. The purpose of this study was to assess the knowledge and personal beliefs of NPs as a step toward understanding the reasons for the participation or non-participation in the influenza vaccine of this professional group. A quantitative cross-sectional survey of knowledge, attitudes, NP demographics, and patient factors was carried out. Most of the 174 participants had received the vaccine. Vaccine status was not correlated with the assessed risk level of patients. Available and mandatory vaccine in the workplace was correlated with vaccination status of the NP. Vaccine status of the NP was correlated with patient counseling to receive influenza immunization. Not all NPs agree with or adhere to federal vaccine recommendations. It is critically important for healthcare providers to base decisions affecting the health of themselves and their patients on evidence-based research.

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BACKGROUND

Influenza is one of the leading causes of death in the United States, claiming over 50,000 victims each year (CDC, 2013). Despite the fact that a vaccine for influenza has been available in the United States since 1946, the willingness of individuals to be immunized continues to be influenced by a number of personal beliefs and attitudes that cross educational levels and socioeconomic groups (IAC, 2010, Prislun, 1998; Liu, 2010).

Attitudes and beliefs that are inconsistent with scientific evidence are not limited to those who lack a background in the health sciences. Healthcare workers (HCW) have also been shown to have a wide range of personal beliefs that can create barriers to accepting immunizations (Canning, 2005; Kung, 2013; Martinello, 2003). Whereas it is known that healthcare workers, including nurses, can transmit influenza to their patients, almost 25% of healthcare workers decline the annual influenza immunization (Linley, 2011).

The purpose of this study was to examine the beliefs, attitudes, and influenza vaccination status of nurse practitioners (NPs) as a professional group. NPs are registered nurses who have completed graduate level education to serve in advanced roles in clinical care. NPs are key providers of primary healthcare in the United States. Therefore it is important to quantify and

understand the reasons for NP participation and non-participation in this key vaccine.

National Vaccine Recommendations

Transmission of influenza from healthcare workers to patients has been documented in a variety of clinical settings (Sullivan, 2009). This is one reason for the development of universal precautions. To provide further protection, the Centers for Disease Control and Prevention (CDC) provides both absolute and conditional recommendations for healthcare personnel in the United States with regard to several immunizations: Hepatitis B, varicella, MMR (measles, mumps, and rubella), Tdap (the combined tetanus, diphtheria, and pertussis vaccine), and influenza (CDC, 2012). Since 1984, the CDC has recommended annual influenza vaccines for all HCW in order to reduce transmission of this virus to coworkers and patients (CDC, 2006).

Any health care personnel who meet age requirements and who lack documentation of vaccination should receive the annual influenza vaccine (CDC, 2011). Those who are pregnant, immune-compromised, or have certain chronic conditions should receive the influenza vaccine via the trivalent inactivated vaccine (TIV). TIV is especially targeted for healthcare personnel and children less than five years of age. Healthy non-pregnant personnel

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younger than age 50 years without high-risk medical conditions can receive either TIV or live, attenuated, influenza vaccine (LAIV) via intranasal spray (CDC, 2012).

The protection offered by the influenza vaccine is beneficial to both HCW and patients in preventing infection, but the best way to achieve optimal protection remains controversial. Whereas there have been calls for mandatory influenza vaccination for HCW, others have recommended strengthening vaccine programs but offering HCW the ability to opt out of the immunization (Tosh, 2005; Gligorov, 2012; Evans, 2012).

Interventions such as hand washing, isolation precautions, and other preventive measures have long been recognized as important in preventing the spread of infectious diseases. Now, however, additional and more invasive measures such as immunizations of HCW are being recognized as basic preventive measures as well. The National Quality Forum, a public/private partnership organization, has included influenza vaccination of HCW as one of its 34 safe practices that would universally reduce the risk of harm to patients (National Quality Forum, 2010).

The American Nurses Association is a professional organization that represents the interests of registered nurses in the United States (ANA, 2012). Historically, the American Nurses Association has not supported a specific mandate for influenza vaccination. The ANA has issued a statement in their Consent Action Report to the Board of Directors that they support implementation of aggressive and comprehensive influenza vaccination programs for RNs that aim for 100% vaccination rates. This statement also comes with the recommendation of healthcare organizations providing the vaccine at no charge at convenient locations with education about the issue of influenza (ANA, 2006).

HCW Immunization Rates

In 2011, the CDC conducted a national survey that represented one of the only surveys available including ARNP's as a distinct category of HCW. Surveyors noted that by November of 2011, 78% of HCW overall had been vaccinated. The highest vaccination rates were among physicians (78%), dentists (78%), followed by ARNP's (77%), and registered nurses (76%). These rates were self-reported via an on line survey. One in six (17.3%) of HCW responded that their employers required them to receive the influenza vaccine (CDC, 2012).

In Canada, British Columbia researchers used a mailed survey to inquire about attitudes and beliefs of nurses and physicians. Responses were received from

344 nurses and 349 physicians. Although this survey primarily addressed the role of nurses and physicians as childhood immunization providers, respondents were also asked about their own receipt of the influenza vaccine and their beliefs associated with this. Over 85% of each type of provider felt that receiving the vaccine was important. The surveyors noted that while almost 90% of nurses and physicians intended to receive the influenza vaccine each season, historical records indicated that no more than 79% of nurses and 77% of physicians had been receiving the vaccine each year (Pielak, 2010).

Even though nurses are often directly involved in educating their patients about receiving the influenza vaccine, many nurses view their own immunizations as a personal health decision that they can either accept or decline. In a small qualitative study of factors influencing the personal immunization decisions of 14 registered nurses, investigators found that consideration of patient factors was not a major theme noted, and further found that influenza immunization was simply a low priority for some nurses (Rhudy, 2010).

Healthcare Provider Beliefs and Attitudes

A few investigators have attempted to determine immunization attitudes and barriers to specific immunizations among various types of healthcare workers. In a study of 212 nurses and physicians working in an urban teaching hospital, investigators attempted to correlate willingness to receive the influenza vaccine with knowledge and beliefs about influenza. Results indicated that there was a significant difference in knowledge level among registered nurses who did and did not receive the vaccine, with vaccinated nurses scoring higher on the knowledge test than non-vaccinated nurses (80% versus 49%, $p = .000005$). The investigators also found that, among nursing staff, the most common reasons for not being vaccinated were concerns of contracting an influenza-like illness (ILI), belief that subject was not at risk, pregnancy or breastfeeding, and an aversion to needles. Most common reasons cited by physicians were lack of convenience and forgetfulness (Martinello, 2003).

In a study involving a survey of 1017 registered nurses in four U.S. states, investigators sought to explore knowledge, attitudes, and beliefs associated with the influenza vaccine. The nurses were asked about knowledge of CDC recommendations for vaccination, and to list reasons for receiving or not receiving the vaccine. They were also questioned about their perceptions of their own patients' risk levels for influenza. Findings indicated that while the majority of nurses (54%) had received the influenza immunization

during the season in question, a few (8%) were not aware that the CDC recommends all HCW be vaccinated. The most common reason for being vaccinated was cited as "protecting oneself from illness" (95%), and the most common reason for not being vaccinated was concern about adverse reactions (39%). Regarding the main reason for the CDC recommendation for the influenza vaccine for HCW, the two most common reasons cited by participants were protection of HCW's (59%) and protection of patients (39%). The percentage citing protection of patients increased by patients' influenza risk level: 29% for low risk, 40% for medium risk, and 41% for high risk ($p = .036$). The authors concluded that working with a high-risk population and being aware of the CDC recommendations are associated with increased likelihood of vaccination, and of agreeing with statements supportive of the influenza vaccine (Clark, 2009).

METHODS

The research design included a quantitative cross sectional survey of knowledge, attitudes, and vaccine status of nurse practitioners. After obtaining approval from the university's investigational review board, the researchers obtained written informed consent from each subject prior to administering the survey.

A survey instrument was developed to address key factors in the existing literature impacting providers' immunization decisions. Face and content validity were assessed using a panel of practicing NP's with expert knowledge of primary care. Three NP's working in primary care reviewed the instrument and provided input and corrections to the content to ensure that the domain of items relevant to the research question was addressed and that questions were clearly worded. These comments and modifications were incorporated into the survey.

After obtaining informed consent, the survey was administered to a convenience sample of 200 practicing NP's. Administration occurred in a face-to-face format at a national advanced practice conference. This face-to-face contact as well as the context of the survey administration explains the high response rate noted in the results section.

Data Analysis

Data were analyzed using SPSS version 19 for MAC. A chi-square test of independence was used to test for association between variables. In addition, the researchers also analyzed open-ended items, including interventions that would support or encourage NP's to receive the influenza vaccine and a variety of reasons that might prevent NP's from receiving the vaccine.

RESULTS

Of the 200 surveys administered, 26 contained inadequate data for analysis, resulting in 174 completed questionnaires (87%). Participant characteristics are summarized in Table 1. Among the NP's, 153 (87.9%) reported receiving the influenza vaccine during the 2011-2012 flu season, with 21 (12.1%) who were not immunized. One hundred fifty-nine (91.4%) of respondents reported that influenza immunizations were available in the workplace. Chi square test of independence between vaccine availability in the workplace and those who received the vaccine demonstrated a significant correlation ($p = 0.01055$).

As expected, receipt of the vaccine and the status of the vaccine as mandatory in the workplace also were positively correlated ($p = .00022$). NP's were also asked to subjectively assess their patients' influenza risk level. Answers included high risk ($n = 83$, 46%), medium risk ($n = 79$, 44%), low risk ($n = 9$, 5%) and not sure ($n = 1$, 0.5%). Assessment of patient risk level was not related to the NP's vaccination participation ($p = 0.976$).

The NP's reported a number of reasons that might dissuade them from receiving the vaccine. These included a lack of belief that immunization was necessary ($n = 9$, 5.1%), or effective ($n = 5$, 2.8%). Four NPs (2.2%) shared a belief that the vaccine itself could cause illness; an additional three NP's (1.7%) believed that the vaccine might cause long term health effects. A total of four NP's (2.2%) stated that they already had a medical condition preventing them from receiving the vaccine. Nine participants (5.1%) reported difficulty in receiving the vaccine, such as waiting in line or inconvenience/distance to travel to receive the vaccine. Only one participant (0.57%) reported the vaccine was too expensive. One additional respondent (0.57%) reported a fear of needles as a barrier.

Participants were then asked to select from a combination of interventions that would encourage them to receive the vaccine. The greatest number of responses addressed the provision of free vaccines in the workplace ($n = 38$, 21.8%) and yearly education seminars on the vaccine ($n = 25$, 13.2%). Other popular responses were various combinations of free vaccines, education, visual communications such as posters, and 24/7 vaccine availability ($n = 40$, 22.9%). Written-in comments included: "Long term, unbiased research on the health effects," "a more effective vaccine," and "none of the above" ($n = 8$, 4.6%), reflecting that none of the suggested methods of encouragement would lead the NP to obtain the vaccine.

Table 1. Demographics of Participants

Age Range (years)	N (%)
20-29	2 (1.1)
30-39	29 (16.7)
40-49	44 (25.2)
50-59	73 (41.9)
60 and over	25 (14.4)
Not reported	1(0.57)
Total N	174 (100)
Gender	
Male	24 (13.8)
Female	147 (84.5)
No answer	3 (1.7)
Ethnicity	
Caucasian	142 (81.6)
Hispanic	7 (4.0)
African American	15 (8.6)
Asian	7 (4.0)
Other/not reported	3 (1.7)
Received Influenza Vaccine	
Yes	153 (87.9)
No	21 (12.1)
Practice Setting	
Hospital	26 (14.9)
Outpatient clinic	99 (56.8)
School	2 (1.1)
Academic setting	7 (4.0)
Other (retail health, nursing home, home care, military, etc.)	31 (17.8)
More than one of above	19 (10.9)

When asked how often they encourage their patients to get the influenza vaccine, 136 (78.2%) of NP's responded "Always," whereas 31 (17.8%) responded "Frequently," and 5 (2.9%) responded "Occasionally." Only one NP answered "Never." There was a significant positive relationship between those who were immunized and those who encouraged their patients to do the same ($p = 0.00611$).

Next, NP's were asked to determine the reason for the CDC's recommendation for HCW's influenza immunization. The correct answer to this question according to the literature is that it prevents transmission to both patients and HCW's. Only 11 respondents (6.3%) answered this question correctly.

Finally, respondents were asked to identify their work setting (academic, school, outpatient, hospital, or other such as military, home health, corrections, or occupational health). The highest responses were tied with a hospital setting and the "other" category ($n = 26$, 14.9%). The NP's vaccination status and setting of employment were found to be significantly correlated ($p = 0.0266$), with NP's working in outpatient settings less likely to receive the vaccine. A summary of the findings is presented in Table 2.

DISCUSSION

In this study, most nurse practitioners were found to have received the recommended annual influenza immunization. Vaccination status, or self-report of having received the influenza vaccine, was not associated with the nurse practitioner's gender or age. Surprisingly, vaccination status of the NP was also not associated with the NP's assessment of the risk level of his/her patients for contracting influenza. This finding contradicts an earlier study of registered nurses that demonstrated that nurses who perceive their patients to be at high risk for contracting influenza are more likely to accept the vaccination (Clark, 2009).

Two factors were significantly associated with the NP's report of having received the influenza vaccine. These included availability of the vaccine in the workplace, and the vaccine being required (mandatory) in the work place. An additional significant association was found with the NP's practice setting, with NP's working in outpatient clinic settings being less likely to receive the vaccine than NP's working in other settings. One possible explanation is that the vaccine is not always immediately available in these settings, as it was also noted that more than 8% of NP's reported that the immunization was not available in their place of work.

Results indicated that NP attitudes toward recommended immunizations vary and are not limited

Table 2. Summary of Survey Results

	Description	p-value	Alpha level	Conclusion
1	Gender of NP as compared to: NP received the vaccine	0.492	0.05	Gender was unrelated to vaccination status.
2	Age of NP As compared to: NP received the vaccine	0.0878	0.05	Age was unrelated to vaccination status.
3	Vaccine easily available As compared to: NP received the vaccine	0.01055	0.05	There was a relationship between ease of availability of the vaccine and whether or not the NP received the vaccine.
4	Mandatory vaccination As compared to: NP received the vaccine	0.00022	0.05	There was a relationship between mandatory influenza vaccination in the NP's work place and the likelihood that the NP received the vaccine.
5	Mandatory vaccine As compared to: Patients are high risk	0.976	0.05	Whether or not the vaccine was mandatory in the NP's work place was unrelated to the NP's perception that his/her patients were in a high risk group.
6	NP encourages patients to get the vaccine As compared to: NP received the vaccine	0.00611	0.05	There was a relationship between the NP's likelihood of encouraging patients to receive the influenza vaccine and whether or not the NP had received the vaccine.
7	NP Work Setting As compared to: NP received the vaccine	0.02657	0.05	There was a relationship between the practice setting of the NP and whether or not the NP received the influenza vaccine.

to national guidelines for immunizations. Attitudes do influence patient counseling concerning immunizations. Results also indicated that mandatory, free, and easily accessed workplace immunizations are effective at increasing provider immunization rates. These results strengthen the findings of Hood and colleagues, who found that techniques such as publicizing the availability of influenza immunizations, making the vaccine available to all shift workers, dispelling common myths, and providing testimonials from vaccine experts increased HCW vaccination rates from 66% to 84% over a two-year period (Hood, 2009).

This study addresses the ongoing need to determine the interaction between provider knowledge and attitudes, as well as the impact of the provider

viewpoint on patient education and counseling. A strength of the survey is that it incorporated a sample of mixed ethnicity and gender from a broad array of practice settings, thus enhancing the generalizability of the findings. Weaknesses of the study include the fact that this was a pilot study, with construct validity of the instrument not firmly established. Further research should be conducted to develop an optimally accurate instrument for measures of provider knowledge and attitudes. The study should also be expanded to include a larger sample size. Other suggestions include conducting the survey during influenza season to determine whether the heightened awareness of threat influences survey outcomes. The study cannot be generalized to groups with demographics (age, practice setting, ethnicity) that are unlike the group studied.

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CONCLUSION

Nurse practitioners receive information about preventive services such as immunizations during their post-baccalaureate education. Information on clinical prevention and population health is an expected component of master's level education (AACN, 2001). Despite these expectations, not all nurse practitioners agree with or adhere to federal vaccine recommendations, including those for healthcare workers.

Influenza vaccination remains the optimal way to prevent influenza in healthcare workers and their patients (Martinello, 2003). It is critically important for NP's to base decisions affecting the health of themselves and their patients on evidence-based research. The evidence regarding influenza shows that any influenza plan for healthcare workers should include a seasonal influenza vaccination and education program.

Nurse practitioners are the future face of primary care in the United States healthcare system. As such, they will increasingly be not only the primary source for vaccine information, but major role models for health behaviors. Participation in primary prevention activities such as immunizations will become increasingly crucial for patients as well as providers as demands for healthcare resources continue to grow.

REFERENCES

- American Association of Colleges of Nursing. (2011). *The Essentials of Master's Education in Nursing*. Washington, DC: AACN.
- American Nurses Association. (2006). *Seasonal Influenza Vaccination for Registered Nurses Consent Action Report*. American Nurses Association.
- American Nurses Association. (2012, May). *About ANA*. Retrieved from Nursing World: <http://www.nursingworld.org/FunctionalMenuCategories/AboutANA>.
- Canning, H. S., Phillips, J., & Allsup, S. (2005). Health care worker beliefs about influenza vaccine and reasons for non-vaccination: a cross-sectional survey. *Journal of Clinical Nursing, 14*, 922-925.
- Clark, S., Cowan, A., & Wortley, P. (2009). Influenza vaccination attitudes and practices among US registered nurses. *American Journal of Infection Control, 37*, 551-556.
- Centers for Disease Control and Prevention. (2006). Influenza vaccination of health-care providers. *Morbidity and Mortality Weekly Report, 55*(RR02), 1-16.
- Centers for Disease Control and Prevention. (2011). Influenza vaccination coverage among healthcare personnel: 2010-2011 season. *Morbidity and Mortality*

Weekly Report, 60(32), 1073-1077.

Centers for Disease Control and Prevention. (2012). Recommended adult immunization schedule: United States, 2012. *Morbidity and Mortality Weekly Report, 61*(4), 1-6.

Centers for Disease Control and Prevention. (2013, January 11). *Leading Causes of Death*. Retrieved March 31, 2013, from Centers for Disease Control and Prevention:

FASTSTATS: <http://www.cdc.gov/nchs/faststats/lcod.htm>.

Evans, G. (2012). OSHA strongly opposes feds move to mandatory flu shots for HCW's. *Hospital Infection Control and Prevention, 39*(2), 13-18.

Gligorov, N., & Thomas, D. (2012). Should the flu vaccine be mandatory for health care workers? *The Journal for Nurse Practitioners, 8*(10), 790-791.

Hood, J., & Smith, A. (2009). Developing a "best practice" influenza vaccination program for health care workers - an evidence based, leadership-modeled program. *American Association of Occupational Health Nurses (AAOHN) Journal, 308*-312.

Immunization Action Coalition. (2010). *Historic dates and events related to vaccines and immunizations*. Retrieved March 31, 2013, from Immunization Action

Coalition: <http://www.immunize.org/timeline/>.

Klunklin, A. S. (2011). Role model behaviors of nursing faculty members in Thailand. *Nursing & Health Sciences, 13*, 84-87.

Kung, Y. M. (2013). Factors associated with health care personnel influenza vaccination behavior. *The Journal for Nurse Practitioners, 9*(2), 87-92.

Linley, M., Zhang, J., & Euler, G. (2011). *Health care personnel influenza vaccination coverage estimates by month of survey and occupation type, United States*. Atlanta, GA: Centers for Disease Control and Prevention. Retrieved April 20, 2013, from <http://www.cdc.gov/flu/professionals/vaccination/health-care-personnel.htm>.

Liu L (2010). *An Analysis of Household-reported Health Status and Socio-demographic Characteristics Associated with Adolescent Influenza Vaccination Rates in the United States: 2008 National Immunization Survey: Teen*. Master's Thesis: Scholar Works at Georgia State University School of Public Health.

Martinello, R., Jones, L., & Topal, J. (2003). Correlation between healthcare worker's knowledge of influenza vaccine and vaccine receipt. *Infection Control and Hospital Epidemiology, 24*(11), 845-847.

Merrill, R. G. (2010). The importance of tobacco cessation training for nurses in Serbia. *Journal Of Continuing Education In Nursing, 89*-96.

National Quality Forum. (2010). *Safe Practices for Better Healthcare: 2010 Update*. Washington, DC: National Quality Forum.

Pielak K, McIntyre C, Tu A, Remple V, Halperin B, & Buxton J. (2010). Identifying attitudes, beliefs and reported practices of doctors as immunization providers. *Journal of Advanced Nursing*, 66(7), 1602-1611.

Prislin, R., Dyer, J., Blakely, C., & Johnson, C. (1998). Immunization status and sociodemographic characteristics: The mediating role of beliefs, attitudes, and perceived control. *American Journal of Public Health*, 88(12), 1821-1826.

Rhudy, L., Tucker, S., Ofstead, C., & Poland, G. (2010). Personal choice or evidence-based nursing intervention: Nurses' decision-making about influenza
Retrieved July 31, 2012, from <http://www.nursingworld.org/OJIN>.

Tosh, P., Jacobson, R., & Poland, G. (2005). Requiring influenza vaccination for health care workers: Seven truths we must accept. *Vaccine*, 18(23), 2251-2255.

vaccination. *Worldviews on Evidence-Based Nursing*, 7(2), 111-117.

Sullivan, P. (2009). Influenza vaccination in healthcare workers: Should it be mandatory? *OJIN: The Online Journal of Issues in Nursing*, 15(1). Retrieved March 31, 2014 from <http://www.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Vol152010/No1Jan2010/Articles-Previous-Topic/Mandatory-Influenza-Vaccination-in-Healthcare-Workers.html>.

Tosh, P., Poland, R., & Jacobson, G. (2005). Requiring influenza vaccination for healthcare workers: Seven truths we must accept. *Vaccine*, 18, 2251-2255.

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