

Rates of Influenza Vaccination of Healthcare Workers Working in Pediatric Units

Çocuk Ünitesinde Çalışan Sağlık Bakım Personelinin Grip Aşısı Oranları

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ABSTRACT Objective: The aim of this study is to determine the influenza vaccination rates of healthcare workers working in pediatric units. **Material and Methods:** This is a retrospective and descriptive study. The study sample was composed of 88 Healthcare workers (51 nurses, 37 physicians). The data were obtained by administering a questionnaire form to healthcare workers. The data were assessed by percent χ -square and Fisher's χ -square test. **Results:** It was determined that 48.6% of physicians received influenza vaccinations while only 5.9% of nurses were immunized. In the study, 25% of physicians and of 75% of nurses suggest that there is no necessity for influenza vaccination if they are adequately nourished and if they care of themselves. **Conclusion:** Influenza vaccination of the healthcare workers (physicians and nurses) especially in pediatric patient care settings is very important to protect the many children who have chronic diseases and who are less than six years of age (risk group).

Key Words: Influenza, human; vaccination; nurses; physicians

ÖZET Amaç: Bu çalışmanın amacı çocuk ünitesinde çalışan sağlık bakım çalışanlarının grip aşısı oranlarını belirlemektir. **Gereç ve Yöntemler:** Bu retrospektif tanımlayıcı bir çalışmadır. Çalışmanın örneklemini 88 sağlık çalışanı (51 hemşire, 37 doktor) oluşturmuştur. Veriler sağlık bakım çalışanlarına soru formu verilerek elde edilmiştir. Veriler ki kare, Fishers's ki kare, yüzde ile değerlendirilmiştir. **Bulgular:** Doktorların %48.6'sının hemşirelerin ise yalnızca %5.9 unun grip aşısı olduğu belirlenmiştir. Çalışmada doktorların %25'i hemşirelerin %75'i dengeli beslenilirse ve dikkat edilirse grip aşısı olmaya gerek olmadığını belirtmişlerdir. **Sonuç:** Özellikle çocuk ünitelerinde çalışan sağlık bakım personelinin grip aşısı olması 6 yaştan küçük olan (risk grubu), kronik hastalıklara sahip olan birçok çocuğu korumak için çok önemlidir.

Anahtar Kelimeler: Grip, aşılama, hemşire, doktor

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Influenza (commonly called the 'flu'), a highly contagious viral illness that occurs in children and adults of any age, is a major cause of morbidity and mortality worldwide. In the United States, between 5% and 20% of the population are infected every year, with more than 200.000 related hospitalizations and approximately 36.000 deaths due to influenza complications.^{1,2} In Turkey, as elsewhere in the world, influenza is a commonly occurring virus with high morbidity and unacceptable mortality rates from its sequelae.³

Influenza is transmitted by direct and indirect contact with contagious individuals, and is spread from person to person in large respiratory droplets that become airborne when an infectious person coughs or sneezes.⁴ With a typical incubation period of 1 to 14 days, and an average incubation of 2 days.^{5,6} The most effective protection against this disease is vaccination especially since there is no proven efficacious treatment. Many groups, such as World Health Organization, the Advisory Committee on Immunization Practices (ACIP), classify risk groups based upon adverse effects. Influenza vaccination is recommended for people in a high risk category such as those with chronic lung, kidney, liver or endocrine diseases, people with weakened immune systems, children under 6 years of age, (especially children on long term aspirin therapy) and health care workers in regular contact with high risk patients.^{7,8}

Healthcare workers are at a greater risk of contamination influenza due to their close contact with patients. As influenza vaccination is estimated to provide greater than 60% protection against infections, it important to have both patients and healthcare workers immunized to the extent practicable.^{9,10} Since potentially contagious healthcare workers may infect the patients they serve, it is important for infected healthcare workers (and those suspected of infection) avoid contact with patients.^{8,11}

The Center for Disease Control and Prevention has recommended annual influenza vaccination for healthcare workers with direct patient contact since 1984 and for all healthcare workers since 1993.¹² Even so, rates of immunization among healthcare workers remain relatively low; in fact, a study reported by the Immunization Practices Working Group that only 36% of healthcare workers who work closely with patients were vaccinated for influenza.^{8,12} Reasons for avoiding vaccination include concern about possible adverse effects, aversion to injections, belief in low risk of infection, and a disregard for dangerous sequelae of influenza.^{13,14}

The aim of this study is to determine the influenza vaccination rates of healthcare workers

working in pediatric units. Second aim was undertaken to analyze beliefs and behaviors of health care workers in pediatric units in Eastern Turkey regarding influenza vaccination, so as to develop strategies to increase immunization rates among health care workers. The beliefs and behaviors of healthcare workers regarding vaccination are doubly important since these factors impact the vaccination rate of the workers themselves.

MATERIAL AND METHODS

Data for this descriptive study was collected by use of targeted surveys administered between the 10th of September and 10th of November in 2006 to health care workers in pediatric units, at Erzurum Numune State Hospital, Aziziye Gynecology and Children's Hospital, Yakutiye Research Hospital in Turkey.¹² The study sample was composed of 88 healthcare workers (51 Nurses, 37 Physicians). Sampling methods were not utilized in the study. All potential participants agreed to participate in the study.

QUESTIONNAIRE

The data were obtained by administering a questionnaire form to healthcare workers. Questionnaires were developed based on previously published literature and utilizing researchers' expertise.^{12,15} Similarly, replies were scored and analyzed according to precedents from the literature.¹⁶⁻¹⁸ The survey was conducted via "face to face" interview in question and answer format. Interviews averaged between 3 and 5 minutes in length. A pilot study was performed on 10 healthcare workers who would be included in the study to determine whether the questionnaire was appropriate.

In the survey directed at healthcare workers, questions included introductory items about their last one year history of influenza, and of influenza vaccination. Questions about immunization were close ended whereas those about reasons for having/avoiding vaccination were open ended.

DATA ANALYSIS

All statistic calculations were analyzed using the statistical software program, SPSS 13.0 for Win-

dows. The data were assessed by percent, c-square and fisher’s c-square test. For all analyses, a P value less than 0.05 was considered statistically significant.

ETHICAL CONSIDERATION

The appropriate committees at all participating institutions, including the ethics committee at the Institute of Health Sciences at Atatürk University, approved this study. Written informed consent was obtained from all study participants. Healthcare workers were told that all information would be kept confidential and they could withdraw from the study without penalty at any time.

RESULTS

Physicians comprised 42% (n= 37) of study participants in the health care workers of the study and nurses, 58% (n= 51). It was determined that 48.6% of physicians received influenza vaccinations while only 5.9% of nurses were immunized (Table 1). Sixty-seven percent (n= 23) of the nurses had influenza twice or more times in the last 1 year and 32.4% had influenza once in that time period. The difference between the frequency of influenza in the last 1 year and whether or not a nurse was vaccinated was not statistically significant (p> 0.05) (Table 2). This study second aim was undertaken to analyze. Note that 40.9% of physicians who had influenza in the last 1 year were vaccinated against

TABLE 1: Influenza vaccination of healthcare workers (physician-nurses) (n= 88).

Health care workers	Influenza Vaccination				Total ^a	
	Present		Absent		n	%
Physician	18	48.6	19	51.4	37	42.0
Nurse	3	5.9	48	94.1	51	58.0
Total	21	23.9	67	76.1	88	100.0
Significance	Fisher’s $\chi^2= 21.58$ p= 0.000					

^a The percentage for total subjects is the column percentage.

influenza vaccination, a statistically insignificant result (p> 0.05) (Table 3).

When asked why they don’t get immunized against influenza, 76.9% of nurses, 23.1% of physicians give as a reason the fact that they rarely get infected with influenza; 26.7% of physicians, 73.3% of nurses cite a lack of time, 37.5% of physicians, 62.5% of nurses do not believe that immunization prevents influenza.

DISCUSSION

A limitation of this study lies in the fact that the data on vaccination rates is based solely on healthcare worker report. We found that the vaccination rate of the healthcare workers is low (23.9%, Table 1). A study reported by the Immunization Practices Working Group that only 36% of healthcare workers who work closely with patients we-

TABLE 2: Influenza vaccination of the nurses according to their influenza situations (n= 51)^b.

Nurse	Influenza Vaccination				Total ^c	
	Present		Absent		n	%
Influenza (in last one year)						
Present	2	5.9	32	94.1	34	66.7
Absent	1	5.9	16	94.1	17	33.3
Significance	Fisher’s $X^2= 0.000$				p= 1.000	
The frequency of influenza (in last one year) (n= 34) ^a						
Once	1	9.1	10	90.9	11	32.4
Twice and over	1	4.3	22	95.7	23	67.6
Significance	Fisher’s $X^2= 0.302$				p= 1.000	

^a As 34 of nurses expressed that they had influenza, n is calculated over 34,

^b The percentage of the line taken,

^c The percentage for total subjects is the column percentage.

TABLE 3: Influenza vaccination of the physician according to their influenza situations (n= 37)^b.

Physician	Influenza Vaccination				Total	
	Present		Absent		n	%
	n	%	n	%		
Influenza ^a (in last one year)						
Present	9	40.9	13	59.1	22	100.0
Absent	9	60.0	6	40.0	15	100.0
Significance	Fisher's X ² = 1.301				p= 0.325	
The frequency of influenza (n= 22) ^a						
Once	5	55.6	4	44.4	9	100.0
Twice and over	4	30.8	9	69.2	13	100.0
Total	9	40.9	13	59.1	22	100.0
Significance	Fisher's X ² = 1.352				p= 0.384	

^a As 22 of the physician expressed that they had influenza, n is calculated as over 22,

^b The percentage of the line taken.

re vaccinated for influenza.^{8,12} We found that physicians (48.6%) have higher rates of influenza vaccination than nurses (5.9%) ($p < 0.001$). Similar studies, report similar results in those physicians are immunized against influenza at a higher rate than nurses, meaning that nurses are not as vigilant in protecting themselves against influenza.¹⁹⁻²¹

Tapiainen et al report that, of the 95% of physicians and 87% of nurses who have vaccination to protect themselves, 37% of physicians and 11% of nurses also do so to be a role model for the patients.²² Other studies about this subject have reported that healthcare workers undergo influenza vaccination to protect their patients and to protect themselves against influenza.^{14,16,23-26}

Interestingly, we found that more than half of nurses (62.5%) don't believe that the influenza vaccine adequately protects against influenza. Other studies have reported that the primary reason why the healthcare workers don't become vaccinated is that is that they too have doubts about the benefits of the vaccination.^{14,17,27}

Martinello et al stated the commonly reported reasons for not getting the influenza vaccine (n= 39) are the belief that: the influenza vaccination may cause influenza-like diseases (44%); the rate of influenza is not high (15%); they don't believe in the efficacy of the vaccination (13%); they don't like vaccines (13%); forgetfulness (26%, for physicians);

and lack of time (32%, physicians).²⁰ Tapiainen et al state that reasons for not undergoing influenza vaccination are: 41% of doctors and 75% of nurses consider the vaccination to be ineffective; 23% of physicians and 55% of nurses considers the vaccination to be unnecessary; 27% of physicians and 28% of nurses worry about side effects; and 5% of nurses have a fear of vaccination.²²

In the current study, 25% of physicians and of 75% of nurses suggest that there is no necessity for influenza vaccination if are adequately nourished and if they care of themselves. Manuel et al, in his study, also states that 81% of the healthcare workers who don't have influenza vaccination believe that proper hand washing is more effective than influenza vaccination for the prevention of influenza.²⁸ These same authors found out that those who have of those who undergo vaccination 48% believe that balanced diet and regular exercise are more important in preventing influenza that the actual vaccine, while 73% of those who don't undergo vaccination believe that balanced diet and regular exercise are more important in preventing influenza that the actual vaccine.²⁸

CONCLUSION

Influenza vaccination is free of charge for health care workers in many countries (in Turkey) and is thus supported in order to reduce the spread of influenza

spread in high risk patients. However, the vaccination rate of the healthcare workers is low. In this study found that the vaccination rate of the healthcare workers is low. Influenza vaccination of the healthcare workers (physicians and nurses) especially in pediatric patient care settings is very important to protect the many children patients who have chronic diseases and who are less than six years of age.²²

The rate of the influenza vaccination is higher for physicians than for nurses in these same clinics. Patients, healthcare workers and their families, and the general public will benefit from the healthcare worker's increased immunity through higher rates of influenza vaccination, thus, we feel it is important to further educate nurses about the importance and benefits of influenza vaccination.

REFERENCES

1. Recommendations for the use of influenza vaccine for children. *Paediatr Child Health* 2004;9(7):483-6.
2. Goldrick BA. Influenza 2004-2005: what's new with the flu? *Am J Nurs* 2004;104(10):34-8.
3. Hacimustafaoğlu M. [Influenza infections in children]. *Ankerm Dergisi* 2005;19(2):101-6.
4. Maltezou HC, Drancourt M. Nosocomial influenza in children. *J Hosp Infect* 2003;55(2):83-91.
5. Cox NJ, Subbarao K. Influenza. *Lancet* 1999; 354(9186):1277-82.
6. Frank AL, Taber LH, Wells CR, Wells JM, Glezen WP, Paredes A. Patterns of shedding of myxoviruses and paramyxoviruses in children. *J Infect Dis* 1981;144(5):433-41.
7. Hemingway CO, Poehling KA. Change in recommendation affects influenza vaccinations among children 6 to 59 months of age. *Pediatrics* 2004;114(4):948-52.
8. Dash GP, Fauerbach L, Pfeiffer J, Soule B, Bartley J, Barnard BM, et al.; Association for Professionals in Infection Control and Epidemiology. APIC position paper: Improving health care worker influenza immunization rates. *Am J Infect Control* 2004;32(3):123-5.
9. Potter CW. A history of influenza. *J Appl Microbiol* 2001;91(4):572-9.
10. Bridges CB, Kuehnert MJ, Hall CB. Transmission of influenza: implications for control in health care settings. *Clin Infect Dis* 2003;37(8): 1094-101.
11. Simeonsson K, Summers-Bean C, Connolly A. Influenza vaccination of healthcare workers: institutional strategies for improving rates. *N C Med J* 2004;65(6):323-9.
12. Talbot TR, Bradley SE, Cosgrove SE, Ruef C, Siegel JD, Weber DJ. Influenza vaccination of healthcare workers and vaccine allocation for healthcare workers during vaccine shortages. *Infect Control Hosp Epidemiol* 2005;26(11): 882-90.
13. Orr P. Influenza vaccination for health care workers: A duty of care. *Can J Infect Dis* 2000;11(5):225-6.
14. Canning HS, Phillips J, Allsup S. Health care worker beliefs about influenza vaccine and reasons for non-vaccination--a cross-sectional survey. *J Clin Nurs* 2005;14(8):922-5.
15. Poland GA, Tosh P, Jacobson RM. Requiring influenza vaccination for health care workers: seven truths we must accept. *Vaccine* 2005;23(17-18):2251-5.
16. Stephenson I, Roper JP, Nicholson KG. Healthcare workers and their attitudes to influenza vaccination. *Commun Dis Public Health* 2002;5(3):247-52.
17. Wodi AP, Samy S, Ezeanolue E, Lamour R, Patel R, Budnick LD, et al. Influenza vaccine: immunization rates, knowledge, and attitudes of resident physicians in an urban teaching hospital. *Infect Control Hosp Epidemiol* 2005;26(11):867-73.
18. Vázquez-Fernández del Pozo S, Hernández-Barrera V, Carrasco-Garrido P, Alvarez-Martín E, López-de Andrés A, et al. Influenza vaccination coverage and related factors among Spanish children. *J Infect* 2007;54(5):483-9.
19. Doebbeling BN, Edmond MB, Davis CS, Wodini JR, Zeitler RR. Influenza vaccination of health care workers: evaluation of factors that are important in acceptance. *Prev Med* 1997;26(1):68-77.
20. Martinello RA, Jones L, Topal JE. Correlation between healthcare workers' knowledge of influenza vaccine and vaccine receipt. *Infect Control Hosp Epidemiol* 2003;24(11):845-7.
21. Sartor C, Tissot-Dupont H, Zandotti C, Martin F, Roques P, Drancourt M. Use of a mobile cart influenza program for vaccination of hospital employees. *Infect Control Hosp Epidemiol* 2004;25(11):918-22.
22. Tapiainen T, Bär G, Schaad UB, Heininger U. Influenza vaccination among healthcare workers in a university children's hospital. *Infect Control Hosp Epidemiol* 2005;26(11):855-8.
23. Ballada D, Biasio LR, Cascio G, D'Alessandro D, Donatelli I, Fara GM, et al. Attitudes and behavior of health care personnel regarding influenza vaccination. *Eur J Epidemiol* 1994; 10(1):63-8.
24. Nichol KL, Hauge M. Influenza vaccination of healthcare workers. *Infect Control Hosp Epidemiol* 1997;18(3):189-94.
25. Steiner M, Vermeulen LC, Mullahy J, Hayney MS. Factors influencing decisions regarding influenza vaccination and treatment: a survey of healthcare workers. *Infect Control Hosp Epidemiol* 2002;23(10):625-7.
26. Lester RT, McGeer A, Tomlinson G, Detsky AS. Use of, effectiveness of, and attitudes regarding influenza vaccine among house staff. *Infect Control Hosp Epidemiol* 2003;24(11): 839-44.
27. Heininger U, Bächler M, Schaad UB. Attitudes of pediatricians regarding influenza self-immunization: a survey in a Swiss university children's hospital. *Pediatr Infect Dis J* 2003; 22(5):391-4.
28. Manuel DG, Henry B, Hockin J, Naus M. Health behavior associated with influenza vaccination among healthcare workers in long-term-care facilities. *Infect Control Hosp Epidemiol* 2002;23(10):609-14.