Influenza Vaccination; Rates, Knowledge and the Attitudes of Physicians in A University Hospital

Bir Üniversite Hastanesinde Çalışan Hekimlerin İnfluenza Aşısı Olma Oranları ve Aşı Hakkındaki Bilgi ve Tutumları

Levent DÖNMEZ; MD,[a]
H. Hüseyin POLAT, MD,[a]
A. Nevzat YALÇIN, MD,[b]
Selma ÖNCEL,[c]
Özge TURHAN, MD[b]

Departments of
[a]Public Health,
[b]Clinical Bacteriology and Infectious Diseases,
Akdeniz University of Faculty of Medicine
[c]Department of Community Health Nursing,
Akdeniz University Antalya School of Health, Antalya

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Yazışma Adresi/*Correspondence:*
Levent DÖNMEZ, MD
Akdeniz University Faculty of Medicine, Department of Public Health, Antalya,
TÜRKİYE/TURKEY
onmez@akdeniz.edu.tr

ABSTRACT Objective: Since physicians are a professional group with the closest contact with the public, they have both an increased risk of becoming infected with the disease and the possibility of contaminating their patients. Knowledge of the percentage of physicians who are currently vaccinated and of their behaviors on the subject of vaccination can play a role in the planning of vaccination services for this group. The aim of this study was to ascertain the attitudes and behaviors of physicians working in a university hospital about the influenza vaccine. **Material Methods:** This study was conducted in February 2006 as a cross-sectional research. A survey was completed by 212 of the 309 research assistants and 23 of the 26 specialist physicians working in Akdeniz University Hospital. **Results:** The influenza vaccine was administered to 14.5% of the research participants. The majority of the physicians (69.8%) stated that they had never received an influenza vaccine. Only 37.1% were considering being vaccinated next year. The percentage of those working more than five years who had been vaccinated (40.9%) was higher than the others (26.0%) and the percentage of those working in internal medicine departments who had been vaccinated (36.0%) was higher than those working in surgical divisions (23.6%). **Conclusion:** The percentage of physicians vaccinated against influenza and their attitudes about this subject is not at the desired level. It is possible to increase the percentage of physicians who are vaccinated by a vaccination organization and education programs.

Key Words: Influenza vaccines; medical staff, hospital; vaccination; health knowledge, attitudes, practice

ÖZET Amaç: Hekimler toplumla yakın temasta olan bir meslek grubu olduğundan hem hastalığa yakalanma riskleri fazladır hem de kendilerinde enfeksiyon varlığında, bunu hastalarına bulaştırma olasılıkları vardır. Hekimlerin şu andaki aşı oranlarının ve aşı konusundaki davranışlarının bilinmesi, bu gurubun aşılanması hizmetlerinin planlanmasında katkı sağlayabilir. Bu çalışmanın amacı bir üniversite hastanesinde çalışan hekimlerin influenza aşısı konusundaki tutum ve davranışlarının saptanmasıdır. **Gereç ve Yöntemler:** Çalışma, Şubat 2006'da gerçekleştirilmiş, kesitsel bir araştırmadır. Akdeniz Üniversitesi Hastanesinde çalışan 309 araştırma görevlisinin 212'sine ve 26 uzman hekimin 23'üne anket uygulanmıştır. **Bulgular:** Araştırmaya katılanların %14.5'i, 2005-2006 sezonunda influenza aşısı yaptırmıştır. Hekimlerin %69.8'i yaşamı boyunca hiç influenza aşısı olmadığını ifade ettiler. Gelecek sene aşı olmayı düşünenler sadece %37.1'di. Çalışma süresi beş yılın üzerinde olanlarda aşı olma oranı (%40.9), diğerlerine göre (%26.0) daha yüksek ve dahili bilimlerde çalışanlardaki aşı olma oranı da (%36.0) cerrahi bilimlerde çalışanlara göre (%23.6) daha yüksekti. **Sonuç:** Hekimlerin influenza aşısı olma oranları ve bu konudaki tutumları istenen düzeyde değildir. Aşı organizasyonu ve eğitim programları yardımıyla sağlık çalışanlarının aşılanma oranlarının artırılabilmesi olanaklıdır.

Anahtar Kelimeler: İnfluenza aşısı; sağlık çalışanı; aşılama; sağlık bilgi tutum ve davranışı

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Health care workers (HCWs) are a group at risk for influenza.[1,2] This situation can be a cause for unwanted absenteeism in health care workers[3-5] as well as the health care workers being a vector for the spread of the disease,[1,6,7] particularly infecting patients at high risk.[1]

Physicians are an important group of health care workers. Establishing the risk of this group for contracting the influenza disease will assist in the determination of policies for improving the health of health care workers and in preventing the spread of infection in society. The most important factor that places physicians at risk for the influenza disease is whether or not they are immune against the disease.

At the same time, physicians are also an important group for influencing the attitudes and behaviors of society.[8] For this reason determining this group's attitude and behaviors about vaccination and the development of recommendations that can change these attitudes and behaviors in the desired direction will have a positive effect on society's attitudes and behaviors about this subject.

Although the percentage of health care workers and physicians who have received the influenza vaccine has been investigated in various studies,[9-13] the results being very different from each other has made it necessary for this type of research to be repeated at every institution.

The aim of this study was to ascertain the attitudes of physicians working at Akdeniz University Hospital about the influenza vaccine, their status of being vaccinated, and analyzing the personal characteristics that have an effect on being vaccinated.

MATERIAL AND METHODS

This cross-sectional research which has met the all criteria of Helsinki Declaration, was conducted in February 2006. Akdeniz University Hospital, where the study was conducted, is a referral center for the region, has an infection control committee and offers influenza vaccination to employees without charge.

The research population was comprised of all the physicians who worked in the facility. However, for the purpose of ensuring a high percentage of participation in the research, teaching staff and physicians who work in basic sciences and who are unlikely to have contact with patients were not included in the study. All other physicians had a chance of contact with risky patients because of their working procedures. Accordingly, they are considered to be vaccinated and are included in the study. As a result, of a total of 335 physicians (26 specialists and 309 research assistants) who were defined as the target group to be reached, 235 (23 specialists and 212 research assistants) completed the survey. The research participation rate was 70.1%. Characteristics (age, sex, branch of work and professional title) of the target population were compared with the hospital records of the subjects who did not participate to study. There were no significant differences between the study population and the rest of the 29.9% in terms of these characteristics, meaning that lack of the participation was not systematic but random. It was assumed that there was no bias to affect the findings; therefore collected data were analyzed with unweighted calculations.

Students in the sixth year of medical school were assigned the duty of surveyors for the research. The surveys were given personally to the participants and it was ensured that the participants completed the surveys themselves. The independent variables for the research were the age of the individual, number of years employed; branch of work and professional title, and the dependent variables were whether or not they had been vaccinated this year. Information about their other attitudes and behaviors on the subject of vaccination (whether or not they had ever in their lives been vaccinated, whether they were considering being vaccinated next year and why they had not, etc.) were obtained as descriptive data.

Data collection for the research took 10 days. During this time cases of bird flu were in the headlines in Turkey. Data analyses were conducted using the SPSS 11.5 packet program on the computer. Chi square, Fisher's exact Chi square and for-

ward conditional logistic regression analysis were used in the statistics. A value of $p<0.05$ was accepted as the level of significance.

RESULTS

While 53.2% of the study group worked in internal medicine departments and 46.8% in surgical divisions, the overwhelming majority (90.2%) were research assistants. The percentage of those who had been vaccinated at least once in their lives against influenza was 30.2%. Only 14.5% were vaccinated for the 2005-2006 season and 36.6% were considering being vaccinated next season (Table 1).

The physicians' attitudes and behaviors about the influenza vaccine are summarized in Figure 1. Although 133 of the participants in the study (56.6%) stated that it was necessary for health care personnel to be vaccinated every year there were 43.4% who stated that it was not necessary. Thirty one (23.3%) of the 133 individuals who stated that it was necessary to be vaccinated every year had been vaccinated this year and three of the 102 individuals (2.9%) who stated that is was unnecessary had been vaccinated this year. In the examination of the reasons why a total of 201 individuals had not been vaccinated this year it was seen

TABLE 1: Characteristics of physicians who participated to study.

Characteristic	Number (n=235)	Percent
Age groups		
under 25 years	31	13.2
26-30 years	157	66.8
31 years and over	47	20.0
Experience as physician		
under 2 years	68	28.9
2-5 years	101	43.0
6 years and over	66	28.1
Title		
Research assistant	212	90.2
Specialist	23	9.8
Place of work		
Internal Medicine Departments	125	53.2
Surgical Divisions	110	46.8
Vaccination status		
At least vaccinated once in lifetime	71	30.2
Vaccinated this season	34	14.5
Considering being vaccinated next season*	86	36.6

* number answered = 232

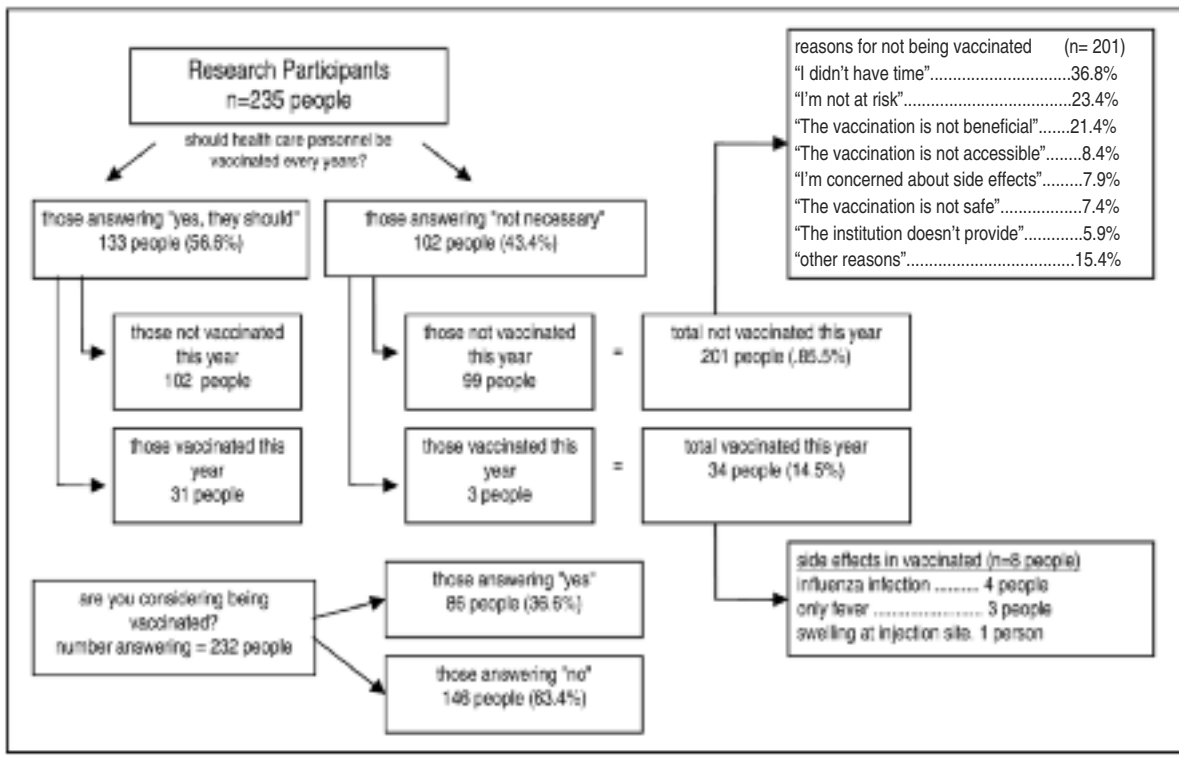

FIGURE 1: Study participants' attitudes and behaviors about influenza vaccine.

that "I didn't have time" was the most common statement (36.8%), followed by "I don't feel like I am at risk" (23.4%), "I don't think the vaccine is beneficial" (21.4%), and "the vaccine was not accessible" (8.4%). Eight of the total of 34 (23.5%) physicians who had been vaccinated this year stated that they had side effects from the vaccine.

Although there was an increase in the percentage of physicians who were vaccinated in the older age groups, the difference was not statistically significant ($p > 0.05$). However as the number of years the physicians had worked increased, the percentage of being vaccinated also increased ($p < 0.05$). The percentage of being vaccinated was higher in the specialist physicians and the physicians working in medical divisions compared to the other groups ($p < 0.05$) (Table 2).

To eliminate the possibility of variables affecting each other in the status of being vaccinated, logistic regression analysis was performed for all of the variables in Table 2 and the results are shown in Table 3. Based on this, only two variables were significant in the model: the staff who worked more than six years were vaccinated 4.5 times more the ones who worked for two years or less (95% CI; 1.5 - 13.3) and, the ones working in internal medicine departments vaccinated 3.1 times more than those working in surgical divisions (95% CI; 1.4 - 7.3).

DISCUSSION

The most important finding in our study was the very low percentage of physicians who had been vaccinated and who were considering being vaccinated in the next year. Vaccination rates were; 50% in New York ED,[11] 38% among another HCWs population in USA,[12] 7,6% in two hospitals in Liverpool [14], 40,1% in whole HCWs population in USA,[15] 9,3% among under 5 years population in Turkey,[16] and 82% among physicians in New Heaven Teaching Hospital.[17] In comparison to other studies, the percentage of being vaccinated in our study was lower than some countries[9,11,12,15,17] but higher than one.[14] However these differences are generally in the differences of the vaccination organization, and

TABLE 2: The relationship between the percentages of being vaccinated and some characteristics of physicians.

Variable	N	Number vaccinated	%	p
Age groups				
under 25 years	31	4	12.9	
26-30 years	157	18	11.5	
31 years and over	47	12	25.5	0.054 *
Experience as physician				
under 2 years	68	5	7.4	
2-5 years	101	13	12.9	
6 years and over	66	16	24.2	0.018 *
Title				
Research assistant	212	27	12.7	
Specialist	23	7	30.4	0.031 †
Place of work				
Internal Medicine Dept.	125	25	20.0	
Surgical Divisions	110	9	8.2	0.010 *

* chi-square test was used, † fischer exact test was used.

TABLE 3: Examination of logistic regression analysis of factors affecting being vaccinated.*

Variable	B ± SE	p	OR	95%CI
Those working more than 6 years †	1.496 ± 0.557	0.007	4.465	1.499-13.300
Those working in internal med.depts ‡	1.148 ± 0.426	0.007	3.151	1.366-7.269

* only significant variables are shown in the table

† reference category is "those working less than 2 years", ‡ reference category is "those working in surgical divisions".

it has been reported that these percentages can be increased with a vaccination organization and education programs.[7,10,15,18] In our examination of the reasons why 201 individuals in our study did not get vaccinated this year (Figure 1) the most common reason was a "lack of time", showing that the rate of vaccinations in physicians could be increased with adequate and effective organization. Similarly, the "lack of time" was also reported in other studies and it was also shown that vaccination rates might be increased by some interventions.[13] In addition, those who had some side effects (8 people) in those who were vaccinated and the worry about side effects in some physicians who were not vaccinated (7.9% of those not vaccinated) shows that the rate of vaccination could be increased by using vaccines that are safe. The worry about side effects were the reason for not getting vaccination in about 11% of HCWs in other studies [14] which gave further support to this review.

Another important finding was the higher rate of vaccination in those who had worked more than six years and who were working in internal medicine departments. Those working in internal medicine departments may have been convinced of the need for being vaccinated by more recent education about vaccination in their working environment. In the same way, an increase in years of working experience may have made the physicians more sensitive to the benefits of being vaccinated. In another study it was also found that the increase in the level of education or in the medical knowledge score was accompanied by an increase in vaccination rates.[19] The important issue here is the higher tendency to be vaccinated in some groups. An examination of the characteristics of these groups and determination of factors influencing being vaccinated could also increase the rate of vaccination in other groups. Our opinion is supported by the reports in other studies stating that arranging for education programs and organization of vaccination implementation within the facility increased the rate of vaccination.[13,20]

It is necessary to examine some of the limitations of the study. The most important of these is the research population being limited to those who work at Akdeniz University Hospital. The characteristics and behaviors about influenza vaccine of the physicians who work at university hospitals may be different from those who work at other health care facilities. For example the mean age of the research assistants in our study may be lower than that of those who work in public hospitals or other health care facilities. In addition, educational activities being ongoing in university hospitals and health related incidents in the news being followed more closely at university hospitals may be a factor that increases the percentage of those being vaccinated. Factors mentioned above may be responsible for the differences in vaccination rates found in various studies. For these reasons the results we obtained cannot be generalized to the rest of the country but only gives us the ability to comment on research assistants at Akdeniz University. However conducting this type of research in every institution can help to give an idea of the country in general.

The second important limitation of the study was that bird flu was in the headlines in the country the same year. The subject being frequently discussed in the media and amongst the health care workers during the time the study was conducted may have been reflected in our findings with a higher percentage of the physicians being vaccinated and looking more positively at being vaccinated. For this reason our findings reflect the state of vaccination in a period in which the topic is in the news headlines. It would not be incorrect to say that the percentage of physicians being vaccinated and having positive attitudes towards vaccination would be lower in a time when the subject was not in the headlines.

CONCLUSION

The percentages of vaccination among the physicians are very low. Although the attitudes of the health care workers leads to the lower vaccination rate considerably, some other factors; lack of the organizations regarding to the accessibility of vaccination services and side effects of vaccine, may well effect this rate.

Increase of the vaccination rate among health care workers, especially in physicians, may contribute to improve the population's health level. In order to increase of this rate; health care units should create education programs which would help to change attitudes of health care workers, and it should organize vaccination services which can be accessible easily. In addition special invitations which indicate the vaccination time should be sent to health care workers.

Additionally, the researches on vaccine technology should be encouraged. That would help to reduce the number of people who avoid vaccination because of its side effects.

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