Knowledge, Attitude and Awareness Toward Influenza Vaccination Among Patients Admitted to the Infectious Diseases Outpatient Clinic of a Research Hospital

Bir Eğitim Araştırma Hastanesinde İnfeksiyon Hastalıkları Polikliniğine Başvuran Hastalarda Grip Aşısı ile İlgili Bilgi Düzeyi, Tutum ve Farkındalığın Değerlendirilmesi

Müge AYHAN[1](İD), Bircan KAYAASLAN[2](İD), Ayşe KAYA KALEM[2](İD), İmran HASANOĞLU[2](İD), Hatice Rahmet GÜNER[2](İD)

[1] Department of Infectious Diseases and Clinical Microbiology, Ankara City Hospital, Ankara, Turkey

[2] Department of Clinical Microbiology and Infectious Diseases, School of Medicine, Ankara Yildirim Beyazit University, Ankara, Turkey

ABSTRACT

Introduction: Worldwide influenza vaccination rates remain low despite guideline recommendations to support vaccinations. It is important to identify attitudes, barriers and motivating factors influencing patients' vaccination behaviours. We aimed to evaluate the knowledge, attitudes and factors influencing the vaccination behaviours against influenza and sources of information used by patients about influenza vaccine.

Materials and Methods: This was a cross-sectional, self administered questionnaire-based study of 229 patients who visited infectious diseases and clinical microbiology outpatient clinic between December 2018 and February 2019. The questionnaire consisted of 39 items in 5 sections: Demographic data (8), questions about influenza vaccine (9), vaccination history (2), factors influencing vaccination behaviours (18) and sources of information used by patients about influenza vaccination (2).

Results: Vaccinated group had a higher education level compared to the unvaccinated group, and the difference was statistically significant (p= 0.007). Vaccination against any diseases in adulthood was also statistically higher in the influenza-vaccinated group (p= 0.000). Other features were similar in both groups. The percentage of correct answers to proposals were similar and high between the two groups. Correct answers given to "People with chronic illness should have a flu vaccine" was statistically higher in the vaccinated group (80.5% vs. 61.8%, p= 0.004). Regular annual vaccination rate was only 10.3% in the vaccinated group. The most common motivating factor in vaccination was doctor's advice (54.5%). The most common barrier against influenza vaccination was the idea that they did not need vaccination (51.3%). The information source affecting the patients mostly was the doctors in both vaccinated and unvaccinated groups.

Conclusion: In order to increase the knowledge level and vaccination rates, doctors should be informed rigorously about advising influenza vaccine to patients, especially high risk groups. Education and advice from healthcare professionals about vaccine is crucial for increasing vaccination rate.

Key Words: Influenza; Vaccine; Misconception; Vaccine hesitancy

Available Online Date: 31.12.2020

ÖZ

Bir Eğitim Araştırma Hastanesinde İnfeksiyon Hastalıkları Polikliniğine Başvuran Hastalarda Grip Aşısı ile İlgili Bilgi Düzeyi Tutum ve Farkındalığın Değerlendirilmesi

Müge AYHAN[1], Bircan KAYAASLAN[2], Ayşe KAYA KALEM[2], İmran HASANOĞLU[2], Hatice Rahmet GÜNER[2]

[1] Ankara Şehir Hastanesi, İnfeksiyon Hastalıkları ve Klinik Mikrobiyoloji Kliniği, Ankara, Türkiye
[2] Ankara Yıldırım Beyazıt Üniversitesi Tıp Fakültesi, İnfeksiyon Hastalıkları ve Klinik Mikrobiyoloji Anabilim Dalı, Ankara, Türkiye

Giriş: Kılavuzlarda aşılanmayı destekleyen öneriler bulunmasına rağmen influenzaya karşı aşılanma oranları tüm dünyada düşük izlenmektedir. Hastaların aşılanma davranışını etkileyen tutumun, olumlu ve olumsuz etkileyen faktörlerin belirlenmesi önemlidir. Bu çalışmada, hastaların influenza aşısı ile ilgili bilgi düzeyinin, aşılanma davranışını etkileyen tutum ve faktörlerin ve hastaların influenza aşısı ile ilgili yararlandıkları bilgi kaynaklarının değerlendirilmesi amaçlanmıştır.

Materyal ve Metod: Bu kesitsel olarak planlanan çalışmada Aralık 2018-Şubat 2019 arasında infeksiyon hastalıkları polikliniğine başvuran 229 hastanın hazırlanan anketi kendilerinin doldurulması sağlandı. Hazırlanan ankette demografik verilere ait (8), influenza aşısı (9), aşılanma öyküsü (2), aşılanmayı etkileyen faktörler (18), kullanılan bilgi kaynakları (2) ile ilgili toplam 39 mevcuttu.

Bulgular: Gribe karşı aşılanan grubun eğitim düzeyi aşılanmayan gruba göre istatistiksel anlamlı olarak daha yüksek izlendi (p= 0.007). Erişkin dönemde herhangi bir hastalığa karşı aşılanma oranı aşılanan grupta daha yüksek izlendi p= 0.000). Diğer özellikler her iki grupta benzerdi. Aşı ile ilgili önermelere verilen doğru yanıtlar her iki grupta yüksek ve benzer izlendi. Yalnızca "Kronik hastalığı olan kişiler grip aşısı olmalıdır" önermesine verilen doğru yanıt oranı aşılanan grupta daha yüksek izlendi. (%80.5 vs. %61.8, p= 0.004). Aşılanan grupta her yıl düzenli aşılanma oranı %10.3'tü. Aşılanmayı olumlu etkileyen en sık faktör doktor önerisi olarak izlendi (%54.5). Hastaların en sık aşılanmama nedeni aşılanmanın gerekli olmadığını düşünmeleriydi (%51.3). Aşılanan ve aşılanmayan grupta hastaları en çok etkileyen bilgi kaynağı doktor olarak izlendi.

Sonuç: Bilgi düzeyini ve aşılanma oranlarını arttırmak için, hekimler özellikle yüksek riskli hasta gruplarında grip aşısını önermeleri açısından mutlaka bilgilendirilmelidir. Sağlık çalışanları tarafından aşının önerilmesi ve verilen eğitimler aşılanma oranlarını arttırmak için kilit öneme sahiptir.

Anahtar Kelimeler: Grip; Aşı; Yanlış bilgi; Aşı karşıtlığı

INTRODUCTION

Influenza is a highly contagious viral infection which impacts people of all ages and occurs mostly in late fall, winter and early spring[1]. The clinical course of the disease ranges from mild self-limiting disease to serious infection, and it sometimes can cause death, particularly in high risk individuals[1,2].

World Health Organization (WHO) estimates that 5-10% of adults and 20-30% of children contact influenza annually at the global scale[3]. Influenza is an important cause of morbidity and mortality, resulting in an estimated 115.000-630.000 influenza associated hospitalizations and 5.000-27.000 annual deaths in the United States (US) depending on the season[4]. Most of the deaths associated with influenza are observed in high-risk populations. Vaccination is the best way to prevent influenza infection[5]. The Centers for Disease Control and Prevention (CDC) recommends routine annual seasonal vaccination for all people aged 6 months and older with particular importance to vulnerable populations, including older adults, young children, pregnant women, persons with chronic lung and heart diseases, kidney or liver failure, neurological, haematological diseases and diabetes[6,7]. In Turkey, influenza vaccine is reimbursed for adults aged older than 65 years, people living in nursing facilities and care centers, and patients with chronic diseases. Recently, women in the second and third trimester of pregnancy have been added to the list[8,9]. Despite these recommendations, vaccination rates remain low worldwide. In many countries, vaccination rates vary from 30 and 50% in all population[10,11]. In our country, this rate is lower

as 6-10%[12,13]. In order to reduce influenza associated morbidity and mortality, CDC defined the target vaccination coverage for influenza as 70% for adults and 90% for healthcare workers (HCWs) in Healthy People 2020[14].

Understanding barriers, identifying attitudes and factors influencing patients' vaccination behaviours are important for increasing influenza vaccination rates and reducing influenza related morbidity and mortality, especially in high-risk populations.

We conducted a cross-sectional study by applying a questionnaire to people presenting to the infectious diseases and clinical microbiology outpatient clinic in order to evaluate the knowledge, attitudes, factors and information sources used by the patients for influenza vaccination and influencing the vaccination behaviors.

MATERIALS AND METHODS

Study Design and Participants

A cross-sectional study was performed between December 2018 and February 2019 in Atatürk Research and Training Hospital A self-administered, anonymous questionnaire was prepared. A pilot study was conducted with 25 patients to verify the clarity of the tool (included in the final sample). All patients who applied to the infectious diseases and clinical microbiology outpatient clinic were informed about the study (n= 900). One researcher explained the purpose of the study face-to-face to each participant and obtained verbal and written consent from the patients who participated the study before administering the questionnaire.

The questionnaire consisted of 39 items in 5 sections: Demographic data[8], questions about influenza vaccine[9], vaccination history[2], factors influencing vaccination behaviour[18], sources of information used by patients about influenza vaccination[2].

Influenza vaccination history was asked. If the patient got vaccinated before, it was asked how many times he or she got vaccinated in last five years. Factors which promote vaccination were asked to the vaccinated group and factors negatively affected was asked to the unvaccinated

group. Information sources of the patients about influenza vaccination and the most effective information source was asked. Some statements about the influenza vaccine were also asked to the participants whether they were true or false, and correct answers were compared between the two groups (Supplementary file 1).

Statistical Analysis

Data were analyzed using the SPSS 20.0 for Windows program. Descriptive statistics were expressed as numbers and percentages for categorical variables and as mean, standard deviation, median, and minimum-maximum for numerical variables. For categorical variables, chi-square test was used in two groups. Fisher's exact test was used for two group comparisons when chi-square condition was not met. Continuous variables were evaluated using Student's t-test and nonparametric methods if not. In the comparison of two independent groups, Mann-Whitney U test was used for normally distributed numerical variables.

Ethical Considerations

The study protocol was aproved by Yıldırım Beyazıt University, Clinical Research Ethics Committee (Approval Date: 19.12.2018, Approval Number: 269). Verbal and written informed consent were obtained for each participant. Names and information about the identities of the participants were seperated from the questionnaire, and data were analyzed anonymously. The study was carried out according to the principles of the Helsinki Declaration.

RESULTS

Three hundred and thirteen patients agreed to participate in the study. Twenty of the questionnaires had lack of information, 36 of the patients refused to give informed consent, 28 patients did not return the questionnaires. A total of 229 patients were included. Mean age was 43.49 ± 12.9 (%95 CI, 41.8 - 45.16). Vaccinated and not-vaccinated groups were compared for demographic features (Table 1). The vaccinated group had a higher education level compared to the unvaccinated group, and the difference was statistically significant (p= 0.007). Chronic lung diseases, cardiovascular diseases, renal failure, diabetes, rheumatoid disease and immunsuppression

Table 1. Demographic features of participants

Demographic features	Vaccinated against influenza (n: 77)	Unvaccinated (n: 152)	p
Age	42.6 ± 14.759	43.9 ± 11.993	> 0.05
Sex, male (n, %)	47 (61.0%)	94 (61.8%)	> 0.05
Education level			
College and higher	47 (61%)	68 (44%)	0.007
Comorbidities			
Chronic lung disease	7 (9.09%)	12 (7.89%)	> 0.05
Chronic heart disease	5 (6.49%)	6 (3.94%)	> 0.05
Kidney failure	4 (5.1%)	3 (1.9%)	> 0.05
Liver disease	21 (27.2%)	84 (55.2%)	**0.000**
Diabetes	7 (9.09%)	7 (4.6%)	> 0.05
Rheumatoid disease	4 (5.1%)	7 (4.6%)	> 0.05
Malignancy	1 (1.2%)	-	-
Pregnancy	-	4 (2.6%)	-
Living with a person with a chronic condition	9 (11.6%)	26 (17.1%)	> 0.05
Living in nursing facility	1 (1.2%)	1 (0.65%)	> 0.05
Vaccination against any disease in adulthood	41 (53%)	31 (20.3%)	**0.000**

was more frequent in influenza-vaccinated group. Only chronic liver disease was higher in the unvaccinated group. Vaccination against any diseases in the adulthood was also statistically higher in the influenza-vaccinated group (p= 0.000). Other features were similar in both groups. One hundred and fifty-two of the patients had at least one underlying medical condition or were older than 65 years, which is a high risk for serious influenza. Vaccination rate in this high-risk group was as low as 29.6% (Table 1).

The knowledge level about influenza vaccine was evaluated by asking true/false questions and the groups were compared (Table 2). Correct answers given to "People with chronic illness should have a flu vaccine annually" statement was statistically higher in the vaccinated group (80.5% vs. 61.8%, p= 0.004). There was no difference between groups for other statements.

Vaccination frequency was asked to previously vaccinated patients. Regular annual vaccination rate was 10.3%, and only 9.09% of the patients were vaccinated 3-4 times in the last 5 years. Most of the patients had been vaccinated irregularly (31, 40.2%) or 1-2 times in last 5

years (31, 42%). In the vaccinated group, factors promoting vaccination behaviour were asked. The most encouraging factors for vaccination were the recommendations of the doctors (54.5%), the idea that the vaccine was useful (37.6%) and being in a high-risk group (23.3%) (Table 3). Barriers against influenza vaccination were asked to the unvaccinated group. The most common barriers against vaccination were that they did not need to be vaccinated (51.3%), the fact that doctors did not recommend influenza vaccine (47.3%) and the idea that vaccine was not useful (21.7%) (Table 4).

Sources of information which were used by the participants were investigated and compared between the vaccinated and unvaccinated groups. Internet (including social media), television and radio news usage were signficantly higher in the unvaccinated group. Most effective information source was doctor in both groups (Table 5).

DISCUSSION

Evaluating knowledge, attitude and awareness about influenza vaccination and the factors influencing vaccination behaviour among patients

Table 2. Correct answers given to some statements about influenza vaccine between vaccinated and unvaccinated groups

	Actual right answer	Vaccinated against influenza (n: 77)	Unvaccinated (n: 152)	Total (n: 229)	p
Vaccine provides partial protection	True	73 (94.8%)	134 (88.1%)	207 (90.3%)	> 0.05
People who are vaccinated have less flu	True	65 (84.4%)	120 (78.9%)	185 (80.7%)	> 0.05
Vaccine reduces hospitalization	True	61 (79.2%)	108 (71%)	169 (73.7%)	> 0.05
Once you get vaccinated, it protects lifetime	False	67 (87%)	117 (76.9%)	184 (80.3%)	> 0.05
Vaccine causes flu	False	65 (84.4%)	114 (75%)	179 (78.1%)	> 0.05
Influenza vaccination should be done in the fall annually	True	64 (83.1%)	119 (78.2%)	183 (79.9%)	> 0.05
Vaccine reduces labor loss	True	37 (48%)	63 (41.4%)	100 (43.6%)	> 0.05
Vaccine has a lot of side effects	False	65 (84.4%)	115 (75.6%)	180 (78.6%)	> 0.05
People with chronic illness should have a flu vaccine	True	62 (80.5%)	94 (61.8%)	156 (68.1%)	**0.004**

Table 3. Factors promoting vaccination in the vaccinated group (n: 77)

I think the flu shot is beneficial	29 (37.6%)
My doctor suggested me to get the vaccination	42 (54.5%)
I am in high risk group for serious illness	18 (23.3%)
I have got vaccinated because my family/close environment suggested me to do it	17 (22.07%)
I have got vaccinated because I am living with a person who has a chronic disease	5 (6.5%)
I have got vaccinated because I do not want to infect my child	12 (15.5%)
I have got vaccinated because of the positive news about the importance of the vaccine in the media	9 (11.6%)

Table 4. Factors effecting negatively against influenza vaccination in unvaccinated group (n: 152)

I think the flu shot is not useful	33 (21.7%)
I think I do not need to be vaccinated	78 (51.3%)
My doctor did not recommend vaccination	72 (47.3%)
I do not want to get vaccinated because of negative news in the media	32 (21%)
I think it is painful	7 (4.6%)
I could not get vaccinated because I am too busy	20 (13%)
I have not got vaccinated because the vaccine causes the flu	8 (5.2%)
I have not got vaccinated because of the side effects	40 (26.3%)
I think vaccine is expensive	7 (4.6%)
I am allergic to the vaccine	16 (10.5%)
I do not know where to get the vaccine	-

Table 5. Comparison of the information sources and most effective source of information about influenza vaccination used by patients among the groups

Sources of information used by the participants	Vaccinated group (n: 77)	Not-vaccinated group (n: 152)	p
Doctor	64 (83%)	111 (73%)	> 0.05
Family and friends	24 (31%)	35 (23%)	> 0.05
Internet (including social media)	12 (15%)	43 (28.2%)	**0.03**
TV and radio news	11 (14.2%)	45 (29.6%)	**0.01**
Newspaper	1 (0.1%)	8 (0.5%)	> 0.05
Source of information which affects mostly			
Doctor	67 (87%)	131(86.2%)	> 0.05
Family and friends	4 (5.2%)	5 (3.3%)	> 0.05
Internet (including social media)	1 (1.3%)	8 (5.3%)	> 0.05
TV and radio news	5 (6.5%)	8 (5.3%)	> 0.05
Newspaper	-	-	

is very important to increase coverage rates of vaccination.

Overall influenza vaccination rate was 32%. One hundred and fifty-two of the patients had at least one underlying comorbidity or were elderly and vaccination rate in high-risk group was lower (29.6%) in our study. Influenza vaccination rates in high-risk groups vary in a wide range as 9.7%-50[14-16]. In our study, the education level was statistically higher in the vaccinated group, and higher education level has usually been associated with increased vaccine uptake in previous studies[7,17-19]. Although most of the studies report an association between vaccination and higher education level, in a large study including 7106 participants, lower education level was found to be positively associated with vaccine uptake[19]. Vaccination against any disease in adulthood was also higher in the vaccinated group than the unvaccinated group (53% vs 20.3%, p= 0.000). Patients who had at least one adult vaccination are likely to have heard of other adulthood vaccines and also influenza vaccine compared to unvaccinated participants[20].

Patients did not have enough information about the necessity of vaccination in people with chronic illnesses. Lack of knowledge is an important barrier about influenza vaccination especially in high-risk groups[21,22]. Even in the vaccinated group, regular vaccination rate was found very low as 10.3%. In a study including 562 patients, only 22.2% of the vaccinated patients reported annual regular vaccination[4] and Çiftçi et al. reported regular vaccination rate as 16.8%[7]. In fact, the low regular vaccination rate was not due to lack of information in our study. Despite high level of knowledge on the fact that the vaccine did not provide lifelong protection, patients did not get vaccinated. Especially in these patients, doctor's advice has a key role for vaccine uptake. Doctors should regularly inform patients and recommend vaccination to particularly high-risk patients.

The most common promoting factors were doctors' advice, patients' perception about the usefulness of the vaccine and being high-risk for serious illness. Recommendations from HCWs have been reported as the most important factor affecting influenza vaccine uptake in both older and younger adults in a large population-based study[19]. Lack of suggestion from a clinical doctor might be a direct factor in low vaccination rates[3]. In another study, results were similar with our study, and the most common reasons for being vaccinated for influenza were stated as to protect oneself from influenza and its complications, to protect household members and being at high risk[4]. Doctor recommendation and being in a high risk group for serious illnesses are the most important factors affecting vaccine uptake.

Having an underlying risk factor or a chronic disease for serious influenza infection cause an increase on awareness for vaccination[23-25].

The most commonly stated barriers were the idea that the vaccine is unnecessary, the lack of doctors' advice about influenza vaccination and the fear of side effects. Aka Aktürk et al. have reported that the most notable reason (57.2%) for not being vaccinated for influenza was absence of doctor's advice like in our study[18]. In a systematic review, the perception of vaccine efficacy is the strongest motivator of influenza vaccine uptake. Vaccine safety and fear of side effects are concerns and deter people from getting vaccinated[21]. In our study, 26.3% of the unvaccinated group were not vaccinated because of side effects. In a study evaluating teachers' attitudes about influenza vaccine, most of the teachers believed that the flu vaccine is ineffective, vaccine makes ill and side effects of the vaccine are worse than the disease itself[26]. The lack of knowledge about the vaccine's safety over the disease is a major barrier regarding vaccination for not only the flu vaccine but also for other vaccines[27,28]. A study has shown that even students of medicine believe that influenza vaccine may cause flu or dangerous side effects[6]. In a Turkish study performed by Ciblak et al., fear of side effects (19%) and discourage by doctors (10%) have been found important and common barriers for influenza vaccination[12]. Although doctors are the most important source of information who should recommend the vaccine, patients can be discouraged from the vaccine by the doctors themselves.

The most common information source was doctor in both groups in our study. Internet (p= 0.03) and television/radio news (p= 0.01) usage as an information source were statistically higher in the unvaccinated group. Wrong information and myths about influenza vaccine and its safety may be a barrier against influenza vaccine. In an Italian study which included 700 subjects with chronic diseases, the most frequently mentioned information source was doctor (38.3%) as in our study and followed by television and newspapers (32.3%)[29]. In a German study, 21.262 people were interviewed via telephone during the study period. Similarly, the most frequently reported source of vaccination advice was the doctors, particularly general practitioners with a rate of 95.1%[30].

The doctors' knowledge, awareness, perception of influenza disease and vaccine necessity and also self-vaccination rate are crucial for recommending vaccination to their patients. In a study from our country, self-vaccination rate of the physicians was 63.4% and 63.3% in diabetic patient population[31]. These results mean doctors' attitude among vaccination is parallel to patients' vaccination behavior. In a Turkish study including 470 HCWs, vaccination rate was 26.7%, and 20% of the doctors had never recommended influenza vaccine. Physicians who had previously been vaccinated against influenza and pneumoccocus advised the patients to be vaccinated in a higher percentage than doctors who had not been vaccinated before[32]. Despite recommendations in guidelines, vaccination rates of HCWs against influenza vary in a wide range (%8.8-67.6)[33,34]. Therefore, it is important to inform doctors and other HCW's about influenza, and encouraging self-vaccination among HCWs is directly associated with an increase in recommendation to patients and vaccination rates. In order to eliminate the fear of side effects and doubts about vaccine safety, patients should be informed rigorously by erudite doctors and other HCWs.

There were some limitations of our study. First, response rate was very low. Second, recall bias and selection bias are also possible due to the study design. Third limitation was that this study was limited to patients who visited the infectious diseases outpatient clinic. So, our results cannot be generalized to all patients since the department of the physician and recommendation rates might be affected.

In conclusion, the most important information source for influenza vaccination is the doctor. In order to increase knowledge level and vaccination rates, doctors should be informed rigorously about vaccine and encouraged about self-vaccination and as a result, recommend influenza vaccine to their patients. Developing education strategies about influenza vaccination and providing medically accurate information from HCW's about

the disease, risk groups, how severe the disease might be, vaccine and its safety could be the key factor to correct misconceptions and increase vaccination rates.

ETHICS COMMITTEE APPROVAL

The approval for this study was obtained from Yıldırım Beyazıt University, Clinical Research Ethics Committee (Decision No: 269, Date: 19.12.2018).

CONFLICT of INTEREST

No potential conflicts of interest were disclosed.

AUTHORSHIP CONTRIBUTIONS

Concept/Design: MA, BK

Analysis/Interpretation: MA, BK, HRG

Data acquisition: MA, BK, AKK, İH

Writing: MA, BK

Final Approval: MA, BK, HRG

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Address for Correspondence/Yazışma Adresi

Dr. Müge AYHAN

Ankara Şehir Hastanesi,
İnfeksiyon Hastalıkları ve
Klinik Mikrobiyoloji Kliniği,
Ankara-Türkiye

E-mail: dr.mugeayhan@hotmail.com