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Major Article

Better knowledge and regular vaccination practices correlate well with higher seasonal influenza vaccine uptake in people at risk: Promising survey results from a university outpatient clinic

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Background: The knowledge, beliefs, opinions, and attitudes of patients and their relatives regarding seasonal influenza vaccination were evaluated.
Methods: This descriptive study was undertaken in the outpatient clinics of Baskent University Hospital. There were 566 responders who completed a self-administered questionnaire.
Results: The mean age of participants was 48.35 years, and 16.8% were ≥65 years. Of the responders, 21.7% were vaccinated this year, whereas 57.8% did not desire to get it. Vaccination rates were significantly higher among responders ≥65 years of age (56.4%), those having at least 1 chronic illness (46.5%), and those who were vaccinated regularly every year (22.2%). Half of the responders did not know that the vaccine was reimbursed for people at risk. The most common reason for refusing the influenza vaccine was not getting the flu frequently (51.2%). Fear of side effects, concerns about vaccine's effectiveness, and belief that vaccine causes the flu were other common reasons for not being vaccinated. Of the responders, 77% believed that getting official information or a recommendation from a physician would influence their decision about seasonal influenza vaccination.
Conclusions: People who are at risk or vaccinated regularly display a higher vaccine uptake and better knowledge of influenza and vaccination. The opinions and attitudes of this study population may assist in developing strategies for changing attitudes of the public toward influenza vaccination.

Influenza is an important cause of morbidity and mortality globally, resulting in an estimated 115,000-630,000 influenza-associated hospitalizations and 5,000-27,000 annual deaths in the United States, depending on the season.[1] Seasonal influenza vaccination (SIV) is the most effective way of preventing influenza virus infections and epidemics.[2] Influenza vaccination is associated with a lower risk of confirmed influenza with an adjusted odds ratio of 0.61.[3]

The World Health Organization defined the primary groups for vaccination in 2012. They determined the primary target groups as pregnant women and the secondary target groups as children (6-59 months), older adults, individuals having chronic medical conditions, and health care personnel.[4] In Turkey, vaccination is reimbursed for older adults ≥65 years of age, people living in nursing homes and care centers, and patients with chronic diseases; very recently, women in the second and third trimesters of pregnancy have been added to the list.[5] A recent decision-analytic model study from Turkey suggests that increasing the vaccination rates for adults with type 2 diabetes to ≥20% could be very cost-effective.[6]

To reduce influenza-associated morbidity and mortality, the Centers for Disease Control and Prevention defined the target for influenza vaccination coverage as 70% for adults and 90% for health personnel in Healthy People 2020.[7] Moreover, European Union member states committed to the goal of attaining vaccination coverage of at least 75% for older age groups and individuals with chronic diseases by 2014-2015.[8] However, thus far, most of the European countries are still below the projected target.[9]

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Because Turkey has no central immunization registry, information on influenza vaccination coverage is only available from limited local studies and sales data.[10] Moreover, data on attitudes and knowledge about seasonal influenza and vaccination in specific target groups are very limited. Assessing the public's knowledge and awareness regarding influenza and SIV, the reasons behind their vaccination decisions, and their opinions regarding the measures to be taken to increase vaccine uptake may be useful in defining officially adopted strategies for SIV. For this reason, we constructed a questionnaire for the patients and their relatives who were admitted to our hospital during the 2015-2016 Northern Hemisphere influenza season.

MATERIALS AND METHODS

This descriptive and cross-sectional study was undertaken in the Mavisehir and Cigli outpatient clinics of Baskent University Zubeyde Hanım Research and Training Hospital between October 1, 2015, and December 31, 2015. The patients and their relatives >18 years of age who were admitted to the outpatient clinics were asked to complete a self-administered questionnaire which included questions about their sociodemographic characteristics, status and history of influenza vaccination, knowledge, beliefs, opinions, and attitudes regarding influenza and SIV. The questionnaire was formed with the review of related literature and administered to a group of 10 patients to determine the clarity, relevance, and time required to complete the questionnaire. After this preliminary study, the form was reevaluated and changed accordingly. The completion time of the questionnaire was approximately 10 minutes. According to a sample size calculation, at least 381 subjects were required to estimate the information about the study population with a confidence interval of 95% and an error estimate of 5%. The study was approved by Baskent University Institutional Review Board (project no. KA15/370).

The questionnaire was composed of 4 sections. The first section included questions on the participants' sociodemographic characteristics, such as age, sex, number of children aged <5 years, number of household members, level of education and income, history of influenza-related diseases and vaccination status, factors positively influencing their vaccination decision, and risk factors, including history of chronic illnesses and residing in nursery home or care center. Participants who were ≥65 years of age, had children ≤5 years of age, suffered from at least one of the chronic illnesses considered as risky (eg, diabetes mellitus [DM], chronic cardiopulmonary disease, asthma, bronchitis or chronic obstructive pulmonary disorder [COPD], chronic renal insufficiency, hematologic disorders, immunity disorder, other chronic diseases), lived in a nursery home, or worked in health care were regarded as at risk.

In the second section, the participants were asked to answer factual statements regarding influenza- and vaccination-related knowledge by checking the right, wrong, or do not know box. During the analysis of the results, we assumed that a lack of knowledge (do not know) reflected a lack of awareness about the importance of influenza and vaccination; therefore, do not know was also defined as an incorrect answer.

In the third section, the participants indicated their current influenza vaccination status and their reasons for having been vaccinated or not vaccinated. The final section consisted of questions that inquired about the participants' opinions regarding the measures that could be considered to increase vaccine uptake in Turkey.

Descriptive statistics were applied to describe sex, age range, marital status, level of education, level of income, smoking, chronic disease(s), risk factor(s) for vaccination, vaccination status, vaccination frequency, factors influencing vaccination decision, reasons for being vaccinated, reasons for not being vaccinated, and opinions about the measures to be considered to increase vaccine uptake in Turkey. Data from the questionnaire were transferred to SPSS 22.0 software (IBM Corp., Armonk, NY) and analyzed as numbers and percentages. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated. Statistical significance was analyzed using the χ^2 test. Significance was set at $P < .05$.

RESULTS

A total of 566 patients and their relatives participated in this study. The response rate was 66.5%. The mean age was 48.35 ± 0.66 (95% CI, 47.05-49.66) years. The distribution of age range is shown in Table 1. Of the responders, 59.1% were women, and 77.2% were married. Of the responders, 16.3% (n = 78) had children at the age of ≤5 years. The number of household members was reported as 2 in 33.9%, 3 in 32.2%, and 4 in 22.1%. The mean number of household members was 2.80 ± 1.03 persons. Education status and level of income of the responders are listed in Table 1.

Of the participants, 47.7% (n = 269) had at least 1 risk factor for SIV, whereas 25.5% (n = 144) had at least 1 chronic disease that could be counted as a risk factor for SIV. The rates of the chronic diseases were as follows: DM, 12%; chronic cardiopulmonary disease, 8.7%; asthma, bronchitis, or COPD, 9.4%; chronic renal insufficiency, 0.7%; hematologic disorders, 1.1%; immunity disorder, 1.8%; and other chronic diseases, 19.2%. Some participants had >1 chronic disease. Two participants were living in a nursing home, and 2 were health care workers. Of the participants, 71.6% did not smoke (Table 1).

The relation of being vaccinated with sociodemographic variables is demonstrated in Table 1. Analysis of the results showed that the vaccination rate was significantly higher among men than woman and among responders ≥65 years of age compared with the

Table 1
Sociodemographic characteristics of the study population

	Vaccination status						
	Total		Yes		No		
Characteristic	n	%	n	%	n	%	Test
Sex	660		120	21.4	440	78.6	$\chi^2 = 4.326$
Female	331	59.1	61	18.4	270	81.6	$P = .038$
Male	229	40.9	59	25.8	170	74.2	
Age (y)	532		116	21.8	416	78.2	$\chi^2 = 86.398$
18-24	26	4.9	3	11.5	23	88.5	$P < .001$
25-49	255	47.9	27	10.6	228	89.4	
50-64	157	29.5	33	21.0	124	79.0	
≥65	94	17.7	53	56.4	41	43.6	
Marital status	561		122	21.7	439	78.3	$\chi^2 = 1.359$
Married	433	77.2	98	22.6	335	77.4	$P = .350$
Single	128	22.8	24	17.3	104	82.7	
Education status	562		122	21.7	440	78.3	$\chi^2 = 11.939$
Primary	41	7.3	17	41.5	24	58.5	$P = .008$
Secondary	40	7.1	9	22.5	31	77.5	
High	147	26.2	24	16.3	123	83.7	
University or higher	334	59.4	72	21.6	262	78.4	
Level of income	489		115	23.5	374	76.5	$\chi^2 = 3.183$
Low	49	10.0	15	30.6	34	69.4	$P = .204$
Medium	390	79.8	85	21.8	305	78.2	
High	50	10.2	15	30.0	35	70.0	
Chronic disease(s)	564		123	21.8	441	78.2	$\chi^2 = 69.291$
Yes	144	25.5	67	46.5	77	53.5	$P < .001$
No	420	74.5	56	13.3	364	86.7	
At least 1 risk factor	564		123	21.8	441	78.2	$\chi^2 = 52.039$
Yes	269	47.7	94	34.9	175	65.1	$P < .001$
No	295	52.3	29	9.8	266	90.2	
Smoker	557		122	21.9	435	78.1	$\chi^2 = 4.767$
Yes	158	28.4	25	15.8	133	84.2	$P = .029$
No	399	71.6	97	24.3	302	75.7	