



# Considerations Regarding Influenza Vaccine Immunization among Health Care Professionals. The Experience of Two Major Hospitals in the South of Greece

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## Abstract

Influenza is the most widespread seasonal contagion disease with high morbidity and mortality rates and excess economic impact. Health Care workers (HCWs) constitute a significant nosocomial reservoir for developing infection from influenza. The implementation of an integrated vaccination program for healthcare professionals contributes significantly to reducing the incidence of such infections both in patients and medical staff.

Many studies have investigated the causes of success or failure of health care vaccination programs. Reasons for avoidance of vaccination include inconvenience, perceptions of the vaccine's ineffectiveness or potential side effects. The aim of this study was to evaluate the knowledge of healthcare professionals regarding the influenza vaccine and its safety. We also aimed to evaluate the proportion of health care professionals been vaccinated and its relation to the level of education and type of their work. We prospectively conducted a survey in order to identify reasons for the adherence or refusal of the national recommendations for influenza vaccination among health care workers in south Greece.

## Introduction

Influenza is the most widespread seasonal contagion disease that is of worldwide importance [1]. A world pandemic, the first of the 21<sup>st</sup> century, was announced by the World Health Organization on June 11, 2009 as a result of the spread of the oseltamivir-resistant H1N1 virus. The H1N1 pandemic has spread to more than 213 countries around the world and 49 of the 50 United States throughout the summer and autumn of 2009. It continues to impact measurably the health and economy of the United States, despite the availability of a moderately effective vaccine [2].

Nosocomial outbreaks of influenza are associated with considerable morbidity and mortality among patients with underlying co-morbidities and an excess economic impact. Health Care Workers (HCWs) constitute a significant reservoir for nosocomial influenza [3]. The implementation of an integrated vaccination program for healthcare professionals contributes significantly to reducing the incidence of infectious diseases such as virus infections among patients and health care workers. In particular, the group of HCWs is among the five target groups recommended for the use of H1N1 vaccines by the Centers for the Advisory Committee (CDC) on Immunization Practices (ACIP) [4].

Due to the close contact with patients and infected materials, health care professionals are at risk of exposure and possible transmission of diseases some of which can be prevented by vaccination. For that reason, maintaining immunity is an important part of the CDC programs for prevention and control. Every department providing immediate care to patients should be encouraged to implement a comprehensive immunization policy for all healthcare professionals. However, although vaccination for health professionals is systematically recommended by public health authorities as the main measure for influenza prevention, vaccination coverage among healthcare workers remains low worldwide [3].

The aim of this study was to evaluate the knowledge of healthcare professionals regarding the influenza vaccine and its safety. We also aimed to evaluate the number of immunized professionals in relation to the level of education and the type of health care professionals' work. We prospectively conducted a survey in order to identify reasons for the adherence or refusal of the national recommendations for influenza vaccination among health care workers in south Greece. The

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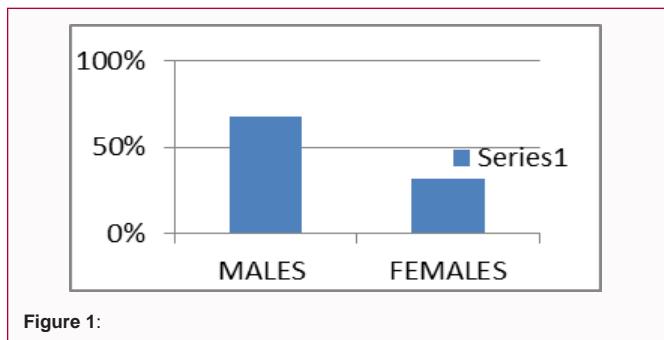


Figure 1:

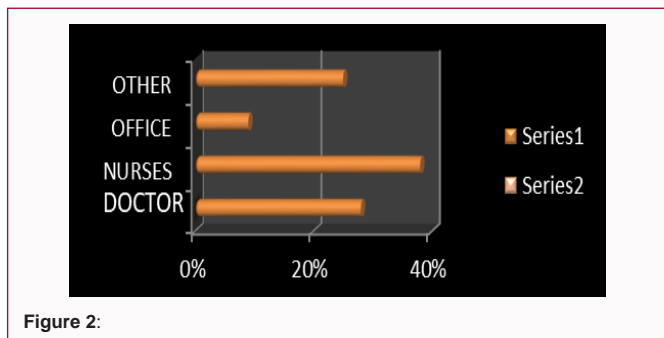


Figure 2:

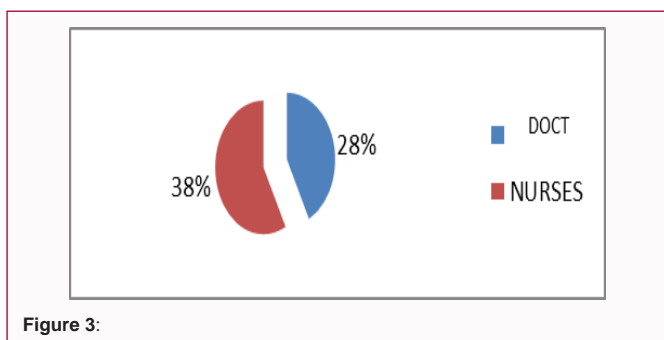


Figure 3:

ultimate goal is to activate them in terms of more effective and proper influenza immunization.

### Patients and Methods

The study was conducted between October 2017 and February 2018 in the two main hospitals of south Greece: the University Hospital of Patras and the General Hospital of Patras. The study was conducted with the distribution of an anonymous questionnaire, developed especially for the study. A total of 140 questionnaires related to demographics and the knowledge regarding the characteristics and use of vaccination were given to employees of the two major hospitals (doctors, nurses and non-medical staff). 120 of these were returned. The selection of the employees of both hospitals was random. All enrolled employees completed the questionnaire by themselves, in private without any interview taking place. Employees were informed about the questionnaire content, for the purpose of conducting this study and were assured for anonymity [5].

After questionnaires being collected, the answers were numbered and data were recorded in a database. Statistical analysis and control of the correlation was done with the SPSS system more specifically with Pearson Correlation.

### Results

The demographic characteristics of the participants were as

**Table 1:** Vaccination coverage of the professionals according to their type of work. Group 1: medical and nursing staff, Group 2: administrative and others.

	Type of work	N	%
Vaccine	1	57	71.25
	2	23	28.75

**Table 2:** Reasons for not vaccination: 1: refers to the fact that operatives consider the vaccine to be ineffective, 2: refers to the vaccine being unsafe, 3: refers to those who think they are not likely to get sick by flu, 4: concerns those who believe that influenza is not a dangerous disease, and finally 5: refers to those who do not trust vaccines in general.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	20	22.2	35.7	35.7
2	8	8.9	14.3	50
3	10	11.1	17.9	67.9
4	16	17.8	28.6	96.4
5	2	2.2	3.6	100
<b>Total</b>	56	62.2	100	
<b>Missing System</b>	34	37.8		
<b>Total</b>	90	100		

follows: 65.2% of respondents were 40 years to 60 years old and 34.8% aged 20 years to 40 years old. The breakdown of gender is shown in Figure 1. The distribution of the professions and the medical staff in particular are shown in Figures 2 and 3 respectively.

The overall vaccination coverage was 48.8%, while 51.2% answered that they did not have done the vaccine. Positive correlation (rs: 0.174, p: 0.076) of vaccination coverage with the type of work was observed. The vaccination coverage of the medical staff is shown in the Table 1 and 2.

There is a statistically significant positive correlation (rs: 0.215, p: 0.05) between the vaccine coverage and the knowledge regarding influenza, also it is noteworthy that the highest level of education (tertiary) has a negative correlation with vaccination coverage (rs: -0.206, p: 0.045).

A positive correlation (rs: 0.185, p: 0.171) with the education level and a statistically significant negative correlation with the type of work (rs: -0.404, p: 0.000) were found.

In addition, 54.4% of the respondents answered that they considered the vaccine to be relatively effective and 40.4% considered it very effective. There was a positive correlation between the acceptance of immunization and the type of work (rs: 0.156, p: 0.160). Specifically, the subgroup of doctors and nurses consider the vaccination to be more effective. Moreover, in relation to the participants' belief regarding the safety of the vaccine: 46.7% consider it is relatively safe, 34.4% believe it is very safe, only 1.1% believe it is unsafe. These results had a statistically significant positive correlation (rs: 0.256, p: 0.015) with the type of work. The safety of immunization was accepted from the majority of the doctors and nurses.

More than half (53.3%) responded that the vaccine may have side effects. It is noteworthy that 65.2% do not know that it is necessarily recommended to all workers in health care facilities by ministerial decision. The vast majority (84.4%) believe that vaccination coverage will increase if the vaccine will be available free of charge by the hospital.

## Discussion

Influenza vaccine administration to health care workers has proven to be effective in reducing the spread of disease from HCWs to vulnerable patient populations including residents of long-term care facilities and patients in neonatal, pediatric and adult intensive care units [1]. Although vaccination against influenza has been proposed for more than two decades in Greece, at least to health professionals during the 2005-2006 period, vaccine coverage rates against influenza remain low [3]. Moreover, despite almost a decade of efforts and wide recommendation for the immunization of HCWs across most European countries, vaccination coverage is still low in this group. During the season 2010/11, the mean vaccination rates registered in 11 European countries resulted to less than 30% [6].

Many publications are referring to the causes of success or failure of health care vaccination programs. Reasons for not being vaccinated include inconvenience, perceptions of the vaccine's ineffectiveness or potential side effects and the perception that health care workers are at low risk for acquiring and transmitting influenza [2]. In our study the main cause for not being vaccinated was the belief that the vaccine is ineffective and secondly the belief that influenza is not a dangerous infection. In the majority of studies, activation, education and accessibility of the vaccine are the key factors in increasing the rate of vaccination for influenza.

The level of immunization of healthcare professionals in our study appears relatively low and similar to already published results. The relatively high immunization levels of healthcare professionals we found do not agree with results from international studies where related immunization rates barely exceed 50%. Moreover, in Germany seasonal influenza vaccine uptake in the pre-pandemic season 2008/09 was 30.5% among Health care workers and decreased to 25.8% in the first post pandemic season 2010/2011. A similar reduction was observed in France, Hungary, Portugal and Spain. In Greece the influenza vaccine has been included in the National Vaccination Program. We found that the epidemiological determinants of influenza vaccine vary across different health care occupations [2].

Despite the vaccination campaigns by the Hospital Infections Committees, knowledge about the vaccine (e.g. safety, efficacy) is limited. In the majority of studies, activation, education and accessibility to the vaccine are the key factors in increasing the rate of influenza vaccination. In this study we found that there is a statistically significant positive correlation between the knowledge about influenza and the need for vaccination. At the same time, 84.4% believe that vaccine coverage will increase when vaccine will be administered free of charge.

A number of potential limitations should be mentioned. The number of participants was low because of the short period of time the study took place. Moreover, the study population was not actually an independent population. Due to small sample size, it was not possible to validate the model just among other hospitals or other health workers.

Implementing policy for influenza vaccination among HCWs requires knowledge about efficacy, safety, and cost effectiveness. Vaccine efficacy encompasses the ability of the vaccine to prevent and protect against influenza illness for those vaccinated. Efficacy is assessed by reduction of confirmed laboratory cases of influenza, reduction of influenza-like illness, and reduced missed work days

by HCW related to influenza or influenza-like illness. Vaccine safety refers to adverse events from vaccine administration (CDC, 2011) [7]. So, continuing education focused on risk of influenza, benefits of vaccination and reinforcing reasons for vaccine acceptance as well as free and convenient access to vaccination over a prolonged period of time represent key component of influenza vaccination programs and should be strengthened even in their efficacy on reaching vaccination coverage rate objectives remain controversy [8].

For increasing vaccination rates, programs should be carefully designed and implemented taking into account the specific needs of each healthcare area. An integrated approach to influenza vaccination should include guidelines for updating the social and public policy that influences vaccination decisions. Offering the vaccine free of charge in conjunction with appropriate educational interventions increases the vaccine rate.

The issue of influenza vaccination among health care workers is highly controversial and rather challenging. High quality studies are urgently required. These would also help to shape evidence-based initiatives and programs to optimize the prevention of influenza in this group [6].

## Conclusion

We report the experience regarding the vaccination against influenza among healthcare professionals in two hospitals in the south of Greece. The implementation of a vaccination protocol in each hospital, continuous and extensive information and education efforts, the maintenance and testing of an immunization record for all healthcare professionals are some measures that will help to increase the proportion of vaccinated health professionals and thus reduce transmission diseases with the ultimate benefits for both themselves and for patients.

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