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Attitudes towards mandatory vaccination and vaccination coverage against vaccine-preventable diseases among health-care workers in tertiary-care hospitals

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KEYWORDS

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Summary Objective: To assess the attitudes about mandatory vaccination and vaccination coverage against vaccine-preventable diseases among health-care workers (HCWs) working in tertiary-care hospitals in Greece.

Methods: A questionnaire was distributed to HCWs working in four tertiary-care hospitals.

Results: In total, 505 HCWs participated in the survey. Self-reported completed vaccination rates were 18.8% against measles, 18.8% against mumps, 22.2% against rubella, 1.9% against varicella, 3.6% against hepatitis A, 56.5% against hepatitis B, and 35.7% against tetanus-diphtheria. Younger age groups had higher completed vaccination rates against measles, mumps, rubella, varicella, and hepatitis B compared with older HCWs (p -value < 0.001). Self-reported susceptibility rates were 12.7% for measles, 18.9% for mumps, 15.8% for rubella, 15.2% for varicella, 89.9% for hepatitis A, 34.2% for hepatitis B, and 64.3% for tetanus-diphtheria. Sixty three percent of 451 HCWs who answered this question supported mandatory vaccinations for HCWs, with significant differences per target disease. Physicians more frequently supported a mandatory vaccination policy compared to nurses and other professions (72.1% versus 61.9% and 54.2%, respectively; p -value = 0.028).

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Conclusions: Approximately two thirds of HCWs working in tertiary-care hospitals in Greece support mandatory vaccinations for HCWs, however suboptimal vaccination rates against vaccine-preventable diseases were recorded.

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Introduction

The broad implementation of vaccination programs during the second half of the 20th century has had an exceptional efficacy leading to the virtual disappearance or complete control of several infectious diseases. However, outbreaks of vaccine-preventable diseases continue to occur within health-care facilities among patients and health-care workers (HCWs), often in association with considerable morbidity and medical costs, because of diagnosis, treatment, and containment purposes.^{1–3} Such outbreaks have been frequently traced to HCWs, who may go unnoticed since many of these diseases are considered as childhood diseases, may transmit during the incubation period, or manifest with atypical symptoms.^{1–3} Vaccination of HCWs at risk constitutes a main infection control measure and it is justified in order to protect them, but also their vulnerable patients.⁴

The Ministry of Health in Greece recommends that all HCWs are vaccinated against hepatitis B and receive the seasonal influenza vaccine every year, whereas hepatitis A vaccine is recommended specifically for infectious diseases specialists and pediatricians. All vaccinations are offered to HCWs at their workplace and free of charge. During October–November every year campaigns are organized in order to promote vaccination against seasonal influenza. The current study was conducted to assess the knowledge and attitudes about occupational vaccines, and the self-reported immunity against vaccine-preventable diseases among HCWs working in tertiary-care hospitals in Greece.

Methods

From December 2010 through March 2011, a standardized printed form was distributed to 941 HCWs regardless of demographic or professional characteristics, among 6107 HCWs working in four tertiary-care hospitals. These included the “G. Gennimatas” Hospital and the Red Cross Hospital (both in Athens), the AHEPA University Hospital in Thessaloniki, and the University Hospital of Alexandroupolis in Alexandroupolis. The following data were collected per HCW: demographic and professional data, knowledge about recommended vaccines, attitudes towards mandatory vaccinations, and self-reported immunity against vaccine-preventable diseases.

HCWs were defined as all employees employed in health-care facilities, including physicians, nurses, midwives, paramedical, laboratory and administrative personnel, and medical students, regardless of employment status (permanent, temporary, or contract staff). Self-reported immunity against vaccine-preventable diseases was defined as either a history of natural infection leaving permanent immunity (pertussis, tetanus, and diphtheria were excluded from this definition because of waning immunity following disease) and/or a history of completed, up-to-date

vaccination. The denominator for self-reported immunity per target disease consisted of the number of HCWs who provided an answer about how many vaccine shots had received per target disease plus those who answered about a history of natural infection. Completed and up-to-date vaccination was defined as follows: one shot for rubella, two shots for measles, mumps, varicella, or hepatitis A, and three shots for hepatitis B (all shots within the appropriate time schedule for each disease), and one booster shot against tetanus-diphtheria within the last 10 years. Susceptibility was defined as lack of self-reported immunity, and was calculated as follows: $(1 - \text{immune}/\text{total}) \times 100\%$. Susceptibility to pertussis was not assessed, since a booster shot in adolescents was added in the routine vaccination program in 2006. Data were self-collected and anonymous.

Chi-square test was used in order to test the statistical association between age and (a) vaccination coverage, and (b) susceptibility rates against vaccine-preventable diseases. Chi-square test was also used in order to test the association between influenza vaccination in the past and vaccination coverage against the other vaccine-preventable diseases. Multiple logistic regression analysis (forward selection) was applied to identify factors significantly associated with HCW knowledge and attitudes regarding occupationally recommended vaccines for HCWs. *P*-values of 0.05 or less were considered statistically significant. Statistical analyses were conducted using the SPSS, v.13.

Results

A total of 505 HCWs participated in the study (response rate: 53.7%). Their characteristics are shown in Table 1. Table 2 shows the HCW state of knowledge about recommended vaccines for HCWs by the Hellenic Ministry of Health. In total, 109 HCWs (21.6%) named correctly the three recommended vaccines. Most HCWs were aware of the recommendations for vaccination against hepatitis B and seasonal influenza (90.3% and 79.2%, respectively); however only 25.9% of them knew that specific recommendations for hepatitis A vaccination are in place. Multiple logistic regression analysis showed that physicians had the lower rate of correct answers regarding recommended vaccines compared to nurses and other professional groups (14.8% compared to 26.1% and 19.7%, respectively; *p*-value = 0.024). No association between gender or age group and knowledge about recommended vaccines was found (data not shown).

Table 3 shows HCW completed vaccination rates by target disease. The highest completed vaccination rate was reported against hepatitis B (56.5%), whereas the lowest against varicella (1.9%). Younger age groups had statistically higher completed vaccination rates against measles, mumps, rubella, varicella, and hepatitis B compared with older age groups (Fig. 1). As far as vaccination against

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