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Original Research

Self-reported influenza vaccination rates and attitudes towards vaccination among health care workers: results of a survey in a German university hospital



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ABSTRACT

Objectives: The objective of this survey was to analyse vaccination rates and attitudes towards vaccination among health care workers (HCWs). The period prevalence of self-reported acute respiratory infections in the influenza season 2014/2015 was examined.

Study design: A cross-sectional study was conducted among HCWs of a German university hospital using an anonymised questionnaire. Recruitment was performed by providing all medical and nursing staff a paper questionnaire with an invitation to participate.

Methods: Descriptive aggregated data were generated from digitalised questionnaires for all variables. Differences in categorical variables were analysed by Chi-squared test. Textual data were analysed by an iterative process based on the grounded theory by Glaser and Strauss.

Results: The response rate was 31% (677/2186). Probable influenza was described by 9% (64/677) of the participants. The overall self-reported vaccination rate was 55% (366/666). Self-reported vaccination rate was higher in physicians (172/239, 72%) than in nursing staff (188/418, 45%). HCWs in paediatrics (103/148, 70%) more likely received vaccines than HCWs in surgery (31/84, 37%). Most vaccinations were provided by medical staff on the wards (164/368, 45%). Self-reported lost work-time due to adverse events after vaccination was low (6/336, 2%). Eight categories for vaccine refusal were identified, whereof doubts about effectiveness and indication of the vaccine was most frequently mentioned (72/202, 36%).

Conclusions: Efforts to promote vaccination should focus on nursing staff and should provide scientific evidence on effectiveness, adverse effects, and the benefits of health care

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workers' vaccination for patients. Administering vaccines at the workplace proved to be a successful strategy in our setting. Studies are needed to assess the frequency of influenza causing disease in HCWs.

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Introduction

In many countries worldwide, annual influenza vaccination is recommended for health care workers (HCWs).^{1,2} However, it is a challenge to motivate HCWs repeatedly to participate in the programmes and to achieve high vaccination rates.^{3–5} In the United States of America, the estimated vaccination rate in HCWs is 36%.⁶ In a systematic review, La Torre et al.⁷ estimated the influenza vaccination rate among Italian nurses to be 13.5%.

Self-reported reasons for rejecting the offer of free influenza vaccination have been subject of a variety of studies reviewed previously,⁸ resulting in recommendations for interventions to increase vaccine uptake in HCWs.⁹ Lack of knowledge and lack of convenient vaccine access were identified as the most important factors for vaccine refusal.

Unimmunised HCWs can act as a source of infection for patients, potentially leading to nosocomial influenza outbreaks.¹⁰ By improving HCWs' compliance with vaccination the rate of nosocomial influenza among patients can be reduced.¹¹ Vaccinating HCWs is superior to vaccinating patients due to higher vaccine efficacy in healthy adults.¹² However, the overall quality of studies investigating the effect of vaccinating HCWs on patient's morbidity and mortality was assessed as only moderate.¹³ A Cochrane review did not identify benefits from HCWs' vaccination in elderly care but identified an urgent need for high quality randomised controlled trials (RCTs).¹⁴

The poor effectiveness of influenza vaccine preparations in some seasons such as 2014/2015^{15,16} contributes to data heterogeneity and may aggravate doubts about vaccine use in HCWs.

The aim of this survey was to analyse the vaccination and self-reported respiratory infection rates among HCWs in the 2014/2015 influenza season in a university hospital. Furthermore, the principal reasons to actively refuse vaccination were categorised.

Methods

Description of the setting

The University Hospital Würzburg provides 1430 beds. About 57,000 in-patients and 235,000 out-patients are treated per year. The nursing staff comprises 2302 employees, and 922 doctors are working at the hospital (as of 25th June 2015).

Influenza vaccination is provided free of charge to staff. Vaccination is carried out either by the occupational physician or by a doctor of the ward. A quadrivalent vaccine is used. The vaccination is communicated by the medical director, the

infection control unit and the occupational physician. Staff who have not been vaccinated against influenza are obliged to wear a face mask when having patient contact during the influenza season.

Study design and data collection

A cross-sectional, retrospective study addressing the time period between 1st September 2014 and 31st March 2015 was performed and targeted medical and nursing staff of the hospital. The observation period for uptake of vaccines was from the 1st September 2014 to 31st December 2014, as this is the period during which vaccines are provided by the employer. Participants were asked about possible influenza-related infection in the first quarter of 2015. Anonymised questionnaires (2186 copies) were distributed on 25th June 2015 and contained 12 questions addressing sociodemographic characteristics, information on vaccination and respiratory symptoms, risk factor data as well as one open-ended question on reasons declining the vaccination ([Supplementary Material 1](#)). The questionnaire was provided to the nursing staff by the respective superiors. The medical staff received the printed questionnaire directly using the internal mailing system. Reminders were provided using the hospital's intranet messaging system. All questionnaires, which were sent back by 23rd of July 2015, were digitalised using the database software Teleform (version 10.9.1, Electric Paper Informationssysteme, Lüneburg, Germany).

For this study, an acute respiratory infection was defined as a newly occurring respiratory illness with fever, cough or sore throat. A probable influenza case (PIC) was defined as a HCW with fever ≥ 38.5 °C and sudden onset of symptoms.

Statistical analysis

Descriptive data were generated for all variables. Data were processed using SPSS (version 22.0, IBM Corp., 2013). The Chi-squared test was applied to assess differences in categorical variables. All tests were performed in a two-sided form. A P-value of <0.05 was considered to be statistically significant.

Analysis of textual data

Textual data were analysed in an iterative process based on the grounded theory by Glaser and Strauss to generate categories.¹⁷

Ethics

The study was approved by the ethics committee of the Faculty of Medicine of Julius-Maximilians-Universität Würzburg

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