



Sociocognitive predictors of the intention of healthcare workers to receive the influenza vaccine in Belgian, Dutch and German hospital settings

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SUMMARY

Background: Influenza vaccination of healthcare workers (HCWs) is recommended to prevent the transmission of influenza to vulnerable patients. Nevertheless, vaccination coverage rates of HCWs in European countries have been low.

Aim: To investigate the relative and combined strength of sociocognitive variables, from past research, theory and a qualitative study, in explaining the motivation of HCWs to receive the influenza vaccine.

Methods: An anonymous, online questionnaire was distributed among HCWs in hospital settings in Belgium, Germany and the Netherlands between February and April 2013.

Findings: Attitude and past vaccination uptake explained a considerable amount of variance in the intention of HCWs to receive the influenza vaccine. Moreover, low perceived social norms, omission bias, low moral norms, being older, having no patient contact, and being Belgian or Dutch (compared with German) increased the probability of having no intention to receive the influenza vaccine compared with being undecided about vaccination. High intention to receive the influenza vaccine was shown to be more likely than being undecided about vaccination when HCWs had high perceived susceptibility of contracting influenza, low naturalistic views, and lower motivation to receive the vaccine solely for self-protection.

Conclusion: Country-specific interventions and a focus on different sociocognitive variables depending on the intention/lack of intention of HCWs to receive the influenza vaccine may be beneficial to promote vaccination uptake.

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Introduction

Influenza is a major public health problem causing severe morbidity and mortality in high-risk groups.^{1,2} Previous research has shown that vaccination of healthcare workers (HCWs) reduces all-cause mortality in patients in long-term care by up to 29%,^{1,3,4} and may have a similar or even higher impact among patients in acute care settings.^{5–8} Health

authorities therefore recommend the vaccination of HCWs.^{9,10} Nevertheless, vaccination coverage rates of HCWs in European countries have been low, ranging from 6.4% to 26.3%.^{11–13}

Intervention programmes to increase influenza vaccination rates in HCWs have been developed,^{14–16} but these programmes show, at best, small effects on vaccination behaviour, and their long-term success is unknown. Kok *et al.*¹⁷ suggested that a systematic approach (i.e. intervention mapping) is needed for the successful development and implementation of programmes to promote influenza vaccination in HCWs, starting with a detailed analysis of the problematic behaviour and identifying sociocognitive variables that drive the recommended behaviour.

Recently, the authors conducted individual semi-structured interviews with HCWs in Belgium, Germany and the Netherlands ($N = 123$) to obtain in-depth understanding of the reasons for vaccination/non-vaccination against influenza, and to gain input for the development of the survey instrument used in this study. The results reflected most of the findings that have been reported previously in review studies on drivers of influenza vaccination.^{18–20} Acceptance of influenza vaccination was found to be positively associated with self-protection motives; willingness to protect patients, family members and/or colleagues; positive perceived norms towards vaccination; perceived moral obligations to receive the vaccine; and the capacity to receive the vaccine conveniently. Low perceived susceptibility of contracting influenza, low perceived severity of influenza, and lack of belief in the relevance of influenza vaccination and the supporting scientific evidence were identified as reasons for non-vaccination. Being older and being a physician as opposed to a nurse were associated with higher acceptance of influenza vaccination, as was previous vaccine uptake.^{18–20}

In addition to these variables, three additional beliefs were identified that had a negative influence on vaccination: omission bias, naturalistic beliefs and prevention beliefs. Omission bias is the preference of inaction, when action might cause harm, and has previously been associated with parental decisions not to vaccinate their children.²¹ Naturalistic beliefs are based on the idea that it is better for one's health to undergo illness and generate antibodies than to prevent illness by vaccination. Prevention beliefs entail different means of prevention (e.g. regular hand disinfection, staying at home when ill) that are considered to be effective, or more effective than vaccination, for the prevention of influenza.²²

The relative strength of these and other identified variables in explaining the motivation of HCWs in hospital settings in Belgium, Germany and the Netherlands to receive the influenza vaccine is not clear. As such, the authors conducted a cross-sectional survey to assess the relative and combined strength of the previously identified sociocognitive variables and three additional beliefs in explaining the intention of HCWs. Moreover, the qualitative study suggested between-country differences in the variables influencing HCWs' vaccination intention. This may suggest the need to develop country-specific interventions in the future.

Methods

Participants and procedure

A cross-sectional study was performed between February and April 2013 in 20 hospitals in Belgium, Germany and the

Netherlands. Hospitals were initially contacted by telephone, and subsequently sent detailed information about participation in the study via email or letter, if requested. In Belgium, 24 hospitals in 19 cities were approached, resulting in participation of seven hospitals (29%). In Germany, 33 hospitals in 16 cities were contacted, resulting in participation of seven hospitals (21.2%). In the Netherlands, 21 hospitals in 14 cities were contacted, resulting in participation of six hospitals (28.6%). Included hospitals provided a contact person (e.g. the occupational physician) who agreed to distribute an email widely within their hospital, either through contacts at ward level or through hospital distribution lists, with information about the study and a link to the online survey. Approximately three weeks later, a second email was sent to the contact person with a request to forward the reminder to hospital employees in case they had not participated. To ensure anonymity, participants were not asked to provide the name of the hospital or department in which they worked.

Online survey

The online survey consisted of 80 questions designed to target variables identified from the literature and the qualitative study: sociocognitive variables and additional beliefs about annual influenza vaccination, past behaviour and experiences, and sociodemographics. Variables were measured on seven-point Likert scales ranging from one (totally disagree) to seven (totally agree), unless otherwise indicated. Items measuring the same underlying theoretical construct were averaged into one single construct when internal consistency was sufficient [Cronbach's $\alpha > 0.60$ or Pearson correlation coefficient ($r > 0.50$)]. Table 1 provides an overview of the constructs and their internal consistency. In addition, past vaccination behaviour was measured with two questions ('In past years, I got vaccinated against influenza when it was offered to me. Always/never'; 'Did you get vaccinated against influenza this year (season 2012/2013)? Yes/no'). Past experience of having influenza was measured with two questions ('How often have you had influenza in the past? Never/more than 10 times'; 'Did you have influenza last winter? No/yes, once/yes, more than once'). Demographic measures were profession (physician/nursing staff/other HCW with patient contact/non-HCW with no patient contact), sex, country and age group (<20 years/20–29 years/30–39 years/40–49 years/50–59 years/ ≥ 60 years). Age categories were chosen to ensure anonymity of participants.

Data analysis

Statistical Package for the Social Sciences Version 19.0 (IBM Corp., Armonk, NY, USA) was used for data analysis. Informed by a descriptive analysis of the sample (frequencies), univariate associations between intention, sociocognitive variables and additional beliefs were analysed using Pearson's correlation coefficients. Differences between HCWs from Belgium, Germany and the Netherlands were tested with multi-variate analysis of covariance (MANCOVA), while controlling for significant differences between the three samples in terms of demographic and influenza-related characteristics. Intention was shown to have a U-shaped distribution and was classified into three groups: no intention to receive the influenza vaccine ($0 = 1.0$), not made a clear decision about vaccination

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