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Prevalence and Determinants of Flu Vaccination in a Working Population

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Abstract

Introduction: Influenza viruses are highly contagious. Frequently, new strains of influenza are identified. Influenza vaccination is the most effective way of influenza prevention. Numerous jobs experience a risk of occupational exposure to influenza; this may conduct to the transmission of the infection to other people and co-workers. The aim is to determine influenza vaccination rates and factors, which influence the vaccination decision regarding a working population exposed to variable contamination risks.

Methodology: A cross sectional survey was conducted during 2015-2016's influenza vaccination campaign. The study concerns a representative sample of a population of 50,000 workers belonging to a large distribution of occupational branches. Workers were asked, during their occupational medical examination, to complete a brief questionnaire containing a list of reasons for either being vaccinated or not. The number of contacts with people during work, which is supposedly influencing the flu contamination, was also taken into account.

Results: The annual influenza vaccination rate was quite low for all groups of workers. But the intention to receive vaccination was twice higher for the most exposed group, which may be subject to contamination during work. One of their most common reasons for not being vaccinated was to have a good health and not feeling concerned by flu. The main reason given about immunization against the flu was in order to avoid contamination by family or co-workers.

Discussion: The low rate of flu vaccination indicated that most of workers were susceptible to infection. International data shows highly variable vaccination rates. The most important tool regarding the decision making of performing influenza vaccination could be related to internal and external communications. The low coverage achieved is an occupational and public health problem. This finding confirms the importance of a comprehensive approach towards the influenza vaccination, ensuring that workers are correctly informed about flu vaccine.

Keywords: Flu vaccination; Influenza; Contamination; Immunity

Introduction

Influenza vaccines have been used for more than 60 years. They have been proven safe and effective [1]. In 1918, the Spanish influenza killed around 20-30 million people worldwide [2].

Actually, most human infections regarding the flu virus are mild and concern upper respiratory illnesses, but this infection could trigger severe symptoms.

Globally, epidemic and pandemic influenza infections cause tremendous social impacts in addition to the generation of serious threats to the health and lives of the global population, including working groups.

Awareness and interest of the public vaccination appear not to be very high [3], despite the fact that modern vaccine and immunization save each year more than three million lives worldwide.

The quick spread of the flu should highlight the need to focus on measures, which members of the public and particularly workers could adopt in order to help slowing down the disease transmission [4].

It enables a systematic deep understanding concerning the acceptance of an immunization [5].

At this time, the current level of vaccination coverage over the world is unable to reach the effectiveness of herd immunity [6].

According to recent surveys in European countries, coverage rates ranged from 9 to 28% for the global population, 14 to 70% among elderly people and 4 to 19% among children [6]. Adverse events observed, following an immunization against flu, were mild. Rare side effects were anaphylactic shock, stroke and death [1].

There is a high-risk occupational subpopulation including healthcare workers, poultry workers…They should be regarded as priority groups that ought to receive the influenza vaccine.

The aim of the study was to determine influenza's vaccination rates in a population of workers, but also the vaccine effectiveness and factors influencing vaccination decisions, alongside with taking into account the occupational risk of contamination.

Methodology

We conducted a survey in France including behaviours and perceptions of influenza. This cross sectional study was performed between November 2015 and February 2016. Data were collected from a miscellaneous group of workers (police officers, electricians, secretaries…) during their occupational medical examination occurring every two years. This process is paid by their employers in order to assess risks and to identify diseases in relationship with their workplace and environment. Verbal consent was obtained prior to this

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interview. Respondents were informed of the purpose of the study. We maintained all individual survey results under anonymity and retained none of the identifiable personal information.

The first part of the self-reported questionnaire collected data on workers: gender, age, and educational level. The risk awareness concerning the impact of flu outbreaks was assessed regarding the job characteristics.

The workers were classified into two groups. We identified the workers most likely to be contaminated by the flu, in relationship with the number of contacts with other workers or people met during a working day. We examined job characteristics belonging to high-risk groups, which were defined by 20 or more numbers of human contacts during a day in narrow space. The low-risk group included other workers.

The second part of the questionnaire was based on the health belief framework. In order to analyse the respondent's answers, we classified their responses into a binary scale (positive and negative perceptions of the question).

The items covered potential factors that may influence their decision to receive the vaccination: Perceived risks, perceived benefits, perceived barriers, social influences and other motivating vaccination results supporting future vaccination uptakes. The potential adverse effects of the influenza vaccination were explored.

Finally, interviewers were asked to indicate if they had been vaccinated against flu during the last winter.

Statistical analysis was performed using SPSS (version 23.0), a statistics' software. Variables were compared by chi-square test-fisher test. All differences reported were significant at an alpha level of 0.05.

Results

We performed interviews on 615 workers. Twenty-two refused to participate. Consequently, 593 individual questionnaires were conducted. The median age was 37, 9 years old (at a range of 15 to 68 years) and women (55%) participated more than men.

The most important group included administrative employees and the smaller group: farmers (Figure 1).

Table 1 displays reported attitudes towards vaccination, in relationship with belonging to high or low-risk group regarding flu

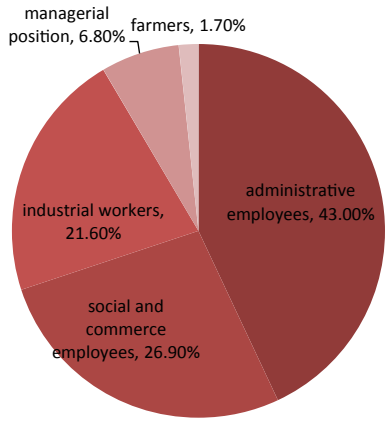

Figure 1: Socio-professional groups distribution.

	Vaccinated before 2014	Vaccinated during 2014	Intention to be vaccinated during 2015-2016
High risk group to be contaminated during work	23%	9,7%	15,5%
Low risk group to be contaminated during work	12,8%	2,8%	8%
Total population	16,1%	5,6%	11%

Table 1: Level of vaccination in relationship with risk to be contaminated during work.

contamination during work. The intention to receive the vaccination was around twice higher for the group stating more than 20 contacts during a working day. But workers vaccinated in this last group is representing less than a quarter of the whole population before 2014 and less than 10% during 2014.

Globally, influenza vaccine was not considered highly acceptable for the two groups.

Behaviours and intentions regarding immunization against flu were not linked to gender, tobacco consumption, chronic diseases or a previous flu contamination.

The factors, which led to some increased vaccination compliance, firstly included the necessity to avoid contamination and lastly to agree with policies which engage self-protection against the flu (Figure 2).

The reasons, found about the association with an opposition to vaccination, were either mainly having a good health or not being concerned by flu vaccination (Figure 3). Medical explanation was the least unfavourable attitude towards vaccination.

Discussion

We have to acknowledge several limitations about this study. A small number of workers refused to participate. Besides, the refusal rate was low and did not influence the results.

The number of workers included in the study was limited, but it gave a good idea of the distribution of jobs in comparison to the whole French working population. Obviously, this study was exposed to the usual limitations provided by the self-reporting questionnaire process.

In this study, the overall vaccination acceptance rate was low. But the result differed when it was compared to the occupational risk exposure groups, which were limited by the number of contacts during a working day. People with more contacts were more likely to get a vaccine [1]. The same difference was found in University Claude Bernard of Lyon (France), where the acceptance of influenza vaccination was higher in the professors' group in comparison to administrative employees' one, which has a lower rate of contacts with other people [7].

In opposite, the rate of vaccinated workers including the high-risk group was not sufficient. It has decreased significantly for the last 2 years, reaching the unbelievable result of less than 10% vaccinated in the high-risk group during 2014.

According to a certain number of studies, a lack of belief in the safety and efficacy of vaccines was the most commonly perceived barrier to vaccination [8,9].

Respondents with better self-reported health conditions, either scared by injections or not concerned by vaccination or afraid about adverse effects of flu vaccination, had no intention to receive flu

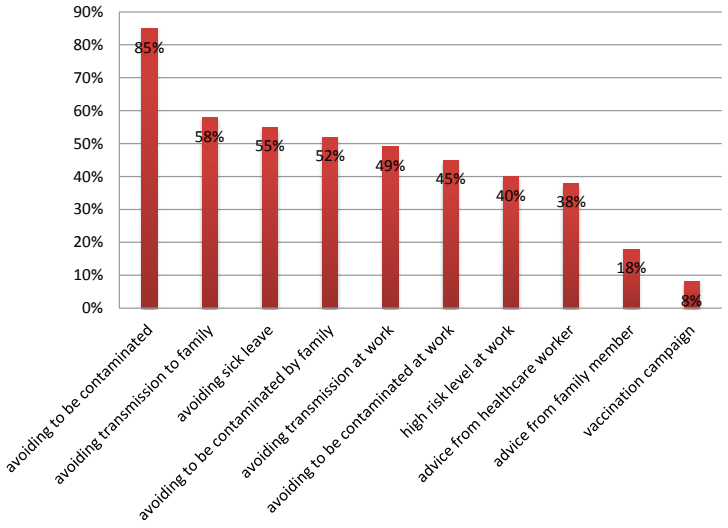

Figure 2: Positive determinants to receive flu vaccine.

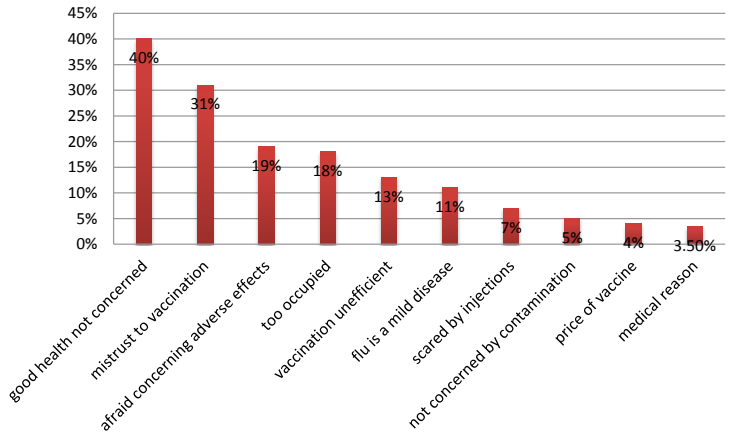

Table 3: Negative determinants to receive flu vaccine.

vaccines. These results were in accordance regarding the low rate, found among other non-working population [10]. Examining the reasons why workers received or not the flu vaccination provides crucial information for the promotion of future vaccination campaigns [11,12].

The results indicated that the media (campaign vaccination) have a low influence, unlike what can be observed for other promotional campaigns [13]. In opposite, the risk to be contaminated or to contaminate their family seemed to be the most convincing reasons to be vaccinated against the flu. In fact, workers were more willing to receive flu vaccine injection, in order to avoid the perceived severity of the disease, alongside with the transmission of the virus to family or to co-workers.

Finally, it should be taken into account that in France, the acceptance of influenza vaccine has become among the lowest in the world [14,15].

Conclusion

A poor understanding of control measures caused confusion and fear. It seems very important to provide influenza vaccine, giving a particular priority to the working population. Moreover, person-to-person's risk of communication regarding occupational high-risk groups, using acceptable and attractive approaches, will be helpful to promote global health.

Health authorities should take into account a global and increasing lack of confidence in all vaccination programs. It could have a considerable impact on the future vaccination coverage, including the working population.

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