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Perception of the A/H1N1 influenza pandemic and acceptance of influenza vaccination by Université Claude Bernard Lyon 1 staff: A descriptive study

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Keywords: influenza vaccination, university staff, 2009 A/H1N1 influenza pandemic

Abbreviations: WHO, World Health Organization; UCBL, Université Claude Bernard Lyon 1

We assessed the perception and attitudes of university staff, including medical school and other science specialties, toward the 2009 A/H1N1 influenza pandemic and influenza vaccination program. A cross-sectional online survey was conducted among 4,529 university personnel on October 19–20, 2009. Seven hundred (15%) employees participated in the study. Only 18% were willing to be vaccinated, men more than women (29% versus 9%, $P < 0.001$), and professors/researchers more than administrative/technical staff (30% vs. 6%, $P < 0.001$). Intention to be vaccinated was insufficient. Additional efforts are needed to improve information dissemination among university staff. Medical university personnel should receive more information to increase vaccine coverage and protect them as well as patients.

Introduction

In April 2009, the world experienced an influenza pandemic that originated in Mexico.¹ On June 11, 2009, the World Health Organization (WHO) announced the scale of the A/H1N1 influenza pandemic that affected 74 countries, for a total of 27,737 cases and 141 deaths.²

In France, the French Institute of Public Health Surveillance confirmed the first case on May 1, 2009.³ Taking WHO recommendations into account,² the French Government implemented an extensive vaccination campaign as of September 24, 2009. Its plan was implemented in mid-October and focused primarily on vaccination of healthcare workers.⁴

Université Claude Bernard Lyon 1 (UCBL) provides teaching to 40,000 students a year in the fields of science and technology, health and sports. UCBL employs 2,900 professors/researchers and teachers, of which 700 are also hospital practitioners (targeted by national and international recommendations^{2,5}) and 1,800 are technical/administrative staff.

To deal with the A/H1N1 influenza pandemic, the university established a plan for the organization and continuity of activities in case of influenza pandemics. One of the points of this plan was to set up a prevention campaign among university

staff and students to protect them during the continuity of activities.

The mission of the Observatory of Healthcare Personnel at UCBL is to report epidemiological results on the health status of university staff.⁶ A number of studies have investigated the perception of the A/H1N1 influenza as well as the attitudes and factors influencing the pandemic influenza vaccine in the general population^{7–10} and healthcare workers,^{11–15} but few studies focused on university staff.^{16,17} In the context of a pandemic situation in France, we conducted a study among university employees in October 2009, at the start of the pandemic vaccination plan.

The aims of this survey were (1) to describe perception of the influenza pandemic and (2) to ascertain the attitudes of university staff with respect to pandemic vaccination. The issues raised by this work could be useful in future campaigns of this size and for better management.

Results

Seven hundred (15%) employees participated in the study. Six hundred and ninety-six personnel completed the questionnaire.

^aThis study was presented at the 7th Vaccine and International Society for Vaccines (ISV) Congress, October 27, 2013, in Sitges, Spain (Abstract P107).

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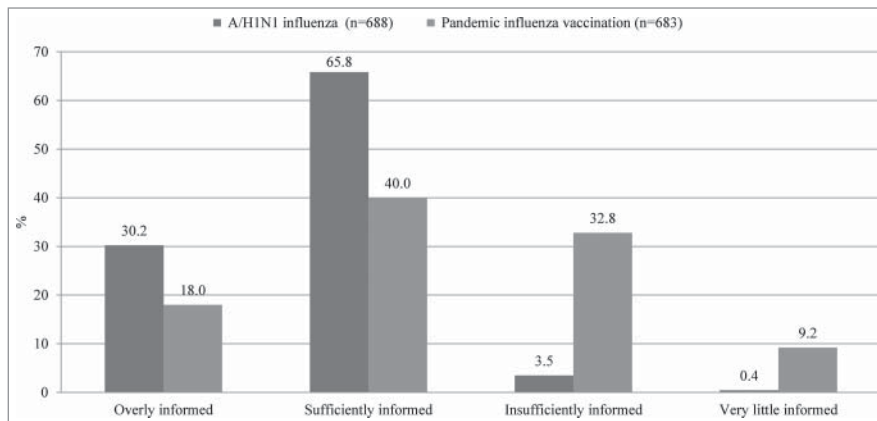


Figure 1. Quantity of information received about the A/H1N1 pandemic influenza and vaccination against it.

Three hundred and nineteen (45.9%) were male, 575 (83.3%) were permanent staff, and 352 (51%) were professors/researchers. Mean (minimum-maximum) age of the respondents was 43 (21–68) years.

Perception of A/H1N1 influenza

Nearly 87% of staff had an anxiety level lower than or equal to 5. Average and median anxiety levels were 3.2 and 3, respectively. Women were more anxious than men (3.3 versus 2.9, $p=0.009$). Concerning the quantity of information on A/H1N1 influenza received by participants, the majority of university staff (65.8%) stated that they were "sufficiently informed" (Fig. 1). Half of them (52.6%) reported that they were "rather well informed" (Fig. 2). People less than 30 years old said they had been "overly informed": 39% of employees <30-year-olds vs. 28.8% of 30–39-year-olds, 30.6% of 40–49-year-olds, and 28.3% of ≥ 50 -year-olds. The proportion of "very well informed" staff was greater among ≥ 40 -year-olds (25.1% and 26.6% of 40–49 and ≥ 50 -year-olds, respectively, versus 13% and 14.6% among those <30-year-olds and 30–39-year-olds, respectively). There were no significant gender or function differences in terms of quantity and quality of information about A/H1N1 influenza.

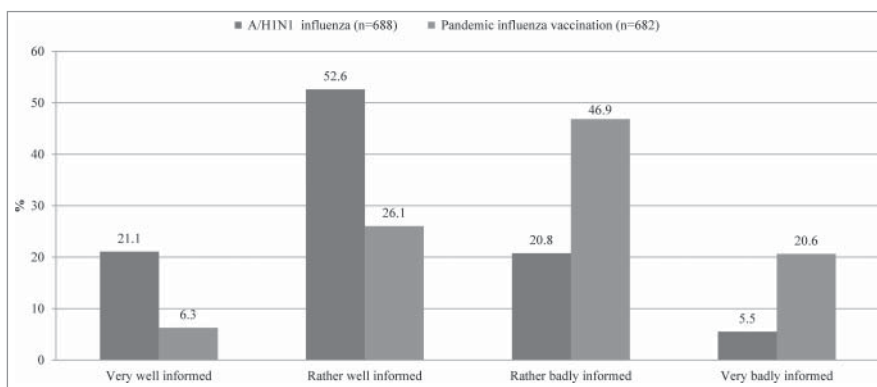


Figure 2. Quality of information received about the A/H1N1 pandemic influenza and vaccination against it.

Information delivered to the general population was inadequate for 64% of personnel. Professors/researchers responded that information was adequate compared to administrative/technical staff (43.1% vs. 28.9%, $P < 0.001$).

The most commonly-adopted prevention measure was "to wash my hands several times a day with soap or a hand sanitizer" (78%).

Perception of pandemic influenza vaccine

A slight majority of personnel (58.8%) did not intend to be vaccinated when the vaccine became available. Only 18.1% were willing to undergo vaccination, while 23% did not know if they were ready.

Men were more willing to be vaccinated than women (29.2% versus 8.8%, $P < 0.001$). Among professors/researchers, 30.3% were willing to be vaccinated compared to 5.9% of administrative/technical staff ($P < 0.001$). Personnel <30-year-olds were less ready to be vaccinated than others (<30-year-olds: 6.5% vs. 30–39-year-olds: 15.9%, 40–49-year-olds: 21%, and ≥ 50 -year-olds: 21.7%) (Table 1).

Concerning quantity of information received about the A/H1N1 influenza vaccine, the majority of university staff stated that they were "sufficiently informed" (40.0%) or "insufficiently informed" (32.8%) (Fig. 1). In contrast, half of them said they were "rather badly informed" (46.9%) in terms of quality of information received (Fig. 2). Among women, 55.2% felt that the risk of the pandemic influenza vaccine to health was "somewhat important" compared to 29.8% of men ($P < 0.001$). Administrative/technical staff were more likely than professors/researchers (52.5% versus 34.3%, $P < 0.001$) to think that the risk of the pandemic influenza vaccine to health was "rather important." UCBL staff had many questions about the vaccine. Concerns about side-effects and composition were frequently cited by those surveyed.

Intention to be vaccinated against seasonal influenza vaccine

Among university staff, 59.5% responded that they were not ready to get vaccinated against seasonal flu, as in all winters (Table 1). Men were more likely than women (31.7% vs. 22.8%) to get vaccinated every winter. In contrast, 35.5% of professors/researchers were ready to get vaccinated every winter compared to 18.4% of administrative/technical staff. Personnel ≥ 40 -year-olds were ready to be vaccinated every winter (40–49-year-olds: 29.1% and ≥ 50 -year-olds: 38.2% versus <30-year-olds: 7.9% and 30–39-year-olds: 19.3%).

Table 1. Characteristics of University Staff Respondents Based on Intention to Get Vaccinated (*n* = 696)

	(1) Intend to get vaccinated (%)	(2) No intention to get vaccinated (%)	(3) Don't know (%)	Total (%)	P value (1) vs. (2)
Gender					
Male	29.2	47.0	23.8	45.9	<0.001
Female	8.8	68.7	22.5	54.1	
Age (years)					
<30	6.5	67.5	26.0	11.1	0.011
30–39	15.9	62.3	21.7	30.1	
40–49	21.0	55.8	23.2	26.6	
≥50	21.7	54.8	23.5	32.2	
Functions					
Professors/researchers	30.3	42.7	27.1	51.0	<0.001
Administrative/technical staff	5.9	74.8	19.3	49.0	
Status					
Permanent staff	18.3	59.4	22.3	83.3	0.677
Temporary staff	15.7	58.3	26.1	16.7	
In your opinion, vaccination against the A/H1N1 influenza pandemic has:					
Very significant risks to the health of people who are vaccinated	1.9	92.6	5.6	8.3	<0.001
Rather significant risks to the health of people who are vaccinated	2.8	78.6	18.6	43.6	
Little risk to the health of people who are vaccinated	35.2	35.9	28.8	43.3	
No risk to the health of people who are vaccinated	45.2	35.5	19.4	4.7	
Intention to get vaccinated against seasonal influenza					
Yes, for the first time	44.1	23.5	32.4	5.0	<0.001
Yes, as in all winters	44.3	26.8	29.0	26.8	
Not this winter	11.9	72.9	15.3	8.7	
No, as in all winters	4.9	74.8	20.3	59.5	

Discussion

The objective of our study was to evaluate UCBL personnel perception of the A/H1N1 influenza pandemic and acceptance of vaccination.

Of the 696 academic staff who responded to the questionnaire, 85.8% had little concern about the risk of a pandemic in France.

Regarding perception of A/H1N1 influenza, staff were well informed quantitatively (65.8%) and qualitatively (52.6%). In general, with the information received on prevention and A/H1N1 influenza, the study population was able to adopt good habits by increasing prevention practices and hygiene, such as hand-washing and the use of hydro-alcoholic solutions. These hygiene measures have had an impact on other communicable diseases, such as gastroenteritis.¹⁸

In terms of vaccination against A/H1N1, only 18.1% of staff were willing to submit to it when the vaccine became available. This low percentage was due, among other things, to the fact that they had doubts about vaccination. Several studies showed that the French population was not ready to be vaccinated because it was not convinced about the new vaccine.^{9,12} Other investigations revealed that, to encourage public vaccination, relevant information must be scientifically-based.^{7,11,19} In our study, unlike administrative/technical staff, professors/researchers were prepared to be immunized (5.9% vs. 30.3%). By comparison, other investigations among healthcare workers obtained results similar to ours.^{12,13}

Concerning A/H1N1 vaccination, personnel were sufficiently informed (40.0%) quantitatively but poorly informed

qualitatively (46.9%). Several studies have also shown that information was poorly communicated.¹⁹ Personnel had doubts about vaccine reliability, efficacy and safety. Many investigations posed exactly the same questions as ours.¹⁵

With regard to vaccination against seasonal influenza, 59.5% of staff did not want to be vaccinated every winter. Several studies have reported similar findings with vaccines against seasonal influenza, that is to say, the general population did not change their habits.^{12,15}

Many investigations have been conducted among the general population^{7,9,10} as well as among students^{20,21} about the influenza pandemic and prevention measures but, to the best of our knowledge, only one of them included university staff.¹⁷

Our investigation had some limitations. The results were probably overestimated because of higher response rates among women and permanent staff and the declarative nature of this study. The literature shows that in other studies internet, women lend themselves more readily than men to complete health questionnaires and therefore more involved in the investigation, which is true in our study.^{6,22,23} One of the reasons advanced is this: women are more often seen as "caregivers" and this, not only for their own health but also for the health of their family or their friends. This would explain their interest in health studies. From similarly, the majority permanent staff in this survey leads us one to think that temporary staff might feel less involved by the life of the university and therefore less concerned to meet intra-university surveys. Second, our study was undertaken before the pandemic vaccine plan was started for the French population and healthcare workers. Thus, acceptance of the A/H1N1 influenza vaccine was measured through attitudes and declared

intentions rather than actual observed behaviors. Other studies were based on intention to be vaccinated.¹⁴ Finally, information about seasonal vaccination was not confirmed by consulting the medical records. Such verification would have dismissed a possible social desirability bias.¹⁴

In conclusion, perception of the A/H1N1 influenza vaccine was poor relative to the quality of information received. Questions asked about vaccine quality disclosed that UCBL personnel were suspicious of the information they were given. Although our findings cannot be extrapolated to the general population, we noticed the same reticence with the pandemic influenza vaccine^{8,10,24,25} and the seasonal influenza vaccine.²⁶⁻²⁸ Other studies have clearly demonstrated many controversies throughout information campaigns.^{19,29,30} They were the source of misunderstanding because of communication problems. In our study, respondents had personal concerns not only about vaccine side-effects, but also about vaccine composition and manufacture that were felt to fall short of dealing with the pandemic. A net decrease in seasonal vaccination occurred after the pandemic.²⁸ Vaccination is a topical subject. Indeed, we observed different attitudes toward vaccination, including its refusal.^{27,31,32} Rejection has increased with the pandemic influenza vaccine.^{26,28,29}

To improve vaccination against influenza pandemics, future interventions should insist on specific vaccine features and bolster information campaigns to demonstrate their necessity, effectiveness and, especially, their safety.^{7,11,29,33}

Methods

Study population

Our survey was conducted among UCBL employees in Lyon (France). The target population comprised permanent and temporary (more than 10 months) university staff (administrative/technical personnel and professors/researchers). It numbered 4,529 employees in October 2009: 2,574 professors/researchers (including lecturers as well as university hospital teachers), and 1,955 administrative/technical staff, such as librarians, engineers, administrative workers and technicians.

Study design and questionnaire

An email request for study participation was sent on October 19–20, 2009 to all university staff. The survey was undertaken

via anonymous self-administered questionnaire available online. It consisted of 15 questions divided into 5 parts: (1) demographic data (4 questions), (2) perception of A/H1N1 influenza (4 questions), (3) prevention measures adopted (1 question), (4) awareness of pandemic vaccination (5 questions), and (5) seasonal influenza (1 question).

The "anxiety scale" for A/H1N1 influenza ranged from 0 (no anxiety) to 10 (high anxiety). A closed question was asked regarding information about A/H1N1 influenza: "*Is the information about A/H1N1 influenza issued to the population appropriate?*" (Yes/No). An open question was asked regarding concerns about pandemic influenza vaccine: "*What are your concerns about pandemic influenza vaccine?*" The quantity and quality of information received on A/H1N1 influenza and the pandemic influenza vaccine were measured on a 4-point scale. Concerning the question of prevention measures adopted, respondents had a choice between: "*I wash my hands several times a day with soap or hand sanitizer*;" "*I cover my mouth and nose with my arm or a tissue when I cough or sneeze*;" "*I throw my used tissues in a dustbin and wash my hands*;" "*I limit interactions with individuals (kiss, hand-shake)*;" "*I keep a physical distance with my interlocutors (colleagues, friends, family)*" (more than 1 answer was possible).

This study was approved by the French Data Protection Authority (Commission Nationale de l'Informatique et des Libertés).

Statistical analyses

Categorical variables were reported as percentages and compared by Fisher's exact test or the Chi² test. Continuous variables were described as mean (minimum-maximum) and compared by the Mann-Whitney test. These analyses were conducted by SPSS 20.0 for Windows.

Disclosure of Potential Conflicts of Interest

No potential conflicts of interest were disclosed.

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