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The public's preventive strategies in response to the pandemic influenza A/H1N1 in France: Distribution and determinants

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ABSTRACT

Objectives. Since the emergence of the pandemic influenza A/H1N1, people were encouraged to adopt a large range of pharmaceutical and non-pharmaceutical measures in order to counter the risk of infection. The aim of this article is to identify and to explain the different types of preventive strategies adopted by the French population.

Methods. The data are based on a phone survey conducted with a representative sample of the French population (N = 1003) in December 2009 (cooperation rate = 45.9%). Logistic regressions were used in order to characterize the different preventive behavioral patterns towards the A/H1N1 influenza.

Results. Four types of behavioral strategies have been identified: 31.5% of the respondents combined vaccination (intention or action, regardless of the nature of the vaccine) with non-pharmaceutical measures, 8.8% wanted to get exclusively vaccinated, 42.0% took non-pharmaceutical steps only and 17.7% didn't protect themselves at all. Significant social and cognitive variables were found to predict membership of each group.

Conclusions. These results indicate that a large majority of that is mainly population adopted a selective strategy rather than a cumulative one as it was recommended, a choice mostly explained by the level of risk perception.

Introduction

The outbreak of the novel A/H1N1 influenza virus in April 2009 and its rapid global spread have raised concerns over a potentially catastrophic influenza pandemic in both scientific and lay communities. Policy for mitigating the epidemiological and socioeconomic consequences of the pandemic constituted at this time a top priority for many public health organizations. In France, the effort to prevent and to control the A/H1N1 pandemic influenza went through different stage, as indicated in Table 1 Broadly speaking, two major phases can be identified. Firstly, in the absence of available vaccine, the public was encouraged to adopt a range of preventive behaviors including hygienic and social distancing measures. Secondly, members of high-priority groups, then the whole population, were recommended to get immunized against the virus (HCSP, 2009). In France, such as in the majority of the western countries, public health authorities failed however to convince a large number of the population to get vaccinated. Nonetheless, the vaccination might be viewed by the public as one possibility among a large variety of pharmaceutical and non-pharmaceutical measures and we don't know the distribution of the health preventive strategies actually adopted, or the social and cognitive factors that determined them (Chapman and Coups, 1999).

The study

The empirical data were collected in France through computer-assisted phone interviews of 1003 adults in December 2009. A proportional random digit dialing was used to select the survey participants across the country. Moreover, a stratified selection procedure based on regions and communes population with quotas on respondents' gender, age, and occupation was carried out to ensure the national representativeness of the sample (cooperation rate = 45.9%). Respondents were informed that the survey is about the H1N1 influenza pandemic in order to get their verbal consent. The survey included a wide range of questions related to preventive behaviors (8 measures, see Fig. 1), perception of risk (4 dimensions: *worry*, *severity*, *prevalence*, and *vulnerability*), perception of illness (4 dimensions: *coherence*, *consequences*, *control* and *cure*), attitudes and worldviews (3 dimensions: *fatalism*, *trust*, and *beliefs in conspiracy theories*). Setbon and Raude (2010) provide a detailed description of these different indexes, derived from the existing literature in health behavior research. The distribution of reported preventive behaviors in response to the influenza pandemic is displayed in Fig. 1. Our approach to modelling the structure of behaviors used the combinations of the dichotomized choices pharmaceutical/non-pharmaceutical measures. Indeed, for all the height protective actions that were

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Table 1
Chronology of the major events related to the 2009 A/H1N1 influenza pandemic in France.

Month	Major events
May of 2009	- First cases of A/H1N1 pandemic influenza diagnosed on the French territory. - Start of intensive public communication program to convince the population to adopt preventive non pharmaceutical measures.
September of 2009	- Launch of the seasonal influenza vaccination campaign (which includes vaccine refund for the elderly people (≥65 years) and people suffering from chronic diseases (the large majority of these persons are immunized by their General Practitioner)).
October of 2009	- Announce by the prime minister of a mass vaccination campaign against the 2009 H1N1 influenza virus. - A high level of vaccination coverage was reached by the French government (enough vaccine had been ordered so that 3 persons in 4 might receive two doses).
November of 2009	- Start of the vaccination campaign against A/H1N1 v, exclusively provided at *ad hoc* vaccination centers as a cost-effectiveness measure (GPs are excluded of the campaign). - A prioritization plan was implemented in which the most vulnerable people at risk (persons suffering from chronic illness, people working in health or child care-giving services, and parents of infants younger than 6 months) were invited by letter notification to get vaccinated first for free. - The first cases of hospitalization and deaths are extensively covered by the news media.
December of 2009	- The vaccination was progressively offered to the entire the population. - The first potential cases of Guillain–Barré syndrome are reported. - Rise of the controversies on the adjuvanted vaccine safety.
January of 2010	- Announce of the Fall of the A/H1N1 epidemic by the epidemiological surveillance networks.

considered in our study, the distinction between these two types of measures has been testified as particularly relevant in the public health literature (WHO, 2006). Thus, the sample was categorized into four groups reflecting the different combinations of pharmaceutical and non-pharmaceutical practices. The distribution of these four behavior patterns is indicated in Table 2.

1. The "mixed protection strategy" is figured by those who declare both influenza vaccination (action or intention), regardless of the nature of the vaccine (H1N1 or seasonal), and at least one of the non-pharmaceutical measures.
2. The "pharmaceutical protection strategy" is represented by individuals who report to prevent the risk of infection exclusively through vaccination, would it be intention or action, seasonal or A/H1N1 vaccine.
3. The "non-pharmaceutical strategy" is featured by those who declare one or several non-pharmaceutical measures and no vaccination intention.
4. The "non-protection strategy" is specific to those who mention neither pharmaceutical nor non-pharmaceutical measures.

To further our understanding of these four behaviour patterns, we introduced a serie of socio-cognitive variables in our model to see their relative influence on choosing one or the other of the mentioned strategies. This was tested by using binary logistic regression for which the adoption of each strategy was analysed as the dependent variable. Table 2 presents the proportional changes in odds of strategy adoption with unit change in the explanatory variables. The most interesting comparison is between the "mixed protection" and the "non-protection" strategy. Along the line of previous researches on influenza vaccination, the odds ratios related to the former strategy are significantly higher per unit increase in the perceived severity, control and worry — from 30% to 60%. Furthermore, the probability of a mixed-protection compared to the other group is about 192% higher for elderly people. By contrast, the odds ratios of adopting the non protective strategy are higher for the respondents who are young, less

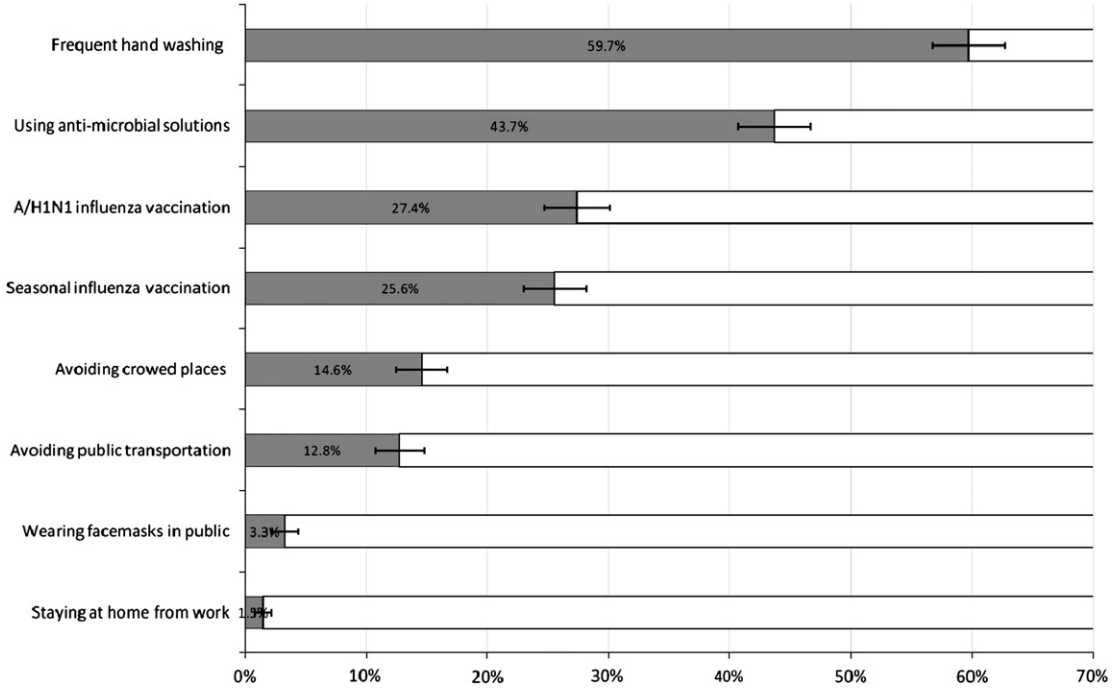

Fig. 1. Proportion of respondents who reported that they undertook (or intended to undertake for vaccination) the preventive measures (% and 95% Confidence Intervals).