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Major article

Social and political determinants of vaccine hesitancy: Lessons learned from the H1N1 pandemic of 2009-2010

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Background: Public acceptance of vaccination programs is essential for vaccine preventable diseases. However, increasing sectors of the population have expressed hesitancy about participating in such programs, leading to the re-emergence of vaccine preventable diseases. In this study we rely on a recreancy hypothesis to test the association between confidence in the government and local hospitals and the willingness to take the vaccine.

Methods: A secondary analysis of a survey that used a large sample of the U.S. population conducted in October 2009 was used (N = 968).

Results: The results indicate that 36.1% of the respondents expressed willingness to be vaccinated. Those with the greatest trust in the government were the most likely to be vaccinated (43.4%), and those least confident were the least willing (15.8%). From the ones reporting being confident in the local health system, 38.4% were willing to be vaccinated, and from those not confident, only 23.5% were willing to be vaccinated.

Conclusion: The decision to get vaccinated in the midst of a contagious outbreak involves many considerations. Trust in the government’s technical and organization skill to deal with the infectious outbreak along with trust in medical organizations predict the adoption of recommended protection measures. The results indicate that public compliance with vaccination plans in health crisis requires the development of social and institutional trust.

Public acceptance of vaccination and collaboration with vaccination policymakers are essential for the prevention of contagious diseases. However, increasing sectors of the population have expressed hesitancy about participating in such programs. Consequently, vaccination hesitancy has become a public health problem with social determinants. Research has shown that in vaccination programs for preventable diseases, such as measles, mumps and rubella, varicella, and pertussis, a number of social factors have contributed to hesitancy. Less is known about hesitancy during pandemic outbreaks. In contrast with programs for preventable diseases, pandemics provide a different context for vaccination hesitancy. During pandemics, the public usually lacks understandable, dependable, and timely information about the outbreak. Social and institutional trust that provides legitimacy to policymakers’ actions might be undermined because of lack of reliable and truthful information. Often a new vaccine must be quickly manufactured and often may be accompanied by the misgivings of a portion of the population. Furthermore, governments tend to become involved at all stages of the response to the pandemic, thereby opening the possibility that partisan politics may infringe on the scientific response to the outbreak.

SOCIAL FACTORS IN VACCINE HESITANCY

Recreancy

We examine 3 social factors in relation to vaccine hesitancy: recreancy, perceived risk of infection, and political partisanship. Recreancy is the concept used to describe the relationships among trust and risk. According to recreancy theory, the trust that individuals have in society’s institutions is based on the perception of 2 important considerations: the institution’s competency to
perform the tasks normally associated with it, and the institution's fiduciary responsibility in the sense that it is consciously working for the best interests of the population. In social risk situations, such as epidemics, trust in the government to respond effectively is important for the public to feel that their health interests will be maximally attended to.

Institutional recreancy is important at both the national and local levels and provides the basis for the legitimate exercise of state authority and the extent that is seen as entitled to be obeyed. The nature of public health, as a set of interventions requiring behavioral actions and lifestyle changes, requires legitimacy to achieve implementation of health policy. The local community may be viewed as a problem-solving system organized to improve the health of its residents and to be the main line of defense against contagions. The local health care system therefore comes under public scrutiny and is ultimately deemed to be positive or recreant. For this reason we distinguish between trust in the federal government's ability to fight outbreaks and trust in the local hospitals' ability.

**Perceived risk of infection**

The health belief model is the most common model used to study health-related behaviors. A central component of the health belief model is the perceived threat of disease. The basic model argues that people are likely to engage in disease prevention behaviors if they perceive that they are highly susceptible to the disease; that the disease has severe consequences; and that preventive behaviors such as vaccination are beneficial. In recent years, an affective dimension (eg, fear, apprehension, worry, anxiety) has been added to the model and has proven to be a strong predictor of health behavior. H1N1 studies have shown that perceived risk of infection is greater for older adults, women, and those that follow media reports about the outbreak.

**Political partisanship**

Major health issues, problems, projects, and events, such as the outbreak of H1N1, are inherently political. Cross-national comparative research has shown that the political agendas of governing political parties have not only direct effects on health through health care legislation but also indirect effects through policy and programs dealing with labor force and social welfare. In the United States the ideology of the Democrats leans liberal and the ideology of the Republicans leans conservative. The organization and delivery of health care are topics of serious disagreement between the 2 parties. The Republican Party tends to favor less government involvement than the Democratic Party. Although individual members of the parties do not necessarily agree with their party's position on all matters, their behavior and attitudes in many issues reflect their party's position. At issue here is if members of the major parties differ in terms of willingness to receive the H1N1 vaccine.

**OBJECTIVE**

The purpose of the study is to investigate the relationships of recreancy, perceived risk of infection, and political partisanship in the public's vaccine hesitancy during the H1N1 epidemic of 2009-2010.

**Theoretical framework**

We draw on the 3 basic theoretical framework previously discussed. They are recreancy theory, which emphasizes the role of institutional trust at both the national and local level in health behavior decision-making; the health belief model, which brings together both the rational process of decision-making in health agency and the affective elements of things such as fear and worry; and the political partisanship perspective, which argues that all health care matters are inherently political, become differentially embedded in the philosophies of political parties, and form the responses of party members to specific matters.

**Hypotheses**

**Recreancy**

Our first hypothesis is that those individuals who trust in the government's ability to deal with the H1N1 outbreak were more likely to be willing to be vaccinated than those lacking such trust.

Our second hypothesis is that those individuals who trust in the ability of local hospitals and health agencies to deal with the H1N1 outbreak were more likely to be willing to be vaccinated than those lacking such trust.

**Perceived risk of infection**

Our third hypothesis is that those individuals concerned with the possibility of H1N1 infection were more willing to be vaccinated than those who were not concerned.

**Political partisanship**

Our fourth hypothesis is that those individuals whose political partisanship supported the government's health care program (Affordable Care Act) were more likely to be willing to be vaccinated than those not in support.

In addition to these hypotheses we ask the following question: what factors are correlated with trust in the government's ability to deal with an epidemic outbreak?

**METHODS**

**Data collection**

The data were gathered through a random representative survey sample of the U.S. population conducted in October 2009 as part of the ABC News/Washington Post poll. The results from the full survey have a margin of sampling error of ±3 points. Sampling and data were collected by TNS of Horsham, Pennsylvania. The sample of participants included those contacted both by landlines and cell phones. The original data set is comparable with the U.S. population in terms of age and sex. There is a slight underrepresentation of ethnic minority groups and some over-representation of college graduates. To correct for these slight biases, a weighted procedure was used. The data were downloaded from the Roper Center for Public Opinion, and we conducted a secondary analysis of the responses of the participants (N = 968).

**Measures**

The dependent variable was the willingness to take the flu vaccination. Respondents were asked to indicate if they planned to get the swine flu vaccine this year. Responses were coded as 1 (yes) and 0 (no).

The independent variable recreancy was measured by 2 questions. The first was confidence in the federal government's ability to respond effectively to an outbreak of swine flu in the United States. Participants were asked to rank their degree of confidence on a 4-point Likert scale with higher values expressing greater confidence. In the same manner, we measured confidence in local hospitals and health care systems on a 3-point scale.
We measured the participants’ perceived risk of infection with a question that asked them to indicate if they were concerned that they or someone in their immediate family might catch the H1N1 virus known as swine flu. Responses were coded dichotomously as 1 (yes) and 0 (no).

Political partisanship was measured by a question that asked the respondents to identify the political party with which they identified. There were 3 categories: Republican, Democratic, and Independent.

The variables that served as controls included demographics that measured age (5 categories), sex (measured dichotomously), presence of children in the home (children between 6 months and 17 years), level of education (3 categories: less than high school, high school graduate, or college or graduate school), ethnicity (3 categories: white, black, or Hispanic), and social attitudes-liberalism/conservatism (3 categories: liberal, moderate, or conservative) (Table 1).

Sample

Sample composition

The final sample included 968 respondents. The average age of the respondents was 45.80 ± 17.84 years. Women were slightly over-represented (51.0%). Children between 6 months and 17 years were in homes of 34.1% of the sample members. In terms of education, 14.2% reported having less than high school education, 31.0% graduated from high school, and 54.9% had college or graduate school education. In terms of race, 81.4% reported being white, 11% black, and 7.6% were Hispanics. Regarding social attitudes, 23.7% reported being liberals, 35.8% reported being ideologically moderate, and 37.9% described themselves as conservatives. A slight majority of the respondents (51.3%) were concerned about the risk of flu infection. The Democratic Party had the largest percentage of respondent organized party identification (52.6%), Republicans had the smallest percentage (39.5%), and political nonparty Independents made up 6.5%. Overall, 69.3% expressed trust in the government’s ability to deal with the H1N1 outbreak, but trust in the local hospitals was higher and reached 79.2%.

RESULTS

Willingness to be vaccinated: Univariate analysis

As Table 1 illustrates, for the entire sample, 36.1% expressed willingness to be vaccinated. This willingness varies according to the independent variables. The level of significance for testing the null hypotheses is $P < .05$, but we report the calculated value. Perceived risk of infection was associated with the willingness to take the flu vaccine ($P < .001$). As concern about possible infection increased, so too did the willingness to be vaccinated. Of those who were very concerned, 52.9% were willing to become vaccinated, whereas only 23.4% of those not concerned at all were willing to do so. Political partisanship had a significant effect on the willingness to become vaccinated ($P < .015$). Democrats (39.6%) were more willing to be vaccinated than either Republicans (32.2%) or Independents (33.9%). The multiple logistic regressions that follow compare Democrats with Republicans. At the same time, although this willingness varied based on political partisanship, it did not vary based on social attitudes. The differences in the percentages of individuals holding liberal, moderate, and conservative attitudes in terms of vaccination willingness were statistically nonsignificant ($P < .36$).

Trust in government was statistically significant in willingness to be vaccinated ($P < .000$). Those with the greatest trust in the government were the most willing to be vaccinated (43.4%), and those least confident in the government were the least willing (15.8%). Similarly, trust in the local hospital and health care system made a statistically significant difference as well ($P < .004$). For those very confident in the local system, 38.4% were willing to be vaccinated, whereas only 23.5% of those who were not confident were willing to be vaccinated.

Of the demographic variables, only age was statistically significant ($P < .03$), with those >65 years of age (43.7%) being the most willing to be vaccinated, and the least willing (31.1%) was among the youngest, those 18 through 29 years of age.

Willingness to be vaccinated: Multivariate analysis

Table 2 shows results for the multiple logistic regression analysis. The results show that of the net of other factors, several variables were significantly related to the willingness to be vaccinated. Those who trust the government were more willing to get vaccinated than those lacking such trust (adjusted odds ratio [AOR] = 1.58, $P < .01$). Furthermore, those who trusted the local...
Given the fact that viral outbreaks appear somewhere in the world, the question arises: would different outbreaks produce different results? Might more virulent outbreaks, such as severe acute respiratory syndrome? Would different outbreaks produce different results? Would different outbreaks produce different results? Given the fact that viral outbreaks appear somewhere in the world, the question arises: would different outbreaks produce different results? Might more virulent outbreaks, such as severe acute respiratory syndrome, produce different results?

**Table 2**

| Variable            | Odds  | 95% confidence interval |
|---------------------|-------|-------------------------|
| Age                 | 1.11  | 0.98-1.25               |
| Sex (women = 1)     | 0.88  | 0.61-1.26               |
| No. of children     | 1.24  | 0.87-1.75               |
| Education           | 1.11  | 0.98-1.25               |
| Ethnicity           | White | 2.22 1.27-3.87          |
| Hispanic            | 2.19  | 1.03-4.60               |
| Black*              |       |                         |
| Social attitudes    | Liberal | 1.05  | 0.68-1.63       |
|                     | Moderate | 0.92  | 0.45-0.89       |
|                     | Conservative* | 0.63  | 0.45-0.89       |
|                     | Democratic* | 0.63  | 0.45-0.89       |
|                     | Republican | 0.63  | 0.45-0.89       |
|                     | Democratic | 0.63  | 0.45-0.89       |
|                     | Concern about getting the flu | 2.20  | 1.62-2.99       |
|                     | Trust in the government | 1.58  | 1.10-2.26       |
|                     | Trust in hospitals | 1.60  | 1.04-2.45       |
|                     | Constant | 0.49  |                |
|                     | Nagelkerke pseudo R² | 0.11  |                |

*Omitted category.

\*P < .05.

\*P < .10.

**Table 3**

| Variable            | Odds  | 95% confidence interval |
|---------------------|-------|-------------------------|
| Age                 | 1.12  | 0.99-1.27               |
| Sex (female)        | 0.98  | 0.67-1.44               |
| No. of children     | 1.02  | 0.71-1.46               |
| Education           | 1.00  | 0.88-1.14               |
| Ethnicity           | White | 1.12 0.65-1.93          |
| Hispanic            | 2.26  | 1.02-5.01               |
| Black*              |       |                         |
| Social attitudes    | Liberal | 1.57  | 0.97-2.53       |
|                     | Moderate | 1.05  | 0.73-1.51       |
|                     | Conservative* | 0.63  | 0.31-0.64       |
|                     | Democratic | 0.63  | 0.31-0.64       |
|                     | Republican | 0.44  | 0.31-0.64       |
|                     | Democratic | 0.44  | 0.31-0.64       |
|                     | Concern about getting the flu | 1.66  | 1.21-2.28       |
|                     | Trust in hospitals | 5.14  | 3.49-7.57       |
|                     | Constant | 0.35  |                |
|                     | Nagelkerke pseudo R² | 0.17  |                |

*Omitted category.

\*P < .05.

\*P < .10.

health care system were also more willing to get vaccinated than those who had little trust in the system (AOR = 1.60, P < .05). The data also showed that those concerned about contracting the flu were more willing to become vaccinated than those who were not worried about contracting the flu (AOR = 2.29, P < .01). Similarly, the odds of Republicans taking the vaccine were less than those of Democrats (AOR = .63, P < .01).

With trust, fear, and partisanship taken into account, older respondents were more willing to be vaccinated (AOR = 1.11, P < .05), and whites (AOR = 2.22, P < .01) and Hispanics (AOR = 2.12, P < .05) were more willing to be vaccinated than blacks.

Table 3 presents the results of the logistic regression conducted to determine the relationship between the variables and trust in the government's ability to deal with the swine flu outbreak. People who trusted the local health care system were more likely to trust the government than were those who did not trust the local system (AOR = 4.72, P < .01). Republicans were less trusting than Democrats (AOR = .36, P < .01). Those concerned about being infected with the flu were more trusting of the government's ability than those less concerned about infection (AOR = 1.82, P < .01). In addition, the regression showed that older people were more likely than young people to trust the government (AOR = 1.13, P < .05).

Hispanics were more likely than blacks (AOR = 2.39, P < .05) or whites (AOR = 1.24, P > .05) to trust the government's ability to deal with the swine flu crisis.

**DISCUSSION**

In this study of vaccination resistance during the H1N1 epidemic, the hypotheses based on 3 theoretical models were supported by the data. The models are as follows: recency theory, health belief model, and political partisanship. Several factors correlated with trust in government also were identified.

As with all studies, our research suffers from several limitations, one of which is that it deals with the outbreak of a single disease. The fear associated with H1N1 generated by the rate of mortality and rapidity of the spread of the disease that made it seem more virulent than other outbreaks such as severe acute respiratory syndrome? Would different outbreaks produce different results? Given the fact that viral outbreaks appear somewhere in the world, we have additional opportunities to test the recency hypothesis in different cultural settings. Investigations of these cases will help us determine whether vaccination is truly the most important public health development in recent years.

At this point, the findings suggest several lessons that may be learned from the H1N1 outbreak of 2009:

1. Trust: trust in the national government's ability to deal with an epidemic outbreak is important to a segment of the population in its willingness to be vaccinated. Trust extends to local community health care organizations as well.

2. Political partisanship: to a significant degree, trust in the government's ability to deal with the H1N1 outbreak is based on political partisan attitudes about the proper role of government; members of political parties endorsing social health care programs are more willing to be vaccinated than others.

3. Vulnerability: age, family composition, and ethnicity are also factors influencing willingness to be vaccinated. Collectively, they point to a perceived vulnerability factor on the part of many that may be operating in the decision to seek vaccination.

4. Fear of infection: independent of other factors, concern about getting the flu is significant in willingness to be vaccinated, the fear, the more willing to be vaccinated.

The decision to seek vaccination for a serious disease is clearly complex. We suggest that epidemics present situations that differ from the normal context of vaccination decision-making and are therefore worthy of additional investigation. Future studies should build on this study and expand the study of the role of social trust in vaccination to the sources of such social and institutional trust. For example, an important topic for future study is the role of media content in trust in the ability of the government and local hospitals to deal with a health crisis and the role of media content on trust to vaccines.

**CONCLUSION**

The most salient result of our study is that in 2009, during the H1N1 outbreak, only 36.1% of the sample expressed willingness to
get the vaccine that was developed to cope with the health crisis. A large percentage of the sample expressed hesitancy to be vaccinated. Our study was directed at understanding the sources of this hesitancy and indicated that increasing the likelihood of the population to participate in vaccination programs requires interventions directed at increasing the trust of the population in the government public health capabilities and the role of the local hospitals. A development of a comprehensive policy to increase recreancy in situations of real social risk is needed.

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