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# AN INDIAN COMMUNITY SURVEY TO ASSESS REASONS AFOR INFLUENZA VACCINE HESITANCY

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## ABSTRACT

**Background:** Flu is caused by four types of viruses: Type A, Type B, Type C, and Type D. In India, the flu vaccine is not being optimally utilized in India but there has been a lot of focus on the development of the COVID-19 vaccine. Despite the availability of vaccines, the vaccine uptake has been very less in India. **Objective:** This study aims to assess the awareness level of the general population of India regarding the flu and the flu vaccine and determine the reasons for flu vaccine hesitancy in India. **Method:** An online survey was created in consultation with physicians of good reputation. The survey was circulated to around 1000 people through electronic media from September 2020 to December 2020. Results: The data obtained from the survey reveals that most people don't consider the Influenza vaccine as the best strategy to prevent Influenza infection. People opined lack of clear cut government policies for mass vaccination, few prescriptions by physicians, high cost of Influenza vaccine, and lack of awareness amongst people, and risk of side effects of Influenza vaccine as the reasons for vaccine hesitancy. **Conclusion:** There are myths in India around the Influenza and the Influenza vaccine; therefore, there is a need of spreading awareness through social media and digital tools to reduce the Influenza vaccine hesitancy in the nation. Further studies can be performed at a larger scale to understand and address the Influenza vaccine hesitancy in a better way.

## Introduction

Influenza is a disease caused by a combination of viruses: Type A, Type B, and Type C. Its symptoms include mild to high-grade fever, running nose, sore throat, muscle and joint pain, headache, cough, and fatigue[1]. Complications of Influenza include viral pneumonia, secondary bacterial pneumonia, sinus infections, and worsening of health problems such as asthma or heart failure[2]. In 2019, the World Health Organization (WHO) reported that the Influenza virus caused 3 to 5 million severe illnesses and 290,000 to 650,000 deaths globally [1].

From history, it is evident that the Influenza virus spreads in yearly outbreaks. As many as three Influenza pandemics have occurred in the past century: The Spanish Influenza (also known as the Spanish Flu) in 1918 (17–100 million deaths), Asian Influenza in 1957 (two million deaths), and Hong Kong Influenza in 1968 (one million deaths) [3],[4],[5].WHO declared an outbreak of a new type of Influenza A/H1N1 to be a pandemic in June 2009 [6] following which, India saw an increase in the number of these viral infections in 2012-13, and it has been worsening since December 2014; the death rate in India was over 6% which was significantly higher than the global death rate of 0.02% in 2009 [7]. Hospitals and clinicians reported much more severe influenza disease than they had seen previously and confirmed very high mortality rates[8]. Also, a study in 2013 reported that each year around *127,092* people die in India due to Influenza-associated respiratory and circulatory diseases[9].

WHO recommends the Influenza vaccine for high-risk groups such as pregnant women, children aged less than five years, the elderly, health care workers, and people who have chronic illnesses such as HIV/AIDS, asthma, diabetes, heart disease, or are immuno-compromised among others[10],[11]. Vaccination against Influenza began in the 1930s [21]. Recent studies conducted by the Centers for Disease Control and Preventions (CDC) show that Influenza vaccination reduces the risk of illness by 40-60% in the overall population [22]. Influenza vaccines are safe and there has been extensive research supporting this conclusion [23].

Despite the availability of safe vaccines, vaccine uptake rates are low throughout the world. Vaccine uptake in the general public during 2009-2010 was considerably low; countries recording less than 50% of the expected coverage in target populations all over the globe (*Europe, China, Australia,* and the *USA)*. Vaccine uptake in high-risk groups, such as pregnant women and the elderly were low [12].

Vaccination is the best way to prevent Influenza prevention; however, limited vaccine uptake was a global problem during the 2009-2010 H1N1 pandemic. Community acceptance of a vaccine is a critical determinant of its effectiveness, but studies have been confined to high-income countries [12].

## Literature Review

A meta-analysis done over the Western world found that fear of adverse reactions, lack of concern, efficacy concerns, and apprehensions about contraindications are the main causes for noncompliance amongst healthcare workers for influenza vaccination. The studies have shown that doctors were less likely to prescribe the influenza vaccine even after the 2009 pandemic [13],[14]. Earlier studies have shown that doctors in India have been ignorant towards influenza vaccination[22].

Since doctors play a critical role in the acceptance of the influenza vaccine, their ignorant attitude could influence people's opinion of the influenza vaccine.

There are limited studies done to understand the reasons for vaccine hesitance in the general population.[15],[16],[17]. A study conducted only amongst corporate employees suggests that knowledge and attitude regarding the importance of vaccine against influenza are not adequate and there is a need for effective awareness for influenza [15]; another study which was conducted in Pune found that the awareness of pandemic influenza vaccines was low (25%). Some respondents did not consider vaccines relevant for adults, but nearly all (94.7%), reported that a vaccine would prevent swine Influenza [16]. A study done in people of rural Jammu reported that the overall knowledge score was 62.9%; more than 90% of people had heard of Swine-flu, knew the prevalent season, and knew disease symptoms. However, knowledge about preventing vaccines was low (27.7%) [17].

## Aims and Objectives

To assess the awareness level of the general public in India regarding influenza and its vaccine and to determine reasons for influenza vaccine hesitancy in India.

## Methods and Materials

A study questionnaire was designed in consultation with physicians of good repute. The questionnaire was formatted in Google Form™ and circulated to around 1000 people through WhatsApp™ over three months starting October 2020 till January 2021. Multiple reminders were sent to some people for completing the survey. None of the answers except email id, state of residence, and consent was kept mandatory and the individuals were asked to respond comfortably to as many questions as they consider relevant and omit the rest.

The information was collected on the following parameters:

- Education, residential area, medical condition, availability of the medical services in within/nearby residential area
- Awareness about Influenza, their experience of Influenza or Influenza-like symptoms, consultation with doctors for such symptoms.
- Information regarding Influenza prevention, availability of vaccines, attitude towards vaccination, or uptake of any alternative therapy for the treatment of Influenza.
- Data on the prescription of vaccines to them by physicians and response thereof, attitude towards annual immunization, and other reasons for vaccine hesitancy.

At the end of three months, 700 responses were received out of which 100 responses were excluded because they provided dummy email ids and another 68 respondents did not provide consent to share the data. The data were analyzed using Microsoft Excel and Stata 16.0. A chi-square ($\chi^2$) test was also performed to check the statistical significance of the data.

## Results

***Table 1: Facts about Influenza and Influenza vaccine***

| Question | Number of responses | Agree (%) | Disagree (%) | Neither agree nor disagree (%) |
|---|---|---|---|---|
| The Influenza vaccine is the best strategy to prevent infection | 521 | 19.4 | 65 | 15.6 |
| Hand-washing, frequent sanitization of objects, covering of mouth with the mask, social distancing from symptomatic people is more effective than the Influenza vaccine | 521 | 76.2 | 10.9 | 12.9 |
| Influenza can necessitate hospitalization of vulnerable people in India | 527 | 51.8 | 8.2 | 40 |
| Influenza is a preventable disease | 521 | 87.9 | 12.1 | 0 |
| Various vaccines are available against Influenza | 523 | 79.2 | 20.8 | 0 |
| Influenza viruses change every season | 519 | 71.7 | 28.3 | 0 |
| The new Influenza vaccine comes up every new season and needs to be taken every year | 516 | 49 | 51 | 0 |
| Correct answer | | | Incorrect answer | |

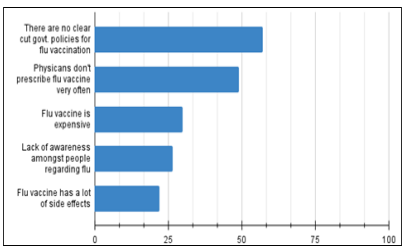
The survey data (Table 1) reveals that only 19.4% (n=101) people considered flu vaccine as the best strategy to prevent flu infection. Most of the people (76.2%, n=397) people reported hand-washing, frequent sanitization of objects, covering of mouth with masks, and social distancing from symptomatic people to be more effective than the flu vaccine. It was found that the age of the respondents did not have a significant impact on their perceptions of the flu and the flu vaccines ($p>0.05$). People who are graduates or with other qualifications were more aware of flu and the flu vaccine than the people with only an undergraduate degree ($p=0.045$).

**Table 2: People's response to the experience of Influenza-like symptoms**

| Question | Number of responses | Correct (%) | Incorrect (%) |
|---|---|---|---|
| Consultation with doctors in case of the experience of Influenza-like symptoms | 524 | 52.3 | 47.7 |
| Consultation with doctors in case of worsening Influenza-like symptoms (body-aches, breathing difficulty, prolonged high fever) | 519 | 73.2 | 26.8 |
| If your doctor prescribes an Influenza vaccine to you and even if you're healthy, do you get yourself vaccinated? | 513 | 57.9 | 42.1 |
| Regular vaccination of healthy people is a waste of money | 519 | 38.3 | 61.7 |

The survey data (Table 2) reveals that nearly 50% (n=274) of the people consult doctors in case they experience flu-like symptoms; this amount increased to 73.2% (n=380), in case of worsening of such symptoms. Nearly 60% (n=297) of people reported that they get vaccinated if they were prescribed flu vaccine by their doctor. Nearly 40% (n=199) of the people considered regular vaccination against flu as a waste of money. These findings are statistically significant ($p=0.032$).

**Figure 1: Top 5 reasons for vaccine hesitancy in India**




The survey also solicited people's opinions about the reasons for Influenza vaccine hesitancy in India. Most of the people (57.1%, n=287) reported the absence of clear-cut government policies as the major reason for vaccine hesitancy in India. Other reasons that contribute to Influenza vaccine hesitancy include few prescriptions by physicians, high cost of Influenza vaccine, lack of awareness amongst people, and after side effects.

## Discussion

The data obtained from the survey reveals that more than 50% of the respondents were aware of the basic facts regarding the flu and the flu vaccine; however, only 19.4% (n=101) considered vaccination as the best strategy to prevent the flu infection. Around 75% (n=397) of people considered hand-washing, frequent sanitization of objects, covering of mouth with the mask, social distancing from symptomatic people is more effective than the flu vaccine for the prevention of flu infection (Table 1).

The findings suggest that around 50% (n=250) of the respondents did not consult doctors when they experienced flu-like symptoms; this percentage reduced to 26.8% (n=139) when these symptoms worsened in the forms of body ache, headache, prolonged high fever, and breathing difficulty (Table 2). This difference is statistically significant (p=0.032). To our knowledge, this is the first study that involves people from all over India; earlier studies have been limited to certain cities or corporate companies [15],[16],[17].

It was found that the age of the respondents did not have a significant influence on their perceptions of the flu and the flu vaccine (p>0.05), but their educational qualifications did. People who are graduates or with other qualifications were more aware of flu and the flu vaccine than the people with only an undergraduate degree or lesser educational levels (p=0.045).

Thus, it can be concluded that while overall awareness is required, people who are undergraduates or have lesser educational qualifications need to be targeted.

The survey also collected people's opinions on the potential reasons for the flu vaccine hesitancy in India (Figure 1). A vast majority (57.1%, n=287) of people reported a lack of clear-cut policies for mass vaccination by the Indian government as the major reason for flu vaccine hesitancy. This was followed by a lack of prescriptions by physicians, high cost of the flu vaccine, lack of awareness amongst people, and risk of side effects caused by vaccination.

It has been reported that the CoWIN app, an app for mass vaccination against COVID-19 developed by the Government of India, has made a significant impact on vaccination. Many earlier studies have suggested the need for digital tools to improve vaccination [20],[21].

The vaccine hesitancy can be reduced by the use of digital tools, clear-cut policies for mass vaccination by the Indian Government, and spreading awareness amongst people in India, especially rural areas.

## Limitations

The responses in this study were self-reported by people, not subject to independent verification, and could be influenced by common perceptions. The sample size of the study is small; therefore, the findings obtained cannot be generalized.

## Conclusion

The findings obtained from the survey provide a good insight into people's perceptions of Influenza and the Influenza vaccine. There is a need to spread awareness amongst people regarding Influenza and the Influenza vaccine. Lack of clear-cut policies, fewer prescriptions by physicians, high cost of Influenza vaccine, and lack of awareness amongst people are major reasons for Influenza vaccine hesitancy in India. Awareness amongst people can be spread by the use of digital tools, awareness campaigns organized by the government, and patient education through physicians.

## Recommendation

In the future, more studies at a larger scale can be done; this would help in getting a better insight and develop better solutions to these problems. This would strengthen our health care system.

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