

ORIGINAL ARTICLE

The acceptance of H1N1 Influenza A vaccine by resident doctors in a tertiary care hospital of Mumbai.

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Abstract:

Background: Following the confirmation by the World Health Organization, that H1N1 influenza virus had reached pandemic proportions; rapid implementation of large-scale immunization programs was considered essential to reduce the burden of disease.

Method: A tertiary care hospital based cross sectional study of six months duration was undertaken with the objective to assess the acceptability of influenza A (H1N1) vaccination, the factors influencing it and to assess outcome of the H1N1 immunization program for the resident doctors. Study participants were all resident doctors working in all departments of the tertiary care hospital of Mumbai. Method of sampling was universal sampling. All the 317 resident doctors working in tertiary care hospital were interviewed by personal interview using a pretested semi-structured questionnaire after obtaining their informed consent. The questionnaire included information pertaining to the H1N1 pandemic and its vaccine. Privacy and confidentiality was maintained. Data entry and statistical analysis was done using licensed SPSS version 17. Frequency distributions were calculated for all the variables.

Results and conclusions: Only 5 (1.75%) of study participants were not knowing about the availability of vaccine. There were no accessibility barriers for receiving the vaccine. There was a poor knowledge regarding H1N1 Influenza A vaccine amongst the doctors' still 152 (47.94%) doctors felt the need of vaccine. Only 4 (1.3%) doctors have taken the vaccine. Fear of side effect was the leading cause

for non-acceptance of vaccine followed by no lifelong immunity and questionable efficacy of the vaccine.

Keywords: swine flu, H1N1 vaccine, pandemic, Influenza A.

Introduction:

Influenza is a major threat to public health. On June 1st, 2009, the World Health Organization (WHO) declared the H1N1flu a pandemic¹. By 20th December 2009, at least 11 516 deaths in 208 countries had been attributed to laboratory confirmed 'H1N1 Influenza A'². According to recommendations from WHO all countries should immunize their healthcare workers as a first priority in order to protect the vital health infrastructure³.

In a pandemic there are many uncertainties, but without vaccination many healthcare personnel (including resident doctors) will become infected. Although this will be a mild illness for most, deaths in healthy young adults have occurred. Immunization of health care personnel (HCP) is a matter of patient safety and is necessary to significantly reduce health care associated influenza infections⁴. Vaccination may also help to keep the healthcare system operating at maximum capacity throughout the pandemic.

A particular concern for recipients may be the association of the 1976-1977 H1N1 Influenza A vaccine with Guillain-Barré syndrome, with an attributable risk of around 12 cases per million vaccinations⁵. This rare event has decreased greatly during the past 15 years (to around 0.7 reports/million vaccinations)⁶. Indeed, recent research

suggests no significant increase in the risk of this syndrome after vaccination, but a greater risk after natural influenza infection. Thus, even if the vaccine were associated with a small increase in the risk of the syndrome, this would probably be outweighed by a protective effect against flu related Guillain-Barré syndrome⁷.

However, as with all new drugs, post-marketing surveillance (including for Guillain-Barré syndrome) is the only way to identify rare adverse events. Immunization of health care personnel is a matter of patient safety and necessary to reduce health care-associated influenza infections.

In Mumbai after the declaration of Swine flu as pandemic, Public Health Department of Municipal Corporation of Greater Mumbai designated Preventive & Social Medicine department (PSM) of KEM (King's Edward Memorial) Hospital as a nodal department for carrying out swine flu vaccination amongst health care professionals. In response to this, the department of Preventive and Social Medicine prepared a standardized plan to immunize resident doctors. Under this plan all the faculties and department were informed through notice about the availability and accessibility of vaccine. Simultaneously posters were displayed all over the hospital campus to disseminate information about campaign. This vaccination campaign was voluntary. It was expected that 100% immunization would take place amongst them but the outcome was not according to the expectations. Hence, the current study was performed to assess the acceptability of influenza A(H1N1) vaccination, the factors influencing it and to assess outcome of the H1N1 influenza A immunization program for the resident doctors.

Methods:

A cross sectional descriptive study was conducted in a tertiary care hospital for a period of 4 months from October -

2010 to January 2011. Universal sampling method was used.

Inclusion criteria: Study participants were all the resident doctors working in the tertiary care hospital of Mumbai of all the departments.

Exclusion criteria: Those residents who did not gave consent for the study or were not available for the interview during the study duration. There were total 354 residents working in the tertiary care hospital at the time of conduction of study but only 317 were available for the interview. So, final sample size was 317.

Instrument: Each of the resident doctors was interviewed by personal interview using a pretested semi structured questionnaire after explaining them aim of the study. The questionnaire was validated based on the findings of pilot study which was conducted amongst 40 doctors. The questionnaire included information pertaining to accessibility and availability of the H1N1 vaccine in the hospital, knowledge regarding the vaccine (route of administration, dosage, type of vaccine, side effects and duration of protection), perception for the need of vaccine, reasons for the acceptance and non-acceptance of the vaccine.

Operationally in the study, the term health care personnel (HCP) is defined broadly as all persons working in health care settings who have the potential for exposure to any type of infectious materials.

Ethical considerations: Ethical clearance was obtained from the Institutional Ethics committee CARE (Committee for Academic Research Ethics) before starting the study. Informed consent was obtained from the study participants. Privacy and confidentiality was maintained.

Data analysis: Statistical analysis was done using licensed SPSS version 17. Frequency distributions were calculated for all the variables.

Results:

Out of the 317 resident doctors, 194 (61.20%) were male and 123 (38.80%) were female. Majority 273 (86.12%) of the residents were between 25 – 30 years age group. 146 (46.06%) residents doctors were from the pre and para-clinical departments and 171 (53.94%) were from the clinical and super specialty departments. Out of the 317, 312(98.42%) were aware about the availability of vaccine in the hospital.

100% study participants agreed that there was no accessibility barrier to take the vaccine in the hospital.

Table 1 depicts that in spite of no availability and accessibility barrier only 4(1.3%) of the resident doctors has taken the vaccine. Thus, the outcome of this immunization initiative was poor as most of the resident doctors were reluctant to take the vaccine.

Table 1: H1N1 vaccination status of doctors

H1N1 vaccination status of doctors	No. of resident doctors	Percentage (%)
No	313	98.7
Yes	4	1.3
Total	317	100.0

Reasons for non-acceptance, 177 (56.55%) residents cited fear of side effect, followed by no lifelong immunity, questionable efficacy and peer pressure (Table 2).

Table 2: Reasons for non-acceptance of H1 N1 vaccine

Reasons for non-acceptance by the doctors	Number of resident doctors (N = 313)	Percent age (%)
Fear of side effect	177	56.55
No lifelong immunity	74	23.64
Questionable efficacy	48	15.33
Peer pressure	44	14.05

Tamiflu drug is available	38	12.14
Technically not required	36	11.50
All are not vulnerable	24	7.67
Disease can be easily treated	4	1.27

Table 3: Knowledge about H1N1 vaccine amongst doctors

About the Vaccine	Knowledge of the doctors	Number (%)
Side effects	Myalgia, fever, redness, swelling	74 (23.34)
	Neurological complications, GBS	84 (26.49)
	Allergic reaction	21 (6.62)
	Don't know	138 (43.53)
Duration of Protection	6 months	63 (19.87)
	1 yrs-2 yrs	67 (21.13)
	Don't know	187 (58.99)
Dosage (0.5ml)	Correct	81 (62.14)
	Incorrect	39 (12.30)
	Don't know	197 (62.14)
Route of Administration	Intramuscular / Nasal	178 (56.15)
	Don't know	139 (43.84)
Type of vaccine (Split virus, inactivated monovalent)	Correct	2 (0.63)
	Incorrect	53 (16.71)
	Don't know	262 (82.65)

Table 3 depicts that 138 (43.53%) doctors were not aware about any side effects of the vaccine. When enquired about the duration of protection offered by the vaccine 63 (19.87%) doctors reported correctly, as 6 months while remaining 254 (80.13%) were either not knowing it at all or knowing it incorrectly.

Table 4: Perception about need of vaccine during the pandemic of H1N1

Need of the vaccine	Number of resident doctors [N = 317] (%)
Needed	152 (47.94)
Not needed	135 (42.59)
Don't know	30 (9.46)

Table 4 shows that 152 (47.94%) of resident doctors felt that the vaccine is needed for health care personnel but despite of that only 4 (2.63%) have actually taken the vaccine.

When asked that who should take H1N1 vaccine, 115 (75.65%) doctors said health care personnel while 37 (24.34%) doctors said it should be restricted to pregnant women / extremes of age / immuno-compromised people.

Discussion:

In the present study, only 4 (1.3%) resident doctors had taken vaccine in the tertiary care centre. A study conducted in University of Athens, School of Medicine, Greece a total of 74 (8%) out of 922 medical students reported to have received the H1N1 vaccine⁸. Similarly study carried out amongst Greek healthcare workers revealed a low acceptance (17%) of vaccination against the 2009 pandemic influenza⁹. The uptake of pandemic influenza vaccine in people at risk (including pregnant women) was 38% in England, 52-55% in Scotland and 42% in Wales¹⁰. Immunization rates of 80% or higher are essential for providing the “herd immunity” needed to have a significant impact on transmission of influenza by health care personnel in medical settings, but overall immunization rates for health care personnel remain near 40% in US⁴. Mandatory influenza immunization programs for health care personnel will benefit the health of employees, their patients and members of the community¹¹. There are also evidences that the willingness of European healthcare workers to be vaccinated with seasonal influenza

vaccine is poor, ranging from 14% in the United Kingdom to 48% in France¹².

The American Academy Of Pediatrics has suggested in their study that sustainability of herd immunity in health care settings can be achieved only through a mandated policy. Despite many organizations' efforts to improve influenza immunization rates with the use of voluntary campaigns, influenza vaccine coverage among United States health care personnel remains unacceptably low at a rate of 44.4% between 2006 and 2007⁴, and even fewer receiving both seasonal and H1N1 vaccines during the 2009 –2010 season. Voluntary programs have proven to be ineffective, in part because health care personnel have misconceptions regarding the risks and benefits of the vaccines.

In the current study the main reasons for non acceptance of the vaccine was found to be fear of side effect in 177 (56.55%) residents. It was followed by no lifelong immunity, questionable efficacy and peer pressure. The Joint Commission of US found that reasons health care personnel decline immunization include fear of getting influenza-like illness from the vaccine, fear of adverse effects, perceived low or no likelihood of developing influenza disease, and concern about exposure to thimerosal, among others¹³. In the study amongst Greek medical students, the most common cause (387/848, 46%) for non-acceptance was mild course of the influenza, while the concern regarding the possible long-term adverse events of the vaccine was reported as a cause in 44% (370/848). Some students had doubts about the vaccine's effectiveness (258/848, 30%) and others were worried about the short-term adverse events of the vaccination (197/848, 23%). In total, 392 (46%) participants appeared worried about possible adverse events⁸. In the study amongst Greek health care personnel, the main reason for refusal of vaccination was fear of side effects, which was stronger in those who received

information on the safety of the vaccine mainly from mass media⁽⁹⁾.

In recent studies concerning the attitudes and behavior towards H1N1 vaccine, the main reasons given for non acceptance were likely to have been: the mild perception of pandemic severity, "I'm not at risk of serious illness", the fear over vaccine safety, "I am very sensitive to these vaccines", and vaccination inefficacy^{14, 15, 16}.

It is well known that health care personnel can transmit influenza virus to patients and coworkers before the onset of symptoms or during symptomatic illness¹⁷. Mandatory influenza immunization of health care personnel is a matter of patient safety. The risk of transmission is augmented, because many health care personnel work when they are mildly symptomatic or ill, which puts their coworkers and patients at risk¹⁸.

On February 5, 2011 United States generates a cost burden estimated to be \$87 billion per year¹⁹. The bulk of this cost is a result of work absenteeism and premature mortality. Presenteeism or working while symptomatic, also contributes a significant amount to the cost burden and decline in productivity associated with influenza infection. Influenza B virus infection in healthy adults impairs the ability to perform certain tasks to a level similar to that seen with sleep deprivation or alcohol consumption²⁰. In addition, healthy adults who receive the influenza immunization have 25% fewer upper respiratory infections, 44% fewer physician visits, and 43% fewer sick days off, saving an average of \$47 per person annually and highlighting the cost-effectiveness of immunization against influenza²¹.

The study had the limitation in the form that it was a uni-centric study and thus findings of the study are not generalizable.

Conclusion:

The low acceptance rate of the pandemic vaccine among healthcare workers is alarming given that they are used as an example for their patients and the public. Vaccination is important in order to keep the healthcare system operating at maximum capacity during a pandemic. Policy makers in India, and may be in other countries in world could consider our findings in order to improve the vaccination strategy for health care workers in future vaccination campaigns. A lot is expected from the Government Public Health Department and other agencies involved in health care delivery mechanisms regarding proper communication and education of the health care workers and of the general public on this issue as majority of the technical features of the vaccine were not adequately known by the resident doctors. The knowledge of doctors about the various aspects of swine flu vaccine should be upgraded. It is evident that the acceptance of H1N1 vaccine amongst the resident doctors will require persuasive efforts by the health care organizations; otherwise the success of this immunization program in future also will remain questionable.

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