A Longitudinal Study of Attitudes and Adverse Reactions of Influenza Vaccination among Health Care Personnel

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Research Article

Abstract: Influenza (Flu) pandemics are caused by emergence of, Re-assorted Novel Influenza A H1N1 viruses that have recently adapted to humans. It continues to be a significant cause of morbidity and mortality globally. Health Care Personnel (HCP), the backbone of health care delivery system, have been identified as an important source of influenza for patients. Vaccination is a useful but underused means of preventing the illness and deaths but the coverage is lower than expected among HCP. Influenza vaccination programs for HCP have not met wide acceptance and it is important to explore their attitudes behind vaccine uptake. **Objectives:** To study the attitudes/beliefs behind vaccination. To study the frequency and pattern of adverse reactions following influenza vaccination in HCP. **Materials and Methods:** A longitudinal study was conducted in 130 HCP, working in Govt. Medical College & Hospital (Miraj & Sangli), participating voluntarily, who had taken influenza vaccine (Nasovac or Injectable). They were followed for 1 year period (Aug'2010 to July '2011) from the day of vaccination. The relevant information was recorded in predesigned proforma, after informed consent. **Results:** Mean age group of the participants was 33.8±10.2 years. 87(67%) of the total subjects had procured the vaccine from private source but 91(70%) preferred Govt. hospital for vaccination. 78(60%) of the total subjects gave the reason for vaccination as personal protection. 71.5% participants took nasal vaccine, of which 52(56%) subjects told the reason for its selection being the ease of administration. The overall incidence of side reactions after vaccination was 40%. No significant difference was found between adverse reactions following Nasal or Injectable vaccine. Most of the reactions were mild & seen during first 3 days of vaccination which was statistically significant. **Conclusion:** Govt. hospital was the preferred place for vaccination by HCP. Vaccination of both types of vaccine is associated with mild adverse reactions during first 3 days with declining frequency over 1 year. The uptake of influenza vaccine is poor among HCP.

Key words: Influenza Vaccination, Health Care personnel, adverse reactions.

Introduction:

A novel influenza A H1NI virus, quite different from the circulating seasonal influenza viruses which got noticed in Mexico in April'2009, spreaded fast across the globe during 2009-10. On 11th June'2009, WHO declared this a pandemic. It affected over 200 countries globally including India. Number of affected countries & human cases with Influenza A virus claiming their lives are increasing rapidly[1]. The majority of the human population has no immunity to this virus. Health Care Personnel (HCP)[2] can acquire influenza from patients or transmit influenza to patients and other staff[2]. One important prevention strategy is vaccinating "at risk population" with Influenza Vaccine. Despite the documented benefits of vaccination, the coverage is lower than expected among HCP[2],[3].

Influenza vaccination programs for hospital workers have not met wide acceptance[4].The plan to introduce such a program is likely to be questioned about the adverse reactions to the vaccine[3].

Materials and Methods:

Study type – Longitudinal study. Study period: Aug 2010 to July 2011. Sample size: A total of 130 HCP[2] which included Doctors, Nurses, Professions allied to medicine (PAMs)[5](Radiographers, dieticians, lab technicians), students etc working in Govt. Medical College and Hospital (Miraj & Sangli) who had taken influenza vaccine either live attenuated Nasovac, manufactured by Serum Institute of India, Pune or killed Injectable vaccine, Panenza, a split virus inactivated, non adjuvanted, monovalent vaccine, voluntarily at either Miraj or Sangli hospital were

followed for the period of 1 year from the day of vaccination without any drop outs. The relevant information was recorded in the predesigned, pretested proforma after informed consent. They were followed daily for the first week and then weekly up to 30 days and then monthly for further 11 months. Individuals were advised to report any reactions telephonically or verbally in between the visit. Those vaccinees who had reported side reactions during the follow up were visited, referred to physician, treated symptomatically and monitored. The data was analyzed by chi square test & standard error of difference between two proportions using SPSS software.

Results:

Out of total 130 HCP vaccinated, 56(43%) were doctors (Table: 1). Mean age group was 33.8 ± 10.2 years. Males and females were in the ratio of 0.83:1 (Table: 1). 87(67%) of the total subjects had procured the vaccine from private source but 91(70%) preferred Govt. hospital for vaccination.
(Table: 2).

Table: 1 Gender wise Distribution of the study subjects taking vaccine.

Study Subject Group (n=130)	Male (%)	Female (%)	Total (%)
Doctors	33	23	56(43.0)
Nurses	05	40	45(34.6)
PAMs	08	05	13(10.0)
Students	11	01	12(9.2)
Others	02	02	4(3.2)
Total	59(45.3)	71(54.7)	130(100.0)

(* - Figures in parenthesis are %)

Table: 2 Distribution of study subjects based on place of vaccination.

Vaccine (Nasal or Injectable)	Private (%)	Government (%)
Procured (n=130)	87(67.0)	43(33.0)
Taken (n=130)	39(30.0)	91(70.0)

78(60%) of the total subjects gave the reason for vaccination as personal protection (Table: 3). 71.5% participants took nasal vaccine, of which 52(56%) subjects told the reason for its selection being the ease of administration (Table: 4).

Table: 3 The attitudes of the subjects towards taking vaccine.

Reasons for vaccination	No. (%) (n=130)
Personal Protection	78(60.0)
Prophylaxis	48(37.0)
As advised by physician	4(3.0)

Table: 4 The reasons for selection of nasal vaccine by study subjects.

Reasons for selection	No. (%) (n=93)*
Non invasive	52(56.0)
Ease of administration	36(38.7)
Less side effects	30(32.2)
More protective	26(28.0)

(*- Multiple responses)

71.5% study subjects had taken nasal type of vaccine and rest 28.5% took injectable vaccine (Table: 5).The overall incidence of side reactions following vaccination was 40% (52/130) (Table: 5). The incidence of adverse reactions reported were 43.1% with nasal and 32.4% with injectable vaccine. No significant difference was observed between adverse reactions following nasal and injectable vaccine (Table 5).

Table: 5 Comparison of adverse reactions following nasal and injectable vaccination among the study subjects.

Type of vaccine	Adverse Reactions		Total (%)
	Present (%)	Absent (%)	
Nasovac	40 (43.01)	53 (56.9)	93 (71.5)
Injectable	12 (32.4)	25 (67.6)	37 (28.5)
Total	52 (40.0)	78 (60.0)	130 (100.0)

X^2=1.22, df =1, Not Significant. (*-Figures in parenthesis are %).

It was observed that single reaction was common over multiple reactions in those vaccinees in which adverse reactions were present. This was found to be statistically significant. (Table: 6).

Table: 6 Comparison of single and multiple adverse reactions in the study subjects.

Vaccine	Adverse reactions (%)		Total (%)
	Single reaction	Multiple reactions	
Nasal	36(90.0)	4(10.0)	40(76.9)
Injectable	11(91.6)	1(8.4)	12(23.1)
Total	47(90.4)	5(9.6)	52(100.0)

SE (p1-p2) = 13.85, Z=5.83, P<0.5, Significant.

Most of the systemic reactions were mild and were observed during first 3 days following vaccination with declining frequency over 1 week in both the types of vaccination. There were no reactions observed after 7 days in both the vaccinees. (Fig: 1). It was found to be statistically significant (Table: 7).

Fig: 1 Daywise Occurrence of Adverse reactions

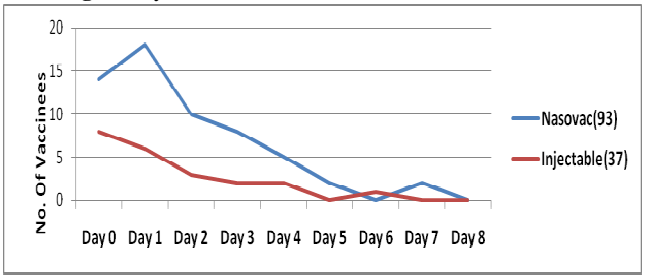

Table: 7 Time distribution of adverse reactions following vaccination in study subjects.

Day Of reaction	Type of Vaccine (%)		Total (%)
	Nasal	Injectable	
Upto 3rd day	34(82.9)	7(17.1)	41(78.8)
4th day-7th day	6(81.8)	5(18.2)	11(21.2)
8th day-upto 1 yr	0 (0.00)	0(0.00)	0(0.00)
Total	40(76.9)	12(23.1)	52(100.0)

Yates Correction applied, X^2=3.93, df =1, P< 0.05, Significant. (* - Figures in parenthesis are %).

Headache was the most common adverse reaction observed in study subjects who had taken nasal vaccine while nasal congestion was most commonly found in injectable vaccinees. The other mild systemic reactions observed were fever, generalized body ache, Respiratory symptoms(cough, running nose, nasal congestion), Gastrointestinal symptoms (nausea, mild diarrhoea, cramps), sore throat, throat congestion etc (Fig: 2).

In the present study, none of the study subjects had presented with local reactions at the injection site in the form of soreness or pain or swelling and none of them had severe adverse reactions after vaccination

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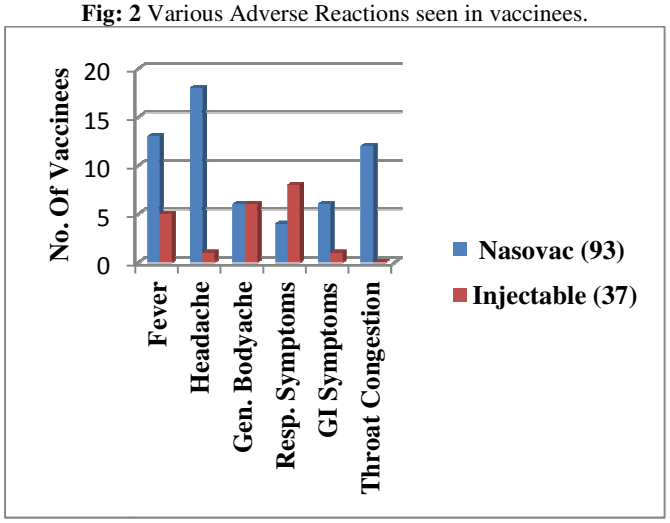
Fig: 2 Various Adverse Reactions seen in vaccinees.



*-Headache was the most common adverse reaction observed in study subjects who had taken nasal vaccine while Repiratory symptoms (nasal congestion) were most commonly found in injectable vaccinees.

Discussion:

In the present study, uptake of the influenza vaccine is found to be quite low which is consistent with the previous other study findings[6]. Among HCP who denied vaccination, majority reported fear of adverse reactions and also expressed doubts regarding efficacy of the vaccine. The findings of this study also show that both the types of vaccine are associated with adverse reactions, being more with nasal type. Similar observations were made in various other studies[7],[8]. The rate of adverse reactions was somewhat more as compared to other studies which can be attributed to the other coincidental intercurrent illnesses which cannot be differentiated from the adverse reactions and also perhaps HCP are overanxious than other recipients and are more apt to report them when invited to do so.

Conclusions:

Govt. hospital was the preferred place for vaccination by HCP. Majority of the study subjects quoted the reason for vaccination as a way of personal protection and most common reason for preferring nasal vaccine was its non-invasiveness. Vaccination by both the types of vaccine is associated with mild adverse reactions during first 3 days and no serious/severe adverse reaction is found with any of the vaccine types even at the end of 1 year follow up. The uptake of influenza vaccine is found to be poor among HCP.

Limitations:

1. As the uptake of both the types of vaccine was poor, our sample size was small.
2. There was lack of current Indian references relating to our study.
3. We do not have satisfactory comparative results with Indian population available with us.

Recommendations:

1. Influenza vaccination should be made mandatory for HCP as a professional obligation as scientific, ethical and legal justifications support it.
2. Efforts are needed to promote vaccination among HCP and to understand their attitude/ beliefs

regarding vaccination. Rumors and fear must not be a barrier in the process of promoting individual safety.

3. Proper planning by the health care institutes to improve the acceptability of vaccine is needed.
4. Tertiary care centre should make influenza vaccination as an additional Hospital policy.
5. Institutional Educational campaigns should be organized to promote the need for vaccination.
6. Vaccine must be made readily available to HCP and they must be educated about the safety and effectiveness of the vaccine.
7. Similar types of studies must be promoted taking large sample size.

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