

Study of Acceptance Rate, Compliance and Complication of H1N1 Seasonal Vaccine among Health Care Workers

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Abstract

Background: Our knowledge on reasons of non-acceptance and complication to H1N1 Vaccination by health care workers is limited. A better understanding of factors having significance in vaccine acceptance is crucial. With this background in mind present study was conducted at tertiary care centre to determine the Acceptance, Compliance, and Complication of anti-H1N1 seasonal vaccine among Health Care Workers (HCWs). **Materials and Methods:** Prospective Observational study was conducted to observe the rate of acceptance, compliance and complications of anti H1N1 seasonal vaccine among 100 health care workers in the period of December 2015 to December 2017 in Tertiary Health Care Centre. All participants were counselled 3 times at interval 6 months (0, 6, and 12 months) regarding H1N1 vaccine. **Result:** Vaccine acceptance rate among health care workers was only 03% before counseling. The main cause for not acceptance of vaccination was fear of adverse effects reported by 27% health care workers followed by cost of vaccine (12%) and work pressure (10%) or non-availability of time. **Conclusion:** As counseling sessions progressed health care workers also started accepting vaccination. After completion of third counseling session rate of vaccine acceptance increased from 3% to 71% and also negative and doubtful conception of health care workers were and changed completely. After counseling their knowledge regarding influenza vaccine was increased. Even though some post vaccination complications had been reported by recipient; those symptoms lasted for short duration of time and there was no serious adverse effect of H1N1 vaccine.

Keywords: Health Care Workers, H1N1 Vaccine

1. Introduction

Health workers are at risk of getting influenza. The World Health Organization (WHO) declared the H1N1 influenza A as pandemic on 1st June 2009¹ by December 2009 11,516 deaths were reported in 208 countries in H1N1 laboratory confirmation cases². Hence WHO has recommended to all health care workers of all countries to get immunize on priority for protection against H1N1 infection³. As there is high risk of infection in the pandemic area and many health care personnel may become infected due to

nonvaccination and if they get infected with even Mild infection, death have occurred in many healthy young adults including doctors. Hence immunization of Health Care Workers (HCW) is a matter of concern in view of patient safety and is one of important aspect to reduce health care associated influenza infections^{4,5}.

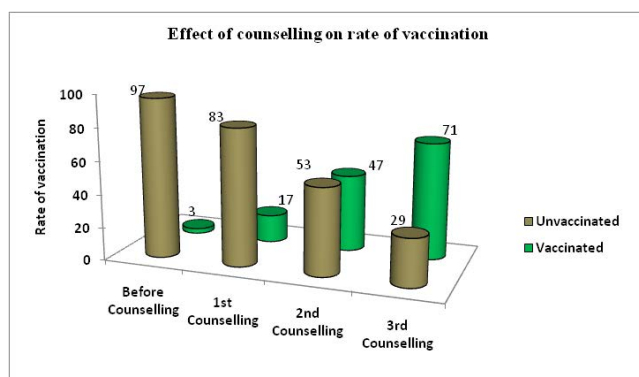
In the period of 1976-1977, recipient of H1N1 influenza vaccine was associated with Guillain Barré syndrome and risk of developing Guillain Barré syndrome with H1N1 Influenza vaccine was about 12 cases per million. But rate

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of this complication is markedly decreased in last 15 years and that is about 0.7 per million⁶.

Recent research shows that there is no major risk of Guillain Barré syndrome due to influenza vaccination⁷. Hence it is important to vaccinate each and every health care worker and to reduce health care associated influenza infection complications³.

Hence, this prospective observational study was conducted to assess the acceptability of influenza A (H1N1), its compliance and to observe its complications and to assess outcome of counseling in the form of compliance.



Graph 1. effect of counselling on vaccination status of HCW's (n=100).

2. Materials and Methods

This Prospective observational study was aimed to study the rate of acceptance, compliance and Complications of H1N1 seasonal vaccine among health care workers, working at a Tertiary Health Care Centre. A total 100 health care workers participated in this study. Out of 100 participants 50 were nursing staff (nursing students) and 50 were resident doctors (post graduate students) and they were selected randomly. Inclusion criteria was Health Care Workers at a Tertiary Health Care Centre and exclusion criteria was Health Care Workers not willing to participate in the study Written informed consent was obtained from all the participants and they were counseled three times at interval of 6 months i.e. on day 0, after 6 months and 1year and response was recorded.

All the information was entered in predesigned proforma. Data was recorded on proforma sheet. Counselling was done regarding H1N1 disease, how it spreads, what precautions to be taken for its prevention such as wearing mask/gloves, hand wash, general cleanliness,

and detailed information about H1N1 vaccine such as its type, need, availability and its adverse effects. Data was analyzed by using SPSS version and frequency distribution was calculated by appropriate method.

3. Observations and Result

In this prospective observational study out of 100 health care workers 50% (50) were residents' doctors and 50% (50) were nursing staff. Among resident doctors 90% (45) belonged to 25-30 years, 8% (4) belonged to 31-35 years and (2%) 1 belonged to 36-40 years age group. In nursing staff 38% (19) were in the age group of 31-35 years, 14% (7) belonged to 25-30 years, 22% (11) were in the age group of 36-40 years and 26% (13) were above 41 years age group (Table 1).

Table 1. Distribution of the participants according to age (n=100)

Sl.no.	Age Groups (Years)	Residents	Nursing staff	Total
1	25-30	45 (90%)	07 (14%)	52 (52.00%)
2	31-35	04 (8%)	19 (38%)	23 (23.00%)
3	36-40	01 (2%)	11 (22%)	12 (12.00%)
4	≥ 41	00 (0.00%)	13 (26%)	13 (13.00%)
	Total	50 (100%)	50 (100%)	100 (100%)

Out of 100 health care workers 42% were female and 58% were male among residents' doctors while in nursing students 38% were male and 62% were female (Table 2).

In this study only 3% were already vaccinated with H1N1 vaccine and those all were resident doctors (post graduate students) (Table 3). It was found that out of 100 health care workers only 5% had history of exposure to known case of H1N1 infection. Among them 3 were resident doctors and 2 were nursing students while 95% had no history of exposure to known cases of H1N1 (Table 4).

Table 2. Distribution of the participants according to gender (n=100)

Sl.no.	Gender	Residents	Nursing staff	Total
1	Male	29 (58%)	19 (38%)	48 (48.00%)
2	Female	21 (42%)	31 (62%)	52 (52.00%)
	Total	50 (100%)	50 (100%)	100 (100%)

Table 3. Distribution of participants according to rate of Vaccination {Before counselling} (n=100)

Sl. no.	Vaccination status	Residents	Nursing staff	Total (%)
1	Unvaccinated	47 (94%)	50 (100%)	97 (97%)
2	Vaccinated	03 (06%)	00 (00%)	03 (03%)
	Total	50 (100%)	50 (100%)	100 (100%)

Table 4. Distribution of participants according to H/o exposure to H1N1 (n=100)

Sl. no.	H/o exposure in the past	Residents	Nursing staff	Total
1	Present	03 (6%)	02 (4%)	05 (05%)
2	Absent	47 (94%)	48 (96%)	95 (95%)
	Total	50 (100%)	50 (100%)	100 (100%)

In this study after first counselling, rate of acceptance for vaccination increased from 3% to 11% in resident doctors and from 0% to 6% in nursing staffs and after second counselling, rate of acceptance of H1N1 vaccine increased from 22% to 58% in resident's doctors while in nursing staffs it increased from 12% to 36%. After third counseling rate of acceptance for H1N1 vaccine still increased from 29(58%) to 40(80%) in resident doctors while in nursing staff it increased from 18(36%) to 31(62%). It was observed that rate of acceptance to H1N1 vaccine was increased with counseling which was increased to 17%, 47% and 71% after 1st, 2nd and 3rd counseling respectively. It indicates that there was good impact of repeated counselling and status of vaccination among health care workers was statistically significantly

improved after counselling ($\chi^2=123.33$, d.f. =3, $P<0.0001$ Significant) (Table 5 and Graph 1).

At start of study, H1N1 vaccine acceptance rate among health care workers was only 3% and all were resident doctors it means at start the compliance for H1N1 vaccination was not good. Factors for poor compliance for H1N1 vaccination were fear of side effects of vaccine (27%), cost of vaccination (12%) and work pressure or non-availability of time (10%). But after repeated counselling rate of acceptance to the H1N1 vaccine was increased from 3% to 71% which was statistically significant

In this study out of 100 health workers, 28.0% experienced pain at injection site which was the most common side effect. Other side effects such as flu like illness (12%), body ache (11%), headache (8%), others (6%), fever (4%), fatigue (3%), swelling at injection site (1%) and vomiting (1%), were noted while there were no side effects in (26%) participants (Table 6).

4. Discussion

The present observational study was conducted at a tertiary health care centre to find out rate of acceptance, effect of counselling on compliance and complications of H1N1 vaccine among health care workers.

A total 100 HCW's were selected randomly. Out of 100 health care workers 50% (50) were resident doctors and 50% (50) were nursing staffs (nursing students). Among resident doctors maximum i.e. 90% (45) were belonged to 25-30 years age group while in nursing staffs 60% participants were in the age group of 31-40 years (Table 1).

In a study⁸ 61.8% belonged to the nurses/medical assistant's profession, 21.8% were doctors, and 16.8%

Table 5. Summarization of effect of counselling on vaccination status of HCW's (n=100)

Sl.no.	Effect of Counselling	Before Counselling	First Counselling	Second Counselling	Third Counselling
1	Unvaccinated	97 (97.00%)	83 (83.00%)	53 (53.00%)	29 (29.00%)
2	Vaccinated	03 (03.00%)	17 (17.00%)	47 (47.00%)	71 (71.00%)
	Total	100 (100%)	100 (100%)	100 (100%)	100 (100%)
$\chi^2=123.33$, d.f. =3, $P<0.0001$ Significant					

were allied health workers. Study² on 317 residents in which preclinical and paraclinical resident doctors were 146 (46.06%) and 171 (53.94%) respectively and majority of them (86.12%) belonged to 25-35 yrs. Age wise distribution was somewhat similar to present study. In a study⁸ mean age of all participants was 33.91 ±8.20 yrs and nearly half (48.9%) of them belonged to 30-39 yrs age group.

Table 6. Distribution of participants according to complications of vaccination (multiple responses)

Sl.no.	Common Side effects	Reported by
1	Pain at injection site	28 (28%)
2	Flu like illness	12 (12%)
3	Body ache	11 (11%)
4	Headache	08 (8%)
5	Others	06 (06%)
6	Fever	04 (4%)
7	Fatigue	03 (3%)
8	Swelling at injection site	01(1%)
9	Vomiting	01 (1%)
10	No side effects	26(26%)

In our study, out of 100 health care workers 52% were female and 48% were male. In resident doctors category (58%) participants were male while in nursing staff (62%) were female. In⁹ out of 317 participants 194 (61.20%) were male and 123 (38.80%) were females. A study conducted in PHCCs¹⁰ (primary health care centre) female participants were (71.2%) and the male were (28.8%). Among all health care workers in current study, majority of them (18%) were from medicine department followed by OBGY department (17%) and followed by Surgery department.

In our study vaccine acceptance rate among health care workers was only 3% before counselling i.e. only 3 participants had vaccination before counselling and all of them were resident doctors. The main reason for not taking vaccination was fear of side effects reported by 27% health care workers followed by cost of vaccine (12%) and work pressure (10%) or non-availability of time.

In a study² only 4 (1.3%) received H1N1 vaccine and reasons of not receiving vaccine were fear of side effects (56.55%) followed by no lifelong immunity offered by vaccination (23.64%), questionable efficacy of vaccine

(15.33%) etc. Study reported⁸ fear of side effect (77.8%) as a most important barrier in vaccination. Study reported¹⁰ that the main reasons for rejecting H1N1 vaccine were uncertainty about the safety of the vaccine (70.3%), fear of side effects (68.3%), vaccine not being tested clinically (36.9%), not belonging to the high-risk group (34.1%), unavailability of the vaccine (19.3%) and ineffectiveness of the vaccine (7%). In his study the acceptance rate for H1N1 vaccine was 28.2% which was comparatively higher than current study.

Study reviewed various literatures¹¹ using bibliographic databases and electronic data to study health care workers' attitudes and barriers to influenza vaccination. He also reported that doubt on safety and efficacy of vaccine was the main barriers in vaccine acceptance.

A study¹² on university student showed that the majority (>70%) students had very high knowledge as they were all medical students. Many of students know about symptoms, transmission, treatment and prevention of H1N1 influenza. However, study² participants had poor knowledge regarding H1N1 influenza.

In this study knowledge regarding dosage, route of administration and type of H1N1 vaccine was 197(62.14%), 139 (43.84%) and 262 (82.65%) respectively while study¹⁰ only 20% to 40% of the participants had correct knowledge on various questions of H1N1 influenza and its vaccination.

In current study out of all health care workers 5% (5) had history of exposure to known case of H1N1; out of those, residents and nurses were 3 and 2 respectively while in study¹³ it was observed that (14.1%) had past history of exposure to known cases of H1N1.

One of the objectives of present study was to assess the effect of counselling on vaccine acceptance. In present study three counselling sessions were conducted. Before counselling out of all health care workers, only 3% had reported to be vaccinated and all of them were resident doctors & in nursing staff none had received H1N1 vaccine. Rate of vaccination acceptance after first counseling was increased up to 22% (11) and 12% (6) in resident doctors and nursing staff respectively and overall rate of acceptance for H1 N1vaccination was increased up to 17% which was statistically significant. After second counselling 58% (29) residents' doctors and 36% (18) nursing staff reported to receive vaccination.

Overall rate of vaccination after second counselling increased up to 47% and difference was found to be

statistically significant among both categories of health care workers. Rate of vaccination after third counselling in resident doctors and nursing staff increased up to 80% (40) and 62% (31) respectively and overall rate of vaccination rose up to 71% and difference was found to be statistically significant ($\chi^2 = 123.33$, d.f. = 3, $P < 0.0001$) among both categories of healthcare workers.

Regarding complications of vaccine, in our study pain at the injection site (37.83%) was the most common complication reported by recipient followed by flu like illness (16.21%) and body ache (13.09%) however all symptoms were lasted only for short duration of time.

Study¹⁴ 100% (59) participants reported feeling of localized pain and soreness which was higher compared to present study, and 18.3% (11) reported minor local swelling at the site of injection. Headache and body aches were reported in 13.4% (8) of the participants, while 33.3% (20) participants reported feeling fatigue and malaise. While¹⁰ showed complications of vaccine in only 8.2% participants among 98 participants and most common complications were low-grade fever and headache (100%) followed by tiredness and pain, swelling or redness at the injection site (62.5%) and severe pain (25%).

5. Conclusion

In this study, the rate of acceptance to H1N1 vaccine was increased with each counselling. It was increased from 3% to 71% after subsequent counselling. The main reasons of non-vaccination or low vaccine acceptance were fear of side effects of vaccination (27%), non-affordability or high cost of vaccine (12%) and work pressure (10%).

Compliance for acceptance of vaccine among participants was increased after counseling. Also, knowledge regarding influenza and H1N1 vaccine was increased from 13% to 75% after counseling.

Post vaccination complications were less severe indicating that H1N1 vaccine is has better safety profile.

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