



## Knowledge, attitude and practice regarding preventive measures against H1N1 influenza amongst dental students and interns in a dental college: A Cross-sectional questionnaire based study.

### Dental Science

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### ABSTRACT

**Introduction:** H1N1 influenza, a virus having symptoms though not specific of the infection initially is life threatening. Dentist come across many patients including those with undiagnosed cases of the infection leading to spread of virus unknowingly which highlights importance of prevention. **Methodology:** A cross-sectional questionnaire based study was conducted amongst 270 dental students and interns studying in a dental college in Pune to assess of the knowledge, attitude and practice towards preventive measures of H1N1 influenza. Chi-square test of proportion and Analysis of Variance (ANOVA) was used. **Results:** Out of 247 participants 129 (52.22%) participants had poor knowledge regarding H1N1 influenza infection and 166 (67.2%) participants had good attitude. There was statistically significant difference in knowledge score between three groups. ( $p < 0.05$ ). **Conclusion:** Majority of the participants had good attitude but there was lack of adequate knowledge.

### KEYWORDS:

H1N1 virus, dental, questionnaire, preventive

### INTRODUCTION

A pandemic is a global disease outbreak. A flu pandemic occurs when a new influenza virus emerges for which people have little or no immunity and for which there is no vaccine. The disease spreads easily from person-to-person causing serious illness and can sweep across the country and around the world in a very short time.<sup>1</sup>

Historically four flu pandemics have occurred since 1918 till 2009<sup>2</sup>. During 2009, the first confirmed case of H1N1 was diagnosed in Mexico on 18<sup>th</sup> March 2009. Soon this communicable disease spread worldwide and on June 11, 2009, the World Health Organization (WHO) signalled that a global pandemic of novel influenza A (H1N1) was underway by raising the worldwide pandemic alert level to Phase 6<sup>3</sup>. In the year 2014-15, H1N1 virus re-emerged and thousands were killed again.

On August 13, 2009, the World Health Organization reported that 1,82,166 laboratories confirmed cases of influenza A/H1N1, with 1799 deaths in 178 countries. In 2015, the incidence of H1N1 influenza increased substantially to reach 5-year highs with more than 10,000 cases and 774 deaths reported<sup>4</sup>. In India alone around 29,938 cases have been reported, whereas 1731 deaths have been reported from January 2015 till 16<sup>th</sup> March 2015. In Maharashtra state around 3579 H1N1 influenza cases and 301 deaths were reported till 15<sup>th</sup> March 2015<sup>5</sup>. The most vulnerable groups were children, pregnant women and elderly.

The easy spread of the virus through respiratory droplets or direct contact (skin or fomites) facilitates the rapid spread of the virus even under careful watch<sup>6</sup>. Health care workers have been identified as very high exposure risk occupations workers by Occupational Safety and Health Administration (OSHA).<sup>7</sup>

In dentistry, dental students and interns come across many patients including some with unrecognized cases of H1N1 influenza. While performing various dental procedures like oral prophylaxis, cavity preparation there is production of aerosols, which can be a potential source of infection leading to spread of the virus unknowingly. Hence some preventive measures should be followed to prevent the spread of

the influenza. There is paucity of literature regarding knowledge, attitude and practice regarding preventive measures against H1N1 influenza infection amongst dental students and interns. This created a need of the study with the aim to assess the knowledge, attitude and practice regarding preventive measures of H1N1 amongst III and IV B.D.S. students and interns.

### METHODOLOGY:

This is a cross-sectional questionnaire based study conducted and reported as per Strengthening the Reporting of Observational Studies in Epidemiology (STROBE, 2007) guidelines. After obtaining ethical approval from institutional ethical committee of Sinhgad Dental College and Hospital, this study was conducted. The study participants included III, IV year BDS students and interns studying at Sinhgad Dental College and Hospital. The participants who were present at the time of study and who were willing to give written informed consent were included in the study.

The questionnaire used was pre-tested and pre-validated. It had three sections as Knowledge (7 questions), Attitude (5 questions) and Practice (6 questions).

A pilot study was conducted prior to the main study amongst 30 participants to check the feasibility of the study and for the validity of the questionnaire. These participants were excluded from the main study. Necessary changes were made in the questionnaire after the pilot study. The prevalence of knowledge was found to be 22%. For sample size estimation of main study sample size formula ( $Z^2 p (1-p)/d^2$ ) was used. After substituting the values ( $z = 1.96, p = .22, d = 0.05$ ) sample size came out to be 270.

Appropriate instructions were given to the participants before the start of the study. Participant information sheet and consent forms were distributed amongst the willing participants along with the questionnaire by principal investigator. Appropriate time duration for filling up the questionnaires was given to the participants. Questionnaire which were incompletely filled were discarded.

### STATISTICAL ANALYSIS:

Statistical analysis was done using Statistical Package of Social Science (SPSS, Inc., Chicago, IL, USA, version 21). Frequency distribution of variables and chi square test of proportion was used. Analysis of Variance (ANOVA) with Bonferroni corrections were used for quantitative variables.  $p < 0.05$  was considered as statistically significant.

**RESULTS:**

Total 247 participants included in the study were from three groups as III year (33.19%), IV year (34.41%) and Interns (32.38%). About 72.87% of respondents were females and 27.12% were males. Out of 247 participants, 4 (1.61%) participants had good knowledge, 113 (45.74%) participants had fair knowledge and 129 (52.22%) participants had poor knowledge. The mean (SD) for III BDS and IV BDS students and interns were 2.91 ( $\pm 1.27$ ), 2.4 ( $\pm 1.13$ ) and 2.31 ( $\pm 1.1$ ) respectively. There was statistically significant difference in mean knowledge score of III BDS students with IV BDS students and interns. ( $p < 0.05$ )

'The mode of transmission of H1N1 virus is through coughing, sneezing and speaking' was known to 77 (93.90%) III BDS students, 83 (97.64%) IV BDS students, 69 (86.25%) interns and the difference was statistically significant. ( $p < 0.017$ ) 'The drug of choice against H1N1 influenza is Oseltamivir' was known to 26 (31.70%) III BDS students, 10 (11.76%) IV BDS students and 27 (33.75%) interns and this difference was statistically significant. ( $p = 0.007$ , table 1)

**Table 1: Distribution of study participants on the basis of correct responses to questions pertaining to knowledge regarding H1N1 virus**

Knowledge Questions	III year (N = 82)	IV year (N=85)	Interns (N=80)	p value
Mode of transmission	77 (93.90%)	83 (97.64%)	69 (86.25%)	0.017*
Spread of infection	21 (25.60%)	11 (12.94%)	13 (16.25%)	0.091
Viability on surface	38 (46.34%)	27 (31.76%)	27 (33.75%)	0.110
Vaccination for baby < 6 months	42 (51.21%)	36 (42.35%)	26 (32.5%)	0.054
Drug of choice	26 (31.70%)	12 (14.11%)	27 (33.75%)	0.007*
Preventive vaccine	16 (19.51%)	12 (14.11%)	9 (11.25%)	0.325
Confirmatory test	19 (23.17%)	23 (27.05%)	14 (17.25%)	0.339

\* $p < 0.05$  is statistically significant

Out of 247 participants, 166 (67.2%) participants had good attitude whereas 74 (29.9%) participants had fair attitude and 4 (1.6%) participants had poor attitude. The mean attitude score for III BDS, IV BDS and interns were 3.8 ( $\pm 0.94$ ), 3.72 ( $\pm 0.82$ ) and 3.6 ( $\pm 0.77$ ) respectively. There was no statistically significant difference in attitude score of three groups ( $p > 0.05$ , table 2). The Personal Protective Equipment (PPE) like gloves and mask are insufficient for protection against H1N1 influenza. Out of all participants, 41 (50%) III BDS students, 47 (55.29%) IV BDS students, 47 (58.75%) interns had favourable attitude.

**Table 2: Distribution of study participants on the basis of correct responses to questions pertaining to attitude regarding H1N1 virus**

Attitude questions	III year (N = 82)	IV year (N=85)	Interns (N=80)	p value
Are we at higher risk of getting infection	74 (90.24%)	72 (84.70%)	67 (83.75%)	0.42
Is isolation of suspected case important	73 (89.02%)	75 (88.23%)	70 (87.5%)	0.95
Should vaccination be made mandatory for health care workers	71 (86.58%)	75 (88.23%)	71 (88.75%)	0.90

Would you wear mask in overcrowded place during influenza high alert	71 (86.58%)	70 (82.35%)	64 (80%)	0.52
Are PPE sufficient to protect you against the infection	41 (50%)	47 (55.29%)	47 (58.75%)	0.99

\* $p < 0.05$  is statistically significant

Out of 247 participants, practice of changing protective barriers such as masks and gloves after every treatment was followed by 168 (68.01%) participants. Out of 168 participants, 67 (27.12%) were III year BDS students, 53 (21.45%) were IV year BDS students and 48 (19.43%) were interns. (Chi square = 15.96,  $p = 0.01$ , table 3). Out of 247 participants, 154 (62.34%) were unaware of name of the disinfectant they can use for decontamination against H1N1 influenza infection. Fifteen (6.07%) participants chose Phenol as a disinfectant, while Sodium Hypochlorite was chosen by 17 (6.88%) participants. Chlorhexidine and spirit were chosen by 9 (3.64%) and 8 (3.23%) participants respectively (Chi square = 28.3,  $p = 0.005$ , table 3). Out of 247 participants, 140 (56.68%) participants had chosen injectable route of vaccination against H1N1 influenza whereas 81 (32.79%) participants chose nasal route of vaccination and 26 (10.52%) participants were not sure about the route of vaccination. Out of 140 participants who have chosen injectable route of vaccination, 35 (14.17%) were III year BDS students while 18 (7.28%) were IV year BDS students and 28 (11.33%) participants were interns. (Chi square = 10.29,  $p < 0.03$ , table 3)

**Table 3: Distribution of study participants on the basis of correct responses to questions pertaining to practice regarding H1N1 virus**

Practice questions	Responses	III (N = 82)	IV (N=85)	Interns (N=80)	p value
Were you vaccinated during last 6 months	Yes	17 (20.73%)	14 (16.4%)	23 (28.7%)	0.19
	No	65 (79.26%)	71 (83.5%)	57 (71.2%)	
Do you change mask and gloves in between two patients	Yes	67 (81.7%)	53 (62.3%)	48 (60%)	0.01*
	No	3 (3.6%)	10 (11.76%)	15 (18.7%)	
	Not always	12 (14.6%)	19 (22.3%)	14 (17.5%)	
	Often	0 (0%)	3 (3.5%)	3 (3.7%)	
What will you do if patient reports with flu like symptoms	Advice diagnostic tests	74 (90.2%)	73 (85.88%)	71 (88.5%)	0.49
	Prescribe medications yourself	5 (6.09%)	3 (3.5%)	4 (4.7%)	
	Treat ignoring symptoms	2 (2.43%)	2 (2.3%)	2 (2.5%)	
	No treatment	1 (1.2%)	7 (8.2%)	3 (3.7%)	
Which best method would you use for decontamination of instruments	Autoclaving	77 (93.9%)	73 (85.8%)	71 (88.7%)	0.68
	Boiling for 1 hour	1 (1.2%)	3 (3.5%)	4 (5%)	
	Using higher concentration of disinfectant	2 (2.43%)	5 (5.8%)	3 (3.75%)	
	Don't know	2 (2.43%)	4 (4.7%)	2 (2.5%)	
Which disinfectant would you use to clean as a disinfectant	Wrong answer/ Don't know	43 (52.4%)	53 (62.3%)	58 (72.5%)	0.005*
	Glutaraldehyde	16 (19.5%)	11 (12.9%)	11 (13.7%)	
	Formaldehyde	3 (3.6%)	1 (1.1%)	2 (2.5%)	

	Phenol	7 (8.5%)	5 (5.8%)	3 (3.7%)	
	Sodium Hypochlorite	11 (13.4%)	4 (4.7%)	2 (2.5%)	
	Chlorhexidine	1 (1.2%)	8 (9.4%)	0 (0%)	
	Spirit	1 (1.2%)	3 (3.5%)	4 (5%)	
Which route of vaccination would you prefer	Nasal	35 (42.6%)	18 (21.1%)	28 (35%)	0.03*
	Injectable	41 (50)	54 (63.5%)	45 (56.2%)	
	Not sure	6 (7.31%)	13 (15.2%)	7 (8.7%)	

\* $p < 0.05$  is statistically significant

## DISCUSSION:

Respiratory infections are of great importance because of their rapid and extensive spread and their role in mortality of children, adolescents and adults. According to Center of Disease Control (CDC), signs and symptoms of influenza A/H1N1 are the same as those of seasonal influenza including fever, cough, sore throat, body pain, headache, lethargy, and fatigue<sup>8</sup>. While providing dental treatment to patients, the knowledge regarding the virus along with right attitude and practice for preventing the spread amongst themselves and to patients is necessary.

In our study, majority of the participants had poor knowledge regarding the preventive measures of H1N1 influenza which was consensus with many studies<sup>9,10</sup> conducted but a few studies<sup>8,10-14</sup> concluded that there was good knowledge regarding H1N1 influenza. This diversity in knowledge may be due to difference in levels of education and socio-economic status or difference in severity of disease status. It may also due to difference in characteristics of the population as studies particularly in dental students and dental interns are lacking. In spite of having poor knowledge in participants, it was found that participants had good attitude towards preventive measures against H1N1 influenza. In this study, participants were in agreement with the fact that health care workers are at a higher risk of getting infection also vaccination should be made mandatory for them; it was in contrast with the studies conducted by Kaipa *et al*<sup>10</sup> and Akan H *et al*<sup>15</sup> respectively. The study participants in this study were from dental field and were sensitized to the disease prevention protocol as a part of their curriculum hence the difference in results could be explained. A few participants in our study were vaccinated against the virus but majority of them practice of changing gloves between two treatments.

There are a few limitations in our study. This study measured a specific population view at a specific point in time therefore their awareness reflects the information available at the time of the problem. Also social desirability bias could have occurred while recording the attitude and practice. Further longitudinal studies are recommended. Also Sensitisation programmes should be arranged for dental students and interns to create awareness. Such programmes will help to improve preventive practice against H1N1 influenza in the future.

## CONCLUSION:

In this study we found that majority of the participants have poor knowledge but good attitude for preventive measures against one of the deadly virus H1N1. The lack of knowledge may be due to lack of awareness about being at a risk.

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