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Asian Journal of Oral Health and Allied Sciences

Original Article

A study to assess the awareness, perception, and myths regarding H1N1 virus among the dentists

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Received: 04 December 2023
Accepted: 26 December 2023
Published: 13 February 2024

DOI
10.25259/AJOHAS_20_2023

Quick Response Code:

ABSTRACT

Objectives: The objective of this study was to assess the awareness, perception, and myths regarding H1N1 virus among the dentists.

Material and Methods: The present study was a descriptive, cross-sectional, closed ended, self-administered, and anonymous questionnaire-based study. The survey questions were developed with information collected from the Center for Disease Control and Prevention, World Health Organization (WHO), Center for Infectious Disease Research and Policy, and by literature review. To evaluate each subject's level of knowledge, a score system was used. Responses from participants were coded, with a "1" denoting a right response and a "2" denoting each wrong answer.

Results: On assessing the awareness about H1N1 amongst the dentists of North India, it was found that 99.5% (n = 398) dentists were well aware of the infection. About 93.75% (n = 375) dentists knew about the symptoms of H1N1. On assessing the knowledge about treatment modalities, 218 (54.5%) dentists said that investigation facilities for H1N1 were available in their city.

Conclusion: Knowledge regarding the mode of spread, vaccination and treatment measures about H1N1 influenza should be made available at masses, is necessary to enable everyone – not just dentists – to guard against future pandemics caused by the same virus or by another influenza species.

Keywords: Dental health practitioners, H1N1 virus, Influenza A virus, Public health awareness, Practice guidelines

INTRODUCTION

H1N1 virus, a respiratory disease causing influenza that infects the respiratory tract of pigs, pandemic has caused over 80 deaths and infections over 40 countries globally, first detected case in Mexico on March 18, 2009, and it spreads rapidly to North and South America, Europe, and Asia.[1,2] First diagnosed case of H1N1 virus in India was on May 16, 2009.[3]

The new H1N1 strain, similar to common influenza, is human-to-human transmission with similar symptoms. Vaccines are being developed, with a safety profile similar to seasonal flu vaccines. Knowledge and practice about the virus are crucial for its prevention.[4-9]

The dental practitioners work in close proximity to oral and nasal route, and hence are more susceptible to H1N1 infection. Keeping all this in view, a study aimed to assess dental health practitioners' awareness, perception, and myths about H1N1 virus among them, highlighting

their susceptibility to the virus and the importance of staying informed.

MATERIAL AND METHODS

The current study was a descriptive, cross-sectional, closed ended, self-administered, and anonymous questionnaire-based study, conducted to assess the awareness of H1N1 among the Dental Health Professionals (Dentists).

The survey questions were developed with information collected from the Center for Disease Control and Prevention (CDC), World Health Organization (WHO), Center for Infectious Disease Research and Policy, (CIDRAP) and by literature review. The questionnaire consisted of 28 questions that were divided into four sections [Table 1]. Research questions no.1–8 assessed the awareness regarding the Spread of H1N1, question no.9–14 regarding the symptoms, question no.15–19 about the treatment modalities, and question no. 20–28 were related to the Prevention of H1N1 among the Dentists.

A pilot study was conducted in order to ensure the appropriate number of questions, clarity of scientific vocabulary, and the possibility of adding or omitting questions based on performance. Forty participants were randomly selected to validate the questionnaire and to determine the internal consistency of the responses. All the study participants were informed that the confidentiality and anonymity would be maintained and their participation was completely voluntary. Verbal consent was obtained from individual participants.

Internal consistency of the research questionnaire was computed using the Cronbach alpha coefficient. Results ranged from 0.72 to 0.83, with an average of 0.78. Cronbach alpha coefficients around 0.8 and above are considered to be excellent.

For each individual category, descriptive statistics were used to find out the percentages of respondents for "Yes" or "No" responses. This method of analysis limits the possibility that the participant could choose correct answers simply by chance. By encouraging participants to correctly identify true statements and reject misconceptions regarding H1N1 influenza, it was easier to determine whether or not the individual truly possessed knowledge regarding H1N1 infection. A scoring system was applied to assess the level of knowledge of each subject. Participant's responses were

Table 1: Survey Questions.

S. No.	Research questions	Yes/No
1.	Do you know about H1N1 infection?	
2.	Are you aware of the H1N1 infection in your city?	
3.	Do you think H1N1 infection is fatal?	
4.	Is H1N1 preventable?	
5.	Can people contract H1N1 infection from another person?	
6.	Can people contract H1N1 infection by eating pork?	
7.	Does H1N1 infection spreads from droplet route?	
8.	Does H1N1 spreads by touching the infected object?	
9.	Do you know the symptoms of H1N1 infection?	
10.	Are symptoms of H1N1 infection similar to other influenza?	
11.	Is Coughing present in H1N1 infection?	
12.	Is Sore throat present in H1N1 infection?	
13.	Is Fever present in H1N1 infection?	
14.	Is Chest discomfort present in H1N1 infection?	
15.	Are investigation facilities for H1N1 available in your city?	
16.	Is a vaccine currently available for H1N1 infection?	
17.	Is this vaccine available in your city?	
18.	Are medications to treat H1N1 infection available in your city?	
19.	Can antibiotics be used to treat H1N1 infection?	
20.	Can regular flu shots protect you from H1N1 infection?	
21.	Can regular hand washing protect you from H1N1 infection?	
22.	Do you think that dental practitioners are more prone to H1N1 infection?	
23.	Do you use waterless alcohol based hand gels or sanitizers before or after treating a patient?	
24.	Can sneezing properly in a paper towel or tissue paper protect you or others from H1N1?	
25.	Do you wear a face mask while treating a patient?	
26.	Is there a difference between the routine face mask and the N-95 face mask?	
27.	As a dentist do you see H1N1 infection as a threat to your health?	
28.	Is media helpful in creating awareness against H1N1?	

coded by giving "1" for a correct answer and "2" for every incorrect answer.

The information thus collected was entered into the Excel Sheet for Microsoft Office and analyzed using the Statistical Package for the Social Sciences (SPSS 16.0) software program for Windows. Data were presented as proportions and Chi-square test was used to determine interactions within and between groups and to determine whether or not significant relationships exist. $P \leq 0.05$ was considered statistically significant.

RESULTS

Awareness about spread of H1N1

- In Figure 1 on assessing the awareness assessing the awareness about H1N1 amongst the dentists of North India, it was found that 99.5% (n = 398) dentists were well aware of the infection, but only one dentist reported of being unaware of its presence.
- 9–10% (n = 37) believed the disease to be non-fatal, and 7.7% (n = 31) believed that they could not contract the disease from another person, thereby choosing the wrong option. About 85% participants believed that they can contract H1N1 infection by eating pork, which is again a wrong perception.
- Around 96.5% reported that H1N1 infection can spread from droplet route and 318 (79.5%) thought that H1N1 spreads by touching the infected object. About 86% (n = 344) dentists stated that H1N1 was preventable.

Awareness about symptoms of H1N1

In Figure 2 assessing the knowledge about symptoms, 93.75% (n = 375) dentists knew about the symptoms, whereas 6.25% had no idea. About 94% (n = 376) believed that symptoms of H1N1 infection were similar to other influenza. About 95.25% (n = 381), 97% (n = 388), 96.5% (n = 386), and 64.5% (n = 258) reported that coughing, sore throat, fever, and chest discomfort are present, respectively, as the symptoms of H1N1 infection.

Awareness about treatment modalities in H1N1

In Figure 3 on assessing the knowledge about treatment modalities, 218 (54.5%) dentists said that investigation facilities for H1N1 were available in their city, which was a wrong perception. However, 344 (86%) participants believed that a vaccine was available for H1N1 (2014–2015 variant) and 232 (58%) said that the vaccine was available in their city, both of which were again incorrect. There were 303 (75.75%) dentists who reported that antibiotics could be used to treat H1N1 infection, and 319 (79.75%) thought that medications to treat the H1N1 infection were available in their city, while they were not.

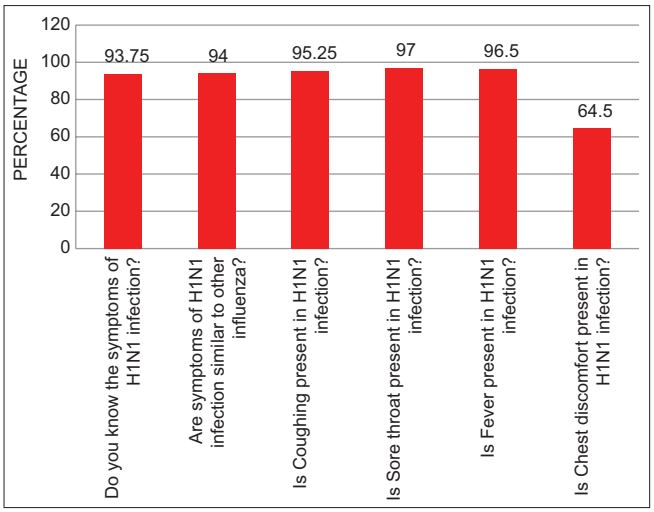

Figure 2: Awareness about the symptoms of H1N1.

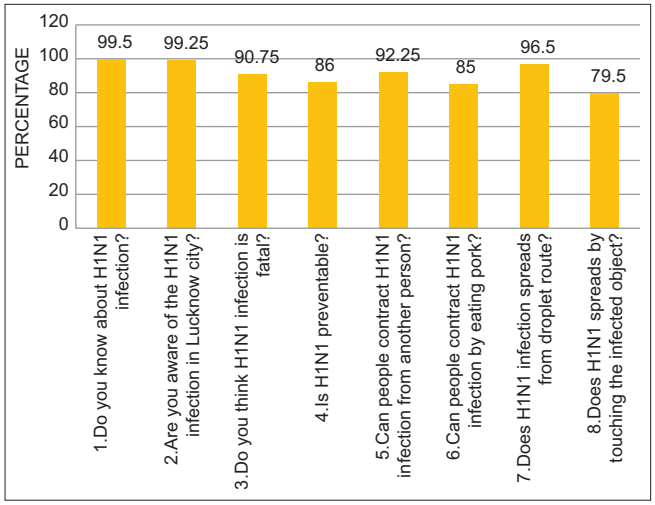

Figure 1: Awareness about spread of H1N1.

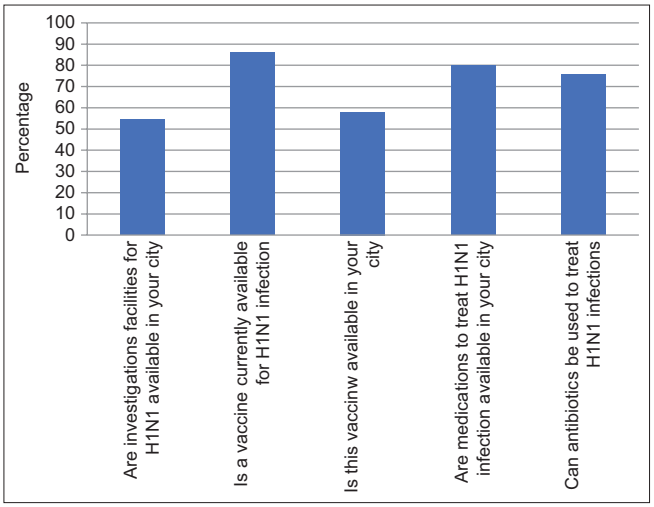

Figure 3: Awareness about the treatment modalities in H1N1.

There was a significant difference ($P \leq 0.05$) observed regarding the knowledge of the spread of H1N1infection between the three comparison groups (Bachelor of Dental Surgery (B.D.S) [253], postgraduate students [65], and Master of Dental Surgery (M.D.S) [82]) for most of the questions [Table 2]. However, regarding the H1N1 being fatal, it is spread by eating pork and touching infected objects were found to be extremely significant ($P \leq 0.009$) on comparison between the groups. No significant difference ($P \geq 0.01$) was observed in terms of H1N1 being preventable, its route of spread, and that it can be contracted from another person.

On comparing the knowledge about the symptoms of H1N1 based on qualification [Table 3], no significant difference ($P \geq 0.01$) was observed between the three comparison groups about the knowledge of symptoms in H1N1 infection and its similarity to other influenza symptoms with the presence of cough, sore throat, and fever.

Extreme significant difference ($P \leq 0.009$) was noted with respect to the presence of chest discomfort in H1N1 infection.

There was a significant difference ($P \leq 0.05$) observed between Bachelor of Dental Surgery (B.D.S), postgraduate students, and Master of Dental Surgery (M.D.S) for almost all queries about the treatment modalities for H1N1 [Table 4]. However,

Table 2: Comparison of knowledge about the spread of H1N1 based on qualification

Questions	B.D.S		Post graduate students		M.D.S		Chi-Square Value	*P*-value
	Yes	No	Yes	No	Yes	No		
Do you know about H1N1 infection?	253 (100%)	0 (0%)	63 (96.9%)	2 (3.1%)	82 (100%)	0 (0%)	10.359	0.0056*
Are you aware of the H1N1 infection in your city?	253 (100%)	0 (0%)	63 (96.9%)	2 (3.1%)	81 (98.8%)	1 (1.2%)	6.683	0.0320*
Do you think H1N1 infection is fatal?	230 (90.9%)	23 (9.1%)	53 (81.5%)	12 (18.5%)	80 (97.6%)	2 (2.4%)	11.11	0.0003**
Is H1N1 preventable?	221 (87.4%)	32 (12.6)	54 (83.1%)	11 (16.9%)	69 (84.1%)	13 (5.9%)	1.079	0.5830
Can people contract H1N1 infection from another person?	234 (92.5%)	19 (7.5%)	58 (89.2%)	7 (10.8%)	77 (93.9%)	5 (6.1%)	1.162	0.5593
Can people contract H1N1 infection by eating pork?	229 (90.5%)	24 (9.5%)	48 (75.4%)	16 (24.6%)	62 (75.6%)	20 (24.4%)	16.417	0.0002**
Does H1N1 infection spreads from droplet route?	242 (95.7%)	11 (4.3%)	63 (96.9%)	2 (3.1%)	81 (98.8%)	1 (1.2%)	1.836	0.3993
Does H1N1 spreads by touching the infected object?	182 (71.9%)	71 (28.1)	59 (90.8%)	6 (9.2%)	75 (91.5%)	7 (8.5%)	20.713	0.00003**

*P<0.05- value are significantly, **Extremely significant (P<0.005), B.D.S: Bachelor of Dental Surgery, M.D.S: Master of Dental Surgery.

Table 3: Comparison of knowledge about the Symptoms of H1N1 based on qualification

Questions	B.D.S		Postgraduate students		M.D.S		Chi-Square Value	*P*-value
	Yes	No	Yes	No	Yes	No		
Do you know the symptoms of H1N1 infection?	231 (91.3%)	22 (8.7%)	62 (95.4%)	3 (4.6%)	80 (97.6%)	2 (2.4%)	4.413	0.11008
Are symptoms of H1N1 infection similar to other influenza?	37 (93.7%)	16 (6.3%)	61 (93.8%)	4 (6.2%)	78% (95.1%)	4 (4.9%)	0.233	0.89003
Is Coughing present in H1N1 infection?	241 (95.3%)	12 (4.7%)	63 (96.9%)	2 (3.1%)	77 (93.9%)	5 (6.1%)	0.731	0.69384
Is Sore throat present in H1N1 infection?	245 (96.8%)	8 (3.2%)	61 (93.8%)	4 (6.2%)	82 (100%)	0 (0%)	4.781	0.09158
Is Fever present in H1N1 infection?	243 (96.0%)	10 (4.0%)	63 (96.9%)	2 (3.1%)	80 (97.6%)	2 (2.4%)	0.461	0.7941
Is Chest discomfort present in H1N1 infection?	150 (59.3%)	103 (40.7%)	42 (64.6%)	23 (35.4%)	66 (80.5%)	16 (19.5%)	12.155	0.00229*

**P<0.005 value are extremely significant, *Significant difference (P<0.05), B.D.S: Bachelor of Dental Surgery, M.D.S: Master of Dental Surgery.

Table 4: Comparison of knowledge about the Treatment Modalities in H1N1 based on Qualification

Questions	B.D.S		Postgraduate students		M.D.S		Chi-Square Value	P-value
	Yes	No	Yes	No	Yes	No		
Are investigation facilities for H1N1 available in your City?	148 (58.5%)	105 (41.5%)	36 (55.4%)	29 (44.6%)	34 (41.5%)	48 (58.5%)	7.271	0.0263*
Is a vaccine currently available for H1N1 infection?	222 (87.7%)	31 (12.3%)	54 (83.1%)	11 (16.9%)	68 (82.9%)	14 (17.1%)	1.746	0.4176
Is this vaccine available in your City?	168 (66.4%)	85 (33.6%)	54 (83.1%	31 (47.7%)	30 (36.6%)	52 (63.4%)	23.63	0.0001**
Are medications to treat H1N1 infection available in your City?	218 (86.2%)	35 (13.8%)	53 (81.5%)	12 (18.5%)	48 (58.5%)	34 (41.5%)	29.42	4.110*
Can antibiotics be used to treat H1N1 infection?	197 (77.9%)	56 (22.1%)	53 (81.5%)	12 (18.5%)	53 (64.6%)	29 (35.4)	7.318	0.0257*

*P<0.05 value are significant, **P<0.005 value are extremely significant, B.D.S: Bachelor of Dental Surgery, M.D.S: Master of Dental Surgery.

the comparison between the knowledge of vaccine availability in their city was found to be extremely significant ($P \leq 0.009$).

There was no significant difference observed ($P \geq 0.01$) regarding the availability of vaccine for H1N1 infection in general.

DISCUSSION

It was a descriptive cross-sectional closed ended self-administered anonymous questionnaire-based study. The reason for choosing the questionnaire method with a two point "Yes" or "No" was that, it became very easy and quick for the clinicians to read and just mark the correct option, thereby saving their precious time as well as of the patient. Majority of the dentists of Uttar Pradesh were approached and included, in order to get a more positive result.

All 28 questions focused on assessing the knowledge of spread, symptoms, and treatment modalities among the dentists and how well they were protecting themselves and their patients. The majority of dental health professionals reported using a face mask while treating a patient. However, there were some who did not about know the difference between a simple face mask and the N-95 face mask, which was specially designed against the H1N1 strain. The N-95 mask was superior in terms of quality and was different from the routine face mask in terms of its pore size, which could filter 98% of the virus particles, unlike the routine face mask, which filtered 62% of the particles. A single N-95 mask can be used for three days only.[10]

A major myth was found among the dental health professionals thatH1N1 infection could be caused by eating cooked pork and pork products, which was a wrong perception. The H1N1 virus is present in the respiratory system of pigs; hence, it can infect the personnel who handle the pork poultry or in close contact with them.[1,2] The current transmission was due to, human-to-human spread by droplet infection, inhaling the sneezed air by a carrier, or by touching the infected objects and then touching back their nose or mouth. So far, no animal has been reported to transmit the virus to humans except live and infected pigs.[11]

The dentists had a good understanding of the symptoms of H1N1, which included fever (>100° F), body aches, sore throat, cough and chest congestion, nausea, and vomiting in severe cases; however, a small section was unaware.[12]

Prevention is better than cure: this mindset was very well present amongdentists. A large portion of them used waterless alcohol-based hand gels or sanitizers before and/or after treating a patient. However, the most important point lacking was the understanding of the duration for which hand washing was done to prevent the H1N1 virus contamination. Ideally, as recommended by the CDC guidelines, hand washing should be done with soap and warm water, lathering up for 20 seconds or as long as it takes to sing "Happy Birthday" twice.[13]

Many dentists believed that regular flu shots could protect them from the infection, which was not true. They had not been vaccinated against the H1N1 as many of them were not aware of the vaccine, and moreover, it was not available in their city. Unlike other infections that affect individuals with low immunity, H1N1 virus flourishes in healthy bodies.

Majority of the dentists had no idea regarding the medicinal treatment of H1N1 infection. However, the medicines recommended for H1N1 infection were mainly Tamiflu and Relenza, which resulted best when given within 48 h of diagnosis.[14]

The limitations of this study included the questionnaire being distributed to the dentists during their working hours, that is,

between 10:00 am and 4:00 pm. So out of the total 450, only 400 returned back the questionnaire. The 50 questionnaires that were excluded from the final analysis were either incomplete or not filled, giving a heuristic end that either the dentist was too busy to fill the questionnaire or that he was not confident of answering correctly and thereby skipped filling the questionnaire.

Hence, the study was focused on the need to understand largely the mode of spread, and preventive measures among the servers of dental health in the community and to save the economy of the country as well. The World Bank has estimated that a flu pandemic could cost the world economy 3 trillion dollars, equivalent to 4.8% of the gross domestic product. Finally, an overall social and political commitment was needed from all the sectors of the society to fight against this H1N1 virus, and to prevent from future pandemics to occur.

CONCLUSION

It is highly recommended that such awareness studies should be conducted among health professionals to update their knowledge and to make them aware of recent information about H1N1 influenza transmission, vaccination and treatment procedures should be made available to the public so that everyone, not only dentists, can protect themselves against pandemics caused by the same virus or different types of influenza virus.

Ethical approval

The research project has been approved by Institutional Research and Development Committee (IRDC) of Saraswati Dental College and Hospital, Lucknow (UP), India via protocol #SS1PR16022023.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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How to cite this article: Nandgaonkar SS, Srivastava P, Gupta A, Misra SK, Chopra D, Sharma P. A study to assess the awareness, perception, and myths regarding H1N1 virus among the dentists. Asian J Oral Health Allied Sci. 2024;14:4. doi: 10.25259/AJOHAS_20_2023