

Perception, attitude and behavioral changes regarding Swine-flu outbreak among patients attending OPD in a dental college at Ghaziabad, India

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Abstract

Introduction: Swine flu caused by novel Influenza A H1N1 virus had led to considerable chaos and panic among common people globally. During a communicable disease upsurge, it is important to find out as much as possible about the concerns, perceptions, attitude and behavior of the public. Such credible information could be crucial for the betterment of health campaigns by public health officials and clinicians.

Aim: To study, perception, attitude and behavioral changes regarding Swine-Influenza outbreak among patients attending dental OPD in a dental college, located at Ghaziabad, India.

Materials & Method: On obtaining approval from Institutional authority, a cross-sectional questionnaire survey was conducted among 300 patients attending OPD during the month of April-May 2015. After the pilot survey a pretested validated questionnaire translated in vernacular language was used by a single calibrated interviewer to conduct the study. Study subjects having participatory consent were interviewed ensuring confidentiality. Perception, attitude and behavioral changes about swine-flu were assessed. The data entry and statistical analysis was performed by SPSS 20 Version.

Results: All studied population heard about the disease as a name. The primary source for getting a perception about Swine-flu was TV. The level of satisfactory perception, positive attitude and good practice of studied population were directly related to their socio-economic status. Hand washing and quarantine were reported as most effective measures for prevention.

Conclusion: Dentists and other public health communicators should especially focus on promoting hand hygiene and coughing/sneezing etiquettes while providing health education to the community.

Keywords: Influenza A (H1N1), Pandemic, Swine flu

Introduction

Influenza although generally constitutes a mild and self-contained illness has the potency to induce substantial morbidity as it spreads extensively in the community. Influenza A outbreak happens nearly each year, though its extent and severity vary widely. In the last century, influenza virus induced 3 pandemics - the 1918 Spanish flu, the Asian flu in 1957 and the Hong Kong flu in 1968. These outbreaks have differed in the extent of spread, the severity of the sickness as well as the causative pathogen.⁽¹⁾ The 1918 pandemic, which is frequently represented as the most widespread and severe, caused by the H1N1 strain and affected about one-third of the human race. It left in its wake about 40 million deaths and probably even imparted to the end of the World War I.⁽²⁾ After the control of this outbreak the virus went back to its regular pattern of inducing smaller epidemics till in 1957, an antigenically discrete strain of the virus again emerged globally in immunologically naive population. This strain was the H2N2 strain. Eleven years later, this virus strain was replaced by the H3N2 strain. Until recently this is the leading variant of influenza in mankind.⁽¹⁾

The novel H1N1 strain which is accountable for the outbreak of swine origin influenza in 2009 was first recognized at the border between Mexico and U.S.A. in April 2009 and within a brief span of two months became the first pandemic of the 21st century.⁽³⁾ The first confirm subject of swine influenza in India was reported on 16th May 2009, who was the traveler from

America at Hyderabad airport since then cases were on rise enormously.⁽⁴⁾ On 10 august 2010, the WHO announced that the Swine Influenza pandemic is officially over. The increased count of cases in different nations in later years has answered, that why it is a leading threat worldwide. India's Health Ministry reported on March 02 2015 that 1,115 of the 20,795 people infected with swine flu in 2015 have died.⁽⁵⁾

Prevention constitutes the most appropriate measure to check H1N1 flu pandemic. The Government has been successful in providing information to people about Swine flu via various means of mass communication. Keeping all this in consideration the survey was planned to evaluate the perception, attitude and behavioral changes concerning Swine-flu outbreak amongst patients attending dental OPD in a dental college.

Materials and Method

On obtaining approval from the institutional ethical committee, this cross-sectional study was carried out in the month of April-May 2015, the study subjects were the patients attending dental OPD, during April to May 2015. The subjects were evaluated by an interview process, applying a pre-tested close ended hindi questionnaire. A pilot study was performed on 50 participants in order to establish the reliability of the questionnaire. Cronbach's alpha test ($\alpha = .87$). The data from the pilot study was not included in the final study. Following data was inquired from patients:

A: Personal and Demographic data, including age, sex and residence (rural/ urban)

B: Socioeconomic status that was classified into upper, upper, middle, lower, middle, upper, lower and lower classes, using the modified kuppuswamy's socioeconomic status scale.⁽⁶⁾

C: Source of information about Novel A/H1N1.

D: Perception towards A/H1N1: Causative agents, source of infection, mode of transmission, risk group, symptoms, complications, presence of treatment and vaccination.

E: Attitude: Whether the disease is dangerous, Do you worry about suffering from H1N1, Has your daily life been disturbed by H1N1, Interest in knowing the methods of prevention, Is the protective measures are sufficient for prevention, Be afraid of the H1N1 vaccine adverse reaction, Taking the vaccine if present, Notification of a suspected case, Interesting in following the disease news, Available information, Measures taken by the government and Continuity of these measures.

F: Behaviors: of hygiene practice while coughing and sneezing, concerning infection control as regards washing hands, covering nose and mouth during coughing or sneezing, for protection from infected person and regarding behaviors of self-care and safety measures during pandemic like face mask usage, social distancing, crowded areas and self-health care. Inclusion criteria for patient selection were patients with minimum age of 18 years and those patients who gave their consent for participating in the study. Patients less than 18 years of age, patients who did not give their consent for participation in the study, patients who were mentally or physically handicapped and patients with medical problems and under any medication were excluded from the study.

The sample size was determined to be 300 based on the results of the pilot study. 300 Study participants were selected by convenient random sampling for an interview out of all the patients came for treatment or consultancy at OPD in the days of survey.

Statistical Analysis: The results were collected, tabulated and statistically analyzed by a personal computer using the SPSS software program (Statistical Program for Social Science), Version 20. Quantitative data were expressed as mean and standard deviation. Qualitative data were expressed as number and percentage.

For the aim of analysis all questions in the knowledge, attitude and behavior segment that were replied positively were given a grade of 1 and questions that were replied negatively were given a grade of 2. Each question that was replied "Don't know" was given a grade of 3, except question number 2, 6, 7 and 8 in knowledge section and questions regarding spitting in public area and use of mouth mask in practice segment for statistical analysis. The individual scores were summed up to yield a total score.

Students t-test was applied to determine the significant difference in the means of knowledge, attitude and behavior for gender and residence at p value <0.05. One-way ANOVA was applied to determine the association of knowledge, attitude, and behavior in relation to different socio-economic classes. Chi-Square test (χ^2) was applied with a 5% level of significance and Karl Pearson's correlation test was applied to determine the correlation between knowledge, attitude and behavior.

Results

347 patients were approached, from whom only 313 agreed to take part in the study. Out of them, 13 patients were excluded due to communication difficulties while directly interviewing them. The demographic profile of the participants has been represented in (Table 1).

Table 1: Demographic profile of participants

Characteristic	Number	Percent	
Gender	Male	169	56.3%
	Female	131	43.7%
Residence	Urban	177	59%
	Rural	123	41%
Socio-economic class	Upper middle (II)	183	61%
	Lower middle (III)	72	24%
	Upper lower (IV)	45	15%

Perception (Table 2): In the present study, 100% of the participants acknowledged the Swine flu as a disease. In this survey, 59% of the participants developed their perception about Swine-flu from TV, while 24.3% from newspapers and rest from their fellow workers. In this survey, 97.3% of the participants recognized that, the disease was a viral illness. This survey indicated that, 84% of patients knew that, sneezing is the primary mode of transmission. The survey demonstrated that, 85.3% of the participants recognized that cough, sore throat, runny or blocked nose are the symptoms of Swine Influenza. 94% study subjects consider Swine flu as severe illness that can lead to death. 69.7% of study subjects know about the presence of treatment of Swine flu, whereas 16.7% and 13.7% of study subjects think that there is no treatment for Swine flu and don't know about anything regarding treatment of Swine flu respectively. 60% study subjects have no idea about vaccination against Swine flu and 31.3% think it has side effects. Only 8.7% participants consider vaccination against swine flu useful and effective.

Table 2: Knowledge response of participants

Question		Male	Female	Percent
Hearing about swine flu	Yes	169	131	100%
	No	-----	-----	-----
Source of knowledge about swine flu	Batch-mates	22	28	16.66%
	Newspapers	60	13	24.33%
	TV	87	90	59.00%
	Internet	-----	-----	
Presence of cases in India	Yes	169	123	97.33%
	No	-----	-----	
	I do not know	-----	8	2.66%
The cause of the disease	Virus	133	77	70.00%
	Bacteria	-----	13	4.33%
	I do not know	36	41	25.66%
Source of infection	Infected persons	130	94	74.66%
	Consumed pork	4	6	3.33%
	I do not know	35	31	22.00%
Mode of transmission of Swine-flu	Touching the mouth	----	13	4.33%
	Sneezing	148	104	84.00%
	Kissing and shaking hands	13	6	6.33%
	Touching contaminated surfaces	-----	-----	
	Consuming pork meat	4	4	2.66%
	I do not know	4	12	5.33%
At risk group for Swine flu	Pregnant women	9	-----	3.00%
	Children less than 5 years old	30	51	27.00%
	I do not know	130	80	70.00%
Symptoms of the disease:	High temperature	----	-----	
	Cough, sore throat - runny or blocked nose	155	101	85.33%
	Diarrhea or vomiting	4	13	5.66%
	Body aches – Headaches	-----	-----	
	Difficulty of breathing	-----	-----	
	I do not know	10	17	9.00%
Complications of Swine flu :	• Sever illness that can lead to death	165	117	94.00%
	• No serious illnesses	-----	-----	
	• I do not know	4	14	6.00%
Presence of treatment for Swine flu	• Yes	128	81	69.66%
	• No	27	23	16.66%
	• I do not know	14	27	13.66%
What about the vaccination against swine flu Infection?	• No idea	93	87	60.00%
	• It is useful and effective	26	---	8.66%
	• Have side effects.	50	44	31.33%

There was a statistically significant difference between different socio-economic groups regarding knowledge response as determined by one-way ANOVA as shown in (Table 5). Females had statistically significant, more knowledge than males as shown in (Table 6) as determined by Students t-test.

Attitude (Table 3): All participants considered the Swine flu as a dangerous disease. 93% study subjects have worries regarding suffering from H1N1. 75% participant confessed that their daily life has been disturbed because of H1N1. All of them showed interest in knowing methods of prevention of Swine flu.

79% participants considered protective measures against Swine flu to be sufficient. 70.7% participants are not afraid of H1N1 vaccines adverse reaction. 83.7% study subjects were ready to take a vaccine against Swine flu, if present. All of them were ready to notify about suspected cases of Swine flu and also were interested in following the news about Swine flu. 56% participants considered available information regarding Swine flu to be sufficient, whereas 44% considered it insufficient. 52.7% participants considered measures taken by government regarding Swine flu as insufficient. 57% of participants agreed that there is

continuity in measures taken by government regarding Swine flu.

Table 3: Attitude response of participants

Questions		Male	Female	Percent
Is the disease is dangerous	Yes	169	131	100.00%
	No	----	----	
Do you worry about suffering from H1N1?	Yes	165	114	93.00%
	No	4	17	7.00%
Has your daily life been disturbed by H1N1	Yes	140	85	75.00%
	No	29	46	25.00%
Interest in knowing the methods of prevention	Yes	169	131	100.00%
	No	----	----	
Is the protective measures are sufficient for prevention.	Yes	136	101	79.00%
	No	33	30	21.00%
Be afraid of H1N1 vaccine's adverse reaction	Yes	37	51	29.33%
	No	132	80	70.66%
Taking the vaccine if present.	Yes	150	101	83.66%
	No	19	30	16.33%
Notification of a suspected case.	Yes	169	131	100.00%
	No	----	----	
Interesting in following the disease news.	Yes	169	131	100.00%
	No	----	----	
Available information.	Sufficient	119	49	56.00%
	Insufficient	50	82	44.00%
Measures taken by government.	Sufficient	98	44	47.33%
	Insufficient	71	87	52.66%
Continuity of these measures	Yes	122	49	57.00%
	No	47	82	43.00%

Table 4: Practice response of participants

Question		Male	Female	Percent
Practice Questions Pertaining to Hygiene				
a. When coughing and sneezing:				
• Covered mouth and nose with tissue or handkerchief	Yes	153	101	84.66%
	No	16	30	15.33%
• Threw away the used tissue into the bin	Yes	48	90	46.00%
	No	121	41	54.00%
• Turn face from others	Yes	135	80	71.66%
	No	34	51	28.33%
• Spit in public area	Yes	----	5	1.66%
	No	169	126	98.33%
b. I wash my hands				
• Before touching eyes or nose	Yes	60	63	41.00%
	No	109	68	59.00%
• After toilet	Yes	156	131	95.66%
	No	13	----	4.33%
• Using soap	Yes	142	101	81.00%
	No	27	30	19.00%
• After covering nose when sneezing	Yes	52	52	34.66%
	No	117	79	65.33%
c. Measures for protection If contact with an infected person:				
• Avoid contact with infected case	Yes	115	115	76.66%
	No	54	16	23.33%
• Avoid touching or shaking hands	Yes	149	84	77.66%
	No	20	47	22.33%
• Put a handkerchief on your nose and mouth	Yes	92	91	61.00%
	No	77	40	39.00%
• Go to the doctor if you experience any	Yes	128	89	72.33%

symptoms of the disease	No	41	42	27.66%
• Recommends that infected person not mixing with others	Yes	66	75	47.00%
	No	103	56	53.00%
Questions Pertaining to Self-care and Safety Measures during Pandemic				
a. Face mask usage:				
• Never use it	Yes	10	4	4.66%
	No	159	127	95.33%
• Wear face mask when having fever, cough or runny nose	Yes	159	127	95.33%
	No	10	4	4.66%
• Make sure mask fully covered mouth and nose properly	Yes	64	26	30.00%
	No	105	105	70.00%
• Wear the face mask recommended by Ministry of Health	Yes	47	19	22.00%
	No	122	112	78.00%
• Changed to a new face mask after using it once	Yes	89	56	48.33%
	No	80	75	51.66%
b. Social distancing during outbreak				
• Avoid going to crowded places	Yes	165	128	97.66%
	No	4	3	2.33%
• Avoid going to shopping mall	Yes	13	13	8.66%
	No	156	118	91.33%
• Practiced social distancing	Yes	69	45	38.00%
	No	100	86	62.00%
• It is very important not to leave the house.	Yes	---	13	4.33%
	No	169	118	95.66%
c. Crowded areas				
• Wear facemask at crowded areas	Yes	159	127	95.33%
	No	10	4	4.66%
• Used 'hand sanitizer' at crowded places	Yes	47	58	35.00%
	No	122	73	65.00%
d. Self-health care				
• Wash hands frequently specially after shaking hands with others	Yes	148	127	91.66%
	No	21	4	8.33%
• Avoid sharing fork and spoon during eating	Yes	35	21	18.66%
	No	134	110	81.33%
• Seek for additional information regarding (H1N1)	Yes	38	48	28.66%
	No	131	83	71.33%
• Consumed food supplements (e.g. vitamins)	Yes	13	13	8.66%
	No	156	118	91.33%
• Drink plenty of water	Yes	26	13	13.00%
	No	143	118	87.00%

There was a statistically significant difference between different socio-economic groups regarding attitude response as determined by one-way ANOVA (Table 5). Females show statistically significant more positive attitude than men as determined by Students t-test (Table 6).

Table 5: Association of socioeconomic group with knowledge, attitude and practice using one way ANOVA

	Socio-economic group	Number of participants	Mean	Std. Deviation	Std. Error	P value
KS	Upper middle	183	7.7760	1.16688	.08626	.000
	Lower middle	72	10.2500	2.74118	.32305	
	Upper lower	45	14.3556	3.49776	.52142	
	Total	300	9.3567	3.14576	.18162	
AS	Upper middle	183	14.3443	1.51786	.11220	.000
	Lower middle	72	14.9583	1.57835	.18601	
	Upper lower	45	16.3778	2.32857	.34712	
	Total	300	14.7967	1.81650	.10488	
PS	Upper middle	183	37.2131	3.09793	.22901	.000
	Lower middle	72	38.3889	5.80324	.68392	
	Upper lower	45	40.4222	4.98857	.74365	
	Total	300	37.9767	4.33576	.25033	

*significant at $p \leq 0.05$; KS = knowledge score; AS = attitude score; PS = practice score.

Table 6: Association of gender with knowledge, attitude and practice using Students t-test

	Gender	N	Mean	Std. Deviation	Std. Error Mean	P value
KS	Male	169	8.9822	2.51773	.19367	.019
	Female	131	9.8397	3.76179	.32867	
AS	Male	169	14.2781	1.72504	.13270	.000
	Female	131	15.4656	1.71553	.14989	
PS	Male	169	38.0059	4.03186	.31014	.895
	Female	131	37.9389	4.71455	.41191	

*significant at $p \leq 0.05$; KS = knowledge score; AS = attitude score; PS= practice score.

Practice (Table 4): Among all participants, 82.7% covered mouth or nose with a tissue or handkerchief, 29.7% threw away the used tissue into the bin, 71.7% turned away their faces from others and 98.3% of them avoid spitting in public places. 81.0% use soap to wash their hands, 41.0% wash their hands before touching eyes or nose, 95.7% after toilets and 34.7% after covering their nose. 76.7% participants avoid contact with infected cases, 77.7% avoid touching or shaking hands. 61.0% put a handkerchief on their nose and mouth for protection when in contact with an infected person. 72.3% went to the doctor if they experienced any symptoms of the disease. 47% recommended that infected person should not mix with others as a protective measure.

95.3% used face mask and used it when having fever, cough or runny nose, 30.0% made sure that the mask fully covered their mouth and nose properly. Only 22.0% wear the face mask recommended by the Ministry of health and only 48.3% changed to a new face mask after using it once. 97.7% avoid going to a crowded place during an outbreak, but in contrast, only

8.7% avoid going to the shopping malls. 37.7% practiced social distancing and only 4.3% considered not leaving the house as a preventive practice. 98.0% were wearing facemask at crowded places and 35.3% use hand sanitizer at crowded places.

With respect to self-health care, 91.7% wash hands frequently and especially after shaking hands with other and 18.7% avoid sharing fork and spoon during eating. 28.7% seek for additional information regarding H1N1. 8.7% and 13.0% of participants consumed food supplements and drink plenty of water respectively.

There was a statistically significant difference between different socio-economic groups regarding practice response as determined by one-way ANOVA shown in (Table 5). There is no statistically significant difference found between males and females regarding practice reply as determined by Students t-test (Table 6). There was a positive linear relationship observed between knowledge and attitude, knowledge and practice and attitude and practice as shown by Karl Pearson's correlation test (Table 7).

Table 7: Correlation between knowledge, attitude and practice using Karl Pearson's correlation test

Relation between		Karl Pearson's coefficient of correlation
Knowledge score	Attitude score	+ .674**
Knowledge score	Practice score	+ .524**
Attitude score	Practice score	+ .532**

** . Correlation is significant at the 0.01 level (2-tailed).

Discussion

Novel influenza A (H1N1), also known as swine flu, has lately emerged from Mexico and has induced the 1st pandemic of the century.⁽⁶⁾ Whenever people are to react befittingly during an outbreak of infectious disease, they require having some basic knowledge about disease transmission, the availability of vaccines and efficient medical treatment. For the above mentioned reasons we have conducted the present survey to collect the baseline data for governmental preventive measures and to look into perception, attitude and behavioral response of study population regarding Swine flu.

All study subjects acknowledged the Swine flu as a disease, which was similar to the findings of study done by Farahat et al.⁽⁷⁾ for secondary school children and was higher than the findings of study done on general population by Kamate et al.⁽⁸⁾ this can be explained by the increasing effectiveness of health promotion programs run by government and various national as well as international health agencies.

TV was the main source from which the study subjects acknowledged to develop their perception regarding swine flu, which was in agreement with the findings of study done by Farahat et al.⁽⁷⁾ and by Balkhy et al.⁽⁹⁾

The virus was acknowledged as a main causative organism of the disease in the present study (97.3%), similar to the findings (84.2%) of a study done by Farahat et al.⁽⁷⁾ However, in an Indian study by Kamate et al.⁽⁸⁾ only 18.2% of the study subjects considered the Swine flu as viral disease, this result indicates great success of various health promotional programs running in India regarding Swine flu.

84% study subjects considered sneezing to be the primary mode of transmission in comparison to that of 44% study subjects of the study done by taghreed farahat *et al.*,⁽⁷⁾ which further support the effectiveness of various health programs going on concerning Swine flu in India.

82.7% of study subjects in the present study showed good cough and sneezing etiquette practices which was higher than previous studies done by Farahat *et al.*⁽⁷⁾ and by Osman *et al.*⁽¹⁰⁾

Almost all study subjects (95.3%) used face mask for prevention and avoiding spreading of Swine flu, which was significantly higher than the findings of the study done by Farahat *et al.*⁽⁷⁾ and by Osman *et al.*⁽¹⁰⁾ but only 30% wear face mask properly covering their nose and mouth properly and only 22% study subjects use government recommended face mask. These can be considered few drawbacks of the current health programs which should be amended soon.

91.7% study subjects frequently washed their hands after shaking hands with others which was higher than the results obtained in the previous work of Farahat *et al.*⁽⁷⁾

97.7% of respondents avoided going to the crowded place during an outbreak, which is significantly higher than the results found in study of Kamateet *et al.*,⁽⁸⁾ these findings can be attributed to the more severe mass media campaign regarding Swine flu sometimes blowing things out of proportion.

The present study showed a poorer perception towards a vaccine for swine flu when compared to the previous study by Farahat *et al.*,⁽⁷⁾ whereas the study subjects had significantly higher attitude towards the Swine flu vaccination in comparison of the results of the study by Farahat *et al.*⁽⁷⁾ and the study done by Han *et al.*⁽¹¹⁾

Conclusion

Scientific literatures suggest that hand hygiene and coughing/ sneezing etiquettes are the most effective non-medical measures in reducing the spread of swine flu outbreak. The result of our survey shows that there is satisfactory perception, positive attitude and good practice towards Swine flu in study subjects. It signifies that public health communicators had some success in preventing confusion and in promoting healthy lifestyles by incorporating hygiene practices. Ministry of Health & Family Welfare (MOHFW) also effectively provides scientific and effective information through the prime media.

Further, we can recommend that dentists and other public health communicators should especially focus on promoting hand hygiene and coughing/sneezing etiquettes while providing health education to their patients and to the community.

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