Influence Of H1N1 Pandemic On Attitude And Intended Behaviour Of University Students: A Cross Sectional Study From South India

V Khanna, I Bairy, C Mukhopadayay, R Khanna, M kumar, R kumar

Citation

Abstract

Background: To understand the attitude and behaviour in institutionalised population is critically important to undertake any preventive and health education measure. During H1N1 outbreak a lot of preventive and health education measures have been taken in our institute. To assess the impact of these measures we aimed to evaluate the knowledge, perception and behaviour changes among university students towards H1N1 pandemic. Objective: To evaluate the knowledge, attitude and behaviour among young institutelized population towards H1N1 influenza pandemic and its influence on hand washing behaviourMethods: A cross sectional questionnaire based survey was done among 957 university students in south India. The survey was based on assessing the knowledge regarding influenza virus and its vaccination, attitude and motivation factors towards hand washing. Results: Out of total 957 Respondents, 62.4% were males and 37.6% were females. Overall, 79.6% and 88.3% of respondents had correct knowledge regarding route of transmission. Female participants have more knowledge compared to male counterpart regarding current practices, self-protection (P<0.001) and vaccination of H1N1 (P<0.05), Participants having acquaintances with recent flu like symptoms were positively correlated with recent flu like symptoms (P value<0.001). Males are more likely to perceive hand wash as effective means of preventing the infection (P value *lt;0.01). After gender stratification, both groups reported to have high perceived severity (P=0.778) towards H1N1 infection.Conclusion: Better measures can be taken during second wave of H1N1 pandemic as students respond differently according to knowledge they acquire, hand hygiene habits tends to change during pre and post endemic period. Positive health behaviour amongst young students helps in prevention of influenza transmission.

INTRODUCTION

Persons with influenza like illness was first reported in Mexico in April 2009, which subsequently confirmed to be novel H1N1 influenza virus [1]. In June 2009, the World Health Organization declared the new strain of swine-origin H1N1 as a pandemic [2]. This novel virus spread worldwide and had caused about 17,000 deaths by the start of 2010. Imported cases of pandemic (H1N1) 2009 was first identified in India in May, 2009 [3].At the end of June 2009, there were dramatic increase in number of cases reported all across India. With progression of pandemic lot of scare and heightened awareness occurred towards swine flu in Indian public. Compulsory and voluntary screening of travellers was done from epidemic hit countries at all major airports. Previous reports during SARS epidemic has shown that perceived susceptibility and favourable attitude increases compliance towards change in preventive health behaviour

[4]. Better knowledge regarding the disease also helps better uptake of preventive measures [5]. During H1N1 pandemic, many health education and preventive measures were taken by our university such as 1) Knowledge regarding various precautions to be taken during epidemic by covering nose while sneezing or coughing, wash hand with soap and water after sneezing or coughing 2) H1N1 influenza virus, its vaccination,disease symptoms and self-protection measures were explained to students 3) Regular H1N1 screening was done for students in outpatient department 4) Knowledge regarding avoiding planning and attending group gathering was given to students. Students' attitude and behaviour can influence the efficacy of preventive measures. Many studies had shown that hand hygiene remained the single most effective measure in preventing H1N1 influenza [7].

To see the impact of health education measures, we designed

the questionnaire based survey among university students to assess the current practices regarding confirmed H1N1 cases, recent hand washing behaviour, relationship between hand washing frequency and flu like symptoms as well as attitude and perception regarding hand washing and knowledge of influenza virus and its vaccination.

MATERIALS AND METHODS
PARTICIPANTS AND PROCEDURE

The study was conducted from mid-July to late august, 2010. All subjects recruited in this study are currently enrolled students of the Manipal University located in South Canara District of Karnataka, India. Students from all over the world with varied cultural back ground and ethnicity are studying in this university. The data was collected across the campus from both medical and nonmedical student community studying in various courses. An inclusion criterion includes the subjects who were willing to participate in this study. Convenience sampling was done and study questionnaire were given to participants. Total 957 subjects (597 males and 360 females) completed the questionnaire. The study was piloted among 10 medical and 10 nonmedical students before modifications in final questionnaire.

SURVEY

A lot of preventive and health education measures were taken for the students by the university administration during H1N1 pandemic. To assess the enhanced knowledge and behaviour towards pandemic H1N1 a survey questionnaire was finalised which consisted of (1) knowledge regarding the virus and its vaccination (2) hand washing attitude and behaviour before and during H1N1 pandemic (3) current practices regarding confirmed H1N1 cases (4) practices towards self-protection against suspected/confirmed H1N1 cases. Additionally, Subjects gender and age were also recorded. The recommended questions regarding hand washing practices were adapted from Cheong et al [8].

ANALYSIS

The quantitative data was collected in SPSS 16.0 software and analysed for proportions, 95% confidence intervals and ⊠2 tests for significance. We used chi-squared tests to examine the following variables: knowledge regarding virus and its vaccination, current preventive practices regarding suspected and confirmed H1N1 cases, differences by gender, recent hand washing frequency, changes in hand washing frequency, information encountered about hand washing, perceived effectiveness of hand washing, perceived severity

of H1N1 influenza, and perceived susceptibility to H1N1 infection. Two-tailed P-values < 0.05 were considered statistically significant.

RESULTS
DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

General demographics details of subjects are outline in Table 1. Out of total 957 Respondents, 62.4% were males and 37.6% were females. Subjects were classified into three age categories: 18-25, 26-35 and 36-50 years. Majority of the participants (96.9%) belongs to age category between 18-25 years. Overall, 94.1% were students and 5.8% were healthcare workers participated.

Participants' knowledge regarding H1N1 virus and its vaccination, current practices and protection from confirmed H1N1 cases

H1N1 was confirmed as a virus by 99% of subjects. Overall, 79.6% and 88.3% of respondents had correct knowledge regarding route of transmission and involvement of lung respectively. Responding to questions to current practices, self-protection and vaccination of H1N1, female participants have more knowledge compared to male counterpart as shown in table 1. In our study, more numbers of male participants were vaccinated against H1N1 influenza then there female counterparts but this difference was not found to be statistically significant (P value =0.194).

Figure 1

Table 1: Demographic characteristics, knowledge, transmission, current practices and self-protection of the participants

	Total N (%)	Males N (%)	Females N (%)	P-value
Age group				
18-25	927(96.9%)	572(95.8%)	355(98.6%)	P=0.012
26-35	29(3%)	25(4.2%)	4(1.1%)	
36-50	19(0.1%)	-	1(0.3%)	
H1N1 is a				
Virus	947(99%)	591(99%)	356(98.9%)	P=0.513
Bacteria	2(0.2%)	2(0.3%)	-	
Fungus	3(0.3%)	1(0.2%)	2(0.6%)	
Don't know	5(0.5%)	3(0.5%)	2(0.6%)	
H1N1 commonly spreads, through				
Inhalation	762(79.6%)	441(73.9%)	321(89.2%)	P<0.001
Ingestion	32(3.3%)	28(4.7%)	4(1.1%)	
Contact	115(12%)	91(15.2%)	24(6.7%)	
Don't know	48(5%)	37(6.2%)	11(3.1%)	
H1N1 involves				
Lungs	845(88.3%)	503(84.3%)	342(95%)	P<0.001
Stomach	27(2.8%)	25(4.2%)	2(0.6%)	
Urinary tract	21(2.2%)	19(3.2%)	2(0.6%)	
Don't know	64(6.7%)	50(8.4%)	14(3.9%)	
Acquaintances with flu-like symptoms				
Yes				
No	349(36.5%)	219(36.7%)	130(36.1%)	P=0.457
	608(63.5%)	378(63.3%)	230(63.9%)	
Recently flu-like symptoms				
Yes	208(21.7%)	130(21.8%)	78(24.7%)	P=0.457
No	749(78.3%)	407(78.2%)	282(78.3%)	
Knowledge regarding H1N1 vaccine				
Yes	670(70%)	399(66.8%)	271(75.3%)	P<0.05
No	287(30%)	198(33.2%)	89(24.7%)	
Vaccinated with H1N1 vaccine				
Yes	67(7%)	38(6.4%)	29(8.1%)	P=0.194
No	890(93%)	559(93.6%)	331(91.9%)	
Current practice regarding confirmed H1N1				
Isolation in hospital	611(63.8%)	359(60.1%)	252(70%)	P=0.012
Isolation at home	144(15%)	102(17.1%)	42(11.7%)	
No isolation	52(5.4%)	38(6.4%)	14(3.9%)	
Don't know	150(15.7%)	98(16.4%)	52(14.4%)	
Self protection while caring for confirmed H1N1 cases				
Face mask and gloves	850(88.8%)	520(87.1%)	330(91.6%)	P<0.001
No physical protection	81(8.5%)	59(9.9%)	22(6.1%)	
Disposable cloths	26(2.7%)	18(3%)	8(2.2%)	

INFORMATION REGARDING HAND WASHING BEHAVIOUR, PERCEIVED SUSCEPTIBILITY AND SEVERITY

With respect to information regarding hand washing as effective preventive strategy, about 77.7% of the participants had come across such information in university campus. Increase frequency of hand washing was observed during epidemic, seen with more female participants compared with male counterparts. Moreover 53.2% of subjects reported to have considered hand washing as "more or less" effective means of preventing H1N1 infection. Males are more likely to perceive hand wash as effective means of preventing the infection (P value<0.01). Perceived severity was high but perceived susceptibility was "nor low, nor high" among participants. After gender stratification, both groups reported to have high perceived severity (P=0.778) but high perceived susceptibility was seen among females (P value<0.001) as shown in table 2.

Figure 2

Table 2: Reported hand washing behaviours, perceived susceptibility, effectiveness and severity towards H1N1

	Total N (%)	Males N (%)	Females N (%)	p-value N (%)
Daily hand washing frequency during epidemic				
<1 time	16(1.7%)	11(1.8%)	5(1.4%)	<0.001
2-4 times	452(47.2%)	304(50.9%)	148(41.1%)	
5-7 times	321(33.5%)	190(31.8%)	131(36.4%)	
8-9 times	105(11%)	63(10.6%)	42(11.7%)	
>10 times	63(6.6%)	29(4.9%)	34(9.4%)	
Hand washing frequency one year before epidemic				
<1 time	32(3.3%)	24(4%)	8(2.2%)	<0.001
2-4 times	479(50.1%)	316(52.9%)	163(45.3%)	
5-7 times	263(27.5%)	162(27.1%)	101(28.1%)	
8-9 times	84(8.8%)	41(6.9%)	43(11.9%)	
>10 times	99(10.3%)	54(9%)	45(12.5%)	
Information encountered				
Yes	744(77.7%)	464(77.7%)	280(77.8%)	0.525
No	213(22.3%)	133(22.3%)	80(22.2%)	
Perceived effectiveness				
Substantial	383(40%)	221(37%)	162(45%)	
More or less	509(53.2%)	331(55.4%)	178(49.4%)	0.014
Negligible	65(6.7%)	45(7.5%)	20(5.6%)	
Perceived severity				
Mild symptoms	139(14.5%)	92(15.4%)	47(13.1%)	
Substantial limitation in daily life	253(26.4%)	158(26.5%)	95(26.4%)	0.778
Have severe consequences	312(32.6%)	191(32%)	121(33.6%)	
May die from disease	253(26.4%)	156(26.1%)	97(26.9%)	
Perceived susceptibility				
Very low	161(16.8%)	107(17.9%)	54(15%)	
Somewhat low	265(27.7%)	185(31%)	80(22.2%)	<0.001
Nor low, nor high	393(41.1%)	233(39%)	160(44.4%)	
Somewhat high	101(10.6%)	56(9.4%)	45(12.5%)	
Very high	37(3.9%)	16(2.7%)	21(5.8%)	

INTERVARIABLE CORRELATIONS

Participants having acquaintances with recent flu like symptoms was positively correlated with recent flu like symptoms (P value<0.001). Positive correlation was seen with information received and hand washing as an effective means of preventing the disease (P value of <0.01). In the present study, hand washing frequency among participants was not related with information encountered, acquaintances with flu like symptoms, recent flu like symptoms and perceived susceptibility and severity of the disease.

RELATIONSHIP BETWEEN HAND WASHING FREQUENCY AND VARIOUS VARIABLES

After univariate and multivariate logistic regression, hand washing frequency was more commonly seen in women compared to men. Interestingly in our study, participant's perception of hand washing as effective measure in preventing infection was negatively correlated with perception of severity of symptoms.

DISCUSSION

To best of our knowledge, there were no institutilized based studies done in India to investigate knowledge, attitude and behaviour except few population based studies done from north India[9].The study, carried out after influenza epidemic in India, provides us with the opportunity to evaluate long term impact on students' knowledge, perception and behavioural changes during peak epidemic

period. Overall participant's knowledge about virus, mode of transmission, system affection and its vaccination were found to be excellent. Participants were aware of the effective preventive strategies such as hand washing, usage of gloves and face mask. Female subjects were found to be more aware then male counterparts regarding confirmed H1N1 cases. The above findings suggested that mass campaign launched by our university was successful. Several previous studies also concluded that females are more amendable for behavioural changes in prevention of H1N1 influenza and SARS[10,11].In our study, personal susceptibility towards H1N1 acquisition difference was observed among gender, which was in line with previously published studies on SARS epidemic[12],but interestingly perceived severity was found to be almost equal in both groups. Females were found to be more compliant towards using personal protection equipment while caring for H1N1 cases. The importance of using personal protection equipment while caring was demonstrated by study done by Matthew E. Wise et al, where in 40% of health care workers used gloves and 20% used N95 or surgical mask, got infected while caring for cases of H1N1[13]. Most of the students had knowledge regarding H1N1 vaccine (70%), overall females were found to be more knowledgeable than male counterparts. Maximum numbers of students were not vaccinated in our study, with almost equal proportion in both genders. Similar results were seen in study conducted by Mavros et al, where in 8% of the student got vaccine with majority (67%) were not vaccinated, concerning long term adverse effect of the vaccine and perception of the disease as mild. The possible low efficacy of H1N1 vaccine could be one of the reasons for not receiving the vaccine among majority in the present study. Participants having acquaintance with recent flu like symptoms, have acquired the flu like symptoms more frequently, similar results were observed by park et al. Present study, demonstrated better understanding, perception regarding H1N1 disease and hand washing practices in university students. Our study has some limitations, firstly, as this study was conducted post epidemic period, true assessment of perception regarding severity of the disease cannot be assessed and hand washing frequency practices during peak epidemic period could be different from post epidemic period. Secondly, flu like symptoms in students and their acquaintances might be due to upper respiratory tract infection or may be because of H1N1 influenza, so we were not able to differentiate between the two as we have not done laboratory confirmation.

CONCLUSION

We have received valuable information regarding student attitude and behaviour towards hand washing, perception and knowledge of H1N1 influenza and vaccination status. Mass education programme undertaken by our university in prevention of H1N1 was successful. This study demonstrated that behavioural response to pandemic are subject to change during and post pandemic period and we can prepare ourselves better for future epidemics.

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Author Information

Vinay Khanna, M.D
Assistant Professor, Department of Microbiology, Kasturba Medical College

Indira Bairy, M.D
Professor, Department of Microbiology, Kasturba Medical College

Chiranjay Mukhopadayay, M.D
Professor and Head, Department of Microbiology, Kasturba Medical College

Ruchee Khanna, M.D
Assistant Professor, Kasturba Medical College

Mritunjay kumar, M.Sc
Department of Microbiology, Kasturba Medical College

Rohit kumar, M.Sc
Tutor, Department of Microbiology, Peerphankar Mahaveer Medical College and Research Center