



Research Article

KNOWLEDGE OF PANDEMIC INFLUENZA AMONG HIGH-RISK INDIVIDUALS- A QUESTIONNAIRE STUDY

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ABSTRACT

Background: Information on perceptions of people about pandemic influenza guides public health agencies to design their health education strategies. This study was initiated to observe the knowledge of high-risk individuals about pandemic influenza.

Methods: Non-consecutive patients aged > 18 years who were having at least one risk factor for severe illness due to pandemic influenza attending the study clinics formed the cohort. A questionnaire incorporating baseline characteristics and 6 questions on pandemic influenza was used. The total score for correct answers was 12. Knowledge of pandemic influenza among study participants were categorized as poor (score ≤ 4), average (score 5 – 8) and good (score ≥ 9). Factors associated with a knowledge score more than 4 were studied using chi-square test or Fisher exact test for categorical variables and Mann-Whitney U test for continuous variables.

Results: 1250 patients were interviewed during the study period of October 2017 to December 2017 which 926 (74%) were aware of the pandemic. The level of knowledge on pandemic influenza among 926 participants who were aware of the pandemic were poor (score ≤ 4) in 832(90%), average (score 5-8) in 85(9%) and good (score ≥ 9) in 9(1%). Being a graduate ($p < 0.001$) was associated with a score more than 4 (average to good knowledge) in the questionnaire.

Conclusions: In conclusion, knowledge about important health care aspects of pandemic influenza among individuals at high-risk of severe influenza infection is grossly sub-optimal. Strategies on health education needs a relook to prevent unfavorable consequences among at risk individuals.

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INTRODUCTION

The pandemic influenza virus which originated in United States during the early months of 2009 made its appearance in India in May 2009 and subsequently produced significant impact on the community at large before coming down in its severity.^{1,2} It can be recalled that initial reports of influenza occurrence in India which emerged during monsoon months of 2009 created a huge sense of alarm, fear and anxiety that prevailed among urban population belonging to all social class. Governmental and private organizations initiated education on influenza through print and audio-visual media, managed patients suffering from influenza illness and recently introduced vaccination for prevention. In a pandemic, public knowledge about the symptoms of illness, methods by which illness is acquired, methods to prevent infection and availability of treatment is of critical importance in containing the spread of infection across population, lower case fatality and prevent serious complications due to delay in diagnosis.

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Though World Health Organization (WHO) has declared officially that “the world is no longer in phase 6 of the pandemic due to influenza and we have moved to the post-pandemic period”, the report also mentions that the virus will circulate among community as a seasonal influenza virus in the years to come and individuals with high-risk for severe infection will continue to be susceptible.³ Information on perceptions of people about pandemic influenza will assist public health agencies to redesign their health education strategies in the years to come. This study was initiated to observe the knowledge of high-risk individuals about pandemic influenza and analyze factors associated with adequate knowledge or otherwise.

METHODS

Study subjects and setting

Patients aged >18 years attending the out-patient department of two tertiary care hospitals, two secondary care hospitals and 14 private outpatient clinics in Chennai who were having or diagnosed with at least one of the condition considered to be high-risk for severe illness due to pandemic influenza as per

WHO formed the study population.⁴ The high-risk conditions were 1)Age>65 years 2)Pregnancy 3)Bronchial asthma 4)Chronic obstructive pulmonary disease (COPD) 5)Hypertension 6) Diabetes mellitus 7)Coronary artery disease (CAD) 8)Heart failure 9)Rheumatic heart disease(RHD) 10) Congenital heart disease 11)Chronic kidney disease(CKD) 12)Chronic liver disease 13)seizures 14)HIV 15)Connective tissue disorder and 16)Malignancy

Data collection

Non-consecutive patients attending the study clinics between October 2017 and December 2017 were interviewed by one of the study authors. An interview questionnaire incorporating the following was used:

- a. Social and demographic characteristics like age, sex, occupation, place of residence, and education.
- b. details of high-risk conditions as mentioned in the inclusion criteria
- c. awareness of current pandemic influenza

If the participant was aware of current pandemic influenza then the following knowledge questionnaire was completed. The questions were asked in local language (Tamil) or English depending on the participant’s choice. The term “swine flu” or its Tamil equivalent was used to denote 2009 pandemic influenza. The questionnaire had 6 questions (1 on symptoms, 1 on modes of spread, 1 on behavioral methods to prevent infection, 2 on vaccine and 1 on specific drug for treating swine flu)

Question 1 on symptoms of swine flu for which the participant was expected to mention four symptoms (running nose, sore-throat, fever and cough). If they reply with one symptom and pause subsequently a prompt was given saying “any other symptom?” additional prompts were given if required but without giving specific options. A score of 1 was given for each correct symptom making a score of 4 as maximum awarded to this question

Question 2 on modes by which influenza spread for which the participant was expected to mention at least three common modes (respiratory droplets from infected person, touching infected person, touching objects used by infected person). A score of one was given to each correct mode of spread making 3 as the maximum score awarded to this question. Prompts were given similar to question one.

Question 3 on behavioral methods to prevent influenza for which the participant was expected to mention about hand washing after contact with persons with proven or suspected infection and use of face mask during contact with such individuals. A score of one was given to each correct behavioral method making 2 as the maximum score awarded. Prompts were given similar to earlier questions. If patients reply saying vaccination as one of the method of prevention then score for question four was directly given without asking the question. Question 4 on existence of vaccine for swine flu for which the patient was expected to say “yes” which carried a score of one.

Question 5 on availability of vaccine in their region was asked if participant was aware of swine flu vaccine (answered “yes” to question four). If patient was able to mention correctly about local availability of vaccine a score of one was awarded.

Question 6 on availability of specific drug for treatment of swine flu. Patient was expected to answer “yes” for which a score of one was awarded. Name of the drug was not expected to be mentioned.

The maximum cumulative score for the questionnaire was 12. Participants who were aware of at least one symptom of influenza or one method to prevent infection were further questioned on how they came to know about them (tv/radio/poster/newspaper/magazine/hearsay/others)

Knowledge of pandemic influenza among study participants were categorized as poor (score ≤ 4), average (score 5 – 8) and good (score ≥ 9). Informed consent was obtained from study participants. Ethics committee of Community Research Network [CRN] approved the study.

Table 1 Baseline characteristics of study participants

Patient Characteristics mean S.D or no(%)	Aware of pandemic influenza (n= 926)	Unaware of pandemic influenza (n= 324)	Total (n=1250)
Age in years	45 ±26.5	48±24.5	46 ±25.8
Sex			
Male	522 (56)	190(59)	712(57)
Female	404 (44)	134(41)	538(43)
Occupation			
Yes	689(74)	203(63)	892(71)
No	237(26)	121(37)	358(29)
Level of Education			
Uneducated	393(43)	208(64)	601(48)
Elementary school	408(44)	76(23)	484(39)
High school	60(06)	18(06)	78(06)
Graduate	65(07)	22(07)	87(07)
Residential status			
Urban	710(77)	279(86)	755(60)
Rural	216(23)		495(40)
Risk factor*			
1)Age>65 years	180(19)	86(26)	266(21)
2)Pregnancy	32(03)	18(05)	50(04)
3)Bronchial asthma	82(09)	38(11)	120(10)
4)COPD	66(07)	32(10)	98(08)
5)Hypertension	380(41)	158(49)	538(43)
6)Diabetes mellitus	286(31)	132(41)	418(33)
7)Coronary artery disease	126(14)	58(18)	184(15)
8)Heart failure	62(07)	22(07)	84(07)
9)Rheumatic heart disease	40(04)	32(10)	72(06)
10) Congenital heart disease	12(01)	14(04)	26(02)
11)Chronic kidney disease	56(06)	22(07)	78(06)
12)Chronic liver disease	40(04)	18(06)	58(05)
13)seizures	34(04)	14(05)	48(04)
14)HIV	32(03)	17(05)	49(04)
15)CTD	46(05)	26(08)	72(06)
16)Malignancy	20(02)	32(10)	52(04)

Percentage mentioned within parentheses approximated to nearest whole number
*distribution of individual risk factors in study cohort. 428(46%) had >1 risk factor

Table 2 Level of knowledge on pandemic influenza and type of high-risk condition among participants who were aware of pandemic (n=926)

Risk factor	No (%) in each group (n=926)	Level of knowledge		
		Poor (n= 832) (90%)	Average (n= 85) (9%)	Good (n= 9) (1%)
Age >65 years	28(03)	23	05	0
Diabetes	26(03)	20	05	1
Hypertension	44(05)	36	07	1
Coronary artery disease	48(05)	40	08	0
Heart failure	18(02)	16	02	0
Bronchial asthma	46(05)	32	11	3
COPD	37(04)	31	06	0
Chronic kidney disease	18(02)	16	02	0

Rheumatic heart disease	40(04)	38	02	0
Chronic liver disease	36(04)	34	02	0
HIV	20(02)	18	02	0
Connective tissue disorder	42(05)	38	04	0
Malignancy	17(02)	17	0	0
More than one risk factor	428(46)	399	27	2
Others	78(08)	74	02	2

Percentage mentioned within parentheses approximated to nearest whole number

Statistical analysis

Continuous variables were expressed as mean \pm S.D and categorical variables were expressed as number (%). Baseline characteristics of participants who were aware of pandemic influenza and those unaware of influenza was compared using chi-square test or Fisher exact test for categorical variables and Mann-Whitney U test for continuous variables. Factors associated with a knowledge score more than 4 were studied using parametric or non-parametric tests as mentioned above. A p value <0.05 was considered to be statistically significant. Analysis were carried out with SPSS version 12.

RESULTS

1250 patients were interviewed during the study period of which 926 (74%) were aware of the pandemic. Table 1 shows the baseline characteristics of participants who were aware and unaware of the pandemic. Among participants who were aware of pandemic, 77 % resided in urban region, male female ratio was 1.3: 1, 74% were employed, 58% had some form of school education and most (46%) had more than one high-risk factor for severe illness due to pandemic influenza. Urban residential status ($p=0.03$) and better educational status ($p=0.001$) was significantly more in the aware group compared to unaware group while other baseline characteristics like age($p=0.9$), sex($p=0.7$), occupation($p=0.1$), pregnancy($p=0.8$), bronchial asthma($p=0.76$), COPD ($p=0.64$), hypertension($p=0.71$), diabetes mellitus($p=0.06$), coronary artery disease ($p=0.65$), heart failure($p=1$), rheumatic heart disease($p=0.23$), congenital heart disease (0.84), chronic kidney disease($p=0.91$), chronic liver disease($p=0.78$), seizure disorder($p=0.95$), HIV($p=0.81$), connective tissue disorder($p=0.76$) and malignancy($p=0.07$) showed no significant statistical difference between groups.

The level of knowledge on pandemic influenza among 926 participants who were aware of the pandemic were poor(score ≤ 4) in 832(90%), average (score 5-8) in 85(9%) and good(score ≥ 9) in 9(1%). Table 2 shows the pattern of knowledge among patients with individual risk factors. 404(44%) were aware of at least one symptom of influenza, 110(12%) were aware of at least one mode of influenza spread, 4 (0.4%) were aware of importance of hand washing and 220(24%) were aware of face mask use in preventing infection during contact with suspected or proven cases of influenza. 116(13%) were aware of preventive vaccine for influenza of which 30(3%) were aware of local vaccine availability or otherwise. 32(3%) were aware of specific drug therapy for pandemic influenza. Being a graduate ($p<0.001$) was associated with a score more than 4 (average to good knowledge) in the questionnaire while factors like age >65 years ($p=0.8$), sex($p=0.62$), occupation($p=0.18$), bronchial asthma ($p=0.62$), COPD($p=0.61$), hypertension($p=0.82$), diabetes mellitus($p=0.71$), coronary artery disease($p=0.5$), heart failure($p=0.6$), rheumatic heart disease($p=0.4$), chronic kidney disease($p=0.8$), chronic liver disease($p=0.6$),

HIV($p=0.71$), connective tissue disorder($p=0.64$) and malignancy($p=0.41$) were not associated with a better score.

404 participants who were aware of at least one symptom of influenza reported to have known it through television($n=230$), hearsay($n=152$), newspaper($n=63$), radio($n=24$) or display posters ($n=14$)

110 participants who were aware of at least one mode of influenza spread reported to have known it through television ($n=77$), newspaper ($n=54$) or hearsay ($n=48$)

DISCUSSION

The study observed that 74 % of participants were aware of the pandemic. Among those who were aware of the pandemic influenza 90% had poor knowledge of common facts about the illness. Though we could not identify a similar Indian study, a recent study in Saudi Arabia observed poor knowledge of pandemic influenza among 44% of participants.⁵ The high prevalence of poor knowledge on pandemic influenza observed in the present study which specifically focused on high-risk individuals for serious infection due to pandemic influenza raise serious concerns on the health education methods adopted by government and non-governmental agencies targeted to prevent spread of infection and lessen complications due to delay in medical consultation. Our observation that more urban participants were aware of the pandemic compared to rural counterparts highlights the trend in spread of general news about the occurrence of pandemic influenza. However the news on illness due to pandemic influenza occurring in various regions has not effectively carried with it the health education aspects of the illness which include symptoms of influenza, mode of spread from one individual to another and methods to be adopted to prevent acquisition of illness. This knowledge would have more meaning rather than a mere knowledge on the existence of the pandemic.

The observation that only 0.4 % of study participants who were aware of pandemic knew the importance of hand washing is discouraging since it the most effective behavioral change found to prevent spread of influenza. An earlier study on public response to Severe Acute Respiratory Syndrome (SARS) observed that 39% of participants frequently washed their hands, 88-94% were aware that close contact with people with SARS is a risk for infection and 64-77% were aware that touching objects or surfaces that have been in contacts with SARS patient is a risk for infection.⁶ 57% participants in a study on public perceptions and behavioral change during the present pandemic agreed that regular hand washing decrease risk of influenza infection and 28% reported frequent hand washing.⁷ Our study observation of disproportionately higher number of participants aware of face mask use (24%) compared to hand washing (0.4%) needs further attention since hand washing is a proven method to prevent infection while face mask use, though frequently used by patients and health-care providers does not have a convincing proof of its effectiveness. Health education methods should attempt to highlight the importance of hand washing and promote detailed educational strategies in the form of posters, short films and audio commentary focused specifically on methods and benefits of hand washing. This effort will go a long way in preventing spread of infection even in future epidemics due to potential viruses.

In conclusion, knowledge about important health care aspects of pandemic influenza among individuals at high-risk of severe influenza infection is grossly sub-optimal to prevent acquisition of illness or self suspicion of illness based on symptoms. Though we have moved into the post-pandemic period, infections due to novel 2009 pandemic influenza will continue to occur in the near future and health education is of paramount importance in preventing unfavorable events due to the illness. Given the increase in air travel we can expect further pandemics in the future and policies on health education strategies needs an urgent reassessment to make it effective at the community level.

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