

ORIGINAL ARTICLE

Knowledge about swine flu among patients seeking health care in a tertiary and primary health care facility in Puducherry

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ABSTRACT

Background: Swine flu/Novel H1N1 influenza Pandemic was in Phase 6 in June 2009. Success of mitigation would depend on compliance of the community particularly to non-pharmacological interventions which in turn would be dependent on the familiarity regarding prevention and control of flu pandemic. **Methodology:** This was a cross sectional study among out-patient attendees of a tertiary and primary health care facility in Puducherry, wherein 267 patients were interviewed to assess the knowledge about swine flu and factors determining it. The knowledge was categorised as Good (50-100 %) and Poor (0-49.99%), and simple scoring method was used. A subcategory of Good was defined as Very Good if knowledge score was > 75%. Data was summarised using proportions and analysed using Chi-square test for associations using statistical package for social science (SPSS version 17.0). P value < 0.05 was taken as significant. **Results:** Good knowledge (score \geq 50 %) was significantly associated with younger age, literacy, accessibility to information hoardings within the premises of health facility and multiple sources of information. Three fourths weren't aware of the correct method of diagnosis and treatment of the disease. **Conclusions:** There were lacunae in knowledge level regarding swine flu among study subjects. There was need for future research for evaluating the impact of need based health messages on health seeking behaviour among the people.

Key words: Health education, Knowledge, Novel human H1N1 influenza, Puducherry, Swine flu

INTRODUCTION

The pandemic strain of Novel H1N1 Influenza virus, generally referred to as the "Swine Flu", had spread immediately to almost all the continents, since it was first recognised in early 2009. Hence, World Health Organisation (WHO) had raised the pandemic alert to Phase 6 by June 2009. The causal agent was of swine origin influenza virus and was a mixture of avian, porcine and human influenza RNA. ⁽¹⁾ Animal to human transmission had been observed thrice, leading to pandemics, in the last century within an average range of 11-39 years of antigenic recycling. ⁽²⁾ However, even today very little is known about patient behaviour in pandemic situation. ⁽³⁾

Management of flu pandemic has been very challenging to medical fraternity, due to various reasons like lack of immunity, lack of timely vaccines; lack of awareness regarding hygiene ⁽²⁾

etc. Vaccine against H1N1 remains to be the most effective tool in combating this menace however there are several issues with regards to vaccine manufacture and approval, as well as production capacity, that remains unsettled. ⁽¹⁾

India has been following a phase-wise approach advocated by World Health Organization for averting efficient human to human transmission that revolves around five broad areas of (i) surveillance and early detection, (ii) pharmaceutical intervention, (iii) non-pharmaceutical intervention (NPIs), (iv) clinical management, and (v) risk communication. ⁽⁴⁾ NPIs when implemented the most systematically, the earliest, and for the longest time could reduce overall mortality rates and spread out epidemic peaks. ⁽³⁾ Risk communication is among the most important NPIs. The risk and risk reduction strategies/

actions should be communicated in clear consistent messages and widely disseminated through print and visual media. ⁽⁴⁾ The awareness campaigns are likely to impact the knowledge and influence the health behaviour (eg: social distancing) of individuals which in turn will influence the spread of the disease and this can go a long way in mitigating and preventing spread of the disease in pandemic situations. ⁽⁵⁾

Compliance with this approach is dependent on community understanding of the required control measures and their value in disease mitigation. ⁽⁶⁾ The aim of the present study was to collect information on the levels of knowledge about Swine flu, among patients attending outpatient services in a primary and tertiary health care facility of Puducherry.

METHODOLOGY

The Union Territory of Puducherry encompasses an area of 480 sq km with 4 districts namely, Puducherry and Karaikal (within the state of Tamil Nadu), Mahe (within the state of Kerala), and Yanam (within the state of Andhra Pradesh). The population of Puducherry in 2001 ⁽⁷⁾ was 9,74,345. There are 9 medical colleges in Puducherry which includes two Government medical colleges and 1 government postgraduate teaching hospital.

Study was carried out at two different sites using random methods for patient selection, and cross sectional study design between September and October 2009. One of these sites was the waiting area of a outpatient department (OPD) registration section in a private tertiary health care facility (Sri Venkateshwaraa Medical College Hospital and Research Centre, SVMCH & RC), and the other was in a nearby (<1 Km) Government Primary Health Centre (PHC, Ariyur), which mainly catered to the rural population of nearby villages in Puducherry district having a daily outpatient attendance of nearly 100 patients which was strikingly similar to that of the other study site i.e. SVMCH & RC due to user fee issues, PHC services being free of cost and attracting more patients. The PHC was part of public private partnership and linked to SVMCH & RC. Data from its field practice area was routinely being utilised by the Department

of Community Medicine, SVMCH & RC for teaching, training and research purposes.

All those below 15 years of age and those who had not heard about Swine flu/ Novel H1N1 influenza were excluded from the study. Participants were asked if they had heard and understood the term "Swine flu/ Novel H1N1 influenza". Those that answered in the affirmative were then asked further questions. Accordingly, a total of 216 patients out of 267 initially approached could complete the interviewer administered questionnaire. We probed into their socio demographic profile and knowledge regarding various aspects of epidemiology of novel H1N1 influenza that would influence the health behaviour in pandemic situation. The survey was carried out by a medical social worker (MSW), who randomly selected ten patients daily, seated in the waiting area of general OPDs at each of the study sites and administered the questionnaire in Tamil (local) language after obtaining verbal consent. For those between 15 years and 18 years, parents provided the consent. Both the terms, Swine flu and Novel H1N1 influenza were used together as it was considered to be synonymous to the general public.

Predetermined categories; [good (50-100%), poor (0-49.99%)] and simple scoring method (every correct response was given one point and zero for wrong answer/not aware) were used to assess the knowledge score. Knowledge above 50% was acceptable, but >75% was desirable, so a special category of knowledge level with score > 75% was also defined, as very good knowledge. Data was expressed using simple proportions and analysed in statistical package for social sciences (SPSS version 17.0). Pearson's Chi-square test was applied and p-value calculated to determine association between select socio-demographic variables and knowledge level. p-value <0.05 was taken as significant value.

Study was part of routine surveillance activities of Department of Community Medicine in its field practice area. Study observed ethical principles as per declaration of Helsinki. ⁽⁸⁾ No external financial assistance was available for the study.

Table 1: Response to knowledge based questions by the study population

Knowledge based questions SVMCH & RC (n=113), PHC (n=103)	Correct Response (%)		Incorrect Response (%)		Not Aware (%)	
	SVMCH	PHC	SVMCH	PHC	SVMCH	PHC
	What causes swine flu?	55.75	41.75	14.16	16.5	30.09
Who is the main reservoir of agent?	9.73	5.83	59.29	66.99	30.98	27.18
How does it spread?	80.53	81.55	2.65	1.94	16.81	16.5
Which organ is mainly involved?	37.17	37.86	30.97	31.07	31.86	31.07
What are the symptoms of swine flu?	61.95	62.14	20.35	20.39	17.7	17.47
What is the correct method of diagnosing swine flu?	4.42	3.88	74.34	74.76	21.24	21.36
What is the treatment of swine flu?	28.32	28.16	61.95	62.14	9.73	9.7
Is this disease very fatal?	27.43	27.18	62.83	63.11	9.73	9.71
How can one prevent this disease?	97.35	98.06	0	0	2.65	1.94
Is treatment made available free of cost by the Government?	43.36	42.72	53.98	55.34	2.65	1.94

Table 2: Determinants of knowledge regarding Swine flu in the study population

Study variables	Knowledge level		Level of significance
	Below 50% [No (%)]	Above 50% [No (%)]	
Age Category (in years) (N=267)			
15-29 (n=99)	29 (29.9)	70 (70.7)	p<0.05
30-44 (n=73)	39 (53.4)	34 (46.6)	
45-59 (n=60)	40 (66.6)	20 (33.3)	
Above 60 (n=35)	24 (68.6)	11 (31.4)	
Gender (N=267)			
Female (n=200)	100 (50)	100 (50)	p=0.75
Male (n=67)	32 (47.8)	35 (52.2)	
Literacy status (N=267)			
Illiterate (n=116)	84 (72.4)	32 (27.6)	p<0.05
Literate (n=151)	48 (31.8)	103 (68.2)	
Place of interview (N=267)			
Primary level (Ariyur) (n=123)	64 (52)	59 (48)	p=0.43
Tertiary level (SVMCHRC) (n=144)	68 (47.2)	76 (52.8)	
Whether read the flu related information within the health facility? (n=183)			
No (n= 109)	46 (42.2)	63 (57.8)	p<0.05
Yes (n=74)	17 (23)	57 (77)	
Sources of information (n=216)			
One source (n=193)	78 (40.4)	115 (59.6)	p<0.05
Multiple sources (n=23)	3 (13)	20 (87)	

RESULTS

Initially 267 patients from SVMCH & RC (144) and PHC Ariyur (123) were selected. Of these, 31 (11.67%) and 20 (7.49%) patients from each of the respective study sites had not heard about H1N1 human influenza. The knowledge score for these patients was counted as 'zero' and categorised under poor knowledge level. Among the remaining, television was the chief source of information in 87% subjects (SVMCH-82.3%, PHC-92.23%). Most study subjects were females (74.91%) and accordingly housewife (39.7%) was the primary occupation followed by agriculture (22.85%). Most patients (52.06%) at the time of survey had flu-like illness as presenting complaint. Few (16.11%) had chronic conditions like diabetes, hypertension, asthma and chronic obstructive pulmonary diseases. Even though the median OPD waiting time at SVMCH and PHC was 60 min, average 38.43% patients (SVMCH-44.3%, PHC-32%) noticed and read the hoardings that carried information about swine flu.

Most patients [SVMCH (55.75%), PHC (41.75%)] believed that infectious micro-organisms caused swine flu and that man (SVMCH-59.29%, PHC-66.99%) was the main reservoir of infection and that the disease spreads through sneezing/coughing (SVMCH-80.53%, PHC-81.55%).

They also thought (SVMCH-56.98%, PHC-59.14%) that fever would be the principal symptom of presentation. Most (SVMCH-74.34%, PHC-74.76%) felt that blood test was the correct way for diagnosing this disease.

When asked about treatment, few (SVMCH-28.32, PHC-28.16%) knew that special drug was required to treat the illness, at the same time many (SVMCH-62.83%, PHC-63.11%) believed that this was a very fatal disease. Strikingly, most (SVMCH-53.98%, PHC-55.34%) did not know that the special drug was available free of cost at Govt. hospitals in Puducherry. However, majority (SVMCH-97.35%, PHC-98.06%) were aware of hand washing, covering of mouth and nose, as principal methods of preventing spread of swine flu (Table 1).

There was significant association between increasing age and decreasing knowledge level.

Similarly knowledge level was better among the literates, among those who had read the information within the premises of health facility and among those who had derived information from multiple sources. No significant difference in knowledge level was observed based on gender and place of interview (Table 2).

DISCUSSION

Puducherry District is highly populated (7, 35,332) with a population density of 2535/sq km,⁽⁷⁾ with pooled mean temperature of 28.5°C, 72-79% humidity and rainfall predominantly in the last quarter of the year.⁽⁹⁾ About 66.57% of the total population within the Union Territory is Urban.⁽¹⁰⁾ There are 8 general hospitals, 39 Primary Health Centres (PHCs), 4 Community Health Centres (CHCs) and 9 Medical Colleges and several private hospitals and clinics that provide health care to the people in the Union Territory of Puducherry and nearby areas in Tamil Nadu.⁽¹¹⁾

As of 27 December 2009, worldwide more than 208 countries and overseas territories or communities had reported laboratory confirmed cases of pandemic influenza H1N1 2009, including at least 12220 deaths of which 1056 deaths were in South East Asia.⁽¹²⁾

First case in India occurred on 15th May 2009.⁽¹³⁾ As on 1st January 2010 there were 26039 lab confirmed cases with 967 deaths [Case fatality rate (CFR): 3.71%, marginally higher than seasonal flu].⁽¹⁴⁾ Puducherry had its first case on 11th Aug 2009. Between May 2009 and 20th Nov 2009, 284 samples were screened at lab facility⁽¹⁵⁾ in JIPMER Hospital, Puducherry and among these, 58 cases (native) were diagnosed to be positive for Novel H1N1 Influenza (Incidence rate : 6.4/lakh population). Though 8 deaths were reported, none of them belonged to the Union Territory of Puducherry.⁽¹⁶⁾ Of these 48 cases were clustered within 3 Kms of JIPMER. Following declaration of emergency in India by Ministry of Health and Family Welfare⁽¹⁷⁻¹⁸⁾, Directorate of Health Services (DHS), Puducherry responded by identifying two places namely JIPMER Hospital and Govt. Hospital for Chest Disease as nodal centres for referral and treatment of laboratory (lab) confirmed

influenza cases initially and later identified 8 more hospitals ⁽¹⁹⁾ that included 5 medical colleges to provide temporary quarantine of suspect cases and equipped them with facilities to take throat samples, protective gears including N95 masks and stock of Tamiflu tablets. JIPMER was identified as one among ten reference labs ⁽¹³⁾ to carry out RT-PCR diagnosis on samples received from nearby places. As per the guidelines issued by WHO ⁽²⁰⁾ widespread awareness was created through all the possible medium of mass communication including provision of hoardings carrying information on swine flu in local language in all the Primary Health Centres in the region. It was therefore necessary to consolidate the gains and prevent further spread of flu pandemic within the community. A lot would depend on health behaviour and knowledge among community members regarding prevention and control of H1N1 influenza.

In the present study, interview was carried out at two different sites, to identify any difference in knowledge among the OPD attendees due to possible difference in approach of the treating physician while imparting care and time spent with the patient at these sites, means of mass communication facilities available etc. Both the sites had large display boards containing information on swine flu in Tamil (local) language. But, no statistical difference was seen. In spite of average waiting time of 60 min in the waiting area of OPDs and opportunities for being self-informed through display boards at both the sites only 5.02% subjects had very good (>75 %) knowledge. This could be due to the fact that 37.04% of these individuals were illiterate and they may not have understood what was written on the hoardings kept at both the study sites. Even then, among those who read the information the knowledge level was good. Similarly the knowledge level was better among the younger age group compared to the elderly subjects and among those who acquired information on swine flu through multiple sources like TV, friends, newspapers, radio etc. It was also found that TV was the commonest means of acquiring information similar to that in other studies carried out elsewhere. ^(5,21-22) Though majority of these patients knew how the disease spreads and how one can prevent it,

most were not aware of the correct method of diagnosis and treatment that could delay diagnosis and increase chances of complications in case they had the disease. This was due to the fact that most awareness campaigns through mass media carried information on spread and prevention only.

The study had certain limitations. It was purely a hospital based study and is likely to miss subjects from the community less likely to fall ill. Since, the study sample was taken from the field-practice area, the external validity was questionable. However, the study provides essential inputs like deficiency in knowledge regarding secondary prevention of the disease, poor impact of display boards at health care sites on illiterate people, which needs to be addressed. This also implies that we need more data from a representative sample regarding impact of various methods of risk communications on knowledge and also the change in behaviour, attitude as a result of these activities. It is also essential to incorporate continuous risk communication evaluation as one of the essential steps in mitigation of ongoing pandemic.

This study prompted the researchers subsequently to incorporate some of the points while designing health education material on swine flu during their routine health education sessions for the patients seeking care in each of these health facilities and demonstrate to the students the process involved in developing need based health education material in clinical practice. However, the impact of this intervention was beyond the scope of this paper.

CONCLUSION

In the early containment phase of a pandemic response, compliance with NPIs will be critical for limiting community transmission. This manuscript describes the survey to determine the state of public knowledge on pandemic influenza, which was found to be excellent with respect to prevention but patchy in critical areas of early diagnosis and treatment. The study paves way for further research in customising the health education messages and evaluating the impact of these changes in health seeking behaviour among people.

REFERENCES

1. Petrosillo N, Di Bella S, Drapeau CM, Grilli E. The novel influenza A (H1N1) virus pandemic: An update. *Ann Thorac Med* [serial online] 2009 [cited 2009 Dec 28];4:163-72. Available from: [http:// www.thoracicmedicine.org/text.asp?2009/4/4/163/56008](http://www.thoracicmedicine.org/text.asp?2009/4/4/163/56008). (Accessed on 1st May 2013).
2. Chawla R, Sharma RK, Madaan D, Dubey N, Arora R, Goel R et al. Mitigation Approaches to Combat the Flu Pandemic. *J Global Infect Dis* 2009;1(2):117-30.
3. Balinska M, Rizzo C. Behavioural responses to influenza pandemics: What do we know? *PLoS Curr Influenza*. 2009 [serial on internet]. September 9: RRN1037 [cited Jan 3 2010]. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2762764/>
4. Mohfw-h1n1.nic.in. Pandemic influenza A (H1N1), Ministry of Health and family Welfare [Homepage on Internet] [cited Jan 3 2010] available at: <http://mohfw-h1n1.nic.in/documents/PDF/Strategic%20Approach.pdf>.
5. Eastwood K, Durrheim D, Francis JL, d'Espaignet ET, Duncan S, Islam F et al. Knowledge about pandemic influenza and compliance with containment measures among Australians. *Bull World Health Organ* 2009;87(8):588-94.
6. Reynolds B. Crisis and emergency risk communication: pandemic influenza. August 2006 (revised October 2007) Atlanta, GA: Centers for Disease Control and Prevention; 2007. Available from: <http://emergency.cdc.gov/cerc/pdf/CERC-PandemicFlu-OCT07.pdf> [accessed on 2010 Jan 3].
7. Government of Puducherry, Directorate of Economics and Statistics [Home page on Internet]. Puducherry, [cited 2010 Jan 3]. Available from: [http:// statistics.puducherry.gov.in/Hand%20Book%202003-04/area_population/tab1.pdf](http://statistics.puducherry.gov.in/Hand%20Book%202003-04/area_population/tab1.pdf)
8. Ethical analysis. In, Research ethics committees Basic concepts for capacity-building. Geneva, WHO Document Production Services, 2009; p 19.
9. Government of Puducherry, Directorate of Economics and Statistics [Home page on Internet]. Puducherry, [cited 2010 Jan 3]. Available from: <http://statistics.puducherry.gov.in/Hand%20Book%202003-4/climate/tab1.pdf>
10. S. Vaithianadane. Figures at a glance. In, S. Vaithianadane (ed). *Statistical Handbook, 2001-2002*. Pondicherry, Publication section, Directorate of Economics and Statistics, 2003; pg XIV, XVII.
11. statistics.puducherry.gov.in [Home page on Internet]. Puducherry, Directorate of Economics and Statistics [cited 2010 Jan 3]. Available from: http://statistics.puducherry.gov.in/Hand%20Book%202003-04/health/tab1_birthrate.pdf
12. World Health Organisation [Home page on Internet]. Pandemic (H1N1) 2009 - update 81, World health organisation, Geneva [cited 2010 Jan 2]. Available from [http:// www.who.int/entity/csr/don/en/](http://www.who.int/entity/csr/don/en/)
13. R K Srivastava (ed). *CD Alert: Pandemic Influenza (H1N1) 2009*. New Delhi, Director, National Centre for Disease Control, Aug-Sep 2009, Vol. 13:No.2.
14. Pib.nic.in. Press Information Bureau, Government of India [Homepage on Internet]. Press Releases, Friday January 01, 2010 [Cited: Jan 2, 2010]. Available from: [http:// pib.nic.in/release/release.asp? relid=56571](http://pib.nic.in/release/release.asp?relid=56571).
15. Mohfw-h1n1.nic.in. Pandemic influenza A (H1N1), Ministry of Health and family Welfare [Homepage on Internet] [cited Jan 3 2010] available from: <http://mohfw-h1n1.nic.in/Laboratories.html>
16. Sarkar S. "Pondicherry scenario of Pandemic H1N1 2009", presentation in CME on Influenza A (H1N1), JIPMER, Pondicherry. Nov 27, 2009. Place: Conference Hall, Super Speciality Block.
17. Mohfw-h1n1.nic.in. Pandemic influenza A (H1N1), Ministry of Health and family Welfare [Homepage on Internet]. Hon'ble HFM. D.O.No.D.32020/5/2009-EMR, June 9,

2009. [Cited Dec 9 2009]. Available from <http://mohfw-h1n1.nic.in/letters.html>
18. Mohfw-h1n1.nic.in. Pandemic influenza A (H1N1), Ministry of Health and family Welfare [Homepage on Internet]. Gulam Nabi Azad. D.O.No.D.32020/5/2009-EMR, June 15, 2009. [Cited dec 9 2009]. Available from <http://mohfw-h1n1.nic.in/letters.html>
19. Mohfw-h1n1.nic.in. Pandemic influenza A (H1N1), Ministry of Health and family Welfare [Homepage on Internet] [cited Jan 3 2010] available from: <http://mohfw-h1n1.nic.in/Puducherry.html>
20. WHO Outbreak communication guidelines. Geneva, World Health Organization, 2005
- (WHO/CDS/2005.28; Available at <http://www.who.int/infectious-disease-news/IDdocs/whocds200528/whocds200528en.pdf>; accessed June 2009).
21. Gaglia MA Jr, Cook RL, Kraemer KL, Rothberg MB. Patient knowledge and attitudes about avian influenza in an internal medicine clinic. *Public Health* 2008;122(5):462-70.
22. Abbate R, Di Giuseppe G, Marinelli P, Angelillo IF. Knowledge, attitudes, and practices of avian influenza, poultry workers, Italy. *Emerg Infect Dis* [serial on the Internet]. 2006 Nov [Cited Jan 3, 2010]. Available from <http://www.cdc.gov/ncidod/EID/vol12no11/06-0671.htm>

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