

Community perception about swine flu in an urban slum of Haryana: A cross-sectional study

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ABSTRACT

Background: Swine flu caused by influenza virus and it's a respiratory disease of pigs. The people like farmers and pork processors working in close proximity with pigs are at higher risk of getting swine flu. In India, a total of 117 deaths and 1,154 cases have been reported in the first two months of year 2018. **Objectives:** To assess the community perception about Swine flu among adults in an urban slum of District Rohtak. **Methodology:** The study was a community based epidemiological study with cross-sectional design and carried out by visiting house to house. The study recruited 500 adults of age 18-60 years. **Results:** The study found that there was no significant difference between gender and age with heard of swine flu while education wise ($p=0.002$) and caste wise ($p=0.011$) awareness of swine flu was found to be statistically significant. **Conclusion and Recommendation:** The study concluded that the majority of subjects heard about swine flu and majority of subjects said that swine flu spread after coughing or sneezing. The study recommends that health care functionaries should spread awareness about signs and symptoms of swine flu.

Keywords: Disease, hygiene, sanitation, respiratory system, virus

Introduction

Swine flu is a respiratory disease of pigs caused by influenza virus and pig act as reservoir of the virus. When infected, human show symptoms such as decreased appetite, increased nasal secretions, cough, and listlessness. People like farmers and pork processors are at higher risk of getting swine flu from pigs because of their close proximity with pigs. The causative agent of the swine influenza is influenza A having five subtypes, namely, H1N1, H1N2, H2N3, H3N1, and H3N2. Of these subtypes, the H1N1 influenza A strain was isolated in the infected humans and the remaining four subtypes are found exclusively in pigs.^[1]

The transmission of virus in human from person to person is through inhalation of infected droplets during sneezing, or

cough, direct contact with the infected patient, or contact with fomites that are contaminated with respiratory or gastrointestinal secretions. Swine flu (swine influenza) is a respiratory disease caused by influenza viruses.^[1] The common signs and symptoms of the influenza flu are fever ($>38^{\circ}\text{C}$), nasal congestion, sore throat, fatigue and weakness, bodyache, chills and sweats, headache, and dry and persistent cough. Some high-risk people like children <5 years, age more than 65 years, pregnant women, people with weakened immune systems, people who have chronic illnesses, such as asthma, heart disease, chronic kidney disease, and diabetes people, and person having body mass index of 40 or more are at risk developing flu complications and a mortality rate (death rate) of about 0.1%. In April 2009, a new influenza virus known as H1N1 swine flu developed in Mexico and it spread rapidly worldwide through airlines in view of increasing international travel. Eventually, the World Health Organization declared the pandemic in 2010. In the past few

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years, the cases of flu have been increased in various countries that show a global threat among emerging disease especially in developing countries. India is one of the developing countries with no exception regarding spread of swine flu and it is ranked third in morbidity and mortality globally.^[2]

The maximum number of cases was reported in 2009 (27,236), followed by 2010 (20,604) and 2012 (5,054). During 2013, India reported 5,253 cases and 699 deaths, with a case fatality rate of 13.3%. In 2014, a total of 218 people died from H1N1 flu, with 937 cases during the year.^[3] Although the number of cases has decreased since 2009, it continues to circulate as a seasonal virus till date. Up to February 2018, a total of 117 deaths were reported in the first 2 months and 1,154 people have been affected in India. Rajasthan is the worst affected state with maximum of 86 deaths and 969 cases in the same period.^[4]

Bharadva *et al.* reported that overall knowledge about swine flu and hand washing were poor. They suggested that the use of effective mass media is helpful for limiting the epidemic.^[5] Commodari quoted that all participants knew that it is a transmissible disease and more than two-third of the subject said that it was a serious disease. The author also found out that sociodemographic and psychological factors contribute to risk perception about the disease.^[6]

Early diagnosis, identification of the risk factors, and prompt antiviral treatment along with vaccination and chemoprophylaxis are the mainstay of management, but through adoption of cost-effective preventive measures such as simple hygiene and sanitation measures for cough and respiratory problems, it can help cut transmission chain of H1N1 flu infection and thus avert the major pandemic of the disease. In addition, correct awareness, knowledge, and information in community especially in adults about swine flu help in taking effective steps to prevent the spread of the disease. The Government of India tries to disseminate awareness regarding swine flu through mass media. Keeping all these in view, the study was conducted to assess the community perception about swine flu among adults in an urban slum of district Rohtak.

Materials and Methods

The study was carried out in three urban slums (Housing Board, Gandhi Camp, and Ekta Colony) of Rohtak district which are field practice area of the Department of Community Medicine, Pt B.D. Sharma PGIMS, Rohtak, Haryana. This field practice area is used for the purpose of teaching, training, and research activities for undergraduate medical students, interns, and postgraduate students of the department. The study was a community-based epidemiological study with cross-sectional design and carried out from January 2018 to April 2018 by visiting house to house. The study recruited 500 adults of age 18–60 years, and the sample size of the study was calculated by $4pq/L^2$. Considering the awareness of 50%, q is $1 - p$, allowable error 5% (L), and 95% confidence

interval, the sample came out to be 400 but the study recruited 500 subjects. In all, 500 subjects were selected randomly from survey registers of six anganwadis (two anganwadis selected randomly from each urban slum area).

The selected subjects were contacted at their house by investigator himself. Data were collected in their vernacular language on predesigned, semi-structured questionnaire. The questionnaire consists of sociodemographic variables (age, sex, literacy, occupation, caste, etc), awareness about swine flu like nature, mode of spread/transmission, symptoms, laboratory tests, and knowledge about preventive measures. The socioeconomic status of the subjects was classified as per Modified Kuppaswami's Socio-economic Status Scale. Interview was started with general discussion to build up rapport with respondents and to gain confidence. All the study individuals were fully informed about the purpose of the study. Informed verbal consent was taken from the individuals before conducting the interview. To ensure the quality of the data, each completed performa was checked by investigator himself before it could be coded on MS Excel 2012. Data were analyzed using Statistical Package for Social Science, version 12.

Results

The study recruited 500 subjects residing for the past 6 months in the urban slums of district Rohtak (Haryana) India. The study found that 290 (58%) were male and the remaining were female. Age-wise, maximum (36%) subjects were in 18–25 years followed by 27.6% in 25–35 years. About 34% adults were educated up to matric; 27% and 21% subjects were literate up to middle and primary class, respectively, while 2% subjects were illiterate. The majority (45%) of the subjects belonged to general caste and 38% subjects were other backward class, while 17% subjects were schedule caste. Occupation-wise, 26.8% subjects were laborer, 24% subjects were in private job, while 16% subjects were unemployed. The socioeconomic status was assessed by Modified Kuppaswami Scale and found that 34.8% and 30.8% subjects were from upper lower and lower middle class, respectively, while 11.8% subjects were from lower class [Table 1].

This study reported that the majority (425, 85%) of the subjects had heard of swine flu and the remaining (75, 15%) did not hear about this illness. Of 425 subjects, the main source of information about swine flu was television (52.9%); the second common source was radio (41.1%) followed by health functionaries (Accredited Social Health Activist, Anganwadi Worker, or health workers) and print media which accounted for 20% and 17.6%, respectively. About the cause of swine flu, the majority (69.8%) said that respiratory (droplets) route is the most common cause followed by 8.2% of subjects who said that it could be because of drinking dirty water. However, 6.5%, 5.4%, 4.7%, and 2.8% responded that intake of unhygienic food, mosquito bite, blood-borne infection, and mother-to-child transmission, respectively, could be the reason of swine flu.

Table 1: Socio-demographic variables of subjects (n=500)

Socio-demographic characteristics	Subjects	%
Sex		
Male	290	58
Female	210	42
Age (years)		
18-25	180	36
25-35	138	27.6
35-45	110	22
>45	72	14.4
Education		
Illiterate	10	2
Primary	105	21
Middle	135	27
Matric	170	34
Higher secondary and more	80	16
Caste		
General caste	225	45
Other Backward caste	190	38
Schedule caste	85	17
Occupation		
Unemployed	80	16
Laborer	134	26.8
Private Job	120	24
Own business	56	11.2
Govt Job	40	8
House wife	70	14
Socioeconomic Class		
Class I	45	9
Class II	68	13.6
Class III	154	30.8
Class IV	174	34.8
Class V	59	11.8

The study asked about common mode of transmission of swine flu and found out that a maximum of 67% of subjects said that coughing and sneezing are most common modes of transmission; however, 12.3% said that mass gathering of peoples is the common mode of transmission. About 12.3% and 8.2% responded that hand shaking and sharing meals, respectively, are the common modes of transmission of this illness. Touching infected person and sexual contact were also reported by 2.8% and 2.1%, respectively, of participants as the common modes of transmission. The study also assessed about how transmission of this disease can be prevented and demonstrated that nearly half of the subjects said that wearing face mask can prevent transmission of swine flu. About 11% of subjects said that avoiding crowded place can be helpful in prevention of transmission. Around 9.4% and 8.2% of subjects also quoted that killing surrounding pig and staying at home, respectively, prevent the transmission of flu. Awareness about the most common symptom appears in the swine flu case and found out that 61% of subjects said that fever is the most common symptom. About 8.9% and 6.8% of subjects said that throat pain and running nose, respectively, are common symptoms followed by headache and cough (5.6% and 4.7%), respectively [Table 2].

This study studied the association between sociodemographic characteristic and awareness of swine flu using Chi-square statistical test and found out that there was no significant difference between gender and age with heard of swine flu, while education-wise ($P = 0.002$) and caste-wise ($P = 0.011$) awareness of swine flu was found to be statistically significant, that is, as education of subjects increases, the level of awareness also increases. But the association between socioeconomic status of subjects with heard of swine flu was found to be statistically nonsignificant [Table 3].

Discussion

Swine influenza is a respiratory disease of pigs which is highly contagious and is caused by swine influenza A viruses. Swine influenza outbreaks are very common in pigs, and because of close contact with pig, man gets infected.^[7] In the past few years, swine flu has spread very fast worldwide and considered as an emerging disease. By taking simple preventive measures at an early stage of this disease, it can be very useful in spreading and controlling of the disease. This could only be possible especially in India by raising the level of awareness among community.^[8]

The study recruited 500 subjects; of these, 290 (58%) were male and the remaining were female. Singh *et al.*^[3] and Kaur *et al.*^[9] also recruited more male subjects when compared with female. Age-wise, maximum (36%) subjects were in 18–25 years; education-wise, 34% adults were educated up to matric, while occupation-wise, one-fourth (26.8%) of subjects were laborer. About 34.8% and 30.8% study subjects were from upper lower and lower middle socioeconomic status, respectively. Bharadva *et al.* reported the same sociodemographic characteristics of their participants.^[5]

This study studied the association between sociodemographic characteristic and awareness of swine flu using Chi-square statistical test and found out that gender-wise and age-wise there is no statistically significant difference. Singh *et al.* reported in their study that female subjects had significantly higher knowledge scores when compared with their male counterparts ($P = 0.001$)^[10] while Kaipa *et al.*^[11] quoted in the study that males had significantly higher knowledge when compared with females. This difference could be because these studies were carried out in different regions and different setting.

Education-wise ($P = 0.002$) and caste-wise ($P = 0.011$), awareness of swine flu was found to be statistically significant, that is, as education of subjects increases, the level of awareness also increases. The association between socioeconomic status of subjects with heard of swine flu was found to be statistically nonsignificant [Table 3]. This study reported that the majority (85%) of subjects had heard about swine flu which is higher than that found in the study by Shilpa *et al.*^[12] but comparable with other studies.^[3,10]

Nearly half (52.9%) of the subjects said that television was the main source of information about swine flu, while 41.1%

Table 2: Awareness about swine flu among study participants

Characteristics	Subjects	%
Have you ever heard about swine flu?	n=500	
Yes	425	85
No	75	15
Source of information*	n=425	
Television	225	52.9
Radio	175	41.1
Print Media	75	17.6
Health functionaries	85	20
Relative and friends	70	16.4
Peer group	55	12.9
School Teacher	25	5.8
Multiple response*		
What is the cause of Swine flu?*	n=425	
Respiratory route (Droplets)	297	69.8
Drinking dirty Water	35	8.2
Intake of unhygienic Food	28	6.5
Mosquito bite	23	5.4
Blood borne infection	20	4.7
Mother to Child Transmission	12	2.8
Don't Know	10	2.3
Most common modes of transmission	n=425	
Coughing and sneezing	285	67
Mass gathering	52	12.3
Hand shaking	35	8.2
Sharing meals	22	5.1
Touching with infected person	12	2.8
Sexual contact	09	2.1
Don't Know	10	2.3
How the transmission of swine flu is prevented?	n=425	
Wear face mask	212	49.8
Maintain personal hygiene	28	6.5
Not eating meat	25	5.8
Killing surrounding pig	40	9.4
Avoid crowded places	47	11
Starting more nutrition diet	28	6.6
Staying Home	35	8.2
Not aware	10	2.4
Most common symptoms of Swine Flu	n=425	
Fever	260	61
Throat pain	38	8.9
Running nose	29	6.8
Cough	20	4.7
Vomiting	18	4.2
Difficulty in breathing	14	3.2
Joint pain	12	2.8
Headache and weakness	24	5.6
Don't Know	10	2.4

subjects had got information from radio followed by healthcare functionaries (ASHA, AWWs, or health workers) and print media which accounted for 20% and 17.6%, respectively. Similar observation regarding source of information was reported by other studies.^[13,14] Mass media was the most common source of information about swine flu among study subjects quoted by Anusha *et al.*^[15] and Naik *et al.*^[16]

In this study, the role of healthcare functionaries providing information about swine flu to the community was low, so these workers should take responsibility to impart health education to the community through camp approach or interpersonal communication or through behavior change communication. In addition, the government should plan to design a program for grass root-level workers where they get trained, update their knowledge, and develop their capacity building regarding swine flu. Social media is frequently and commonly used nowadays, so this media can be used to spread the message regarding the awareness and disease prevention of swine flu.

About the cause of swine flu, the majority (69.8%) said that respiratory (droplets) route is the most common cause followed by 8.2% of subjects who said that it could be because of drinking dirty water. However, 6.5%, 5.4%, 4.7%, and 2.8% responded that intake of unhygienic food, mosquito bite, blood-borne infection, and mother-to-child transmission, respectively, could be the reason of swine flu. Few subjects thought intake of unhygienic food, drinking of dirty water, and mosquito bite (11.7%, 10.5%, and 9%, respectively) as a mode of swine flu transmission; similar findings were quoted by Chaudhary *et al.*^[17]

Human-to-human transmission of swine flu occurs through coughing or sneezing by infected person and it spreads quickly in crowded places. The study asked about common mode of transmission of swine flu found out that a maximum of 67% of subjects said that coughing and sneezing are the most common modes of transmission; however, 12.3% said that mass gathering of people is the common mode of transmission. About 12.3% and 8.2% responded that hand shaking and sharing meals, respectively, are the common modes of transmission of this illness. Touching infected person and sexual contact are also the common modes of transmission as said by 2.8% and 2.1% of participants. Similar observations were reported by Deepak *et al.*^[18]

The study also assessed about how transmission of this disease can be prevented and demonstrated that nearly half of subjects said that wearing face mask can prevent transmission of swine flu. Use of face mask as a preventive measure was found to be 56% as reported by Singh *et al.*^[3] Bharada *et al.* also found that face mask was most common method known and used by the subjects.^[5]

About 11% of the subjects said that going to crowded place can help in prevention of transmission. About 9.4% and 8.2% of subjects also quoted that killing surrounding pig and staying at home, respectively, prevent the transmission of flu. The findings by Deepak *et al.* are also consistent with our findings.^[18] Seale *et al.* found that regular hand washing, cough etiquette (covering mouth and nose when coughing or sneezing), and avoiding the sick were suggested by subjects as good strategies to prevent becoming infected with pandemic influenza.^[19]

By simple preventive measures such as hygiene and sanitation for cough and respiratory problems, we can effectively prevent swine

Table 3: Association between socio-demographic variables of subjects and heard of swine flu

Socio-demographic variables	Awareness		Total	Chi-square test
	Yes	No		
Sex				$\chi^2=0.5820$, $P=0.422$
Male	242	48	290	
Female	183	27	210	
Age (years)				$\chi^2=0.4220$, $P=0.310$
18-25	156	22	180	
25-35	120	18	138	
35-45	94	16	110	
>45	57	17	72	
Education				$\chi^2=34.09$, $P=0.002$
Illiterate	03	07	10	
Primary	59	46	105	
Middle	121	14	135	
Matric	164	06	170	
Higher secondary and above	78	02	80	
Caste				$\chi^2=28.21$, $P=0.011$
General caste	215	10	225	
Other Backward caste	172	18	190	
Schedule caste	38	47	85	
Occupation				$\chi^2=0.2862$, $P=0.219$
Unemployed	60	22	80	
Laborer	116	18	134	
Private Job	112	08	120	
Own business	51	05	56	
Govt Job	38	02	40	
House wife	50	20	70	
Socioeconomic Class				$\chi^2=0.492$, $P=0.628$
Class I	43	02	45	
Class II	62	06	68	
Class III	131	23	154	
Class IV	149	25	174	
Class V	49	19	59	

flu transmission in the community. Therefore, providing proper knowledge and awareness in the community regarding H1N1 swine flu helps in taking effective steps to prevent the spread of H1N1 influenza virus. Awareness about the most common symptom appears in the swine flu case, and it was found that in 61% of subjects fever is the most common symptom. About 8.9% and 6.8% of subjects said that throat pain and running nose, respectively, are the common symptom, followed by headache and cough (5.6% and 4.7%), respectively. Other studies also reported the same observation, that is, fever was the most common symptom in swine flu^[3] and other symptoms can be running or blocked nose, nausea, chills, cough, sore throat, body ache, weakness, and fatigue.^[12,19] Prevention is considered as the most appropriate measure to control H1N1 flu pandemic. The central or state government should provide each and every information to community in relation to swine flu through mass communication.

Conclusion and Recommendations

One good outcome from this study was that the majority of the subjects had heard about swine flu and the majority of the

subjects said that swine flu spread after coughing or sneezing. Most of the study subjects had knowledge of use of face mask to prevent swine flu. Education-wise and caste-wise, association with awareness about swine flu was found to be statistically significant. Since swine flu is considered as an emerging disease and it spreads very fast, therefore, the simple preventive measures at an early stage will be very useful in containment of the disease which could only be achieved by raising the level of awareness. The study recommends that healthcare functionaries should strengthen their information, education, and communication activities to spread awareness about signs and symptoms, cause of disease, and mode of transmission, and simple preventive measures should be imparted to community either through house-to-house visits or through organized camps in their areas. The government should use social media, Internet, television, radio, and so on for spreading messages about swine flu. In addition, in every state, there should be a 24 × 7 helpline number from which any query or any guidance regarding swine flu can be sought. Even today, there are myths and misconceptions about swine flu in the community and primary care physician should take the responsibility to remove their misbeliefs about this disease. In addition, the primary care physician should diagnose early and carry out early intervention and preventive measures to control the outbreak of this infection.

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Conflicts of interest

There are no conflicts of interest.

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