

Knowledge and Awareness on Swine Origin Influenza A(H1N1) Among Health Care Providers and Civil Employees in a Tertiary Level Hospital, Dhaka Bangladesh

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ABSTRACT

Background: Swine Origin Influenza A(H1N1) viruses create yearly epidemics and rarely pandemics that cost millions of lives worldwide. Health care providers and civil employees at hospital can help in prevention of transmission of influenza by acquiring knowledge and awareness.

Methods: A descriptive cross-sectional study was conducted at Combined Military Hospital Dhaka from July to December 2023. Total 213 participants were interviewed that comprises doctors, nurses, medical assistants and civil employees. Purposive sampling technique was used to collect data. Face to face interview was done through a pre-tested semi-structured questionnaire. Data were analysed by using Statistical Package for the Social Sciences (SPSS) version 25.0. Informed consent were obtained from the respondents addressing proper ethical issues.

Results: In this study out of total participants 70.4% had previously heard about H1N1 influenza A. Total 38% participants said that internet was found as major source of information. Among the participants 64.3% told fever was common symptom and use of facemask at duty hour was consented by 33.8% as an important means for prevention. Maximum (66.3%) civil employees do not know about washing hand after contact as a preventive procedure leading to spread of infection. Maintaining distance as preventive measures observed by 13.6% participants. Moreover, all participants were aware of transmission through droplet infection except civil employees. In the present study, 50% doctors and 38.1% nurses had knowledge that drug Oseltamivir is very effective against swine Influenza A(H1N1). Remarkable differences were identified among doctors, nurses, medical assistants and civil employees regarding knowledge of quarantine and availability of vaccine. RT-PCR laboratory test is the confirmatory method to detect swine influenza A(H1N1) were exactly known by 9.9% participants, while 70.9% participants don't know the confirm diagnostic method.

Conclusion: Knowledge and awareness regarding swine influenza A(H1N1) was low among study participants. For controlling epidemic or even pandemic, awareness by mass media is important. Remarkable gap observed regarding knowledge and awareness about swine influenza A(H1N1) among the health care providers and civil employees, needs to be addressed by proper training and motivation.

Keywords: Swine influenza A(H1N1), Knowledge, Awareness, Health Care Providers

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INTRODUCTION

The swine influenza A(H1N1), also known as influenza A(H1N1) pdm09, as there was a history of pandemic in 2009 from the virus and later as it circulated in the community as seasonal influenza A(H1N1). In temperate climates, winter is the main season for spreading epidemics, while in tropical areas, influenza spreads more irregularly all the year round.¹

The outbreak by swine origin influenza A(H1N1) virus in human begun in Mexico in March 2009. Clinical symptoms are almost same both in novel influenza and seasonal human influenza.²

Though respiratory diseases developed in experimentally infected pig with pandemic 2009 influenza A (H1N1); but there was no history of systemic diseases by this virus infected pork.³ Due to shortage of specific influenza A(H1N1) vaccine, controlling measures were focused against virus spreading and educating people to reduce the risk of disease transmission.⁴

It is important to mark that though the influenza virus evolved in swine, the 2009 pandemic virus did not fully derive from swine. It incorporates a mixture of flu genes from swine, birds and human flu types.⁵

Health care providers should be prepared themselves to treat the seasonal flu patients along with those infected with novel strain of influenza A(H1N1). Although H1N1 flu is incorrectly called “swine flu,” the virus spreads from person to person. The seasonal influenza transmits very easily in crowded places including schools, hospitals, markets and stations. Droplet containing viruses easily spread from nearer infected person through contaminated hands who touches the infected

persons and inanimate infected objects. All bodily secretions are also considered as potentially infectious.⁶ The incubation period may vary from 1 to 7 days.⁷ To prevent spread, people should cover their face with tissue papers, handkerchief or by hands and wash by soap or detergent properly.

Symptoms of influenza A(H1N1) include fever, body ache, nasal discharge, reddish eyes, vomiting, lethargy and fatigue which usually appear in quick succession. Children, pregnant women and elderly people are of high risk group. Respiratory failure is the most common cause of death, but other causes of mortality include dehydration, electrolyte imbalance and sepsis. For seasonal complication, pneumonia is the most common.⁴ Vaccination termed as first line of defense.⁸ Vaccination also lowers the severity and complication of flu patients with minimum hospital stay.

Laboratory test of nasal, throat or nasopharyngeal secretions of infected flu persons by detection of direct antigen or influenza A(H1N1) virus itself by reverse transcriptase-polymerase chain reaction (RT-PCR) is confirmatory.⁴

Except severe and prolonged disease, complications are less in hospitalized person with influenza A(H1N1) virus. Antiviral therapy is effective if treated earlier even patient came after 48 hours of onset of illness.⁹ Globally the annual epidemics measures about 3 to 5 million cases of severe illness, and about 290000 to 650000 respiratory deaths. In industrialized countries most deaths occur from 65 or older aged people.²

In developing countries, the effects of seasonal influenza epidemics are not familiar, but research shows 99% of under 5 years children's death occurs mainly due to influenza related lower respiratory tract infection.³

The dissemination of exact information about influenza A(H1N1) virus to the mass population followed by making people aware about its spread and there by developing a sense of proper code of behavior among the people during pandemic is important.¹⁰

Here, the objective of this study is to ascertain the knowledge and awareness of health care providers and civil employees in a tertiary care hospital and to make them aware about the prevention of the swine influenza A(H1N1) epidemic.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted during the period of July to December 2023 at Combined Military Hospital, Dhaka. A total of 213 health care providers and civil employees were included in the study, of which 20 were doctors, 42 nurses, 71 medical assistants and 80 civil employees (Aya/ward boys and civil cleaners) who had been working for minimum one year and gave consent.

Subjects were drawn proportionately by purposive sampling during the study period. Face to face interview of a pretested, semi-structured questionnaire was used for obtaining socio demographic profile, knowledge and awareness of the respondents regarding swine influenza A(H1N1). A written permission from ethical committee of Combined Military Hospital Dhaka was taken. Written consent from each subject was taken and the respondents were counselled to provide correct information. The information collected was kept strictly confidential and anonymity was maintained. Data analysis was done by using software SPSS-25.0.

RESULTS

A descriptive cross-sectional study was conducted among 213 participants from July to

December 2023 at Combined Military Hospital, Dhaka.

Table-I: Socio-demographic profile of the participants (n=213)

Variables		Doctor n(%)	Nurse n(%)	Medical Assistant n(%)	Civil Employee n(%)	Total n(%)
Age Group (years)	<30	6(30)	22(52.4)	32(45.5)	30(37.5)	90(42.3)
	30-40	14(70)	11(26.2)	25(35.2)	40(50)	90(42.3)
	>40	0(0)	9(21.4)	14(19.7)	10(12.5)	33(15.5)
Gender	Male	8(40)	0(0)	54(76.1)	41(51.2)	103(48.4)
	Female	12(60)	42(100)	17(23.9)	39(48.8)	110(51.6)
Educational Status	Below SSC	0(0)	0(0)	0(0)	45(56.3)	45(21.1)
	SSC/HSC or equivalent	0(0)	0(0)	52(73.2)	31(38.8)	83(39)
	Diploma/Degree or equivalent	0(0)	35(83.3)	19(26.8)	4(5)	58(27.7)
	MBBS/ postgraduate	20(100)	7(16.7)	0(0)	0(0)	27(12.7)
Service Length (years)	<5	7(35)	14(33.3)	3(4.2)	10(12.5)	34(16)
	5-10	13(65)	13(31)	30(42.3)	44(55)	100(46.9)
	>10	0(0)	15(35.7)	38(53.5)	26(32.5)	79(37.1)

Table-I reveals that out of total 213 study population 48.4% were male and 51.6% were female. About three fifth (60%) of the doctors were female, whereas all the nurses (100%) were females by gender. Among medical assistants (76.1%) and civil employees (51.2%), male were predominant. Majority of the doctors (70%) and civil employees (50%) were in the middle age group (30-40 years), whereas majority of the nurses (52.4%) and medical assistants (45.5%) were younger than 30 years. Maximum respondents' educational levels were SSC/HSC and below SSC, that were 73.2% medical assistants and 56.3% civil employees respectively. Service length of maximum respondents (46.9%) were 5-10 years (Table-I).

Table-II: Distribution of the respondents by source of information regarding swine flu (n=213)

Variables		Doctor n(%)	Nurse n(%)	Medical Assistant n(%)	Civil Employee n(%)	Total n(%)
Have you heard about Swine influenza A(H1N1)?	Ye	20(100)	40(95.2)	63(88.7)	27(33.8)	150(70.4)
	No	0(0)	2(4.8)	8(11.3)	53(66.3)	63(29.6)
Source of information about Swine influenza A(H1N1)	Television	4(20)	14(33.3)	21(29.6)	39(48.8)	78(36.6)
	Newspaper	3(15)	4(9.5)	2(2.8)	4(5)	13(6.1)
	Internet	9(45)	21(50)	39(54.9)	12(15)	81(38)
	Colleagues	2(10)	1(2.4)	4(5.6)	4(5)	11(5.2)
	Health workers	2(10)	2(4.8)	5(7)	21(26.3)	30(14.1)

Total 15(70.4%) participants have heard about H1N1 influenza A. Main source of information by which participants get informed about swine influenza A (H1N1) was internet (38%), followed by Television (36.6%), health workers (14.1%), newspapers (6.1%) and colleagues (5.2%) (Table -II).

Table-III: Distribution of the respondents by knowledge about swine influenza A(H1N1) (n=213)

Variables		Doctor n(%)	Nurse n(%)	Medical Assistant n(%)	Civil Employee n(%)	Total n(%)
Sources	Birds	1(5)	7(16.7)	8(11.3)	25(31.3)	41(19.2)
	Pig	19(95)	35(83.3)	62(87.3)	49(61.3)	165(77.5)
	Human	0(0)	0(0)	1(1.4)	6(7.5)	7(3.3)
Vaccine	Yes	12(60)	29(69)	39(54.9)	11(13.8)	91(42.7)
	No	8(40)	13(31)	32(45.1)	69(86.3)	122(57.3)
Quarantine	1-4 days	1(5)	5(11.9)	2(2.8)	1(1.3)	9(4.2)
	1-7 days	8(40)	18(42.9)	22(31)	6(7.5)	54(25.4)
	7-10 days	8(40)	18(42.9)	32(45.1)	19(23.8)	77(36.2)
	Don't know	3(15)	1(2.4)	15(21.1)	54(67.5)	73(34.3)
Effective initial treatment	Azithromycin	3(15)	9(21.4)	6(8.5)	0(0)	18(8.5)
	Oseltamivir	10(50)	16(38.1)	11(15.5)	0(0)	37(17.4)
	Don't know	7(35)	17(40.5)	54(76)	80(100)	158(74.2)
Confirm diagnosis by	RT-PCR	7(35)	12(28.6)	2(2.8)	0(0)	21(9.9)
	Chest x ray	6(30)	12(28.6)	12(16.9)	0(0)	30(14.1)
	Other lab tests	2(10)	4(9.5)	5(7)	0(0)	11(5.2)
	Don't know	5(25)	14(33.3)	52(73.2)	80(100)	151(70.9)

On query about sources of swine influenza A(H1N1), total 77.5% respondents answered pig followed by 19.2% birds and 3.3% by human. Total 57.3% respondents have no

knowledge about vaccine. Among them maximum (86.3%) were civil employees. Among others, positive knowledge about vaccine presents in 60% doctors, 69% nurses and 54.9% medical assistants and 13.8% civil employees (Table-III).

Home quarantine for 7-10 days is an effective method to prevent the spread of infection which was correctly replied by only 40% doctors, 42.9% nurses, 45.1% medical assistants and 23.8% civil employees. About 50% doctors, 38.1% nurses and 15.5% medical assistants knew about the effective initial treatment (Oseltamivir) against influenza A(H1N1). RT-PCR examination is the confirmatory method for diagnosing swine influenza A(H1N1), correctly known by 9.9% Participants only. Here, important is that 70.9% participants don't know the confirm diagnostic method (Table-III).

Table-IV: Information regarding spread of influenza A(H1N1) from human to human (n=213)

Means of spread	Doctor n(%)	Nurse n(%)	Medical Assistant n(%)	Civil Employee n(%)	Total n(%)
Eating pork	0(0)	1(2.4)	3(4.2)	0(0)	4(1.9)
Direct contact	1(5)	8(19)	20(28.2)	6(7.5)	35(16.4)
Droplet inhalation	18(90)	32(76.2)	43(60.6)	19(23.8)	112(52.1)
Infected hand	1(5)	1(2.4)	2(2.8)	1(1.3)	5(2.3)
Don't know	0(0)	0(0)	3(4.2)	54(67.5)	57(27.2)

Droplet inhalation as a mode of spread was answered correctly by 90% of the doctors, 76.2% of the nurses, 60.6% of the medical assistants and 23.8% of the civil employees. Few of the nurses (2.4%) and medical assistances (4.2%) had misconceptions that it can be transmitted by eating pork. Most (67.5%) of the civil employees didn't know about mode of spread of H1N1 virus [Table-IV].

Table-V: Distribution of the respondents regarding knowledge about the symptoms of swine influenza A(H1N1) (n= 213)

Variables		Doctor n(%)	Nurse n(%)	Medical Assistant n(%)	Civil Employee n(%)	Total n(%)
Fever	Yes	19(95)	34(81)	29(40.8)	55(68.8)	137(64.3)
	No	1(5)	8(19)	42(59.2)	25(31.3)	76(35.7)
Vomiting	Yes	7(35)	8(19)	3(4.2)	1(1.3)	19(8.9)
	No	13(65)	34(81)	68(95.8)	79(98.8)	194(91.1)
Reddish eyes	Yes	4(20)	8(19)	18(25.4)	1(1.3)	31(14.6)
	No	16(80)	34(81)	53(74.6)	79(98.8)	182(85.4)
Cough and sore throat	Yes	12(60)	14(33.3)	9(12.7)	5(6.3)	40(18.8)
	No	8(40)	28(66.7)	62(87.3)	75(93.8)	173(81.2)
Nasal discharge with blockage feeling	Yes	13(65)	16(38.1)	24(33.8)	23(28.7)	76(35.7)
	No	7(35)	26(61.9)	47(66.2)	57(71.3)	137(64.3)

*Multiple responses

Most of the study participants in all categories of health care provider had variations of knowledge about the symptoms of influenza A(H1N1). The common symptoms reported were fever (64.3%), cough and sore throat (18.8%), nasal discharge with blockage feeling (35.7%), reddish eyes (14.6%) and vomiting (8.9%). Doctors and nurses had better knowledge about the symptoms as compared with medical assistances and civil employees (Table-V).

Table-VI: Distribution of the respondents regarding awareness about preventive measures from human-to-human spread (n=213)

Variables		Doctor n(%)	Nurse n(%)	Medical Assistant n(%)	Civil Employee n(%)	Total n(%)
Preventive measures of spread from human to human.	Use of face mask	14(70)	32(76.2)	40(56.3)	14(17.5)	100(46.9)
	Maintain distance from patients	4(20)	4(9.5)	16(22.5)	5(6.3)	29(13.6)
	Use of handkerchief	0(0)	0(0)	6(8.5)	6(7.5)	12(5.6)
	Wash hand by detergent/sanitizer	1(5)	6(14.3)	6(8.5)	2(2.5)	15(7)
	Don't Know	1(5)	0(0)	3(4.2)	53(66.3)	57(26.8)
Pattern of use of face mask	All the duty hour	1(5)	4(9.5)	30(42.3)	37(39.3)	72(33.8)
	During Potential contact	19(95)	37(88.1)	39(54.9)	36(45)	131(61.5)
	Intermittently	0(0)	1(2.4)	1(1.4)	3(3.8)	5(2.3)
	No use	0(0)	0(0)	1(1.4)	4(5)	5(2.3)
Safe distance from the patient	1 meter	6(30)	14(33.3)	23(32.4)	13(16.3)	56(26.3)
	2 meters	10(50)	21(50)	41(57.7)	12(15)	84(39.4)
	Don't know	4(20)	7(16.7)	7(9.9)	55(68.8)	73(34.3)

About 70% of the doctors and 76.2% of the nurses had the knowledge of use of face mask for prevention from human-to-human transmission. Maintaining distance from patient, use of handkerchief or washing hands after contact with virus had a mixed answer from respondents. It is important that maximum 66.3% civil employees do not know about preventive procedure that leads to infection. A comparable proportion of doctors (95%) and nurses (88.1%) were reported of wearing of mask only while potential contact during their duty time and total 33.8% of respondents use mask by all the time of duty hour.

A safe distance of 6 feet (2 meters) to be maintained from a patient of swine flu was rightly known by 50% doctors, 50% nurses and 57.7% medical assistants whereas 68.8% civil employees don't know about it (Table-VI).

DISCUSSION

The results of this study revealed a range of awareness regarding swine origin influenza A(H1N1) among a sample of health care providers and civil employees of Combined Military Hospital, Dhaka.

In this study, 70.4% of total respondents had early heard about H1N1 influenza A, which was lower than that of other studies.¹¹⁻¹⁴ It may be due to lack of awareness and unavailability of information regarding influenza. Present study constituted more female respondents except medical assistants and civil employees which were similar to the studies conducted by Latiff et al.¹⁵ and Lin et al.¹⁶. Tele media or internet was the most common source of information regarding influenza A(H1N1) in the present study which was almost similar to other studies as well. Health workers as a source of information were very less in this study, possibly because of inadequate knowledge regarding the disease.

In this study the most common symptom in majority participants was fever which was also observed in other studies.^{11,14} Only 1.9% of the respondents in this study had a wrong conception that swine flu can spread by eating pork, that contradicts the findings by Singh et al which was 40.6%.¹¹

In this study, 46.9% of the respondents knew the use of facemask as a way to prevent influenza A(H1N1) whereas hand washing, as an effective way for prevention of flu transmission, was known to only 7.0%. In contrast to this study, Rubin et al. in their study showed higher percentage (87.8%) of the respondents knew that hand washing reduce influenza transmission and fewer respondents (24.3%) in favour of using facemask for preventing spread of influenza virus.¹⁷ Maintaining distance as preventive measure observed among 13.6% participants and about 26.8% do not know the preventive measure especially the civil employees (66.3%) which demands training and awareness to them for influenza prevention.

RT-PCR test is the confirmatory method for laboratory diagnosis of swine influenza A(H1N1) correctly known by 9.9% participants only. Here, important is that 70.9% participants don't know the confirm diagnostic method.

In the current study, 50% doctors and 38.1% nurses had knowledge that antiviral drug Oseltamivir is effective against swine influenza A(H1N1). As per the Centre for Disease Control and Prevention (CDC), Oseltamivir is very effective among swine influenza A(H1N1) positive patient.⁹

A regular training regarding swine influenza A(H1N1) and its prevention needs to be performed to improve capacity of health care providers and civil employees worked in hospital environment. These will make them

competent about their behavior modification for awareness and secure update knowledge for prevention of swine influenza A(H1N1).

CONCLUSION

Knowledge and awareness regarding swine origin influenza A(H1N1) was less among study participants. Significant gaps observed between knowledge and actual practice of the health care providers and civil employees regarding swine influenza A(H1N1) which need to be minimized by appropriate training and health education to prevent transmission of H1N1 influenza and related pandemics.

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