

ORIGINAL ARTICLE

AN EPIDEMIOLOGICAL STUDY OF PDM09 INFLUENZA CASES - A RETROSPECTIVE STUDY

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Abstract

Background and Aim: Seasonal influenza is an acute respiratory infection caused by influenza viruses which circulate in all parts of the world and can affect people in any age group. In August 2010 World Health Organisation (WHO) declared the halting of pandemic and H1N1 influenza virus is now considered as seasonal influenza virus. The present study was conducted with aim of observing epidemiology of disease. **Material and Methods:** The records of 271 patients who were tested positive for swine flu in the period of Jan-17 to Feb-18 (14 months) at Dr.Sampurnand medical college, Jodhpur were evaluated retrospectively to study the epidemiology. **Results:** 271 patients were tested positive out of 1873 samples. 48.7% patients were male and 51.3% were females. Case fatality rate (CFR) was 18.5% for all cases, and in females it was 23%. The ages of the patients varied from 15 days to 85 years, but most commonly affected were in age group 20 to 59 (65.3%). Most deaths were observed in patients' ≥60 years of age (CFR- 22.8%). 34% of patients who died had some form of co-morbidity associated. The peaks with case were observed in post monsoon and winter months corresponding to decrease in temperature. **Conclusion:** The mortality and morbidity due to seasonal influenza is still high. Preventive measures should be engaged in high risk population during increased activity of disease.

Keywords: epidemiology, swine flu, H1N1, pdm09 influenza.

INTRODUCTION

Influenza is an acute respiratory infection caused by influenza viruses which circulate in all parts of the world. There are 3 types of influenza viruses which cause infection in humans, types A, B, and C. Influenza A and B viruses cause seasonal epidemics of disease.¹ Influenza affect all age groups; globally incidence is higher in young children and those above 65 years.^{2,3} Persons with co-morbid conditions; such as lung disease, heart disease, liver disease, kidney disease, blood disorders, Diabetes; pregnancy and immuno-compromised persons are at higher risk. The transmission is air borne from person-to-person, through droplets generated by the act of coughing, sneezing, hand-shaking, talking and laughing. The hallmark of influenza is the sudden, rapid onset of symptoms. Influenza symptoms may include fever, chills, body aches, sore throat, non-productive cough, runny nose and headache.

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Gastrointestinal symptoms and muscle inflammation occur more often in young children, and infants can present with a sepsis-like syndrome. Confirmation of seasonal influenza (including H1N1) infection is through Real time polymerase chain reaction (RT-PCR).⁴

The WHO declared H1N1 as a pandemic on 11th June, 2009 originating in Mexico. The first laboratory-confirmed case was reported from Hyderabad in India on 16th May 2009. The pandemic was started in the western part of Rajasthan in August 2009 and lasted until April 2010. In August 2010 WHO declared H1N1 influenza virus as seasonal influenza virus.⁵ Since 2010 a total of 14,826 positive cases are reported from the state along with 1314 deaths. From Jodhpur alone 1,623 case and 221 deaths were reported.⁶

AIMS AND OBJECTIVE

This study was conducted at Dr. Sampurnanad Medical College and attached hospitals, Jodhpur to discern the trends and epidemiology of seasonal influenza in January 2017- February 2018.

MATERIALS AND METHODS

The study was conducted retrospectively, and confirmed H1N1 cases were included from 14

months (January 17 to February 18). The samples (nasopharyngeal/ nasal/ throat swab) were taken from suspected patients and are tested at microbiology department of our centre i.e. Dr. Sampurnanad Medical College, Jodhpur with RT-PCR technique. Nasopharyngeal swabs are preferred for isolation of large amount of virus infected cells.⁷ Infected persons are assumed to be shedding the virus from the day prior to onset of symptoms until resolution of fever. For intubated patients endotracheal secretions are collected. Specimens are placed in sterile viral transport media and are transported to laboratories in ice or cold packs at temperature of 4 degrees.⁸ The positive cases were described according to their demographic characteristics. Case fatality rates were also calculated. The data are collected in Microsoft-Excel sheets and represented as percentages and proportions in the form of tables and graphs.

RESULTS AND OBSERVATIONS

A total of 271 (14.4%) out of 1873 patients' samples were tested positive for H1N1 virus from January 2017 to February 2018. Out of 271 patients 132 (48.7%) were male and rest (51.3%) were female. There were 50 deaths reported in the same period, of which 18 (36%) were male and 32 (64%) were female. Case fatality rate for each sex i.e. male and female was 13.6% and 23% respectively. Patients were in both the extremes of ages. Majority of patients i.e. 177 (65.3%) belonged to age group 20-59 years. Most deaths, 38 (76%) occurred in ≥60 years age group with 22.8% case fatality rate. 116 (42.8%) patients belonged to rural background with rest (57.2%) belonging to urban area. Maximum number of patients i.e. 232 (85.6%) were recorded in the months September-17, December-17, January-18 and February-18 when temperature dip was observed. Same was true for the deaths, i.e. 45 (90%) deaths were in the same months. Out of 50 patients who died, 17 (34%) had various co-morbid factors associated such as chronic heart, lung and liver diseases, severe anaemia, other infections (Dengue, Malarial parasite, HIV), type 2 Diabetes Mellitus, and pregnancy or pregnancy related complications).

Table 1 Distribution of patients according to various socio-demographic factors (N=271)

INDICATOR	TOTAL NO. OF PATIENTS
GENDER	
MALE	132 (48.7%)
FEMALE	139 (51.3%)
AGE GROUP	
0 TO 5	41 (15.1%)
6 TO 10	10 (3.7%)
11 TO 19	8 (2.9%)
20 TO 59	177 (65.3%)
≥60	35 (13%)
RESIDENCE	
RURAL	116 (42.8%)
URBAN	155 (57.2%)

Table 2 Distribution of patients who died due to H1N1 according to gender, age and residence (N=50)

INDICATOR	TOTAL NO. OF PATIENTS	CASE FATALITY RATE
GENDER		
MALE	18 (36%)	13.6%
FEMALE	32 (64%)	23%
AGE GROUP		
0 TO 5	2(4%)	4.9%
11 TO 19	2 (4%)	20%
20 TO 59	38 (76%)	21.5%
≥60	8 (16%)	22.8%
RESIDENCE		
RURAL	22 (44%)	18.9%
URBAN	28 (56%)	18.0%

Table 3 Distribution of cases and deaths due to swine flu according to months

Month	No. of Cases (N=271)	No. of Deaths (N=50)
Jan-17	0	0
Feb-17	0	0
Mar-17	5	0
Apr-17	4	0
May-17	0	0
Jun-17	0	0
Jul-17	0	0
Aug-17	12	3
Sep-17	72	8
Oct-17	10	1
Nov-17	8	0
Dec-17	40	13
Jan-18	72	19
Feb-18	48	6
Total	271	50

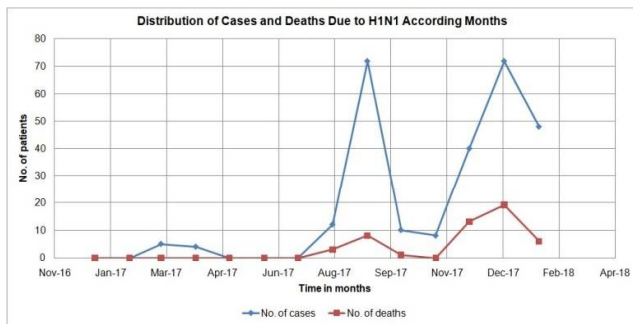


Figure-1. Distribution of cases and deaths due to swine flu according to months

DISCUSSION

Seasonal influenza viruses circulate worldwide and can affect people in any age group. In temperate climates, seasonal epidemics occur mainly during winter. It is a serious public health problem that causes severe illness and death in high risk populations.¹ In our country two peaks are observed, one mild peak post monsoon and one much severe in winter months as shown in the figure 1. Severity of disease was more in months of Jan-Feb-18 as compared to Jan-Feb-17. This change corresponds with the change in recommendation of vaccine by WHO, which recommended replacement of the A/California/7/2009 (H1N1)pdm09-like virus component with an A/Michigan/45/2015

(H1N1)pdm09-like virus.⁹ For the duration Jan-17 to Feb-18, Rajasthan reported a total positive cases of 4,753 and 376 deaths due to swine flu, out of these 271 (5.7%) cases and 50 deaths (13.3%) were reported from Dr. S.N. Medical College, Jodhpur respectively. In a study conducted by Gelotar P. S. et al. in hospital based swine flu cases in Gujarat, a total 246 were recorded positive for H1N1. Most numbers of these cases were from young adults (34.55%) in age group between >15-30 years and paediatrics (25.61%) in age group of <15 years. Male (56.91%) were infected more than female (43.09%). Infection rate was higher in urban population (64.22%) than rural population (35.78%).¹⁰ Total two peaks of infection were noticed. One was in rainy season & second was in winter season. In our study females patients were more than males (51.3% v/s 48.7%), most common age group affected was 20-59, and urban patients were more than rural. In the present study a case fatality of 18.5% was observed. In a similar study conducted by Singh M. et al. case fatality rate was found to be 14.7%, with CFR among males (16.5%) higher than among females (14.5%) and CFR was highest in 50 to 60 years age group. In contrast, the present studied showed a higher case fatality in females than males (23% v/s 13.6%) and highest in the geriatric age group (22.8% in ≥60 years of age).⁵ Co-morbidities such as chronic heart disease, chronic lung disease, diabetes, etc. were present in 34% patients who died, 3 of whom were pregnant and 1 in immediate post-partum period. Similar findings were reported by Sharma V. et al. in a study conducted in a tertiary care institute where deaths due to swine flu were associated with co-morbidities.¹¹

CONCLUSION-

There was marked increase in number of cases in Jan-Feb-18 as compared to Jan-Feb-17. This can be attributed to change of strain.¹² Also temperature changes are responsible in increase in cases in winter months. Persons with co- morbid conditions are at increased risk for mortality; therefore preventive measures in these groups should be made available by the government at the beginning of season.

Conflict of Interest - None

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