

# Age–Sex Distribution and Seasonality Pattern among Influenza Virus Infected Patients in Delhi, 2009–2010

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The sudden rise in the number of novel influenza A (pH1N1) virus infections in India, soon after its emergence in Mexico and USA, raised serious concern about the disease severity and its associated respiratory complications to hospitalized patients.<sup>(1)</sup> Patients suddenly started reporting to various hospitals with severe respiratory complications. They were tested for the pH1N1 infection and their case history was thoroughly evaluated to characterize the epidemiology and clinical severity of the infection. The worldwide data for influenza infections show that the older people, along with young children, are particularly vulnerable to severe outcomes and secondary infections.<sup>(2)</sup> The existing surveillance systems have not made adequate use of age-specific data and the importance of understanding age, when estimating the impact of influenza disease burden, needs to be extensively studied. This short communication describes the snapshot of age and sex distribution in pandemic influenza H1N1 virus related respiratory complications and comorbidities that were identified starting from the peak of pandemic to post-pandemic phase.

A retrospective study initiated in August, 2009, and continued through September, 2010, screening a total of 982 patients, from various hospitals of Delhi, presenting

with severe influenza-like-illness and respiratory complications. Frequency analysis was carried out and expressed as the mean  $\pm$  standard deviation (SD) for patients belonging to different age groups and sex. *P* value of  $\leq 0.05$  was considered significant. All the clinical specimens tested by real-time Reverse transcription-PCR, as per centers for disease control and prevention guidelines, showed 211 (21.48%) patients positive for pH1N1, while 329 (33.5%) for seasonal influenza A virus. The pH1N1-infected population ranged between 6 months and 80 years (mean  $\pm$  SD, 20.36  $\pm$  16.25 years) with maximum in the age group of 6–20 years (35.07%) followed by 21–45 years (31.27%), 0–5 years (21.32%), and 45 years and above (12.32%). The age pattern observed in case of seasonal influenza A virus recorded a maximum in 21–45 years (32.83%) followed by 0–5 years (30.09%), 6–20 years (24.92%), and 45 years and above (12.16%) in the age range of 6 months to 70 years (mean  $\pm$  SD, 20.68  $\pm$  17.96 years). The sex distribution of pH1N1 infection was 136 (64.45%) males as compared to 75 (35.54%) females. The seasonal influenza also followed a similar pattern. The most common comorbidities included asthma/bronchitis/COPD followed by hypertension and diabetes. A correlative analysis of the relative humidity and average temperature with the virus infection rate was done to show the seasonality of the novel virus [Figure 1]. This study had necessary ethical clearance from the Institute's Ethics Committee.

Although all the age groups were reported to have pH1N1 infection, however our findings show that the individuals of 6–20 years were found to be infected more as compared to the lesser and higher age range. The patients infected with pandemic H1N1 and seasonal viruses were associated with few comorbid conditions,

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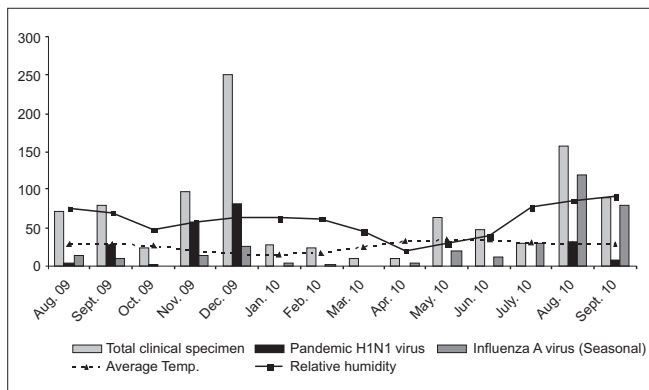
DOI:

10.4103/0970-0218.94028

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Received: 15-04-11, Accepted: 03-12-11



**Figure 1:** Month-wise distribution of clinical specimen collection with influenza positivity and correlation with average temperature and relative humidity

which matched with the worldwide experience.<sup>(3)</sup> The incidence, severity, and case fatality rates following influenza infection can differ between males and females, but are often age-dependent and vary between countries.<sup>(4)</sup> The sex and gender on the outcome of infection are influenced by a number of global, social, and biological factors. Our study reiterates that the novel pH1N1 virus, cocirculating with the seasonal strains, trailed similar influenza epidemiology in terms of age and sex distribution. The new strain followed typical seasonality

as there was tremendous increase in number of positive cases with rise in humidity and fall in temperature.

## Acknowledgement

The authors thankfully acknowledge the health care professionals of KSCH and MAMC in clinical specimens collection.

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**How cite this article:** Kumar B, Pati DR, Khanna M, Kumar P, Daga MK, Singh V, *et al.* Age-sex distribution and seasonality pattern among influenza virus infected patients in Delhi, 2009-2010. *Indian J Community Med* 2012;37:57-8.

**Source of Support:** Nil, **Conflict of Interest:** None declared.

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