# Case Fatality Rate and Some Demographic Characteristics Among Children in Al- Elwyia Pediatric Teaching Hospital During Influnza Pandemic 2009

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## Abstract

**Background:** Influenza A (H1N1) virus is the subtype of influenza A virus that was the most common cause of human influenza (flu) in 2009. Other strains of H1N1 are endemic in pigs (swine influenza) and in birds (avian influenza). In June 2009, the World Health Organization declared the new strain of swine-origin H1N1 as a pandemic. This strain is often called swine flu by the public media.

**Aim :** This study was designed to know case fatality rate and some demographic characters during 2009 influnza pandemic among children in Al- Elwyia teaching hospital Baghdad Iraq.

**Methods :** Cross sectional study of 342 cases with signs and symptoms of influenza were studied. Samples were tested with real time polymerase chain reaction (PCR) .

**Results :**Case fatality rate was estimated to be 0.5% . Males and the age group of 6-12years age group are predominantly affected with pandemic influenza.

**Conclusion :** Pediatric H1N1 case fatality rate is comparable to national and global case fatality rate.

**Key words :** Influnza, H1N1,pandemic, case fatility .

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## Introduction

On 11 June 2009 the World Health Organization formally confirmed the first pandemic of influenza for 40 years[1].

The novel strain of influenza known as pandemic (H1N1) 2009 virus that originated in Mexico and the United States resulted in the first pandemic of the 21st century. As of May 2010 cases were observed in 214 countries, and 18,097 laboratory-confirmed deaths caused by this virus have been reported [1].

By May 2010, the number of cases was in steep decline[2,3,4]. On 10 August 2010, the Director-General of the World Health Organization,Margaret Chan, announced the end of the H1N1 pandemic, and announced that the H1N1 influenza event has moved into the post-pandemic period.[5]

In 24/6/2009, Iraq announced first confirmed case of H1N1 followed by announcement of subsequent cases. W.H.O was on 24 June, reported 55,867 global confirmed cases of novel H1N1 swine flu including 238 deaths (0.4 % case fatality ) while the United States figures, with 21,449 total confirmed cases, including 87 deaths[6] (0.4 % case fatality ) .

Till 15th Nov. 2009 nine cases of influenza death were recorded in Iraq among a total of 1835 confirmed H1N1 cases[7].

Case fatality rate among confirmed cases was 0.49%

This study was designed to know the mortality rate due to H1N1 and to show some demographic characteristic of disease among children at Al- Elwyia Pediatric Teaching Hospital during influnza pandemic 2009.

## Material and Methods

This cross sectional study was done between 19/10/2009 and 15/11/2009. Samples were collected from 342 cases with signs and symptoms of influenza cases consulting outpatients departments , samples also include suspected patients admitted to influenza unit.

Routine sampling of suspected cases of influenza were carried out according to Iraqi communicable disease center instructions and guidelines. After mid of November, investigations were limited to in patients suspected cases .

Samples include nose and throat swabs and blood samples (3-5 ml of blood ) . These samples were sent to central health lab in Baghdad which lies just few kilometers from the hospital to be tested by real time- PCR for confirmation of H1N1. The only case with fatal outcome was discussed in influenza special death conference and was concluded that the cause of death was H1N1 with complicated pneumonia and the death report declared that she has not suffering from chronic illness.

## Results

Results show that 57% of samples were positive for H1N1 ,males are predominant,11-15 years age and primary school groups are predominant and mortality rate was 0.5% among H1N1 cases (tables 1-5).

**Table (1):** Distribution of results according to positivity or negativity for H1N1.

| Result | No. | % |
|---|---|---|
| **Negative** | 147 | 43% |
| **Positive** | 195 | 57% |
| **Total** | 342 | 100% |

Table1 shows 57 % of suspected cases were positive for H1N1.

**Table (2):** Distribution of H1 N1 cases according to gender :

| Gender | No. | % |
|---|---|---|
| **Male** | 123 | 63.1 |
| **Female** | 72 | 36.9 |
| **Total** | 195 | 100 |

Males constitute 63.1% of cases while females constitute 36.9%.

**Table (3):** Distribution of patients with H1N1according to age group**.**

| Age group (year) | No. | % |
|---|---|---|
| **0-1** | 2 | 1 |
| **2-5** | 27 | 13.8 |
| **6-10** | 70 | 35.9 |
| **11-15** | 93 | 47.7 |
| **>15** | 3 | 1.5 |
| **Total** | 195 | 100 |

This table shows that 11-15 years age group constitute 47.7 % of the sample which is the predominant age group founded among study sample .

**Table (4):** Distribution patients with H1N1 according to school stage.

| Stage | No. | % |
|---|---|---|
| **Preschool** | 42 | 21.5 |
| **Primary school** | 121 | 63 |
| **secondary** | 25 | 12.8 |
| **Left or unregistered** | 7 | 3.6 |
| **Total** | 195 | 100 |

63% of cases lie within primary school level which is the predominant group founded among study sample.

**Table (5):** Mortality rate among confirmed cases :

| Outcome | No. | % |
|---|---|---|
| **Live** | 194 | 99.49 |
| **Dead** | 1 | 0.51 |
| **Total** | 195 | 100 |

## Discussion

Data from UK and USA regarding pandemic A/H1N1 Influenza in Children (age range, 5 to 14 years) shows highest estimated incidence rate and the lowest case fatality rate during 2009 pandamic[8] .

In UK, the overall estimated case fatality for H1N1 rate was 26 per 100 000. It was lowest for children aged 5-14 (11 per 100 000) and highest for those aged ≥65 (980 per 100 000). In the 138 people in whom the confirmed cause of death was pandemic A/H1N1, the median age was 39 [9]. United Kingdom case fatality rate is lowest among global figures .

One Mexican study calculated a case fatality rate of 0.1%, but the denominator was restricted to patients presenting to primary care[10].

Worldwide estimate of case fatality rate compares favorably with those in the three 20th century influenza pandemics. The rate in the 1918-9 H1N1 pandemic was 1-3% [11,12]. Rates in the subsequent pandemics (1957-8 and 1967-8) were in the order of 0.2%[13].The whole case fatality rate of H1N1 in Iraq as reported in 15th Nov. 2009[7] 10 was 0.49% which is comparable to our pediatric population mortality (0.51% among confirmed cases ) and was compared

to global case mortality figures[2] , although higher than (1957-8 and 1967-8) pandemics.

The case fatality rate among pediatric age group in this study shows no big difference when compared to our national figures.

The great majority of deaths in the 1918 flu pandemic were the result of secondary bacterial pneumonia. Subsequent pandemics have had many fewer fatalities due to the development of antibiotic medicines which can treat pneumonia[14].

Children were particularly affected by pandemic (H1N1) 2009. This finding is evident in the age distribution of patients, which is skewed toward younger age groups, and in high hospitalization rates for children identified in many settings worldwide[15,16,17].

The study shows that 11-15 years age group are more predominantly affected and shows the predominance of primary school level. This might be explained by overcrowding in primary schools .

The study shows male predominance of samples(63% ).

The reported male-female differences in the incidence of infection vary with age in several countries . The male/female ratios for H1N1 influenza cases were >1 in age groups <20 years in one study done in Japan[18].

Conclusion : Pediatric H1N1 case fatality rate is comparable to national and global case fatality rate

Conflicts of interest

We declare that we have no conflicts of interest.

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