Statistical study for Influenza in Thi-Qar governorate Iraq / 2010

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Summary:

The present study was designed to determined the number of infection of influenza in Thi-Qar governorate from the beginning of January till the ending of December 2010.

The total number of Influenza cases was 35455 and a significant differences P≤0.001 were recorded in the infection percentage of months and December was the highest month distribution 16.5 %, a significant differences were shown between age groups P≤0.01 and a high percentage of infection 34.3 % was found in age group 15-44 years which followed by 23.1 % in age group 5-14 years.

The high diffusion factor of Influenza was found in Al-Chiebaish distinct 49.5 per thousand.

الخلاصة:

صممت الدراسة الحالية لتحديد عدد الإصابات بالأنفلونزا في محافظة ذي قار خلال المدة من بداية شهر كانون الثاني إلى نهاية شهر كانون الأول لعام 2010.

وجد أن عدد الإصابات الكلية بالأنفلونزا 35455 إصابة وسجل وجود فروق معنوية P≤0.001 بين نسب الإصابة حسب الأشهر إذ كانت أعلى نسبة إصابة خلال شهر كانون الأول 16.5 %، ولوحظ وجود فروق معنوية P≤0.01 بين الفئات العمرية وكانت أعلى نسبة إصابة ضمن الفئة العمرية 15-45سنة 34.3 % تلتها الفئة العمرية 5-14 سنة 23.1 %، وأعلى معامل انتشار لمرض الأنفلونزا كان في قضاء الجبايش 49.5 بالألف.

Introduction:

The Influenza is a contagious respiratory illness caused by influenza viruses. It can cause mild to severe illness, and at times can lead to death. Some people, such as older people, young

children, and people with certain health conditions, are at high risk for serious Influenza complications, (http://www.cdc.gov/flu/professionals/acip/persons.htm).

Influenza, commonly referred to as the flu, is an infectious disease caused by RNA viruses of the family Orthomyxoviridae (the influenza viruses), that affects birds and mammals. The name influenza is Italian and means "influence" (Latin: influentia). The most common symptoms of the disease are chills, fever, sore throat, muscle pains, severe headache, coughing, weakness/fatigue and general discomfort, Influenza may produce nausea and vomiting, particularlyinchildren. (http://www.merck.com/mmhe/sec17/ch198/ch198d.html).

Typically, influenza is transmitted through the air by coughs or sneezes, creating aerosols containing the virus. Influenza can also be transmitted by direct contact with bird droppings or nasal secretions, or through contact with contaminated surfaces. Airborne aerosols have been thought to cause most infections, although which means of transmission is most important is not absolutely clear (Brankston *et al*., 2007).

Influenza viruses can be inactivated by sunlight, disinfectants and detergents (Suarez *et al*., 2003).

Three influenza pandemics occurred in the 20th century and killed tens of millions of people, with each of these pandemics being caused by the appearance of a new strain of the virus in humans.

Often, these new strains appear when an existing flu virus spreads to humans from other animal species, or when an existing human strain picks up new genes from a virus that usually infects birds or pigs (WHO, 2006).

Influenza spreads around the world in seasonal epidemics, resulting in the deaths of hundreds of thousands worldwide annually, and millions in pandemic years (Dushoff *et al*., 2006).

The present study is aimed to asses the distribution of Influenza in Thi-Qar governorate for the period from the beginning of January till the ending 0f December 2010.

Methods:

This work is an epidemiological study on the distribution of Influenza among the people attending all hospitals or health centers in Thi-Qar governorate by the helping of Thi-Qar health office during the period from the beginning of January till the ending of December 2010.

Influenza diagnosed clinically by the medical doctors and the information was collected such as age, address and other confounders by special information sheet.

The results were analyzed statistically with T test by the statistical program SPSS.

Results:

Table (1) Percentage of Influenza cases distribution to months in Thi-Qar, 2010.

	Month	Number of cases	Percentage %
1	January	3307	9.3
2	February	2830	8.0
3	March	2078	5.9
4	April	4037	11.4
5	May	2282	6.4
6	June	1943	5.5
7	July	2770	7.8
8	August	2232	6.3
9	September	2794	7.9
10	October	3016	8.5
11	November	2320	6.5
12	December	5846	16.5
	Total	35455	100

T cal: 9.45, T tab:2.201, $P \leq 0.001$.

Table (2) Age distribution of Influenza cases in Thi-Qar, 2010.

Age group (Year)		Total	Percentage %
1	≤ 1	3449	9.7
2	1-4	7047	19.9
3	5-14	8204	23.1
4	15-44	12146	34.3
5	≥ 45	4609	13.0
	Total	35455	100

T cal: 4.66, T tab:2.77, P≤0.01.

Table (3) diffusion factor of Influenza cases distribution on geographical areas in Thi-Qar, 2010.

	Distinct	Number of cases	Percentage %	Total number of people	Percentage %	diffusion factor
1	Nasiriyah	8125	22.9	651071	36.7	12.4
2	Al-Shatra	14459	21.8	401639	15.8	35.9
3	Al-Refai	1648	40.8	368618	22.7	4.4
4	Suq-Alshuyukh	7733	4.7	280490	20.8	27.5

5	**Al-chiebaish**	**3490**	**9.8**	**70484**	**4.0**	**49.5**
	Total	**35455**	**100**	**1772302**	**100**	**20**

Discussion:

Influenza is caused by a variety of species and strains of viruses, in any given year some strains can die out while others create epidemics, while yet another strain can cause a pandemic. Typically, in a year's normal two flu seasons (one per hemisphere), there are between three and five million cases of severe illness and up to 500,000 deaths worldwide, which by some definitions was a yearly influenza epidemic (WHO, 2003)

In current study the total number of Influenza cases was 35455 (table 1) and this high number of infection cases return to the transmission of influenza can be modeled mathematically, which helps predict how the virus will spread in a population (Grassly and Fraser, 2008).

Influenza can be spread in three main ways: (Hall, 2007) by direct transmission (when an infected person sneezes mucus directly into the eyes, nose or mouth of another person); the airborne route (when someone inhales the aerosols produced by an infected person coughing, sneezing or spitting) and through hand-to-eye, hand-to-nose, or hand-to-mouth transmission, either from contaminated surfaces or from direct personal contact such as a hand-shake. The relative importance of these three modes of transmission is unclear, and they may all contribute to the spread of the virus (Taller, 2006). In the airborne route, the droplets that are small enough for people to inhale are 0.5 to 5 μm in diameter and inhaling just one droplet might be enough to cause an infection (Weber and Stilianakis, 2008). Although a single sneeze releases up to 40,000 droplets (Cole, and Cook, 1998), most of these droplets are quite large and will quickly settle out of the air. How long influenza survives in airborne droplets seems to be influenced by the levels of humidity and UV radiation: with low humidity and a lack of sunlight in winter probably aiding its survival(Weber and Stilianakis, 2008).

As the influenza virus can persist outside of the body, it can also be transmitted by contaminated surfaces such as banknotes (Thomas *et al*., 2008), doorknobs, light switches and other

household items ,The length of time the virus will persist on a surface varies, with the virus surviving for one to two days on hard, non-porous surfaces such as plastic or metal, for about fifteen minutes from dry paper tissues, and only five minutes on skin (Bean et al., 1982). However, if the virus is present in mucus, this can protect it for longer periods (up to 17 days on banknotes) (Thomas *et al*., 2008; Weber and Stilianakis, 2008).

In current study a significant differences P≤0.001 were recorded in the infection percentage of months (table 1) and December was the highest month distribution 16.5 % followed by April, January, February, 11.4%, 9.3%, 8.0%, Influenza reaches peak prevalence in winter because people are indoors more often during the winter, they are in close contact more often, and this promotes transmission from person to person.

Another factor is that cold temperatures lead to drier air, which may dehydrate mucus, preventing the body from effectively expelling virus particles. The virus may also survive longer on exposed surfaces at colder temperatures, aerosol transmission of the virus is highest in cold environments (less than 5 °C) with low relative humidity (Lowen et al., 2007). However, seasonal changes in infection rates also occur in tropical regions, and in some countries these peaks of infection are seen mainly during the rainy season (Shek and Lee, 2003).

children do not go to school in the summer, there is a more pronounced beginning to flu season, coinciding with the start of public school. It is thought that the creche environment is perfect for the spread of illness and Vitamin D production from Ultraviolet-B in the skin changes with the seasons and affects the immune system (Cannell *et al*., 2006; Cannell *et al*., 2008).

Research in guinea pigs has shown that the aerosol transmission of the virus is enhanced when the air is cold and dry (.Lowen *et al*., 2007).

Recent research done by National Institute of Child Health and Human Development (NICHD) found that the influenza virus has a "butter-like coating". The coating melts when it enters the respiratory tract. In the winter, the coating becomes a hardened shell; therefore, it can survive in the cold weather similar to a spore. In the summer, the coating melts before the virus reaches the respiratory tract (Polozov *et al*., 2008).

A significant differences were shown between age groups P≤0.001 and a high percentage of infection 34.3 % was found in age group 15-44 years which followed by 23.1 % in age group 5-14 years and the percentage of infection in children group (≤1-14 years) was 52.9 % (table 2), Children are much more infectious than adults and shed virus from just before they develop symptoms until two weeks after infection (Carrat *et al*., 2006).

Children and the elderly were a high-risk groups of people who must be Vaccination against influenza with an influenza vaccine (Hilleman, 2002), even healthy people can be affected, and serious problems from influenza can happen at any age. People over 50 years old, very young children and people of any age with chronic medical conditions are more likely to get complications from influenza, such as pneumonia, bronchitis, sinus, and ear infections (CDC, 2006).

The high diffusion factor of Influenza was found in Al-Chiebaish distinct 49.5 per thousand (table 3) and this differences in diffusion factor of infection was referred to vary in health service sufficiently and the active of health groups and the ability to dominate the infection between geographical areas of Thi-Qar governorates, in Al-Chiebaish distinct which had approximately 50 persons infected with influenza per 1000 persons mostly of people lived in rural areas which suffered from decline health level besides the long distance between the rural areas and the hospitals or health centers, most people in this distinct suffered from decline in teaching level that led to ignorance with health rules of transmitted or controlled of this infectious disease.

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