

Incidence Rate of Dengue Fever in Saudi Arabia 2011-2018, a Retrospective

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Abstract: Background: Dengue fever is the most unexpectedly spreading mosquito-borne viral disease inside the world. In the last 50 years, incidence rate has accelerated 30-fold with growing geographic expansion to new nations and, in the gift decade from urban to rural settings.

Method: A retrospective cross-sectional study was conducted to assess the magnitude of dengue fever in Saud Arabia. Secondary data was collected from the statistical books from 2011 – 2018, the incidence rate per 100,000 persons was calculated and analyzed. The variables collected included age, sex, nationality and incidence rate distribution by years, month and cities.

Results:

The result indicates that the incidence rate of dengue fever was comparatively low in the year 2012 and 2014 than in other years. The number of dengue fever cases started to rise in January, reach its peak between April, May and June. Incidence rate of non-Saudis was greater than that of Saudis, males were more affected than females. Also, the look at indicates that there is an association among occurrence of dengue fever and age distribution.

Conclusion:

Dengue fever cases found in Saudi Arabia during the month of January and the number of cases seems to increase more in the month of April, May and June. It is an endemic in cities like Jeddah, Makah, Medina and Jazan.

Recommendations: Mosquito control programs and effective health education programs regarding prevention and control of dengue fever needed.

I. INTRODUCTION

Dengue fever is a serious febrile fever that caused by Aedes allbopictus and Aedes aegypti and mostly in tropical area among the children and adult [1]. Hemorrhagic complications (DHF) or shock (DSS) as well as depression and tiredness are associated with DF symptoms [2]. Over 2.5 billion humans are at risk of contracting dengue worldwide, with an anticipated 390 annual infections (range 284-528 million infections), approximately of which approximately ninety six million had been scientific significant (24.6%) [3]. It has absolutely been mentioned that as high as 87% of infections can certainly be clinically irrelevant or in apparent [4] -[5], most dengue infections arise in tropical and subtropical areas, as bloodless wintry weather temperatures restriction the distribution of dengue's vectors, and temperature and rainfall have an effect on these mosquitoes' breeding styles and life cycles [6] -[7]. Dengue fever was first discovered in Batavia in 1779 and a year later in Philadelphia,

[8]. 1998, another DF pandemic occurred in 56 countries with an infection of 1.2 million people [9]. In Saudi Arabia, the dengue virus was identified first in Jeddah 1994, on account that that the disease becomes endemic in many towns of Saudi Arabia like Jeddah, Mecca, Medina and Jazan [10].

II. METHODOLOGY

This is a cross sectional study was conducted in Saudi Arabia from 2011 to 2018. The data and were collected from statistical book of Ministry of Health. The data included age, sex, nationality and distribution of cases per month and city.

III. RESULTS

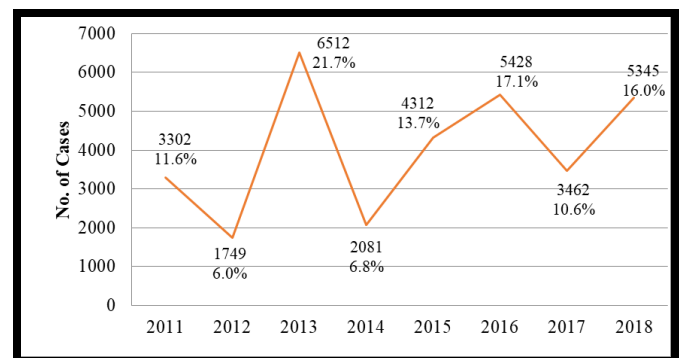


Figure 1: lines shows Incidence Rate of Dengue Fever and Number of Cases in Kingdom of Saudi Arabia, 2011-2018

The result indicates that the Incidence rate for dengue fever per 100,000 persons were higher in the years 2011,2013,2015,2016,2017 and 2018 was (11.64) (21.71) (13.68) (17.1) (10.64) (16.00) respectively and was lower in years 2012 and 2014.

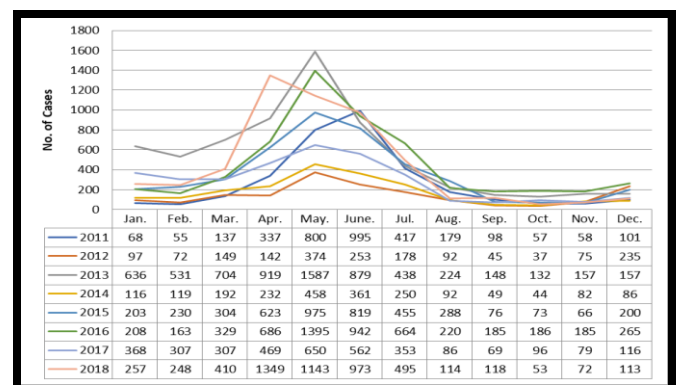


Figure 2: Lines Shows Trends of Dengue Fever by Months, Kingdom of Saudi Arabia, 2011-2018.

The study revealed that, the majority of cases occurred in April, May and July

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Table 1: Distribution of dengue fever cases according to the city, Kingdom of Saudi Arabia, 2011-2018

2018	2017	2016	2015	2014	2013	2012	2011	City
0	0	4	0	1	2	1	2	Riyadh
163	372	450	855	432	1748	1580	867	Makkah
4942	2656	4323	3161	1524	4411	0	2348	Jeddah
11	6	31	16	7	69	0	25	Ta if
41	105	56	10	31	52	0	0	Medinah
0	0	9	1	0	1	0	0	Eastern
0	0	1	0	0	0	0	0	Elihsa
0	0	9	0	8	0	0	0	Tabook
174	320	550	266	71	92	165	50	Jazan
14	3	2	3	7	137	3	9	Najran
0	0	0	0	0	0	0	1	El- Bahah
0	0	2	0	0	0	0	0	Elgnphoda
6345	3462	5428	4312	2081	6512	1749	3302	Total

City	2011	2012	2013	2014	2015	2016	2017	2018
Riyadh	2	1	2	1	0	4	0	0
Makkah	867	1580	1748	432	855	450	372	163
Jeddah	2348	0	4411	1524	3161	4323	2656	4942
Ta if	25	0	69	7	16	31	6	11
Medinah	0	0	52	31	10	56	105	41
Eastern	0	0	1	0	1	9		0
Elihsa	0	0	0	0	0	1	0	0
Tabook	0	0	0	8	0	9		0
Jazan	50	165	92	71	266	550	320	174
Najran	9	3	137	7	3	2	3	14
El- Bahah	1	0	0	0	0	0		0
Elgnphoda	0	0	0	0	0	2	0	0
Total	3302	1749	6512	2081	4312	5428	3462	6345

High Incidence rate of dengue fever reported from four cities Jeddah, Makkah, Madinah and Jazan.

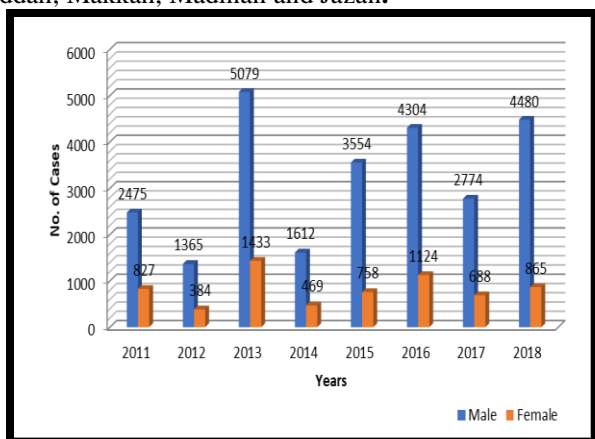


Figure 4: Bars Shows Number of Males and Females Contracted Dengue in Kingdom of Saudi Arabia, 2011-2018.

From the statistical book, the reports showed that the male were at significant risk of acquiring the dengue fever infection comparing to female.

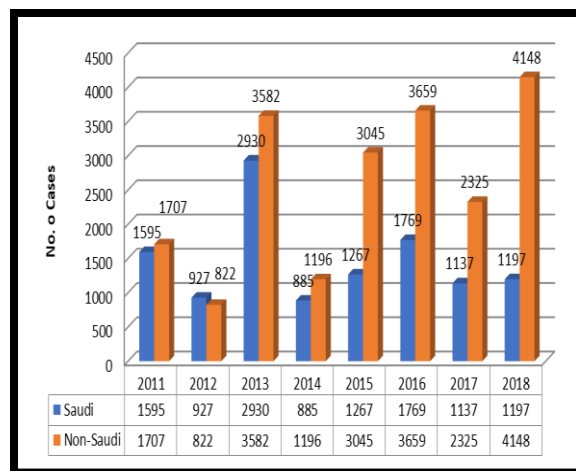


Figure 5: Bars Shows Number of Saudi and Non-Saudi Contracted Dengue Fever, Kingdom of Saudi Arabia, 2011-2018.

Most cases were found high among Non- Saudi than Saudi person.

Table 2: Association between Incidence rate of dengue fever and age group, Kingdom of Saudi Arabia, 2011-2018.

Age	2011-2012	2013-2014	2015-2016	2017-2018
1—5 years	143	128	460	176
5-15 years	451	676	569	525
15--4 5years	900	1688	5734	8106

The study revealed that there is an association between the incidence rate of dengue fever and age group.

IV. DISCUSSION

Dengue Fever (DF) maintains to be a first-rate public health trouble within the country. Many risk factors make KSA prone to outbreaks and epidemics; amongst these, Increased tour among humans to neighboring States for the motive of jobs and trades is probably answerable for the spread of the disease, fast unplanned urbanization with heavy construction activities and bad sanitation facilities make contributions to fertile breeding grounds for the mosquitoes, possibility of resistance of *Ae. Aegypti* to the insecticides have been reported in the distinctive elements of Jazan (AL sheikh et al. 2016). Also, the poor know-how about the hobby of mosquito main to poorer protective practices in opposition to the mosquito. (Elyas et al, 2016).

The study reported that maximum number of dengue cases seen in April, May and June, which indicated an active viral transmission during this period. Most studies in the review found that dengue transmission is highly sensitive to climatic conditions, especially temperature, rainfalls and relative humidity (Horta 2014).

The disease is endemic in many elements of KSA, with the majority of cases concentrated in four towns (Jeddah, Makah, Madinah and Jizan). These cities are the websites of both the yearly pilgrimage (Hajj) and the minor pilgrimage (Umrah), which might be completed by almost three million Muslims from everywhere in the world. Second, even more visitors come to Jeddah for the duration of the summertime. Third, those pilgrimages arise for the duration of the rainy season. Fourth, greater humidity and excessive temperatures may assist exacerbate the situation, making Makah and Jeddah extra liable to infectious diseases (Khormi 2012) (Khan 2008). Some sporadic instances in Jizan have been defined as because of the nature of the city; Jizan is notably flat and placed at sea level; hence, the probability of the formation of small stagnant water collections is excessive following the rainfall (Al-Azraqi 2013). Another examines in Brazil also showed that the risk of dengue transmission improved with excessive temperatures. The study revealed that male were at significant risk of acquiring the dengue fever infection comparing to female, these findings are consistent with studies have shown that male and young age are significant risk factors for DF (Alzahrani 2013) (Ayub 2006).

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