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Follow up of dengue disease in Swat after the outbreak in 2013

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Abstract
Dengue is an epidemic health problem in Pakistan since December 2013 affecting more than 2.5 billion people worldwide. Pakistan is also one of the victims of dengue disease which has been affecting differentiated areas of Pakistan since 1994 after the first conform report of positive case of dengue in Pakistan. Since then different areas are been hit but still it is endemic in Pakistan. In August 2013, outbreak of dengue was occurred in District Swat of Khyber Pakhtunkhwa which had killed more than 37 deaths reported. In 2014 the occurrence of dengue was studied. In 2014 total of 278 patient we are reported positive for dengue out of which male were more affected. Means that dengue virus affect male patients more than female. It was also reported that dengue is found to be more prevalent in age group 21- 40. In laboratory examinations it was found that 4% patients were IgM positive, 2% were IgG positive and the highest 92% were NS1 positive. The study also shows that Faizabad area of Minogra was more affected having 29% patients. In this study I found that platelets count was very variable from as low as zero in one patient to as high as 440000in other

Keywords: Dengue disease, dengue virus, victims

Introduction
The word dengue is supposed to be originated from a Swahili phrase "Ki-dinga Pepo" meaning of a disease which have a sudden cramp like seizure, a caused by an evil spirit. (Carey 1971). Dengue was present for centuries which were not recognized. The first recorded symptoms which were related to dengue were noted in Chinese medical encyclopedia in 992 AD. However they were originally published can be referred to Dyansty centuries earlier (265-420 AD). Before officially reported. They called the disease as "water poison" and associate this to flying insects. (Natasha *et al*., 2013) [1].

The dengue disease is caused by four viruses (DV) that are DENV-1, DENV-2, DENV-3 & DENV-4. Which are antigenically related but have distinct serotypes and are transmitted to human by two vectors, one is primary vector that is *Aedes aegypti* and the other is secondary vector that is Aedes albopictus. These viruses generally casue either dengue fever (DF), or a severe case dengue haemorrhagic fever/dengue shock syndrome (DHF/DSS. ((Basu *et al*., 2008). The dengue viruses have four different serotypes, which can be differentiated serologically. Infection of any of them can cause dengue fever or in more severe form causes hemorrhagic feve (DHF). (Chungue *et al*., 1995) [2].

Dengue is beloved to be very endemic in tropical and subtropical regions and have estimated 2.5 billion effecties, these areas covers 100 counties. It is notified that per year over 100 million cases of dengue fever and around 450,000 cases of dengue hemorrhage fever are reported. (Murray NE *et al*., 2013) [3]. Epidemics same as dengue, occurred in 1635 and 1699 in West Indies and Central America. But a relative major out occurred in Philadelphia in 1789 and the epidemic then became common in USA uptill 20th century. The last outbreak there happened in New Olreans in 1945. (Natasha *et al*., 2013) [1].

In Pakistan the first case of dengue fever was reported in 1994-95 which is followed by many out breaks in different areas of the country speacaily in karachi and Lahore which were a night Mayer for population and had an adverse effect on them. (Humayoun MA *et al*., 2010) [4]. There were two different out breaks of dengue in two very different areas of Pakistan, on in Lahore (Punjab) 2011 and the second in Swat (KPK) in 2013 affecting more tha 20000 thousand humans with approximately 4000 deaths. In current study I have focus on the follow up cases after the outbreak in 2013 and had studied the cases with were reported in Saidu group of teaching hospital in 2014.

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1.1 Sign, symptoms of dengue disease

Many patients with dengue experience a prodromal of chills, erythematous mottling of the skin, and facial flushing, which may last for 2-3 days. Children younger than 15 years usually have a nonspecific febrile syndrome, which may be accompanied by a maculopapular rash.

Accompanying symptoms in patients with dengue may include any of the following:

- Headache
- Retro-orbital pain
- Severe myalgias: Especially of the lower back, arms, and legs
- Arthralgias: Usually of the knees and shoulders
- Nausea and vomiting (diarrhea is rare)
- Rash: A maculopapular or macular confluent rash over the face, thorax, and flexor surfaces, with islands of skin sparing
- Weakness
- Altered taste sensation
- Anorexia
- Sore throat

Mild hemorrhagic manifestations (for example, petechiae, bleeding gums, epistaxis, menorrhagia, hematuria.)

2. Methods & Materials
2.1 Description of the Study area

The study area Swat is part of the provincially administrated Tribal Area (PATA) of the Khyber Pakhtunkhwa Province of Pakistan. Total area is 5,337 km2, total population is 1,257,602 and capital is Saidu Sharif. Adversely affected areas of swat were brought under consideration which includes; Amankot, Saidu Sharif, Faizabad, Skha Chena, Sethi, college colony, Makanbagh, Tauheedabad.

The area was selected due to following reasons.
1. It is easily accessible.
2. It was severely affected by dengue disease in 2013.
3. Before this not much epidemiology of dengue after the outbreak was studied.

2.2 Collection of clinical data

The date was collected from medical wards of Saidu group of teaching hospital for years 2014-15 containing information of each patient via name, father name, age, sex, address, date of onset, DF and DHF, date of admission and date of discharge, platelets count, IgM and IgG, NS1.

2.3 Parameters used: The following parameters were used in the present study;
- Age wise occurrence of dengue.
- Gender wise occurrence of dengue.
- Laboratory examinations of dengue.

2.4 Analysis of data

The data obtained from Saidu Group of Teaching Hospital was entered in MS excel and further analysis was made in different parameters, their occurrence were find out and were presented in tables.

3. Results
3.1 Age wise occurrence of dengue

The data were analyzed and all patients were divided in five groups for year 2014. In 2014 total of 290 patients were registered. Out of these 87 patients(30%) were in age group 0-20, 147 patients (51%) were from age group 21-40, 47 patients (16%) were from age group 41-60, 8 patients (03%) were from age group 61-80 and only 01 patient was from age group 81-100.(Table 3.1)

Table 3.1: Age wise Occurrence of dengue disease

S. Number	Age range	Number of patients	Percentage
1	0-20	87	30%
2	21-40	147	51%
3	41-60	47	16%
4	61-80	8	3%
	81-		
5	100	1	0%

3.2 Gender vise occurrence of dengue

In registered patients ie; 290 the number of male patients was 171(59%) and number of female patients was 111 (38%) similarly male child patients were 4 (1%) and female child patients were also 4 (1%).(table 3.2).

Table 3.2: Gender wise occurrence of dengue

S. number	Gender	Number of patients	Percentage
1	Female	111	38%
2	Male	171	59%
3	female child	4	1%
4	male child	4	1%

3.3 Laboratory examinations

In laboratory examination IgM, IgG and NS1 were brought under consideration. Out of total patients 11 were IgM +ve (4%) while 1 patient was IgM –ve (0%), among these 5 were IgG +ve (2%) while 2 were IgG –ve (1%), and out of total patients 278 were NS1 +ve (92%) while 5 were NS1 –ve (2). (Table 3.3)

Table 3.3: laboratory examinations (2014)

IgM +ve	IgM -ve	IgG +ve	IgG –ve	NS1 +ve	NS1 –ve
11	1	5	2	278	5
4%	0%	2%	1%	92%	2%

4. Discussion
4.1 Age wise occurrence of dengue:

For each year the total patients were divided in five groups. A comparison was made between all groups. It was found that in year 2014 the dengue fever rate was high (51%) in age group 21-40 and the lowest (0% ie; 1 patient) was found in age group 81-100. This shows that the dengue occurrence is high in middle age group (21-40).

These results are in agreement with the study of (Lin *et al.*, 2012) who show that adult age group show more predominance in dengue fever. These results are also in correlation to the work of (Suleman *et al.*, 2016) [13] who found 49.5% (160/323) age group was 16–30 years old are most affected in their study. My results also showed relation with the study of (Khan & Khan, 2015) [7] who found the same results as my study. My study also is in agreement with the work of (Gupta,

Dar, Kapoor, & Broor, 2006) [8] who studied occurrence of dengue in three years 2003, 2004, 2005 and found that out of these confirmed dengue cases maximum cases, in all three

years, were seen in the age group 21–30. The showed contrast from the study of (Sharma *et al*., 2012) [12] who studied dengue from 20that the most affected age was 2006-2010 and that the age group most commonly affected of all 5 years was 11–20 years. This deviation may be due the reason that adults in adults in study area mostly spent their time in outdoor environment and are exposed to risk factors. It has been concluded that adults are at more risk to dengue in study area as compared to other age groups.

4.2. Gender wise: In the present study those patients which were found positive for dengue disease. It was been found male (59%) were more effected than female (38%). These results are in agreement with the work of (Sharma *et al*., 2005). They studied total 185 cases in different zones of Dehli in which (68%) were male and (32%) were female. These results are in correlation with the study of (Munir *et al*., 2014) who found that Out of the 841 confirmed dengue cases, 514 (79%) were males and 139 (21%) females. The study is also in relation to the work of (Raza *et al*., 2014) who found that Out of 299 patients, 218 (72.9%) were males and 81 (27.1%) were females. The probable reason is that male responsible for all external activities while female are limited to home in study area. The dengue fever is high in males because of the fact that it may be due to outdoor work habit of men as compared to females. They are more exposed to the work site in the early morning or evening while returning from work site to home.

4.3 Laboratory examination: In present out of total patients 278 patients (92%) are found to be positive for NS1, 11 patients (4%) are found to be positive for IgM and 5 patients are found to be positive for IgG. This result may be due to the reason that NS1 may be performed prior to the two tests. This is in agreement to the statement of mayo medical laboratories one of the world's leading medical laboratories which states that NS1 antigenemia is detectable within 24 hours and up to 9 days following symptoms onset and NS1 is often detectable prior to IgM and IgG which showed the high level of NS1 in my results.

5. Conclusion: At the end of the study it is concluded that after the outbreak of dengue in Swat in 2013, Swat was still at risk to dengue which was neglected in 2014 which resulted in 278 patients affected. In the study it was showed and proved that males are more susceptible to dengue than females and adults (middle age group) gets more dengue than others, but still females and other age groups can also be affected by dengue disease.

As there is no treatment for dengue disease and even no vaccine. So the only way of escape is preventive measures; including awareness in community about dengue, eradication of breading grounds of *Aedes aegypti*, continuous spray on standing water to kill the larvae of *Aedes aegypti*, home to home visits of lady health visitors to let female know about the care of dengue and spread of dengue and tell them not to store water in tanks etc. Forming a dengue awareness cell consisting of specialist doctors, educationists, media persons in each districts to have regular sessions on dengue and also involve youth in the war against dengue. The main thing in not to let down the efforts after the outbreaks in any districts for next time. Be prepared and must not let dengue attack again.

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