

# Characteristics of Educational Education Rate in Children with DHF

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## ABSTRACT

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The erythrocyte sedimentation rate (ED) is the rate at which red blood cells settle in a special examination tube in mm/hour (read: millimeters per hour). On examination, the LED will show a high, normal, or low LED. A high erythrocyte sedimentation rate means that the rate of red blood cell deposition is faster than normal. The red blood cells in the body are evenly distributed throughout the blood plasma because the blood continues to flow. showed that from 20 patients, 8 people were diagnosed with DHF with a range of LED counts of 22-35 mm/hour.2. And 12 people who were not diagnosed with DHF with a range of 7-20 mm/hour LED count.3. It is expected to always carry out LED checks on children with DHF using the Westergreen method because the results are more accurate and do not require large funds.

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## 1. Introduction

Dengue Hemorrhagic Fever (DHF) in Indonesia was first discovered in Surabaya in 1968, fourteen years after the Extraordinary Event (KLB) in Manila (Philippines), but virological confirmation was only obtained in 1972. so that by 1980 all provinces in Indonesia except East Timor had been infected with the disease. Dengue Hemorrhagic Fever is a disease caused by dengue virus infection which is still a public health problem when this disease appears, the body condition is very unstable due to hematocrit. This disease is found in almost all parts of the world, especially in tropical countries. An increase in hematocrit levels can indicate hemoconcentration, due to a decrease in fluid volume and an increase in red blood cells, so an examination (LED) measures the degree of erythrocyte sedimentation in a blood sample over a certain period of time. Dengue Extraordinary Events (KLB) usually occur in endemic areas and are associated with the arrival of the rainy season. The age most often affected by DHF is 5-15 years. In patients infected with the dengue virus, a response will occur in the form of secretion of vasoactive mediators which results in increased vascular permeability and extravascular fluid permeation (plasma leak), which is characterized by an increase in hematocrit and erythrocyte sedimentation rate.

This has the potential to result in a state of hypovolemia and shock. Causes of dengue fever Dengue fever is caused by the dengue virus, which is spread by the bite of the *Aedes aegypti* and *Aedes albopictus* mosquitoes. Because it is mediated by these two insects, dengue fever can not be transmitted from person to person directly like the flu. *Aedes aegypti* and *Aedes albopictus* mosquitoes breed mostly in densely populated areas, for example in big cities with humid and warm climates. The problem of dengue fever is usually experienced by subtropical and tropical countries, including Indonesia. It is estimated that there are one hundred million cases of dengue fever that occur every year in the world, even thousands of them are infected in a short time due to this disease outbreak. The erythrocyte sedimentation rate (ED) is the rate at which red blood cells settle in a special examination tube in mm/hour (read: millimeters per hour).

On examination, the LED will show a high, normal, or low LED. A high erythrocyte sedimentation rate means that the rate of red blood cell deposition is faster than normal. The red blood cells in the body are evenly distributed throughout the blood plasma because the blood is constantly flowing. However, if blood is taken and placed in a special tube that was previously given an anticoagulant (anti-blood clotting agent), then the red blood cells will settle at the bottom of the tube due to the influence of gravity while

the erythrocyte sedimentation rate (LED) is used to measure the rate of red blood deposition. in plasma for one hour (mm/hour). Part of the red blood cells (erythrocytes) has a hematocrit where, hematocrit is the number of red blood cells in the blood so that by examining the hematocrit, we will get the results of the comparison of the number of red blood cells (erythrocytes) to the volume of blood in percent units. After carrying out these results, an examination of the erythrocyte sedimentation rate (ED) will be carried out to see the speed at which red blood cells settle in children with dengue fever.

## 2. Methods

The type of research used is a descriptive observational study examining the erythrocyte sedimentation rate (ED) in children with dengue fever (DHF).

### 2.1 Place and Time of Research

- Research Place The research was conducted at Efarina Berastagi Hospital.
- Research Time Data collection in this study was carried out in July – August 2018.

### 2.2 Population, Sample and Types of Data

- Research Population The population in this study were all patients with dengue hemorrhagic fever in children aged 18 years at Efarina Berastagi Hospital.
- Research Sample The sample in this study was taken using the "total sampling" technique, namely all patients with dengue hemorrhagic fever in the Children's Department in Indonesia July – August 2018 by checking the erythrocyte sedimentation rate in children with dengue fever (DHF).

### 2.3 Data Collection Techniques

The type of data collected in this study is secondary data obtained by collecting patient medical records. Data Retrieval The data used is data that has been stored on the first status computer at Efarina Berastagi Hospital made by the registration team and patient status from medical records.

## 3. Results and Discussion

**Table 1**  
Patients Diagnosed with DHF

No	Name	Gender	Umur	Total LED	inspection date LED
1.	ALT	Woman	12 Year	22 mm/jam	06 July 2018
2.	OK	Woman	9 Year	22 mm/jam	06 July 2018
3.	MA	Male	5 Year	23 mm/jam	08 July 2018
4.	XLS	Woman	13 Year	23 mm/jam	11 July 2018
5.	RDP	Woman	5 Year	25 mm/jam	06 August 2018
6.	RA	Male	15 Year	33 mm/jam	23 August 2018
7.	AR	Male	13 Year	33 mm/jam	25 August 2018
8.	RA	Male	12 Year	33 mm/jam	30 August 2018

**Table 2**  
Characteristics by Gender

Gender		%	Total
Male	4 person	50%	8 Orang terdiagnosa DBD
Woman	4 person	50%	

**Table 3**  
Characteristics by Age

5 year	2 person	25%
9 year	1 person	12,50%
12 year	2 person	25%
13 year	2 person	25%
15 year	1 person	12,50%

### 3.1 DHF

Based on the results of research that has been carried out, patients diagnosed with DHF are characterized by fever for 2-7 days with symptoms of shock, lethargy and heartburn. This is supported by research that has been carried out by the Indonesian Ministry of Health, (2010) which states that dengue hemorrhagic fever is an infectious disease caused by the dengue virus and transmitted by the *Aedes aegypti* mosquito, which is characterized by a sudden fever for 2-7 days without a clear cause. accompanied by weakness / lethargy, restlessness, heartburn accompanied by signs of bleeding on the skin in the form of red spots, bruising (echymosis) or rash (lunGS). Sometimes accompanied by nosebleeds, bloody stools, vomiting blood, decreased consciousness or shock (shock). However, in

contrast to the research that has been carried out by Dr. Kariadi Semarang (2010) which states that patients with DHF will experience a fever for 5-7 days. This difference may be due to having a different immune system.

### 3.2 LED

Based on research that has been carried out from 20 patients regarding the ESR examination in children with DHF, 8 people were diagnosed with DHF and 12 were not diagnosed with DHF in this case, this is different from previous researchers, according to Hartoyo E (000). The sample only got 6 samples because the amount of blood was too little. From 6 samples obtained 4 boys and 2 girls. Of the 6 samples, 4 had normal erythrocyte sedimentation rates, 1 had a slow ESR, and 1 had a fast erythrocyte sedimentation rate, then somewhat different from the study by Purwanto from RSAD. The results of the study were 36 of 37 patients had normal hematocrit. Out of 37 patients, only 6 children underwent ESR examination; only 1 child with fast LED (> 15mm/h). In patients, an examination of the erythrocyte sedimentation rate is carried out, namely to see the deposition of erythrocytes in the blood, so that patients with dengue fever (DHF) undergo an ESR examination, in this case an examination using the Westergreen method. With the Westergreen method, higher values can be obtained, this is because the length of the Westergreen pipette is twice the length of the Wintrobe pipette. This fact is what causes clinicians to prefer the Westergreen method over the Wintrobe method. In addition, the International Committee for Standardization in Hematology (ICSH) recommends using the Westergreen method.

## 4. Conclusion

Based on the results of the study it can be concluded that:

- a. The erythrocyte sedimentation rate (ED) in children with dengue fever at the Efarina Berastagi hospital from July – August 2018 showed that 8 of 20 patients were diagnosed with DHF with a range of 22-35 mm/hour ESR.
- b. And 12 people who were not diagnosed with DHF with a range of 7-20 mm/hour LED count.
- c. It is expected to always carry out LED checks on children with DHF using the Westergreen method because the results are more accurate and do not require large funds.

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