

Conference Paper

Epidemiology of Dengue Hemorrhagic Fever (DHF) Using Surveillance Data in Kolaka District, Southeast Sulawesi, Indonesia

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Dengue Hemorrhagic Fever (DHF) is currently a health problem in Southeast Sulawesi Province. It requires serious attention from all stakeholders. This disease has the potential to lead to an extraordinary event (KLB) which is a threat to the wider community. This study used various data from the Indonesian Government Agencies. Data on cases of DHF was obtained from the Southeast Sulawesi Provincial Health Office and the Kolaka Health Office from 2016 to 2020. The conclusion is that most of the DHF sufferers are male with a distribution that tends to decrease every year. The prevalence of the fever has seen a significant decrease. It did not show an increase in trend during the five-year cycle.

Keywords: Dengue Hemorrhagic Fever, Kolaka, Indonesia

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1. INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is an infectious disease caused by the dengue virus transmitted by the *Aedes aegypti* and *Aedes albopictus* mosquitoes. These species found in tropical and subtropical areas including Indonesia to northern Australia [1]. This disease not only often causes Extraordinary Events (KLB) but also causes adverse social and economic impacts. The social losses that occur include causing panic in the family, the death of family members, and the reduced life expectancy of the population [2].

In Indonesia, the number of DHF patients reported was 138,127 cases in 2019. This number increased comparing to in 2018 by 65,602 cases. The mortalities due to DHF in 2019 also increased comparing to 2018 cases from 467 to 919 deaths respectively [3]. Until now, DHF is still a health problem that must be worried about in Southeast Sulawesi Province. It requires a serious attention from all parties, considering that this disease has the potential leading to Extraordinary Events (KLB) and it is a threat to the wider community. In Southeast Sulawesi Province alone, the number of DHF cases

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reported in 2020 was 905 people (Incidence Rate = 34.48 per 100,000 population) and the death rate was 9 people (CFR = 0.9%) [4].

Kolaka Regency is one of the regencies in Southeast Sulawesi Province with the highest number of cases. It is the fourth out of 17 districts with the highest number of cases. In fact, among 12 subdistricts in Kolaka Regency, there were only 2 subdistricts which did not have cases in 2020. While in the previous year all subdistricts in the regency had several cases. Kolaka Regency has a fluctuating prevalence of Dengue Hemorrhagic Fever (DHF) cases, where in 2016 the number of cases were 753, in 2017 there were 243 cases, in 2018 there were 250 cases, and in 2020 there were 60 cases. Regarding 5-year cycle calculation, 2020 is the next cycle. However, based on data from the Surveillance and Immunization section state that this year's DHF cases have significantly decreased to 60 cases with an Incidence Rate of 22.4 per 100,000 population [5].

To prepare for the implementation of Dengue Hemorrhagic Fever prevention effort in Kolaka Regency. It is necessary to describe the number of cases. The decreasing and increasing cases of Dengue Hemorrhagic Fever in Kolaka Regency is very significant. Therefore, it is important to forecast the number of cases for the next period, then the prevention of Dengue Hemorrhagic Fever can be carried out optimally. The objective of the study is to determine the distribution of dengue hemorrhagic fever cases and predict the center of malaria transmission to provide recommendations for preventing the fever in Kolaka Regency.

2. METHODOLOGY

Kolaka Regency is the capital city of Kolaka subdistrict. It is one of the regencies in Southeast Sulawesi Province. Kolaka Regency covers the mainland and islands which has a land area of 3,283.64 km² and an estimated marine area of ± 15,000 km². It is located in the western part of Southeast Sulawesi Province, extending from North to South between 3° 36' – 4° 35' South Latitude and crosses from West to East between 120° 5' – 121° 52' East Longitude.

This study used various data from the Indonesian Government Agencies. Data on cases of dengue hemorrhagic fever (DHF) was obtained from the Southeast Sulawesi Provincial Health Office, and the Kolaka Health Office from 2016 to 2020. The data obtained from the annual health profile published by the Kolaka district health office. Research findings are presented in figure format

3. RESULT OF THE STUDY

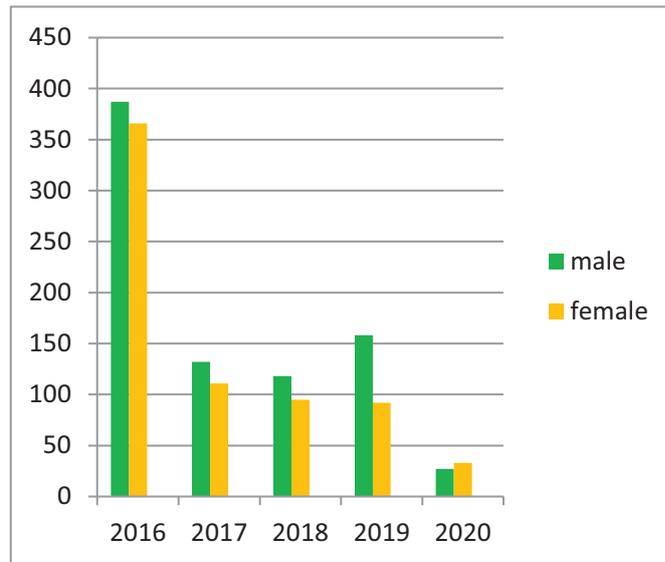


Figure 1: Number of cases by gender in Kolaka Regency.

The result show that from 2016 to 2019 period, the distribution of patients with dengue hemorrhagic fever (DHF) by gender was more in men. In contrast, the distribution of female DHF sufferers is greater than that of male in 2020. However, the frequency of sufferers is relatively small compared to previous years. This means that efforts to control dengue hemorrhagic fever (DHF) in Kolaka have achieved a better result in 2020 (Figure 1).

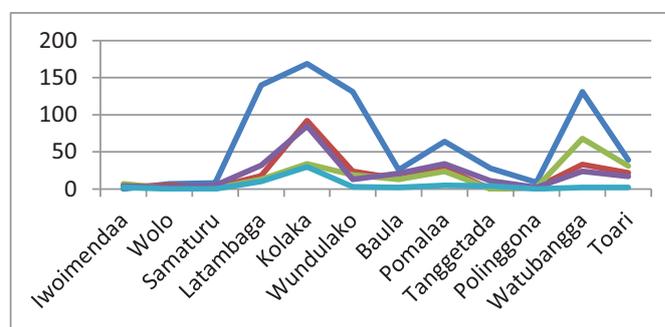


Figure 2: Number of cases by subdistricts in Kolaka Regency.

As can be seen in Figure 2, the highest incidence of dengue hemorrhagic fever (DHF) in 2016 and 2017 was in Kolaka subdistrict. While in 2018, the most cases were found in Watubanggasubdistrict. For the year 2019 and 2020, the highest prevalence was in Kolaka subdistrict.

Figure 3 shows that in 2016, the prevalence of dengue hemorrhagic fever (DHF) was 752 cases with a death rate of 4 cases. In 2017, the cases of dengue hemorrhagic fever

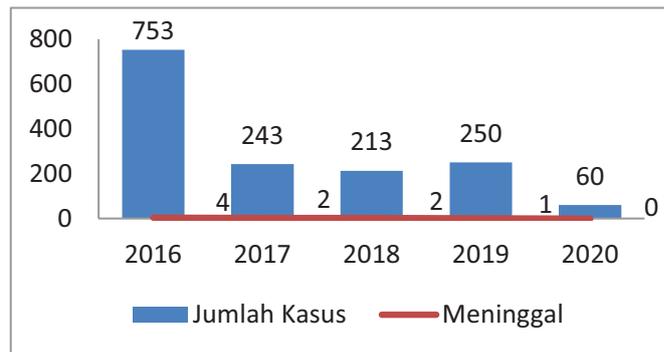


Figure 3: Number of cases by year.

(DHF) were 243, with a mortality rate of 2 cases. In 2018, the prevalence of the fever was 213 cases with a death rate of 2 cases. 250 cases of DHF were found in 2019, with a mortality rate of 1 case. While in 2020, the prevalence of dengue decreased to only 60 cases and there were no cases of death.

4. discussion

The proportion of the dengue hemorrhagic fever (DHF) cases in men was 54.1% while in women was 45.9%. Several studies on the percentage of cases of dengue hemorrhagic fever (DHF) by gender as reported by Saraswati&Mulyantari showed that male sample had the highest suspected dengue fever. It had the highest prevalence of the primary and the secondary infections compared to women. The percentage of male sample with suspected DHF was 53.52% and women 46.48%. Men who got the primary dengue infection were 13.16% and women were 12.79%. While men who suffering the secondary dengue infection were 68.72% and women were 65.40%. These data indicate that men are more susceptible to DHF related to activities or work outside the home during the day, which is the time of exposure to dengue virus vectors [6]. Research conducted by Jalilly in the year 2013 in India stated that from 113 samples, the percentage of DHF cases in men was 51% higher than women which was 49%. This shows that men are more susceptible to dengue infection than women [7].

Meanwhile, based on age group, the highest percentage of patients with suspected DHF was in the 26-45 year age group, that was 28.41%. The age group of 25-46 years also has the highest percentage of the secondary dengue infection, which was 82.17%. This fact shows that even the adult group does not have sufficient immunity to dengue infection with different serotypes. Another thing that causes the high number of cases is because this age group is a productive age range. The group has more activities during the day both indoors and outdoors, performs a high mobilization and

interaction with other people, making it easier for vectors of *Aedes aegypti* mosquito to transmit the dengue virus.

The prevalence of dengue hemorrhagic fever (DHF) is known to be the most common in Kolaka district. This study found that among 12 subdistricts in Kolaka Regency, Kolaka subdistrict is most prone area to the dengue cases. In fact, Kolaka subdistrict is the most populated subdistrict in Kolaka Regency. As a capital of the regency functioned as the administrative center, dengue hemorrhagic fever is one of the health problems emerged

5. conclusion

Most of the patients with dengue hemorrhagic fever (DHF) are male. The distribution of the prevalence tends to decrease year by year. The prevalence of dengue fever since 2016 has seen a significant decrease, even if did not show an increase during the five-year cycle

6. ACKNOWLEDGMENTS

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