

Indonesian Journal of Tropical and Infectious Disease

Vol. 10 No. 3 September–December 2022

Original Article

Characteristics of Leptospirosis Cases in Pacitan District, East Java Province

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Received: March 31st, 2022; Revised: August 13th, 2022; Accepted: September 16th, 2022

ABSTRACT

Leptospirosis is a disease that is still a public health problem in the world, however, these cases are rarely reported due to the difficulty of distinguishing clinical symptoms from other endemic diseases and the lack of appropriate laboratory diagnostic services. Pacitan district is one of the districts in East Java that reported Leptospirosis cases for 3 consecutive years from 2017 to 2019. There were total 92 Leptospirosis cases with Case Fatality Rate (CFR) of 15.22% in Pacitan. This study is a descriptive study with a Cross Sectional design that aims to describe the distribution of characteristics of Leptospirosis cases in Pacitan district based on person, place, and time. This study used secondary data from the Pacitan district Health Office, East Java province. The population in this study was all cases with Leptospirosis cases as many as 92 cases recorded in the Pacitan district Health Office data for 2017–2019. The sample of this study were all cases with Leptospirosis as many as 92 cases. The results of the study obtained Leptospirosis cases in Pacitan district in 2017–2019 based on person occurred most in the age group of 40–49 years old by 20.45%, in the male sex by 68.48%, and in the population who worked as farmers by 73.58%. Based on the place where the most occurred in Tulakan sub district by 52.75%, while based on time, most occurred in February, March and April, this is because February to April is the rainy season. Therefore, based on the results of the study, it is necessary to educate the public, especially at risk groups, about the risk factors and Prevention of Leptospirosis.

Keywords: leptospirosis; Pacitan; person; place; time

ABSTRAK

Leptospirosis merupakan salah satu penyakit yang masih menjadi masalah kesehatan masyarakat di dunia, namun kasus ini jarang dilaporkan karena sulitnya membedakan gejala klinis dengan penyakit endemik lainnya dan kurangnya pelayanan diagnostik laboratorium yang tepat. Kabupaten Pacitan merupakan salah satu Kabupaten di Jawa Timur yang melaporkan adanya kasus Leptospirosis selama 3 tahun berturut-turut dari tahun 2017 hingga tahun 2019. Terdapat 92 kasus Leptospirosis dengan Case Fatality Rate (CFR) sebesar 15.22% di Kabupaten. Penelitian ini merupakan penelitian deskriptif dengan desain Cross Sectional yang bertujuan untuk menggambarkan distribusi karakteristik kasus Leptospirosis di Kabupaten Pacitan berdasarkan orang, tempat, dan waktu. Penelitian ini menggunakan data sekunder yang diperoleh dari Dinas Kesehatan Kabupaten Pacitan, Provinsi Jawa Timur. Populasi dalam penelitian ini adalah seluruh kasus Leptospirosis sebanyak 92 kasus yang tercatat dalam data Dinas Kesehatan Kabupaten Pacitan tahun 2017–2019. Sampel penelitian ini adalah seluruh kasus Leptospirosis sebanyak 92 kasus. Hasil penelitian diperoleh kasus

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Leptospirosis di Kabupaten Pacitan pada tahun 2017–2019 berdasarkan orang paling banyak terjadi pada kelompok usia 40–49 tahun sebesar 20,45%, pada jenis kelamin laki-laki sebesar 68,48%, dan pada penduduk yang bekerja sebagai petani sebesar 73,58%. Berdasarkan tempat paling banyak terjadi pada Kecamatan Tulakan sebesar 52,75%, sedangkan berdasarkan waktu paling banyak terjadi pada bulan Februari, Maret dan April, hal ini karena pada bulan Februari hingga April merupakan musim penghujan. Oleh karena itu berdasarkan hasil penelitian, perlu dilakukan edukasi untuk masyarakat terutama pada kelompok berisiko mengenai faktor risiko dan pencegahan penyakit Leptospirosis.

Kata kunci: leptospirosi; orang; Pacitan; tempat; waktu

How to Cite: Prasetyo, F. A., Isfandiari, M. A., Nugroho, A. Characteristics of Leptospirosis Cases in Pacitan District, East Java Province. Indonesian Journal of Tropical and Infectious Disease. 10(3). 158–164. Dec. 2022.

INTRODUCTION

Leptospirosis is a zoonotic disease that is a public health problem in the world. Leptospirosis is common in tropical and subtropical developing countries and has high rainfall.^{1,2} The occurrence of Leptospirosis is not only related to climate and environmental conditions, but due to contact with environments contaminated with *Leptospira* bacteria such as agriculture, poor housing and waste disposal that can cause a source of infection. While in temperate countries, Leptospirosis can occur locally and can also be transmitted by people who come from abroad, especially those who visit the tropics.^{2–4}

Annual incidence worldwide is estimated at >1 million cases, including approximately 59,000 deaths. The regions with the highest estimates of morbidity include South and Southeast Asia, Oceania, the Caribbean, parts of sub-Saharan Africa and parts of Latin America. Outbreaks can occur after heavy rains or floods in endemic areas, especially in urban areas in developing countries, where housing and sanitary conditions are poor. Leptospirosis outbreaks have occurred in the United States after floods in Hawaii, Florida and Puerto Rico.⁵

The incidence of Leptospirosis in subtropical countries is estimated at between 0.1–1 cases/100,000 inhabitants per year, while in tropical countries it is estimated at 10 cases/100,000 inhabitants per year and may increase to 100 cases/100,000 inhabitants in the event of an outbreak.² In the United States, an estimated 100–200 cases of

Leptospirosis are identified each year, of which 50% occur in Hawaii.¹

Cases of Leptospirosis in humans are generally reported from India, Indonesia, Thailand and Sri Lanka during the rainy season. Indonesia is a tropical country and some areas in Indonesia are endemic areas of Leptospirosis. Leptospirosis can be a public health threat in the event of extraordinary events, this is because in Indonesia there are several risk factors that affect the incidence of Leptospirosis such as the high population of rats (rodent) as a reservoir of Leptospirosis, poor environmental sanitation and flood areas are increasingly widespread.⁶

Leptospirosis is a rarely reported disease, one of the causes of which is the difficulty of distinguishing clinical symptoms from other endemic diseases and the lack of appropriate laboratory diagnostic services.^{3,4} Leptospirosis cases in Indonesia are also not widely reported, only 9 provinces that report cases of Leptospirosis are DKI Jakarta, West Java, Central Java, Yogyakarta, East Java, Banten, North Kalimantan, South Sulawesi and Maluku.⁷

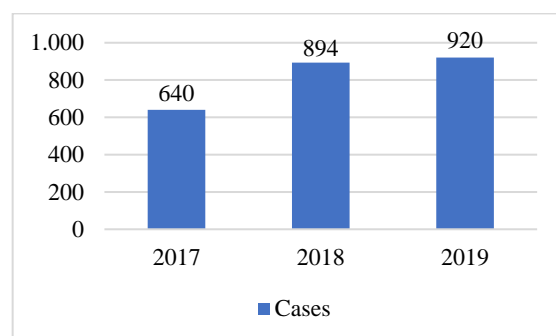


Figure 1. The Situation of Leptospirosis in Indonesia in 2017–2019⁸

The Figure 1 is showed an increase in Leptospirosis cases in Indonesia from 2017 until 2019 and there is a decrease in the case fatality rate from 2017 until 2019. The highest Leptospirosis cases occurred in 2019 and the lowest Leptospirosis cases occurred in 2017, while the highest case fatality rate occurred in 2017 and the lowest case fatality rate occurred in 2019. In 2017 there were 640 cases of Leptospirosis with a CFR of 16.88%, in 2018 there were 894 cases of Leptospirosis with a CFR of 16.55%, and in 2019 there were 920 cases of Leptospirosis with a CFR of 13.26%.⁷

East Java was one of the provinces that reported cases of Leptospirosis from 2017 to 2019, which consisted of 106 cases in 2017 with a CFR of 17.92%, in 2018 as many as 128 cases with a CFR of 7.81% and in 2019 there were 147 cases with a CFR of 15.65%.

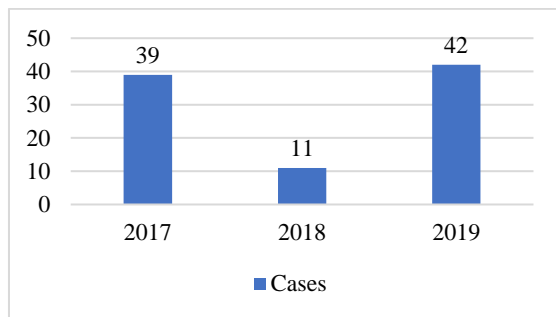


Figure 2. The Situation of Leptospirosis in Pacitan District in 2017–2019⁸

Pacitan district is an endemic area of Leptospirosis in East Java province, the Figure 2 is showed that Leptospirosis cases and case fatality rate fluctuate. In 2017, there were 39 cases of Leptospirosis and 32 cases of Leptospirosis recovered with a CFR of 17.95%, in 2018 there were 11 cases of Leptospirosis and 9 cases of Leptospirosis recovered with a CFR of 18.18%, in 2019 there were 42 cases of Leptospirosis and 27 cases of Leptospirosis recovered with a CFR of 11.90%.⁸

This study aims to describe the characteristics of Leptospirosis cases in Pacitan district, East Java province in 2017–2019 based on person, place, and time.

MATERIALS AND METHODS

This study was a *descriptive* study with Cross Sectional design to describe the distribution of characteristics of Leptospirosis cases Pacitan district based on person, place, and time. The population and sample in this study were all cases with Leptospirosis with (92 cases) reported in the Pacitan district Health Office in 2017 until 2019. The data used in this study were secondary data obtained from the Pacitan district Health Office.

RESULTS AND DISCUSSION

A. Person

1. Sex

Based on Figure 3, the distribution of Leptospirosis cases by sex in Pacitan district in 2017–2019 is more common in men, namely 63 cases (68.48%), while in women as many as 30 cases (31.52%).

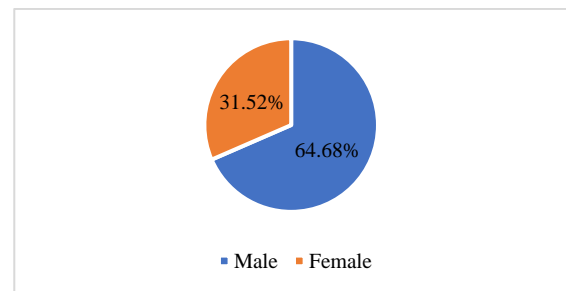


Figure 3. Distribution of Leptospirosis Cases by Sex in Pacitan District in 2017–2019⁸

In this study, it is stated that Leptospirosis cases that occurred in Pacitan district in 2017–2019 were more common in men, namely as many as 63 cases (68.48%). This study is in line with research conducted Prihantoro et al⁹, 80% of Leptospirosis cases are male.⁹ This study is also in line with research conducted in Boyolali, Central Java, Leptospirosis cases occur most in men by 70%.¹⁰ Men are 37.01 times more likely to be infected with Leptospirosis than women.¹¹ This can happen because men have jobs that are more often exposed to environments contaminated with *Leptospira* bacteria.¹²

2. Age

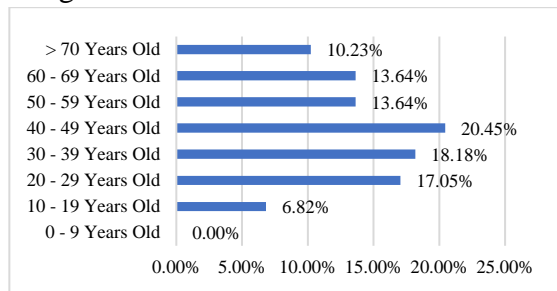


Figure 4. Distribution of Leptospirosis Cases by Age Group in Pacitan District in 2017–2019⁸

Based on Figure 4 is showed that the number of Leptospirosis cases in Pacitan district in 2017–2019 was most prevalent in the age group of 40–49 years old by 20.45%, in the age group of 30–39 years old by 18.18%, then in the age group of 20–29 years old by 17.05%, age group 50–59 and age 60–69 years old by 13.64%, in the age group >70 years old by 10.23%, and in the age group 10–19 years old by 6.82%, while in the age group 0–9 years old no cases.

In the research that has been done, it is stated that Leptospirosis cases that occurred in Pacitan district in 2017–2019 occurred most in the age group of 40–49 years by 20%. While in the age group <10 years there are no reported cases of Leptospirosis. Cases of Leptospirosis in children are rarely reported due to undiagnosed or different clinical manifestations with adults.⁶ This study is in line with that conducted by Prihantoro et al⁹, Leptospirosis cases occur at the age of more than 40 years old as many as 70%.⁹ Suprpto et al¹³ said that the most cases of Leptospirosis in productive age (46–60 years).¹³ This can happen because men in

productive age tend to do more activities outside the home.

3. Job

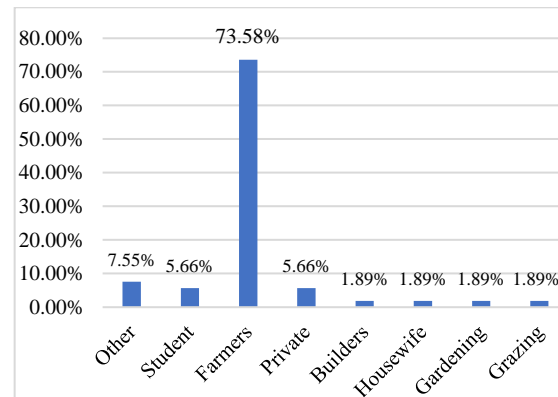


Figure 5. Distribution of Leptospirosis Cases by Jobs in Pacitan District in 2017–2019⁸

Based on Figure 5, Leptospirosis cases in Pacitan district in 2017–2019 occurred most in people who worked as farmers (73.58%), while in students, private sector and workers Leptospirosis cases amounted to 5.66%. In housewives, gardening and grazing the number of cases of Leptospirosis amounted to 1.89% and others to 7.55%.

Job is one of the risk factors for the occurrence of Leptospirosis. People who work in environments that contaminated with *Leptospira* bacteria are at risk of developing Leptospirosis.⁶ The risk of Leptospirosis is higher in people who work outdoors or in contact with animals, such as farmers, planters, ranchers, slaughterers, veterinarians, veterinary nurses, mine workers, laboratory workers, fishermen, soldiers, fish traders, and traders in markets.^{14,15,16}

Residents of rural areas who work as farmers and ranchers are at risk of contracting Leptospirosis.⁶ This study showed that Leptospirosis cases that occurred in Pacitan district in 2017–2019 were the most common in cases who worked as farmers, namely 73%. This study is in line with research conducted Nuraini et al¹⁰, 44.7% of cases with Leptospirosis occurs most in farmers.¹⁰

Raharjo et al¹⁷ said that risky jobs have a 6,317 times higher risk of developing Leptospirosis than non-risky jobs.¹⁷ While working as a farmer 2 times higher risk of Leptospirosis.¹⁸ Samekto et al¹⁹ stated that the habit of not wearing footwear is 4 times higher risk of developing Leptospirosis.¹⁹

B. Place

DISTRIBUTION OF LEPTOSPIROSIS CASES BY SUB DISTRICTS IN PACITAN DISTRICTS IN 2017-2019

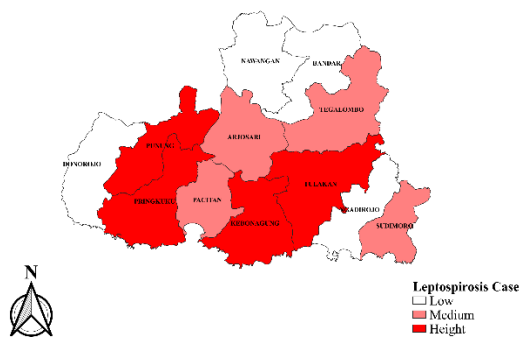


Figure 6. Distribution of Leptospirosis Cases by Sub Districts in Pacitan District in 2017–2019⁸

Based on Figure 6, the most Leptospirosis cases in Pacitan district in 2017–2019 occurred in Tulakan sub district by 52.75%, then Punung sub district by 14.29%, Kebonagung sub district by 9.89%, Pringkuku sub district by 6.59%, Pacitan sub district by 4.40%, and Sudimoro sub district, Arjosari sub district by 3.30% and Donorojo sub district by 2.20%. However, in Nawangan sub district, Bandar sub district, Ngadirojo sub district, there were no cases of Leptospirosis.

C. Time

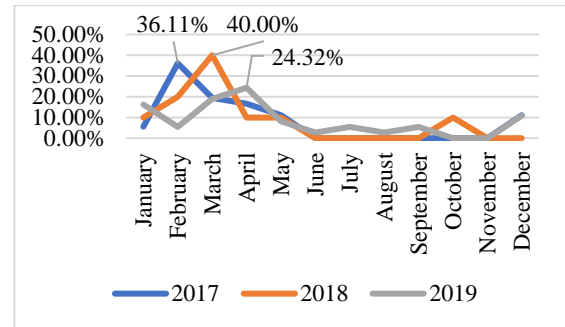


Figure 7. Distribution of Leptospirosis Cases by Time in Pacitan District in 2017–2019⁸

Based on Figure 7, the highest Leptospirosis cases in Pacitan district in 2017 occurred in February at 36.11%, in 2018 the highest Leptospirosis cases occurred in March at 40.0%, in 2019 the highest Leptospirosis cases occurred in April at 24.30%.

The rainy season in Pacitan district occurs in February–April and November–December, while the dry season in Pacitan district occurs in May–October.²⁰ In this study, it was stated that Leptospirosis cases that occurred in Pacitan district in 2017–2019 mostly occurred when rainy season occurs.

One of the risk factors for Leptospirosis is high rainfall. Heavy rainfall can cause waterlogging up to flooding. Leptospirosis can be transmitted through water contaminated with *Leptospira* bacteria.^{24,25} Rains and floods are one of the factors causing Leptospirosis.^{16,25,26}

The Maniih et al²⁷ study showed that there was a relationship between the presence of standing water with the incidence of Leptospirosis and cases who are around the house there is standing water has a risk of 3,385 times greater exposed to Leptospirosis compared to respondents who are around the house there was no standing water.²⁷ Research conducted by Suwanpakde et al²⁸ in Thailand showed a relationship between flooding and the incidence of Leptospirosis.²⁸

CONCLUSIONS

The most cases of Leptospirosis in Pacitan district in 2017–2019 occurred in male, the age group 40–49 years old, farmers and occurred in the rainy season, from February to April.

ACKNOWLEDGEMENT

We would like to thank the Pacitan District Health Office for the secondary data on Leptospirosis reports.

CONFLICT OF INTEREST

The authors state that they have no conflict of interest.

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