

## Conference Paper

# Epidemiology of Tuberculosis Disease Using Surveillance Data in Kendari City, Indonesia

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Tuberculosis (TB) is still a public health problem in the world despite efforts to control it have been carried out in many countries since 1995. The number of tuberculosis cases in 2018 was 66,623 cases, which increased compared to cases of tuberculosis found in 2017 which amounted to 446,732 cases. This study uses various data from the Indonesian government bodies. Data on tuberculosis cases were obtained from the Kendari City Health Office from 2017 to 2019. The conclusion is that the majority of tuberculosis sufferers are male with a distribution that tends to increase every year. The prevalence of tuberculosis since 2017 has experienced a significant increase. On one hand, this shows that there is a strong tracing of health workers. On the other hand, the prevention of tuberculosis cases has not shown optimal results.

**Keywords:** Tuberculosis disease, Kendari, Indonesia

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## 1. INTRODUCTION

Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis* bacteria. There are several species of *Mycobacterium*, including: *M. tuberculosis*, *M. africanum*, *M. bovis*, *M. Leprae*, etc., which are also known as Acid-Fast Bacilli (AFB). The group of *Mycobacterium* bacteria other than *Mycobacterium tuberculosis* can cause respiratory tract disorders known as MOTT (*Mycobacterium Other Than Tuberculosis*) which sometimes can interfere with the diagnosis and treatment of tuberculosis [1]

Tuberculosis (TB) is still becoming one of the public health problems in the world even though efforts to control Tuberculosis have been carried out in many countries since 1995. In 2018, it was estimated about 10 (9.0-11.1) million new Tuberculosis cases (incidents) worldwide, in which 5.7 million are men, 3.2 million are women, and 1.1 million are children. People who are living with HIV (Human Immunodeficiency Virus) accounted for 9% of the total. Eight countries shared with 66% of new cases: India (27%), China (9%), Indonesia (8%), Philippines (6%), Pakistan (5%), Nigeria (4%), Bangladesh (4%), and South Africa (3%). Approximately 1.5 (1.4-1.6) million people die from tuberculosis. Globally, the TB mortality rate fell by 42% between 2000 and 2018. The severity of

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national epidemics varies widely among the countries. In 2018, there were fewer than 10 new cases per 100,000 population in most-populated countries, 150 – 400 cases in most of the 30 high TB prevalence countries, and above 500 cases in several countries including Mozambique, Philippines, and South Africa that interfere with the diagnosis and treatment of tuberculosis [2].

Indonesia ranks third in the world after India and China in finding tuberculosis cases in 2018. The number of tuberculosis cases in 2018 was found up to 566,623 cases, it increased comparing to all tuberculosis cases found in 2017 which amounted to 446,732 cases. The highest number of reported cases were in provinces with large populations, including West Java, East Java, and Central Java. Tuberculosis cases in the three provinces shared with 44% of the total TB cases in Indonesia [3].

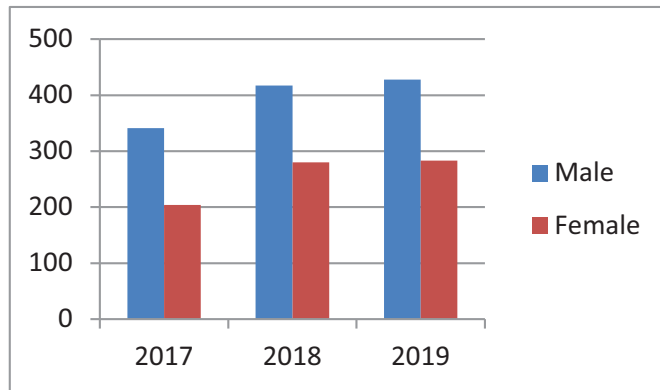
One of the efforts to control and to counter Tuberculosis disease is to strengthen the Tuberculosis Surveillance System. Tuberculosis Surveillance aims to obtain and provide information to a direct effective and efficient Tuberculosis control and counter measures. This activity aims to determine the spread of tuberculosis cases and to predict the place of transmission of tuberculosis. Therefore, it can provide recommendations for preventing tuberculosis in Kendari City.

## 2. METHODOLOGY

Geographically, the Kendari city is located in southeastern of Sulawesi Island. It lies on the mainland of the island of Sulawesi surrounding Kendari Bay. Kendari City, which is the capital of Southeast Sulawesi Province, is astronomically located in the southern part of the equator between  $3^{\circ}54'40''$  and  $4^{\circ}5'05''$  South Latitude (LS) and stretches from West to East between  $122^{\circ}26'33''$  and  $122^{\circ}39'14''$  East Longitude (BT). The land area of Kendari City is  $295.89 \text{ km}^2$  or equals to 0.7 percent of the total land area of Southeast Sulawesi Province.

Administratively, Kendari City consists of 11 subdistricts, namely Kendari, West Kendari, Mandonga, Puuwatu, Kadia, Wua-Wua, Baruga, Poasia, Kambu, Abeli, and Nambo.

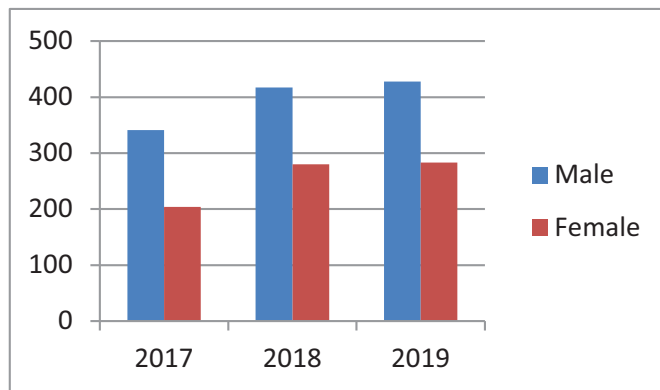
This study uses various data from the Indonesian government bodies. Data on tuberculosis cases was obtained from the Kendari City Health Office from 2017 to 2019. The data was taken from the annual health profile published by the office. Research findings are presented in figure format.



**Figure 1:** Number of cases by gender in Kendari City.

### 3. result of the study

The results showed from 2017 to 2019, distribution of patients with tuberculosis by gender was more in male. This means that efforts to control tuberculosis in Kendari City have not given optimum results (Figure 2)



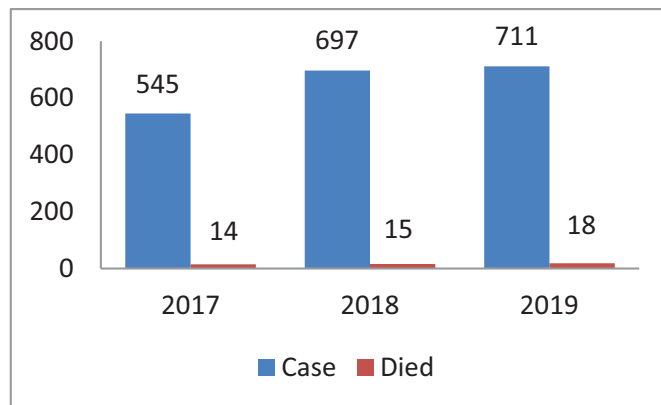
**Figure 2:** Number of cases by subdistricts .

The results showed that distribution of tuberculosis by subdistricts in Kendari City in 2017 and 2018 was mostly found in West Kendari subdistrict while in 2019 the highest number of cases was in Kadia subdistrict..

Figure 3 shows that in 2017 the prevalence of tuberculosis was 545 cases with the death rate of 14 cases. In 2018, there were 697 cases of tuberculosis with the death rate of 15 cases. While in 2019, the prevalence was 711 cases with the death rate of 18 cases.

### 4. DISCUSSION

The proportion of cases of tuberculosis in men was 60.7%, while in women it was 39.3%. AFB (+) cases were reported higher in men than in women. This condition is



**Figure 3:** Number of cases by year.

caused by the habit of men who often be outside the house which allows them to be exposed to droplets containing TB germs [4]. These claims are supported by Putra's research that found out of the total of 74 AFB negative pulmonary TB respondents, 53 (71.6%) were male and 21 (28.4%) were female [5]. Basundari, et al. in their study of 70 people with pulmonary TB at Persahabatan Hospital, Jakarta reported that the most of male respondents who suffered from pulmonary TB were 42 and the remaining 28 were women. Other reports also mention that the most dominant pulmonary TB sufferers occur in men [6]. This shows that men dominate pulmonary TB patients both by microscopic AFB and by PCR compared to women.

Tuberculosis sufferers in Kendari City are dominated by adults with the largest number of sufferers are in West Kendari and Kadia subdistricts. In adults, the male will be very vulnerable to contracting tuberculosis due to work activities that require them to keep working with the lack of information obtained about the mode of transmission and the risk of transmission of tuberculosis

## 5. CONCLUSION

Most tuberculosis sufferers are male with a distribution that tends to increase every year. The prevalence of tuberculosis since 2017 has always experienced a significant increased cases. On the one hand, this shows that there is a strong tracing of the health workers. On the other hand, the prevention of tuberculosis cases has not shown optimal results.

## 6. ACKNOWLEDGMENTS

Head of Kendari City Health Office.

## References

- [1] Kemenkes RI, "Peraturan Menteri Kesehatan Republik Indonesia Nomor 67 Tahun 2016 tentang Penanggulangan Tuberkulosis," ed. Jakarta: Kementerian Kesehatan Republik Indonesia, 2016.
- [2] WHO, "Global Tuberculosis Report," ed. Geneva: World Health Organization, 2019.
- [3] Kemenkes RI, "Profil Kesehatan Indonesia ", ed. Jakarta: Departemen Kesehatan, 2020.
- [4] D. P. Aceh, "Profil Kesehatan Provinsi Aceh ", S. d. d. Informasi, Ed., ed. Aceh, 2015.
- [5] P. IWA, S. E, Suradi, and A. TY, "Nilai Diagnostik Pemeriksaan Reaksi Rantai Polimerase pada Tuberkulosis Paru Sputum Basil Tahan Asam Negatif," *J Respirol Indonesia*, vol. 28, pp. 136-144, 2008.
- [6] E. Fitria, R. Ramadhan, and Rosdiana, "Karakteristik Penderita Tuberkulosis Paru di Puskesmas Rujukan Mikroskopis Kabupaten Aceh Besar " *Jurnal Penelitian Kesehatan*, vol. 4, pp. 13-20, 2017.
- [7] Pratiwi, R. N., Winda, S., Suparno, A. S., & Tosepu, R. "A Systematic Literatur The Impact Of The Climate To The Case Of Tuberculosis (TB): A Review". In *IOP Conference Series: Earth and Environmental Science*. IOP Publishing, Vol. 755, No. 1, p. 012089, 2021.
- [8] Tosepu, R., & Jumakil, J. "Hubungan Variabilitas Iklim Dengan Kejadian Tb Paru Bta Positif Di Kota Kendari Tahun 2010-2018. *Jurnal Kesehatan Lingkungan Universitas Halu Oleo*, 1(2) 2019.
- [9] Mongan, R., & Fajar, F. "Relationship Between Family Support and Medical Compliance in Patients With Pulmonary Tuberculosis in the Working Area of the Community Health Center of Abeli, Kendari". *Public Health of Indonesia*, 3(1), 17-22, 2017.
- [10] Asyary, A. (2018). "Response: Factors Related To The Success Of The Treatment Program Of Multidrug-Resistant Tuberculosis In Polyclinic Of MDR-TB Of The General Hospital Of Undata Palu, Indonesia". *Public Health of Indonesia*, 4(1), 37-38, 2018.