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The trend of pediatric tuberculosis cases before and during the COVID-19 Pandemic at Klinik Utama RS. H. A. Rotinsulu Cibadak Bandung

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Abstract

Tuberculosis (TB) remains a global issue, including in Indonesia. The World Health Organization through the SDGs, has set an "End Tuberculosis" strategy to end the TB epidemic by 2030. Kota Bandung ranks second in Indonesia for the highest number of TB cases. The COVID-19 pandemic has impacted TB management, including among children. This study aims to provide an overview of the trend in pediatric tuberculosis incidence before and during the COVID-19 pandemic. This research is a quantitative study with retrospective cohort study design. Data were collected from medical record in Klinik Utama RS. H. A Rotinsulu Cibadak Bandung. The population and sample in this study are all TB cases in children aged ≤15 years from 2018 to 2022. In the period before the COVID-19 pandemic, the proportion of pediatric TB in 2018 was 16 patients and 26 patients in 2019. During the COVID-19 pandemic, the proportion of pediatric TB patients decreased to 16 in 2020, dropped further to 14 in 2021, and increased to 15 in 2022. In conclusion, the incidence of pediatric tuberculosis at the Main Clinic of RS H. A. Rotinsulu Cibadak Bandung decreased both before and during the COVID-19 pandemic.

Keywords: Tuberculosis; Child; COVID-19; Pandemic; Incidence

1. Introduction

Tuberculosis is an infectious disease caused by the entry of Mycobacterium tuberculosis (M.tbc) bacteria into the respiratory tract through the air. M.tbc bacteria spread through the air when a TB patient talks, coughs, or sneezes. Generally, TB bacteria attack the lungs, but they can also affect other organs such as glands, bones, skin, brain, and others. [1] To this day, TB is still remains as a global issue. Approximately 11% of the total cases worldwide are children. [2] In 2022, TB became the second leading infectious disease globally in terms of mortality after COVID-19. According to the 2021 WHO report, around 10.6 million people worldwide are suffered from TB, with 1.2 million of them are children. Globally, an estimated 1.6 million people died from this disease in 2021, including 187,000 people with TB-HIV. [3]

The WHO has "End Tuberculosis" strategy, which is part of the Sustainable Development Goals (SDGs). This strategy aims to end the global tuberculosis epidemic by targeting an 80% reduction in TB incidence and a 90% reduction in TB deaths by 2030. In support of this strategy, the Indonesian Ministry of Health has developed an elimination roadmap with the goal of reducing TB incidence by 80% (equivalent to 65 per 100,000 population) and TB deaths to 6 per 100,000 population by 2030. This will be achieved by increasing case detection and treatment coverage to over 90%, achieving a treatment success rate of more than 90%, and providing TB preventive therapy to more than 80%. [4]

Indonesia ranks second in the world for the highest number of TB cases, after India. In 2021, WHO reported that the TB incidence rate in Indonesia rose to 356 per 100,000 population, equivalent to 969,000 new cases annually. TB deaths

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in the same year were estimated at 144,000, or 52 per 100,000 population. Based on TB incidence from 2000-2020, there was a decline in both incidence and mortality, whereas in 2021-2022, there was an increase in TB incidence. In 2021, the incidence increased by 18% and deaths by 55%. The coverage of pediatric TB case detection in Indonesia from 1995-2022 has tended to increase. In 2022, the coverage of pediatric tuberculosis case detection in Indonesia reached 58.47%. In the same year, West Java became the province with the highest percentage, at 401%. [4] Kota Bandung ranks second in the number of TB cases after Bogor Regency, with the highest number of identified cases in 2019 totaling 11,959. In 2020, the number of identified cases decreased to 8,262, but rose again in 2021 to 8,813 cases. In 2019, the number of pediatric TB cases in Bandung was the highest in West Java, with 3,530 identified cases. The number of completed TB treatments for all cases by gender in Bandung in 2019 was 3,202 for males and 3,286 for females. [5]

COVID-19 is a disease caused by the SARS-CoV-2 virus that emerged in late 2019 and rapidly spread worldwide. The World Health Organization (WHO) declared COVID-19 a global pandemic on March 11, 2020. [6], [7] Tuberculosis has been one of the diseases affected by the COVID-19 pandemic in the global public health sector. This has also impacted pediatric TB. Most cases of pediatric TB are transmitted within their own environment, especially at home. Large-scale social distancing measures (PSBB) requiring families to stay at home for extended periods have increased the risk of TB transmission. [7] Children living with TB patients have a higher risk of contracting tuberculosis. [8] TB in children often goes undetected or is neglected due to nonspecific symptoms and difficulty in diagnosis. [9] This also affects the detection of pediatric TB cases. Every child living in an environment with TB patients can be infected, even if they have been vaccinated. [10] According to dr. Rina Triasih, as Project Leader of Zero TBC Yogyakarta, Almost all available resources in the health sector and other sectors have been optimized to handle COVID-19. This situation has significantly impacted the detection and treatment of TB cases, causing a notable decline. As a result, with many TB patients still undiagnosed and untreated, there remain many sources of TB transmission in the community. If not handled properly and correctly, it will not only increase the number of new TB cases but also potentially raise the mortality rate. [11] Based on these factors, this study aimed to provide an overview of the trend in pediatric tuberculosis incidence before and during the COVID-19 pandemic.

2. Methods

This study is a quantitative with retrospective cohort study design. [12] The location of this study is Klinik Utama RS. H. A. Rotinsulu Cibadak Bandung, covering the period before and during the COVID-19 pandemic from 2018 to 2022. The population and sample of this study consist all of TB cases in children aged ≤15 years from 2018 to 2022. Data were collected from medical record that includes the number of child tuberculosis cases recorded as BTA+. The variables in this study are the scoring results, Mantoux test, and sputum test, which subsequently show positive BTA results. Data analysis is conducted based on the number of children who tested positive.

3. Results and discussion

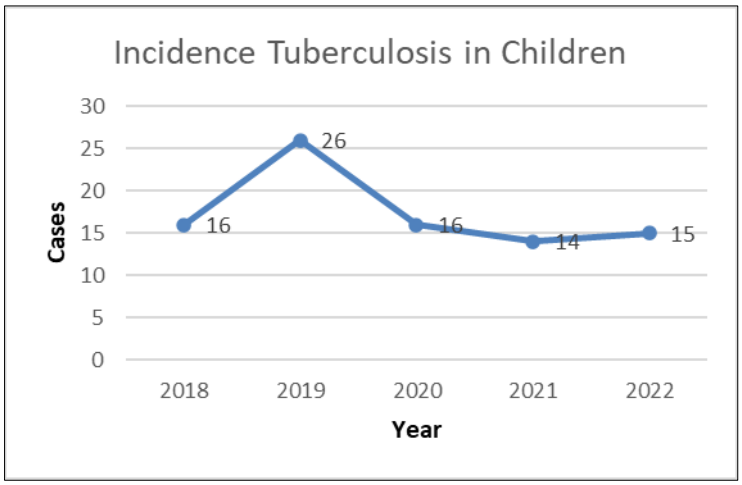
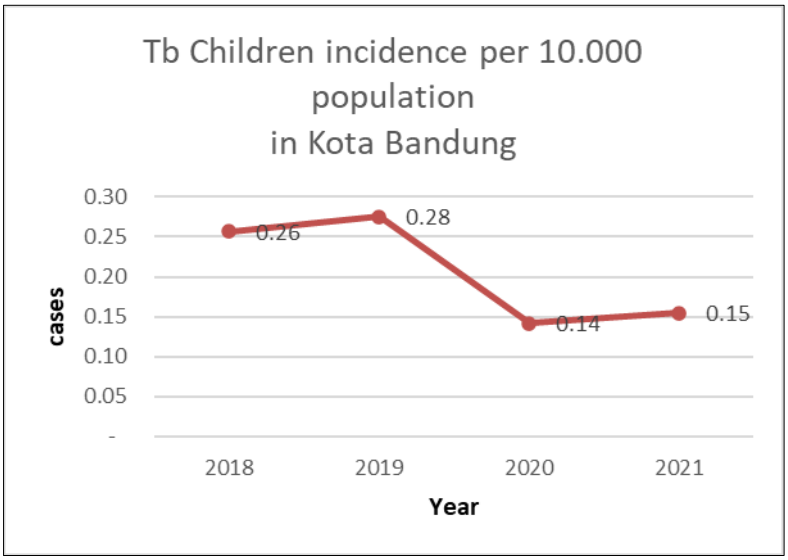


Figure 1 Trends incidance between tuberculosis in children in Klinik Utama RS H. A. Rotinsulu Cibadak Bandung periode before (2018-2019) and during pandemic (2020-2022)

Basen on the reaserch findings that illustrated in the figure 1, there was 16 cases in 2018 and increased by 26 in 2019 during periode before COVID-19 pandemic. Meanwhile, during the COVID-19 pandemic periode, the number of pediatric TB cases decreased to 16 in 2020, further decreased to 14 in 2021, and started to increase in 2022 to 15.

A decrease in cases also occurred in the city of Pekalongan, according to research conducted by Irnawati et al. (2021). In that study, there was an increase in pediatric TB cases during the period before the COVID-19 pandemic (2015-2019), and drastically decreased, up to twofold during the COVID-19 pandemic period (2020-2021). [13] In another study conducted by Putri and Handayani (2023), the findings showed a 29.3% decrease in TB case detection before (2019) and during the COVID-19 pandemic (2020). Although there was no significant difference in TB case detection between the pre-COVID-19 period (2019) and during the COVID-19 period (2020) in the Balkesmas area of Semarang, there was still a decrease. [14]



Source : Satu Data Bandung

Figure 2 Trends in Tuberculosis among children incidence per 10.000 population of children in between 2018 – 2022 in Kota Bandung

According to the data from Dinas Kesehatan Kota Bandung, which showed in Figure 2, the incidence of tuberculosis among children under 15 per 10.000 population was increased too during the period before pandemic COVID-19 (2018 – 2019) and decreased during the COVID-19 pandemic (2020 -2021). [15] The number of new tuberculosis cases in Indonesia increased from 360.565 cases in 2016 to 565,669 cases in 2019 (before the pandemic), then during pandemic the cases was decreased to 393.323 cases in 2020 and 473,006 cases in 2021. [16]

The decreased in the number of cases in 2020 and 2021 is expected not to because the numbers of sufferers actually decreased, but beacouse of underreporting or lack of diagnososis resulting due to limited access to health care during pandemic period. [17] In another hand, Indonesia has been affected by the COVID-19 pandemic including TB control management, such as budget cuts for TB control programs, care and treatent for TB, TB-MDR, and TB-HIV due to large-scale social restriction (PSBB), reduced TB case detection and rapid diagnosis, and decreased in monitoring, evaluation, and surveillance activities. [18]

4. Conclusion

The incidence of pediatric tuberculosis at Klinik Utama RS H. A. Rotinsulu Cibadak Bandung for the period before and during the COVID-19 pandemic has decreased. The decrease in the number of cases during the pandemic period is suspected to be not due to a true reduction in the number of sufferers, but rather due to underreporting or lack of diagnosis resulting from reduced access to healthcare Additionally, the COVID-19 pandemic also affected TB control management in Indonesia, including a decrease in TB case detection and rapid diagnosis In order to achieve the target of reducing TB incidence by 2030 in Indonesia, the efforts of case detection need to be enhanced.

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