

ISSN 2597- 6052

MPPKI

DOI: <https://doi.org/10.56338/mppki.v7i6.5287>

Media Publikasi Promosi Kesehatan Indonesia
The Indonesian Journal of Health Promotion

Research Articles

Open Access

A Descriptive Epidemiological Tuberculosis in Purwakarta District, 2020-2023

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ABSTRACT

Introduction: Based on the results of the Indonesian Health Survey (SKI) in 2023, prevalence of Tuberculosis based on a history of doctor diagnosis is highest in Jawa Barat Province, at 0.47%, while the national Tuberculosis prevalence is 0.30%.

Objective: This study aims to illustrate the Tuberculosis cases overview in Purwakarta District, 2020-2023.

Method: This research uses a quantitative research design with a univariate descriptive analysis approach. This study utilizes secondary data from the Tuberculosis Information System (SITB).

Result: Tuberculosis cases in Purwakarta District were highest in year 2022 (4703 cases). Based on gender, the highest cases occurred in males, with the peak in 2022 (2590 cases). The age group with the highest was the elderly age group, with the peak in 2022 (1253 cases). Tuberculosis Diabetes cases in 2022 reached 134 cases. The most accessed healthcare facility was hospitals (3317 cases) accessing healthcare services at hospitals.

Conclusion: Tuberculosis cases in Purwakarta District peaked in 2022, with the highest distribution among males and elderly. The most common comorbidity of Tuberculosis cases is diabetes, and the highest number of visits is at hospitals, indicating potential Tuberculosis issues in Purwakarta District, thus further studies regarding the Tuberculosis status in Purwakarta District are needed.

Keywords: Tuberculosis; Descriptive; Univariate; Epidemiology

INTRODUCTION

Tuberculosis ranks among the top ten causes of death worldwide. Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis*. The United Nations (UN) has agreed upon the Sustainable Development Goals (SDGs), one of which addresses the strategy to end Tuberculosis with a target of reducing Tuberculosis cases by 80% and Tuberculosis-related deaths by 90% by the year 2030. The commitment to diagnose and treat 40 million people with Tuberculosis was agreed upon in September 2018 [1].

Based on the results of the Survei Kesehatan Indonesia (SKI) in 2023, the prevalence of Tuberculosis based on a history of doctor diagnosis is highest in Jawa Barat Province, at 0.47%, while the national Tuberculosis prevalence is 0.30%. Nationally, the highest prevalence age group for Tuberculosis is 65-74 years old (0.59%), 55-64 years old (0.51%), and 75+ years old (0.50%), indicating that the elderly population in Indonesia is most affected by Tuberculosis. The largest prevalence of Tuberculosis cases in Indonesia by gender is in males (0.38%). The prevalence of Tuberculosis among occupations in Indonesia is highest among fishermen (0.50%), farmers (0.41%), and laborers/drivers (0.40%) [2].

The health information system used for Tuberculosis data reporting in Indonesia has been integrated using Hospital Information System/Sistem Informasi Rumah Sakit (SIMRS) and Tuberculosis Information System/Sistem Informasi Tuberkulosis (SITB) as an effort to increase the detection of unreported Tuberculosis cases (underreporting) in hospitals. The integration process of SIMRS-SITB uses 23 mandatory variables agreed upon by the TB Working Group and pilot hospitals for SIMRS-SITB integration in 2018-2019. The data obtained undergo validation and cleaning processes to avoid data duplication and to check the completeness of mandatory variable filling. Since 2020-2022, the integration of SIMRS-SITB has been reported in 14 provinces, 36 districts/cities, and 42 health facilities (data as of June 9, 2022). The challenge faced in SIMRS-SITB integration is the diversity of SIMRS in each hospital, resulting in varying availability of required mandatory variables. Therefore, the TB Working Group has mapped the types, databases, programming languages, and variable availability in SIMRS used by each health facility. Health facilities with the same type of SIMRS are prioritized by the TB Working Group's IT team for on-the-job training and assistance to increase the number of health facilities integrating SIMRS-SITB. Despite the existence of the SITB information system, some health service facilities have yet to maximize data input and validation in Purwakarta District, including the discovery of new cases, cases under treatment, and cases that have recovered.

The aim of the Tuberculosis Eradication Program is to reduce the incidence and mortality rates of Tuberculosis, break the chain of transmission, and prevent the emergence of Multidrug-Resistant Tuberculosis (MDR-TB). The occurrence of Tuberculosis becomes crucial to be studied through epidemiology. Descriptive epidemiology aims to describe the distribution of analytical references in time, person, and place [3]. Secondary data on variables of individuals, places, and time has not been descriptively studied. Thus, this research needs to be conducted to depict the descriptive epidemiology of Tuberculosis (TB) occurrences in Purwakarta District from 2020 to 2023.

METHOD

This study employs a quantitative research approach with a descriptive study design aimed at depicting the patterns of Tuberculosis incidence frequency distribution according to person, place, and time variables. Secondary data obtained through the Sistem Informasi Tuberkulosis (SITB) at healthcare facilities such as hospitals, community health centers, private clinics, and correctional facility clinics in Purwakarta District are utilized. Data analysis entails univariate analysis to describe the characteristics of each research variable, presented in the form of frequency distributions.

RESULTS

The secondary data from SITB indicates that all healthcare facilities in Purwakarta District, including government hospitals, private hospitals, clinics, and community health centers (Puskesmas), have reported tuberculosis case detection, treatment, recording, and reporting well in the Tuberculosis Information System. The secondary data from SITB analyzed data from 2021 to 2023. The highest tuberculosis cases in Purwakarta District occurred in the year 2022 and were concentrated in Purwakarta District.

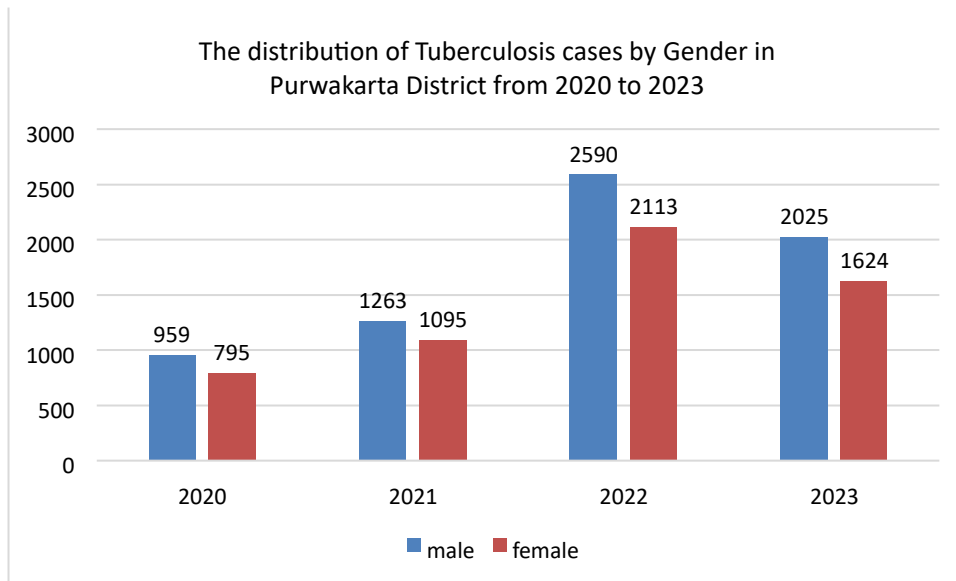


Figure 1. The distribution of Tuberculosis cases by Gender in Purwakarta District from 2020-2023

Figure 1 depicts tuberculosis cases in Purwakarta District experiencing an increase until 2022 and a decline in 2023. The highest number of cases occurred in 2022, with the highest number of cases in the male group (2590 cases) and the female group (2113 cases). Observing the number of tuberculosis cases in Purwakarta District, it can be seen that the highest Tuberculosis cases are in the male group every year.

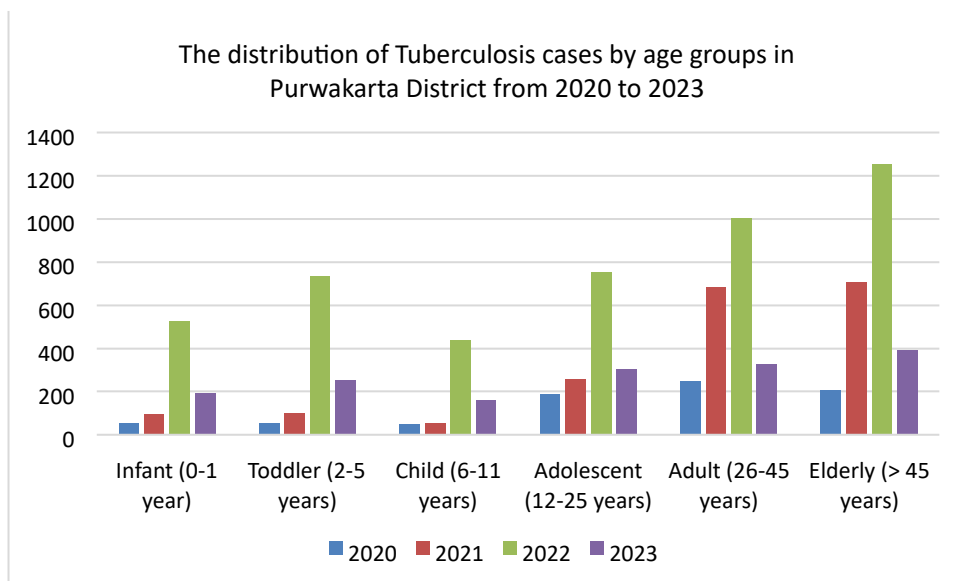


Figure 2. The distribution of Tuberculosis cases by Age Groups in Purwakarta District from 2020-2023

Figure 2 illustrates the distribution of tuberculosis cases by age group in Purwakarta District from 2020 to 2023. It shows that the elderly group (>45 years old) is susceptible to tuberculosis infection, with adults aged 26-45 years positioned as the next susceptible group. However, based on the annual increase, the age group of 0-1 year shows a significant rise, indicating an increasing trend in the susceptibility to tuberculosis in this age group.

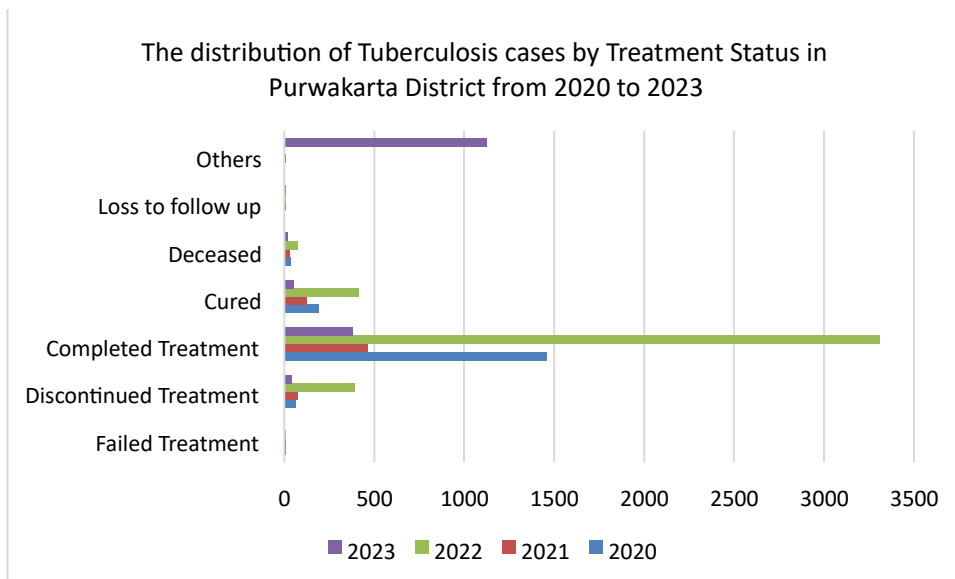


Figure 3. The distribution of Tuberculosis cases by Treatment Status in Purwakarta District from 2020-2023

Figure 3 illustrates the distribution of tuberculosis cases based on treatment status, revealing a gap between completed treatment, treatment discontinuation, and patient mortality during tuberculosis treatment. The number of cases completing treatment in Purwakarta District was exceptionally high in 2022, with 3310 cases completing treatment and 413 tuberculosis cases cured in the same year. The number of tuberculosis cases resulting in death in Purwakarta District from 2020 to 2023 was 164 cases, with the highest number of deaths occurring in 2022, totaling 75 cases. The number of tuberculosis cases declared cured in Purwakarta District from 2020 to 2023 was 780 cases, with the highest number in 2022, totaling 413 cases.

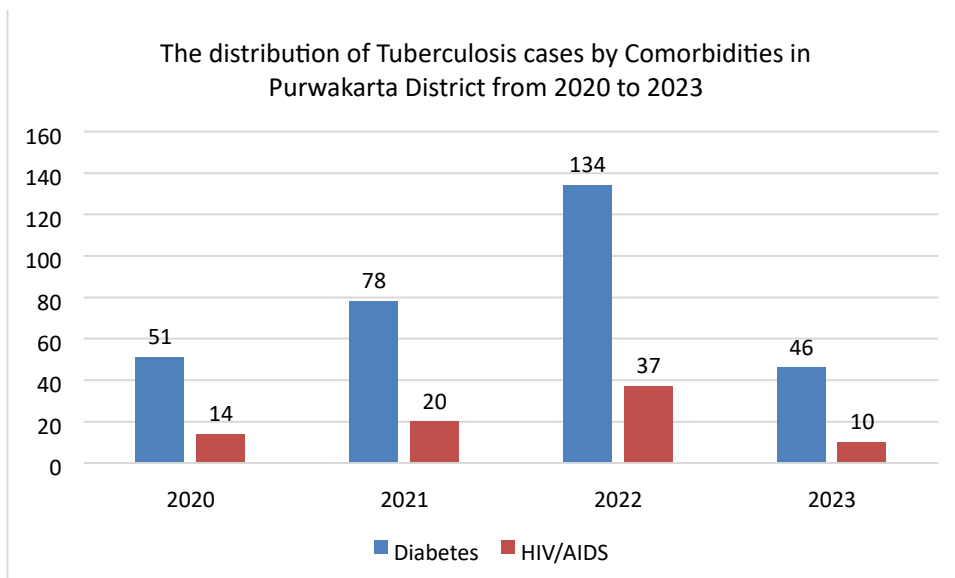


Figure 4. The distribution of Tuberculosis cases by Comorbidities in Purwakarta District from 2020-2023

Figure 4 illustrates the distribution of tuberculosis cases based on comorbidities. It is known that the most commonly found comorbidities in tuberculosis patients in Purwakarta District are diabetes and HIV/AIDS. The reporting shows that the number of patients with comorbid diabetes is consistently high every year from 2020 to 2022, but there has been a decrease in the number of patients with comorbidities in 2023.

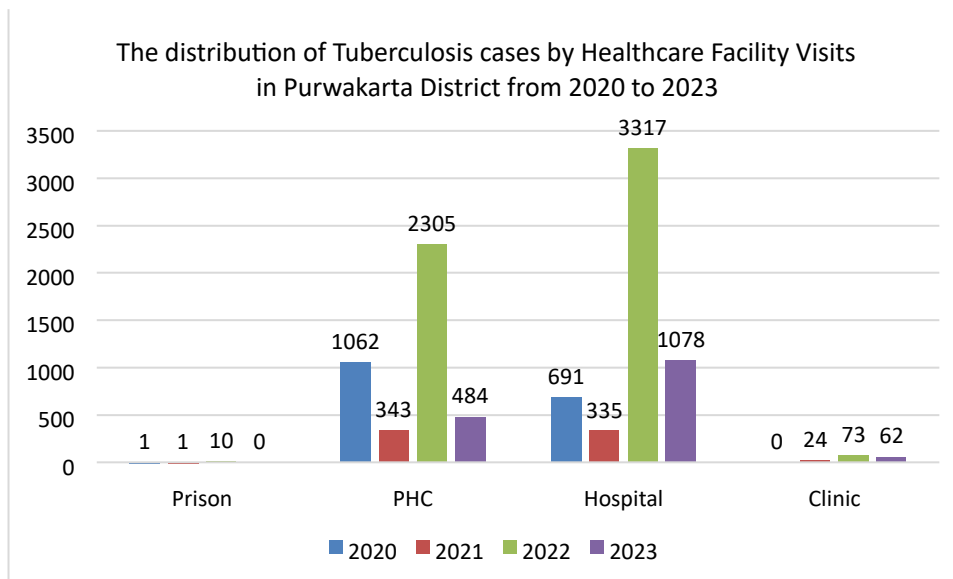


Figure 5. The distribution of Tuberculosis cases by Healthcare Facility Visits in Purwakarta District from 2020 to 2023

Figure 5 shows the distribution of tuberculosis based on visits to healthcare facilities. The highest number of visits to healthcare facilities was recorded in 2022. From the data presented, it is known that the healthcare facilities most frequently visited by tuberculosis cases in Purwakarta District from 2020 to 2023 are hospitals and primary healthcare centers (PHCs). Healthcare facility visits to prisons showed an increase in 2022 and then decreased by 100% in 2023. Healthcare facility visits to clinics indicated 24 new tuberculosis cases detected in 2021.

DISCUSSION

Identification of Tuberculosis cases based on gender shows the highest risk level among males. The highest tuberculosis cases in the male group in 2022 were 55.07% (2590 cases). Several studies indicate that the highest tuberculosis cases are found in the male gender group compared to females [4]. The high tuberculosis cases in the male group are due to the high mobility of males, resulting in a high level of exposure, and unhealthy habits such as smoking, alcohol consumption, and lack of rest can lower the immune system's defense that is easily exposed to tuberculosis bacteria. Male habits that cause low awareness of the dangers of tuberculosis transmission can be one of the factors triggering the high tuberculosis cases in the male gender group [5]. There is a relationship between gender and tuberculosis incidence where the male gender group is more at risk than the female gender group. This condition is caused by the workload and unhealthy lifestyle in the male group, while in the female gender group, there is a habit of promptly reporting the disease and consulting healthcare professionals [6,7]. The results of the journal review conducted by previous researchers indicate that males are 4.19 times more likely to contract tuberculosis compared to the female gender group [9].

Age is associated with tuberculosis incidence, where the most vulnerable age groups to tuberculosis are children and the elderly. Based on the 2023 Indonesian Health Survey (SKI) data, the elderly age group is the most commonly affected by tuberculosis [2]. This condition is influenced by the possibility of tuberculosis bacteria reactivation as a person ages [8]. Research conducted in Palembang City shows that older age poses a risk of contracting tuberculosis because as one ages, the body's organs experience a decline in immunity to a disease [7]. Journal review studies indicate that individuals above the age of 36 have a 3.54 times higher risk of contracting tuberculosis compared to those under the age of 36 [9].

Patients diagnosed with tuberculosis complete treatment. There are several classifications of patients in tuberculosis treatment that need to be considered. Firstly, there are relapsed tuberculosis patients, who have previously been declared cured or have completed treatment, but are currently diagnosed again with tuberculosis based on bacteriological or clinical examination results. This can occur either due to actual disease relapse or reinfection. Furthermore, there are patients who resume treatment after experiencing failure in previous treatments. They have previously undergone treatment but were declared unsuccessful in the last treatment. Additionally, there are patients who resume treatment after being lost to follow-up, who previously underwent treatment but did not

continue until completion and were declared lost to follow-up. This classification was previously known as treatment of patients after being lost to follow-up or default. Finally, there is another classification, namely tuberculosis patients who have previously undergone treatment but the final outcome of the previous treatment is unknown. All of these classifications are important to understand in order to determine the appropriate treatment strategy for each tuberculosis patient [10]. The increase in tuberculosis treatment is due to the high number of new tuberculosis cases found in 2022.

The most common comorbidities suffered by tuberculosis patients are HIV/AIDS and diabetes. Based on a literature review study, individuals with HIV/AIDS status have a risk of tuberculosis infection 11.70 times higher. Someone with a history of diabetes has a risk of tuberculosis infection 1.53 times higher [9]. In cases of tuberculosis in Purwakarta District, the number of diabetes patients is found to be higher than cases of HIV/AIDS as comorbidities of tuberculosis. This condition indicates that there is actually a potential increase in tuberculosis cases among HIV/AIDS patients that has not been detected when considering the risk of tuberculosis transmission in HIV/AIDS and diabetes patients. There is a lifestyle and dietary pattern in Purwakarta District that leads to a high number of diabetes cases among tuberculosis cases.

Healthcare facilities have a relationship with the management of tuberculosis cases. The connection between healthcare facilities and tuberculosis incidence includes access to locations, the level of satisfaction with the services provided, and the availability of adequate equipment and medications needed by tuberculosis patients. Based on research conducted in West Kalimantan, there is a relationship between healthcare service access and tuberculosis incidence [11]. Research at RSUD Goeteng Taroenadibrata Purbalingga showed a relationship between distance from home to the hospital, where individuals are 3.2 times more likely to seek tuberculosis treatment at the hospital if they have a closer distance compared to a farther distance [12]. The situation in Purwakarta District shows that tuberculosis patients tend to seek treatment at hospitals, as accessing hospitals is much easier compared to other healthcare facilities. However, tuberculosis patients also frequently undergo examinations and treatment at PHCs, where community-based tuberculosis services are more easily accessible.

CONCLUSION

The number of Tuberculosis cases in Purwakarta District was highest from 2020-2023 in the year 2022, with a total of 4703 Tuberculosis cases. Tuberculosis cases in Purwakarta District from 2020-2023, based on gender, showed the highest number of cases in males each year, with the highest peak being in 2022 (2590 Tuberculosis cases). The age group with the highest Tuberculosis cases in Purwakarta District from 2020-2023 was the elderly age group, with the highest peak in 2022 (1253 Tuberculosis cases). The majority of Tuberculosis cases in Purwakarta District received complete treatment. The most common comorbidity found in Tuberculosis cases was diabetes, with the highest number of Tuberculosis Diabetes cases in 2022 (134 Tuberculosis Diabetes cases). The most accessed healthcare facility by Tuberculosis cases was hospitals, with the highest peak in 2022 (3317 Tuberculosis cases) accessing healthcare services at hospitals.

SUGGESTION

This research has limitations in terms of secondary data analysis, only at the stage of univariate descriptive analysis. This study could be developed into a relationship analysis study that would be richer in the study of the causes of Tuberculosis cases in Purwakarta District. Researchers suggest conducting analysis or ecological study of Tuberculosis cases in Purwakarta Regency utilizing existing SITB secondary data.

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