


## Profile of Leprosy Among Children in Jayapura City

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Article Info	ABSTRACT
<p><b>Article history:</b></p> <p>Received April 20, 2023</p> <p>Revised May 09, 2023</p> <p>Accepted May 22, 2023</p>	<p>Leprosy is a chronic infectious disease caused by <i>Mycobacterium leprae</i> with highly variable clinical presentations. Leprosy remains a health problem in Indonesia. Leprosy cases in children are an epidemiological index to determine disease transmission as an indicator of the success of the national leprosy eradication program. Objective: To analyze the picture of leprosy in children in Jayapura City. A retrospective study method was used to examine all new leprosy cases in children (0-14 years) in all community health centers in Jayapura City who came to the Community Health Center Outpatient Unit from January 2019 to December 2022. The results of this study revealed that of the 967 new leprosy cases, 811 (83.87%) were adults and 156 (16.13%) were children aged 0-14. The most common age group was 10-14 years with 96 people (61.54%). Male gender was 82 people (52.56%) and female gender was 74 people (47.44%). In general, there were 103 Papuans (66.03%), while 53 non-Papuans (33.97%) had multibacillary leprosy. 128 (82.05%) had paucibacillary leprosy, and 28 (17.95%) had paucibacillary leprosy. Twenty-three (14.75%) of the children with leprosy dropped out. The leprosy rate among children in Jayapura City remains very high, at around 16.13%.</p>
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### 1. INTRODUCTION

Leprosy remains a health problem in Indonesia. One way to control leprosy is through early detection and therapy using a Multi Drug Therapy (MDT) regimen as recommended by the World Health Organization (WHO). The drugs used to treat leprosy consist of a combination of dapsone, rifampicin, and clofazimine. (WHO, 2018) Indonesia ranks third in the world with 18,248 new cases of leprosy, with 1,363 cases of grade II disability and 14,165 cases of MB leprosy. According to the WHO, in 2016, the number of leprosy cases globally was 214,783, with the highest number of cases occurring in Southeast Asia. (Papua, 2019; WHO, 2018)

Currently, six provinces have not yet achieved leprosy elimination: West Papua, Papua, Maluku, North Maluku, North Sulawesi, and Gorontalo. Meanwhile, at the district/city level, a total of 101 districts/cities have not yet achieved leprosy elimination. Indonesia remains the third-highest contributor of leprosy cases in the world, after India and Brazil. In 2021, there were 7,146 new leprosy cases, with children accounting for 11% (data as of January 24, 2022). This figure has not yet reached the government's target of below 5%. The Ministry of Health is targeting leprosy elimination by 2024 (Ministry of Health of the Republic of Indonesia, 2022).

The number of new leprosy cases per 100,000 population in 2017 varied at the provincial level. The lowest prevalence was in North Sumatra with 0 cases (1.11), and the highest was in East Java with 3,373. The number of new leprosy cases in Papua was 968 (29.65%) and in West Papua 788 (86.09%). The lowest proportion of new cases of leprosy in children in 2017 was in Bangka Belitung, Yogyakarta, and Bali, each with 1 case. Papua had 235 cases (24.28%) and West Papua 215 cases (27.28%). (Ministry of Health Leprosy Information and Data, 2018)

Many believe that leprosy does not cross the placenta, but reports of leprosy in infants suggest that transplacental transmission can occur, although this is rare. The clinical presentation and severity of leprosy are largely determined by

the patient's immune response, particularly the cellular immune response. The development of the immune system in children is relatively less mature than in adults. Children are the next generation, so their quality of life, especially in terms of health, will determine their role in development. Furthermore, childhood is a highly active period, so leprosy patients can become a source of infection within the family, neighborhood, or school. (Wulan K et al., 2014)

The number of new leprosy patients under 15 years of age identified in a one-year period, known as the proportion of children under 15 years of age, is one indicator of the success of the leprosy eradication program. (Wulan K et al., 2014) Based on this description, the researchers wanted to understand the profile of leprosy sufferers in Jayapura City.

## 2. METHOD

This study was a retrospective study with a cross-sectional approach. Sample collection was conducted using a total sampling of all children with leprosy in Jayapura City, Papua, from 2019 to 2022. The data source was secondary medical records from the Community Health Centers (Puskesmas) and the Jayapura City Health Office. Data collected included the distribution of Puskesmas treatment locations, ethnicity, age, gender, type of leprosy, and treatment frequency. Analysis was performed using IBS SPSS Statistics 23.0. Univariate data analysis was conducted using frequency distribution.

## 3. RESULTS AND DISCUSSION

Table 1. Demographic and Clinical Characteristics

Variables	Total (n=156)
<b>Distribution of Community Health Centers</b>	
Waena Community Health Center	6 (3,84 %)
North Jayapura Community Health Center	22 (14,10 %)
Kotaraja Community Health Center	11 (7,05%)
Imbi Community Health Center	18 (11,53 %)
Elly Uyo Community Health Center	22(14,10%)
Abepura Community Health Center	18(11,53 %)
Twano Community Health Center	2(1.248
Skow Community Health Center	1(0.64)
Hamadi Community Health Center	54(34,61)
<b>Ethnic origin</b>	
Papua	103 (66.03 %)
Non-Papuan	53(33.97%)
<b>Age (years)</b>	
0 - 1	1(0.64%)
1 - 4	3(1.93%)
5 – 9	56 (33,89%)
10-14	96(61.54%)
<b>Gender</b>	
Male	82 (52.56%)
Female	74 (47.44 %)
<b>Type of Leprosy</b>	
Multibacillary Leprosy	128 (82.05%)
Paucibacillary Leprosy	28 (17.95%)
<b>Treatment Compliance</b>	
DO	23(14.75%)
RFT	123(78.85%)

A retrospective study of leprosy in children in Jayapura City has not been previously published. The total number of new leprosy patients, both adults and children, at several community health centers in Jayapura City, Papua, during the four-year period from January 2019 to December 2022 was 967, consisting of 811 (83.87%) adults and 156 (16.13%) children aged 0-14 years. According to Ministry of Health data as of January 13, 2021, new cases of leprosy in children in Indonesia were 9.14%. This figure is still considered high because it falls short of the government's target of below 5% for children (Directorate General of P2P, Ministry of Health, 2021).

Compared to this study, the leprosy rate in children in Jayapura City is very high, exceeding the Indonesian average, which is considered high. This figure indicates a high rate of transmission within families and communities and suggests that the leprosy control program is not yet fully implemented.

The number of new leprosy cases in Indonesia in 2016 was reported at 16,826, with a prevalence rate of 0.71 per 10,000 population and a new case detection rate of 6.5 per 100,000 population. Of these new cases, 83% were multibacillary (MB), 9% were grade 2 disability cases, and 11% were pediatric cases. Ministry of Health, 2021

A similar study was conducted at the Dermatology and Venereology Outpatient Unit (URJ) of Dr. Soetomo Hospital, Surabaya, from January 2009 to December 2011, examining all new leprosy cases in children (ages 0-14). The results revealed 37 pediatric patients, or 5.5% of the total 677 new leprosy cases. (Wulan IGA et al., 2011). Meanwhile, a study

conducted at Dr. Soetomo Hospital in Surabaya between 2010 and 2019 found 70 cases of leprosy in children, of which 58 were multibacillary (MB) and 12 were paucibacillary (PB) (Reza NR et al., 2022).

The youngest age of leprosy found in this study was 1 case of a leprosy patient under 1 year old. A similar study reported the youngest case of a 3-week-old infant in Martinique. A 2.5-month-old infant was also diagnosed with tuberculoid leprosy, confirmed by 7 histopathological examinations. A 2011 retrospective study found that the youngest patient at Dr. Soetomo Hospital in Surabaya was 1-4 years old, with 1 case. (Wulan IGA et al., 2011). The highest number of cases was in the 10-14 age group, with 96 cases, followed by 56 cases in the 5-9 age group. According to research conducted at several Surabaya educational centers in 2011, there were 36 cases, or 70%. (Wulan IGA et al., 2014)

The gender distribution of new patients aged 0-14 years was 82 males (52.56%) and 74 females (47.44%). This result is nearly identical to previous research. A retrospective study conducted between 2009 and 2011 showed a ratio of male to female patients of 1.8:1, with 22 males (59.5%) and 15 females (40.5%). (Wulan IGA et al., 2011) The difference in prevalence between males and females is likely influenced by the opportunity for contact due to hormonal differences, genetic factors, and social factors. Males tend to be more active outside the home, resulting in greater exposure to patients who become sources of infection, resulting in a 9-12% greater risk of contracting leprosy than females. Ministry of Health, 2021

This study shows that MB patients far outnumber PB patients. Several previous researchers found that PB type of leprosy in children is more common than MB type, but in endemic areas, MB leprosy patients are relatively more common. The high incidence of leprosy in children, especially MB type, requires attention because MB type is the primary source of transmission. Knowledge of the potential for leprosy reactions needs to be communicated, especially to parents of patients.

Based on the WHO classification of leprosy, MB leprosy is more common than PB leprosy. This study found 128 MB cases, or 82.05%, while PB cases accounted for 28 cases, or 17.95%. The same study was also conducted in Surabaya. The high proportion of MB cases, grade 2 disabilities, and pediatric cases in Indonesia indicates ongoing transmission and a high delay in detecting new cases. Ministry of Health, 2021

In general, the prevalence of childhood leprosy in Papuans is 103 cases, or 66.03%, while in non-Papuans, the prevalence is 53 cases, or 33.97%. Factors influencing leprosy include ethnicity, socioeconomic status, age, and gender. Ministry of Health, 2021.

Jayapura City is a pluralistic city inhabited by various ethnic groups, both indigenous Papuans and non-Papuans. Jayapura is known as a leprosy endemic area. Some sufferers still consider the skin lesions normal and are not bothered by them as long as they can still carry out their daily activities. This appears to be the reason for the high number of leprosy cases in Papua. M. Erodes 2021.

New leprosy cases in Indonesia are still frequently found, with varying numbers, especially in the eastern region. As of 2016, the rate of grade II disability was 5.27 per 1,000,000 population, and the rate of grade II disability in children was 0.24 per 1,000,000 population. These high rates are caused by, among other things: the high social stigma surrounding leprosy in the community; a lack of adequate healthcare personnel, which hinders case detection and management; the public's lack of awareness of the early symptoms of leprosy; the majority of leprosy control program personnel are not doctors; comprehensive leprosy management (including disability prevention) is suboptimal; clinically, leprosy often resembles other skin diseases, necessitating additional examinations. Meanwhile, facilities for supporting diagnosis are not yet available in all health care facilities; the very long course of leprosy, which makes reactions after treatment unmonitored; and the lack of uniformity in leprosy management. Ministry of Health, Republic of Indonesia, 2021.

In this study, 23 people, or 14.75% of pediatric leprosy patients, experienced medication discontinuation or dropped out. Discharge from treatment occurred in 123 people (78.85%). Dropouts were often related to access to funds, and drug side effects (possible factors) were associated with a tendency to drop out of leprosy treatment. The skills of health workers (a reinforcing factor) were also associated with drop out of leprosy treatment. Other reinforcing factors included inadequate supervision of health workers, and incentives received by doctor informants, mostly not from leprosy programs. Meanwhile, incentives received by paramedic informants were sufficient. Ministry of Health, Republic of Indonesia, 2021.

#### 4. CONCLUSION

There were 156 leprosy patients in children in Jayapura City from 2019-2022, of which 66.03% were indigenous Papuans. The largest number of leprosy patients in children were in the 10-14 age group (61.54%), based on gender, the largest number was male (52.56%), and based on the type of leprosy, the multibacillary type was 82.05%. Cases of children in Jayapura City... Dapsone Hypersensitivity Syndrome (DHS) in indigenous Papuan leprosy sufferers is quite high. This can provide information on the caution of administering MDT drugs to prevent the occurrence of Dapsone Hypersensitivity Syndrome (DHS).

#### ACKNOWLEDGEMENTS

We would like to thank the Jayapura City Health Service and Health Officers at the Jayapura City Community Health Center who played a role in this research.

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