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# Characteristics of Drug-Sensitive Pulmonary Tuberculosis Patients in Primary Health Center Laubaleng During COVID-19

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**ABSTRACT**

**Background:** Primary Health Center Laubaleng (PHCLB) first used the System Information Tuberculosis (SITB) at the start of the COVID-19 pandemic. SITB is more effective and efficient than manual, contains TB patient data, and is easy to view again. This research aims to describe the characteristics of Drug Sensitive Pulmonary TB (DSPTB) patients at the PHCLB during COVID-19 from SITB which is useful for detecting TB risk group cases.

**Method:** The research type was descriptive quantitative with a cross-sectional approach by comparing each age group, productivity, and gender. All DSPTB patients were recorded and reported in the SITB PHCLB database during the COVID-19 pandemic from January to December 2020, 2021, and 2022. SITB database access permitted by PHCLB, Jl. Renun, No. 597, Laubaleng District, Karo Regency, North Sumatra Province, Indonesia

**Results:** The largest percentage of DSPTB patients were aged 45-54 years in year 2022 (41.4%). The productive age category (15-64 years) dominated not (≥65 years) and not yet productive (0-14 years) in 2020, 2021, and 2022, respectively 90.9%, 85.4%, and 86.2%. The total number of DSPTB decreased in 2020, 2021, and 2022, respectively 55, 48, and 29 people.

**Conclusion:** Characteristics of DSPTB from SITB PHCLB during the Covid-19 pandemic, were mostly in the adult age category 45-54 years, productive (15-64 years), male and total number of patients decreased by 7 and 19 people respectively.

**Keywords:** System Information Tuberculosis (SITB), Primary Health Center Laubaleng (PHCLB), Pulmonary Tuberculosis (TB)

**ABSTRAK**

**Latar Belakang**: Puskesmas Primer Laubaleng (PHCLB) pertama kali menggunakan Sistem Informasi Tuberkulosis (SITB) pada awal pandemi COVID-19. SITB lebih efektif dan efisien daripada manual, berisi data pasien TB, dan mudah dilihat kembali. Penelitian ini bertujuan untuk mendeskripsikan karakteristik pasien TB Paru Sensitif Obat (DSPTB) pada PHCLB selama COVID-19 dari SITB yang berguna untuk mendeteksi kasus kelompok risiko TB.

**Metode**: Jenis penelitian adalah deskriptif kuantitatif dengan pendekatan cross-sectional dengan membandingkan masing-masing kelompok umur, produktivitas, dan jenis kelamin. Semua pasien DSPTB yang tercatat dan dilaporkan dalam database SITB PHCLB selama pandemi Covid-19 dari Januari-Desember 2020, 2021, dan 2022. Akses database SITB diizinkan oleh PHCLB, Jl. Renun, No. 597, Kecamatan Laubaleng, Kabupaten Karo, Provinsi Sumatera Utara, Indonesia

**Hasil:** Persentase terbesar pasien DSPTB berusia 45-54 tahun pada tahun 2022 (41,4%). Kategori usia produktif (15-64 tahun) mendominasi tidak (≥65 tahun) dan belum produktif (0-14 tahun) pada tahun 2020, 2021, 2022, masing-masing 90,9%, 85,4%, dan 86,2%. Jumlah total DSPTB menurun pada tahun 2020, 2021, dan 2022, masing-masing 55, 48, 29 orang.

**Kesimpulan**: Ciri-ciri DSPTB dari SITB PHCLB selama pandemi Covid-19, sebagian besar pada kategori usia dewasa 45-54 tahun, produktif (15-64 tahun), laki-laki dan jumlah total pasien masing-masing menurun 7 dan 19 orang.

**Kata Kunci**: Sistem Informasi Tuberkulosis (SITB), Puskesmas Laubaleng (PHCLB), Tuberkulosis Paru (TB).

## 1. Introduction

The Indonesian Tuberculosis (TB) Control Program targets elimination by 2035 and free by 2050. The success of the program depends on regular monitoring and systematic evaluation of electronic recording-reporting data information which is managed using a web-based System Information TB (SITB). The implementation of electronic SITB in all health centers is carried out in stages taking into account the availability of resources in the area. Health centers are required to record and report every incident of TB disease [1]. The Primary Health Center Laubaleng (PHCLB) recorded and reported TB cases manually before the Corona Virus Disease 2019 (COVID-19) pandemic. The COVID-19 pandemic caused the Indonesian Government to Implement Large-Scale Social Restrictions (LSR) and Community Activity Restrictions (CAR) in all regions including Karo Regency [2]. Restrictions on the mobilization of people, facilities, and infrastructure in a particular province/regency/district/city, including Karo Regency, were intended to prevent the spread of COVID-19 and were implemented for 3 consecutive years starting from 2020, 2021, and 2022 [3]. The 3 years implementation required PHCLB to start recording and reporting TB electronically through SITB. Arif et al research at the Baubau City Primary Health Center, Southeast Sulawesi, on a collection of medical record data, SITB, and questionnaires from December 2020-February 2021, showed that the majority of pulmonary tuberculosis patients were male (65.3%) and aged 15-35 years (65.3%) [4]. TB patients must be more vigilant during the Covid-19 pandemic. Covid-19 can worsen TB disease. WHO estimates that there will be a 25% reduction in TB case detection during the Covid-19 pandemic. Suarli et al researched TB patient treatment visits at the Lung Polyclinic Dompet Duafa Hospital in 2019 were 583 people and in 2020 only 411 people, meaning there was a decrease of 172 patients during the COVID-19 pandemic. TB patients are afraid to come to health facilities, resulting in the risk of drug withdrawal [5]. The COVID-19 pandemic has caused concerns about the initial steps in efforts to cure patients as well as reduce morbidity and mortality due to TB [6]. Susilawati et al research on medical record data of TB patient cases at the Sanden Primary Health Center in 2020-2022 found that the most cases were 14 in 2020 and decrease of around 50% to 7 cases in 2021 and 9 cases in 2022. According to Susilawati et al, TB cases have been successfully reduced because of the presence of cough clinics since 2020 during COVID-19. Susilawati et al also found that the majority of TB patients were 53.3% male, and 17 cases were of productive age (16-59 years) [7].

The healthcare system has changed during the Covid-19 pandemic [6]. PHCLB benefits from the effectiveness and efficiency of SITB during the implementation of LSR and CAR because recording and reporting TB cases can be done directly via the web and recorded, without having to manually use lots of files [8], travel along damaged roads and quite a long distance to the Health Service [9] so that it can avoid accidents and transmission during the Covid-19 pandemic. The ease of access to SITB data has attracted the attention of researchers to process data. This research aims to determine the proportion distribution of demographic characteristics such as age, productivity, gender, and total DSPTB during the Covid-19 pandemic in 2020-2022 from SITB which is useful for increasing case detection TB risk groups and early drug administration in PHCLB work area.

## 2. Method

The research type was a descriptive quantitative with a cross-sectional approach by comparing each age group, productivity, gender, and total DSPTB patients, which were recorded and reported in the SITB PHCLB database during the Covid-19 pandemic from January-December 2020, 2021, and 2022. SITB database access permitted by PHCLB, Jl. Renun, No. 597, Laubaleng District, Karo Regency, Postal Code 22164, North Sumatra Province, Indonesia.

The research subject was DSPTB patients at PHCLB. The research object is SITB PHCLB. Inclusion criteria were DSPTB patients who were recorded and reported in the SITB PHCLB database from January to December 2020, 2021, and 2022. Exclusion criteria were suspected TB, drug-resistant TB patients, incoming and outgoing laboratory requests, and laboratory examination results in the SITB PHCLB database system.

Secondary data of DSPTB patients from January-December 2020, 2021, and 2022 was accessed directly from SITB PHCLB [10].

Data Analysis

Univariate analysis of DSPTB SITB data PHLCB during the Covid-19 pandemic in 2020, 2021, *and* 2022 which was taken using total purposive sampling to describe the characteristics of each research variable such as age, productivity, gender, and total DSPTB and presented in the form of a frequency distribution table.

## 3. Results

Table 1 shows the accumulated results of male and female DSPTB patients from SITB PHCLB data during the COVID-19 pandemic. The total number of DSPTB patients decreased in 2020, 2021, and 2022, respectively 55, 48, and 29 people.

**Table 1** The Total DSPTB Patients

| Gender | Year | | |
|---|---|---|---|
| | 2020 | 2021 | 2022 |
| | n | n | n |
| Male | 30 | 42 | 19 |
| Female | 25 | 6 | 10 |
| Total | 55 | 48 | 29 |

Table 2 shows the percentage results for each age group of DSPTB patients from SITB PHCLB data during the Covid-19 pandemic. The first largest percentage of DSPTB patients was in the 45-54 years age range in the order of 2020, 2021, and 2022, respectively 27.3%, 27.1%, and 41.4%. The 25-34 years age range was the second largest in 2020, 2021, and 2022, respectively 20%, 27.1%, and 10.3%. The third largest age range was 55-64 years old in the order of 2020, 2021, and 2022, respectively 20%, 14.6%, 13.8%.

**Table 2** The DSPTB Patients Based on Age Range

| Age (years) | Year | | | | | |
|---|---|---|---|---|---|---|
| | 2020 | | 2021 | | 2022 | |
| | n | (%) | n | (%) | n | (%) |
| 0-14 | 0 | 0 | 0 | 2.1 | 0 | 0 |
| 15-24 | 5 | 9.1 | 5 | 10.4 | 1 | 3.4 |
| 25-34 | 11 | 20 | 13 | 27.1 | 3 | 10.3 |
| 35-44 | 8 | 14.5 | 3 | 6.2 | 5 | 17.2 |
| 45-54 | 15 | 27.3 | 13 | 27.1 | 12 | 41.4 |
| 55-64 | 11 | 20 | 7 | 14.6 | 4 | 13.8 |
| ≥ 65 | 5 | 9.1 | 6 | 12.5 | 4 | 13.8 |

Table 3 shows the percentage results for each age group who were not, currently, and not yet productive with DSPTB patients from SITB PHCLB data during the Covid-19 Pandemic. The productive age group (15-64 years) dominated not (≥65 years) and not yet productive (0-14 years) in 2020, 2021, and 2022, respectively 90.9%, 85.4%, and 86.2%. The percentage of the not productive age group (≥65 years) was very small in 2022, 2021, and 2022, respectively 9.1%, 12.5%, and 13.8%, and DSPTB patients in the not yet productive age group (0-14 years) were not found only 1 person (2.1%) was found in 2021.

**Table 3** The DSPTB Patients Based on Productivity

| Productivity | Year | | | | | |
|---|---|---|---|---|---|---|
| | 2020 | | 2021 | | 2022 | |
| | n | (%) | n | (%) | n | (%) |
| Not yet (0-14 years) | 0 | 0 | 1 | 2.1 | 0 | 0 |
| Yes (15-64 years) | 50 | 90.9 | 41 | 85.4 | 25 | 86.2 |
| Not yet (≥65 years) | 5 | 9.1 | 6 | 12.5 | 4 | 13.8 |

## 4. Discussions

The Sustainable Development Goals targets for 2030 recommend that health data be disaggregated by age, but in reality, the grouping of age categories for recording and reporting health data is still not standardized, thus hampering data analysis, interpretation, and comparison. The age group under 5 years is still

experiencing rapid biological and physiological changes so it requires better sorting. Age disaggregation is useful for disease management and health services. Large categories will cover major differences. The small sample size has the alternative of larger age groupings to have sufficient and acceptable precision to support the analysis [8].

Adults are susceptible to TB [11]. The 45-54 years age range was 41.4%, the first largest percentage of DSPTB patients during the COVID-19 pandemic in PHCLB. This was following research by Muchtar and colleagues at RSUP Dr. M. Djamil Padang in 2015, who found that 44.6% aged >45 years mostly suffered from pulmonary TB [12]. Most TB in adults can be due to being infected as a child with primary TB without good prevention so that it appears as an adult or having activities that involve interacting with TB patients or an environment that is easily infected with TB [13]. Apart from that, the physical factor at work can cause decreased immunity and susceptibility to infection [11]

The group most vulnerable to contracting TB is the young adult age group which is also the productive age group [1]. During the COVID-19 pandemic, there were 50 patients (90.9%) from DSPTB PHCLB in the productive age group (15-64 years) who dominated this study. Research by Aida and colleagues, which processed medical record data from Sanjiwani Hospital for 2019 and 2020, also found that there were 41 patients (56.2%), the majority of whom were of productive age (18-60 years). This was because those of productive age were more active outside the home, so they were more likely to meet other people who had been infected with TB [14].

Data on sex ratios is useful for developing gender-oriented expansion planning [15]. The results of the TB prevalence survey showed that there were more male TB patients than female [1]. This was following research conducted, that the highest number of DSPTB patients were 87.5% male compared to 12.5% female during the Covid-19 pandemic in PHCLB. Research by Laily and colleagues, on medical record data in 2013 at the Tuminting Manado Health Center, also found that the majority of pulmonary TB patients were 55.1% male compared to 44.9% female [13].

There is no clear theory for the high prevalence of TB in males, only the possibility that it is due to smoking habits and males being more active outside the home, so they are at risk of being exposed to TB; under-detection of infection prevalence and reporting of disease progression for female; or differences in access to health services [12].

Research on the characteristics of TB patients is useful for increasing the case detection rate in TB risk groups in the Primary Health Centers' working area [11]. The total number of DSPTB patients in this study decreased respectively by 7 and 19 people during the Covid-19 pandemic.

Indonesia experienced a 25.3% significant decrease in TB case detection during the Covid-19 pandemic. This was due to social restrictions which tracking and diagnostic testing of more COVID-19 patients so that decreased tracking and TB detection [16]. The other reasons were difficulties in coming to the health center during the pandemic, anxiety about COVID-19 transmission, focus being diverted to COVID-19 [17], bored with long periods of taking medication [18], and lack of information communication and education for medical staff regarding treatment routines so that patients recover quickly [19].

Primary Health Centers, apart from playing a preventive, promotive, and curative role, must be more proactive, intensive, massive, family, and community-based to reach and detect TB patients earlier. Primary Health Centers must be able to provide and maximize professional and competent Human Resources and strengthen Strategic Information Systems to maintain coverage and increase the success of TB treatment [20].

The research has several strengths and limitations. The strengths are: 1. SITB data is consistent, reliable, and easy to analyze; 2. Findings from sample research results can represent the population at the PHCLB work area. The limitations are 1. There is still a lot of SITB data that has not been explored; 2. There has not been a comparison of SITB data with other Primary Health Centers.

## 5. Conclusions

Characteristics of DSPTB from the SITB PHCLB database during the COVID-19 pandemic, most often in the adult age range 45-54 years, productive age group (15-64 years), and male gender. The total number of TB patients decreased by 7 and 19 people respectively during the Covid-19 pandemic. Researchers hope that there will be continued research regarding maximizing recording and reporting as well as processing other data at SITB as well as indicators of successful TB control during the COVID-19 endemic.

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