Compliance Profile of Pulmonary Tuberculosis Patient Treatment Stage in Consuming Anti Tuberculosis Drugs (ATD) at Lubuk Buaya Health Center Padang

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A R T I C L E   I N F O

ABSTRACT

A well-prepared abstract enables the reader to identify the basic Tuberculosis (TB) is a disease caused by the microorganism Mycobacterium tuberculosis. According to the World Health Organization (WHO), the prevalence global of TB in 2018 was around 10 million people infected and caused 1.5 million deaths. Eradication TB, it is necessary to be aware of the patient himself because adherence to taking ATD is a key factor in the success of the treatment. The purpose of this study was to determine the compliance profile of pulmonary TB patients in consuming Anti-TB Drugs (ATD) at Lubuk Buaya Health Center, Padang City in 2019-2020. Type of research is descriptive research with cross-sectional study method and total sampling. Univariate data analysis is presented by distribution freququency. Data processing using the computerized SPSS program. The results of research showed 117 patients who met the inclusion and exclusion criteria. The most of patient is 26-45 years old, namely 51 people (43,6%). The Most of gender is male, namely 65 people (55,6%). The most job of patient is entreprenur, namely 35 people (29,9%). The most of education category is a middle category, namely 69 people (59,0%). The most of treatment stage is continuation stage, namely 99 people (84,6%). The most of ATD category is the first category , namely 100 people (85,5%), and the most patient to complied to taking ATD, namely 99 people (84,6%). This research was concluded that age 26-45 years old, gender is male, job is entreprenur, education is a middle category, stage of treatment is continuation category, the first category of ATD, patient to complied to taking ATD is the dominant profile pulmunary TB patient at Lubuk Buaya health center in 2019-2020.

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INTRODUCTION

Tuberculosis (TB) is a disease caused by the microorganism Mycobacterium tuberculosis. This microorganism infects in three ways: silent, latent, and active. This germ mainly attacks the pulmonary organs of patients infected with positive tuberculosis Acid Resistant Bacillus (BTA) (Qiyaam, Furqani, & Hartanti, 2020). TB spreads through droplets. Healthy individuals can become infected by simply inhaling a few Mycobacterium tuberculosis (MTB) germs from people who have been infected (Latifah, Al Masyani, & Fauziah, 2021).

TB cases in Padang City have increased every year. In 2019 it increased compared to 2018. Most TB cases are pulmonary TB cases. In 2018, there were 1,115 cases of pulmonary TB. Recently, it was an increase in the prevalence rate of pulmonary TB in the city of Padang, with a figure of 1,162 cases in 2019. The cure rate of TB patients in Padang city is 872, and the mortality rate is 76 people, while the success rate (SR) value is 87.8%. The highest spread of pulmonary TB cases in Padang City is in Koto Tengah District, which is dominated by the Lubuk Buaya Health Center working area, with 111 cases.

The high prevalence rate of pulmonary TB in Indonesia has made the government make efforts to overcome this disease. The Directly Observed Treatment Shortcourse (DOTS) strategy is the government's effort to reduce the rate of increase in pulmonary TB cases most effectively recommended by WHO. This strategy is considered very good nationally because implementing this strategy can cause positive progress in overcoming pulmonary TB disease (Tukatman, Yulianti, Baeda, 2021).

Eradicate TB disease must be aware of the patient himself because adherence to taking ATD is a critical factor in successfully treating this disease. The high percentage of non-compliance that is difficult to assess results in a surge in TB cases, increases the risk of treatment failure and relapse and increases the likelihood of patients experiencing drug resistance. Multi-drug resistant (MDR) and extensively resistant (XDR) TB pose a severe threat (Dhiyantari, Trasia, Indriyani, & Aryani, . 2014).

Anti-TB drugs are administered to patients in the form of a fixed-dose combination. ATD alloys are divided into three categories: ATD category 1, ATD category 2, and ATD category 3. The division of the drug is adjusted based on the case that occurred in the patient. The treatment stage of TB patients consists of an intensive and advanced phase. Intensive phase treatment is treatment in new patients given every day for up to 2 months, while the progressive step is the stage of treatment that serves to prevent recurrence with a duration of 4 months (Kemenkes, 2013).

Compliance of TB patients for treatment can be influenced by several factors, namely internal factors, and external factors. Internal factors that can affect patients are the characteristics of TB patients (e.g., age, gender, comorbidities), while external factors that affect include health facility workers, access to health facilities, family support and motivation, and PMO participation (Ramadhan, dkk, 2021).

Based on the increasing prevalence of pulmonary TB cases, an analysis of how patients adhere to treatment with ATD is needed, and pharmacological management includes dots strategies. Therefore, this study was conducted to determine the compliance profile of patients consuming ATD at the Lubuk Buaya Health Center in 2019-2020.

RESEARCH METHOD

This research covers the field of medicine in pulmonary disease. This research was carried out at the Lubuk Buaya Health Center which was carried out in March 2021-July 2022. This research is an analytical descriptive study. The study was conducted with a cross-sectional design of medical records at the Lubuk Buaya Health Center in 2019-2020. Research variables are assessed at the same time. The target population in this study were patients who had been diagnosed with pulmonary TB.

The samples in this study were taken with total sampling from pulmonary TB patients in 2019-2020. The minimum sample size in this study was based on a definite descriptive formula and obtained 96 samples.

Data Analysis

Data collection was carried out by recording the data contained in the medical records of pulmonary TB patients at the Lubuk Buaya Health Center in 2019-2020, which began in April 2022. The data to be collected consists of age, gender, occupation, education, patient treatment stage, patient ATD category, and patient compliance with consuming ATD. The data analysis used in this study is univariate analysis. The univariate analysis explains the research variables to be studied: the profiles of pulmonary TB patients, which include age, gender, occupation, education, treatment stage, ATD Category, and patient adherence to consuming ATD. The data was described through the SPSS application using a descriptive statistical approach to obtain frequency distribution based on the characteristics studied from all research variables. The data processing process is carried out using the SPSS application.

RESULTS AND DISCUSSIONS

Results

This study aims to determine compliance with the treatment stage of pulmonary TB patients in consuming Anti-TB Drugs (ATD) at the Lubuk Buaya Health Center in Padang City in 2019-2020. The results of the study obtained a sample of 117 patients.

Table 1. Frequency Distribution of Pulmonary TB Patients at The Lubuk Buaya Health Center in 2019-2020 based on age

Age categories	F	%
< 25 years	16	13,7
26 – 45 years	51	43,6
46 – 65 years	41	35,0
> 66 years	9	7,7
Total	117	100,0

Based on table 1, the results of the highest age of pulmonary TB patients at the Lubuk Buaya Health Center in 2019-2020 were 26-45 years, totaling 51 people. (43.6%).

Table 2. Frequency Distribution of Pulmonary TB Patients at The Lubuk Buaya Health Center in 2019-2020 by Gender

Gender Categories	F	%
Male	65	55,6
Female	52	44,4
Total	117	100,0

Based on table 2, the results of the highest sex of pulmonary TB patients at the Lubuk Buaya Health Center in 2019-2020 were male sexes, totaling 65 patients (55.6%).

Table 3. Frequency Distribution of Pulmonary TB Patients at the Lubuk Buaya Health Center in 2019-2020 Based on Patient Work

Job Categories	F	%
Self employed	35	29,9
Civil servants/TNI/Retirees	10	8,5
Farmer/Driver/Laborer	16	13,7
Housewives	32	27,4
Student	10	8,5

Unemployment	5	4,3
Others	9	7,7
Total	117	100,0

Based on table 3, the results of the most work of pulmonary TB patients at the Lubuk Buaya Health Center in 2019-2020 were self-employed with 35 people (29.9%).

Table 4. Frequency Distribution of Pulmonary TB Patients at The Lubuk Buaya Health Center in 2019-2020 Based on Patient Education

Categories Education Level	F	%
Low	39	33,3
Moderate	69	59,0
High	9	7,7
Total	117	100,0

Based on table 4, the most educational results of pulmonary TB patients at the Lubuk Buaya Health Center in 2019-2020 were in the moderate category with a total of 69 people (59.0%).

Table 5. Frequency Distribution of Pulmonary TB Patients at the Lubuk Buaya Health Center in 2019-2020 based on the patient's treatment stage

Treatment Stage Categories	F	%
Intensive	18	15,4
Advanced	99	84,6
Total	117	100,0

Based on table 5, the results of the treatment stage of pulmonary TB patients at the Lubuk Buaya health center in 2019-2020 were patients with an advanced treatment stage of 99 patients (84.6%).

Table 6. Frequency Distribution of Pulmonary TB Patients at the Lubuk Buaya Health Center in 2019-2020 based on the category of drugs consumed by patients.

Category of ATD	F	%
I	100	85,5
II	17	14,5
Total	117	100,0

Based on table 6, the results of the OAT category consumed by pulmonary TB patients at the Lubuk Buaya health center in 2019-2020 were patients with category 1, totaling 100 patients (85.5%).

Table 7. Frequency Distribution of Pulmonary TB Patients at The Lubuk Buaya Health Center in 2019-2020 based on compliance with patient drug consumption

Compliance Category	F	%
Compliance	99	84,6
Uncompliance	18	15,4
Total	117	100,0

Based on table 7, the results of compliance with OAT consumption in pulmonary TB patients at the Lubuk Buaya health center in 2019-2020 were patients who obediently consumed with as many as 99 patients (84.6%).

Discussions

1. Age

Based on the results of this study, the most age of pulmonary TB patients at the Lubuk Buaya Health Center in 2019-2020 was the most aged 26-45 years with 51 people (43.6%). This study is in line with research conducted by Ramadhan et al., in Banda Aceh City and Aceh Besar Regency, which stated that the highest age of pulmonary TB patients was 26-45 years, with 104 people

(39.7%).8 The study conducted by Absor et al., in Lamongan in 2016-2018 obtained the results of the most TB patients affecting the age of 35-55 years with 46 patients (41.6%) (Absor dkk, 2020).

Another study conducted by Dian et al., at the Tuminting Health Center in Manado City found that the age of the most pulmonary TB patients aged 26-45 years was 78 people (39.8%) (Laily, Rombot, & Lampus, 2015). Rahmat et al., conducted a study in 2021 at Ibnu Sina Hospital, Medan City, obtaining the results that the highest age of pulmonary TB patients was the productive age with 60 patients (63.8%) (Sikumbang, Eyanoer, & Siregar, 2022).

The productive age is infected with tuberculosis because, at the productive age, individuals carry out high activities and mobility to allow exposure to TB germs; besides that, TB germs can be active again in the body, which tends to occur at a productive age. High activity and mobility in the productive age due to the demands of meeting the needs of life and social activities that allow individuals to interact and increase the risk of developing tuberculosis (Dotulong, Sapulete, & Kandou, 2015).

Based on the above, researchers argue that the high number of TB cases at productive age in this study is due to individuals carrying out very dense activities and high mobilization. In addition, at a productive age, individuals tend to interact with others, thereby increasing the risk of exposure to TB bacteria that spread through droplets.

2. Gender

Based on the results of this study, the most gender was obtained, namely men, namely 65 people (55.6%). This study is in line with a survey conducted by Ridwan et al. in Pontianak in January 2017 - September 2018, stating that the most gender is male as many as 51 patients (64.6%). Another study conducted by Hadifah et al. in three health centers in the working area of Pidie Regency found that the most gender was male with 13 patients (65.0%) (Hadifah, Manik, Zulhaida, & Wilya, 2017).

This study also follows research conducted by Nuraini et al. RSUP Dr. Soeradji Tirtionegoro Klaten in 2017 obtained the results that most sex of pulmonary TB patients were men totaling 54 patients (56.2%) (Nuraini & Susilaningsih, 2017). This condition is because the male sex leaves the house more often, which can increase the risk of exposure to droplets containing TB bacteria. Some other things that cause men to be infected with more TB due to higher smoking habits in men ()

Cigarette smoke that is exposed regularly and air pollution can damage secretions from the tracheobronchial mucosa; besides, it can damage macrophages on the alveolar, so that other organisms such as TB germs can penetrate the body's defense system in the lungs easily (Fitria, Ramadhan, & Rosdiana, 2017).

Other factors influencing the incidence of more men than women infected with tuberculosis include drinking alcohol. Men tend to consume more alcohol. The effects of alcohol can affect the pulmonary immune system. Research by Lannorth with a systematic review states the risk of active TB will increase in patients who consume 40g or more of alcohol daily and in patients with alcohol use disorder. This problem is because alcohol has a toxic effect on macrophage function, and inhibition of TNF, NO, granuloma formation, and CD 4 proliferation occurs so that the mycobacteria digestion process becomes inhibited.

Researchers argue that the more excellent frequency distribution of men than women in cases of pulmonary tuberculosis at the Lubuk Buaya Health Center is because the male sex has more activity outside the home than women, thereby increasing the risk of exposure to TB mycobacteria. In addition, most men have a poorer lifestyle than women, such as smoking and consuming alcohol, which affects the body's immune system.

3.   Job

This study obtained the most jobs in self-employed patients, comprising 35 people (29.9%). This research is in line with a survey conducted by Puspitasari in 2014 at al., the pulmonary polyclinic of

RSUP Prof. Dr.R.D. Kandou, Manado City, which found that the most patients' work results were self-employed, totaling 19 patients (36.5%) (Puspitasari, 2014). Another study conducted by Rahmatillah et al. obtained the results of the work of pulmonary TB patients at the Bandung community lung health center in 2017; most were self-employed, with 70 patients (58.4 %).

Research conducted by Nurhaini et al. in Klaten obtained the most work results were Self-Employed and IRT, with the number of patients per job of 10 patients (31.3%); this is because the work is related to close to the location of the source of TB transmission, a dirty environment so that it is easy to get infected with TB (Nurhaini, Hidayati, & Oktavia, 2019).

According to research conducted by Riva in 2018, most occupation of pulmonary TB patients is self-employed because this type of self-employed work requires to interact with many people in the outside environment to increase the risk of exposure to TB mycobacteria. Work environment factors also affect being infected with TB where a lousy work environment can act to infected TB, including self-employed workers are more at risk of being infected with TB than individuals who work in office areas (Debora, 2020).

Fina et al. stated that pulmonary TB often occurs in a dirty, humid, lack of sunlight, muddy, and untidy work environment. Research by Fina et al. showed that the work environment that is the source of TB transmission lies in the market, and most of the people's work in the market are traders. Traders are people who do not work in the government sector and can be interpreted as self-employed (Oktafiyana, Nurhayati, & Almurhan, 2017).)

In addition to being self-employed, pulmonary TB infects many housewives. Housewives are women who spend more time at home. TB infection in subjects in the house is influenced by several factors, including poor ventilation, poor lighting, and building materials at home.. 26.27 In addition, housewives and self-employed people have a lot of free time to detect TB disease because housewives and self-employed are jobs whose working hours are not tied (Sugito, 2022).

4. Education Level

The results of this study obtained the highest level of education in pulmonary TB patients was the moderate category, namely 69 patients (59.0%). This research is following the results of a study conducted by Nurhaini et al. at the Klaten public health center in 2019, which obtained patients with the highest level of education in pulmonary TB was SMA, as many as 15 patients (46.9%).

Another study conducted by Hadifah et al. in three health centers in the working area of Pidie Regency found that the most educational results of pulmonary TB patients were high school as many as 7 patients (35.0%). Mulyadi stated that most category of education in pulmonary TB patients is secondary because many respondents have low category economic conditions, so they cannot continue their education to a high level. Education is closely related to the prevention of diseases, including pulmonary tuberculosis (Mulyadi, & Dermawan, 2011).

According to Minadiarly and Sumarno, there is a relationship between education level and pulmonary TB incidence, and the role of moderate and low-level education has a higher risk of TB infection compared to higher education level individuals. Education relates to one's knowledge of the disease, with a good understanding of disease allowing individuals to prevent contracting disease (Yuni, 2016).

Researchers argue that many moderate category educations in pulmonary TB patients is due to lower knowledge of the disease than higher education. Besides, patients cannot continue their education to a higher level related to their economic aspects. Many patients graduated from high school and junior high school due to the government's 9-year compulsory education program and the demands of several fields of work that require individuals to complete formal high school education (Refdanita, & Kusumawaty, 2019).

5. Treatment Steps

Based on the results of this study, the most stages of treatment were obtained, namely the advanced stage, which was 99 patients (84.6%). This study is in line with a study conducted by Mursudarinah et al in Surakarta which stated that the most TB patients were in the advanced stage of treatment with as many as 42 patients (60.9%) (Mursudarinah, & Sari, 2019).

TB treatment consists of intensive and advanced phases; intensive stage treatment aims to reduce the number of TB germs that are drunk every day, while the advanced stage seeks to kill the remaining germs contained in the body so that the patient can recover and minimize the possibility of relapse.

Drugs given to new patients in the early stage of treatment include isoniazid, rifampicin, pyrazinamide, and ethambutol for two months. Then entering the advanced stage, the patient is given isoniazid and rifampicin within four months. Side effects that appear in these anti-tuberculosis drugs include nausea, vomiting, eating disorders, and headaches.

The type of patient who relapsed received the drugs isoniazid, rifampicin, pyrazinamide, ethambutol, and streptomycin within two months and continued the next one month without streptomycin in the intensive phase, in the advanced stage, TB treatment with drugs isoniazid, rifampicin, and ethambutol in 5 months.

The parameter to assess TB therapy's success is to look at the conversion rate. If the BTA conversion result is negative at the end of the intensive period, the patient can continue oat therapy with advanced stages. If the conversion result remains positive, the BTA indicates an indication of irregularity in taking the drug. Failure or success of BTA conversion affected by treatment adherence (Putra, Hidayatullah, Aida, & Hidayat, 2022).

Researchers argue that the number of patients in this study has reached the advanced treatment stage. Pulmonary TB patients cause this problem at the Lubuk Buaya Health Center; the conversion results at the end of the intensive phase have shown a reasonable conversion rate to continue the therapeutic regimen to the advanced stage.

6. Anti-tuberculosis Drugs (ATD) Category

The results of this study obtained the most ATD category in pulmonary TB patients, namely ATD category one, as many as 100 patients (85.5%). This research is in line with a study by Refdanita at the Cilangkap Health Center, Depok City, with the most treatment in pulmonary TB patients, namely ATD category 1, with 55 patients (98.2%).

Another study conducted by Puspitasari in 2014 observed the pulmonary polyclinic of RSUP Prof. Dr.R.D. Kandou, Manado City, found that the most oat category of patients was ATD category one, with as many as 36 patients (69.2%).20 The study conducted by Marlina at the old Stabat Health Center, Wampu District, obtained the results of the oat category the most was category one as many as 21 patients (100.0%).

Category 1 (intensive stage) is given daily a combination of isoniazid, rifampicin, pyrazinamide, and ethambutol for 56 days. In the advanced stage is given isoniazid and rifampicin three times a week for four months. Category 2 was given isoniazid, rifampicin, pyrazinamide, ethambutol, and stepthomycin, where streptomycin was given by injection in the first two months, and continued isoniazid, rifampicin, pyrazinamide, and etambutol for one month so that the total duration of treatment in the ATD 2 therapy regimen at the intensive stage for three months, then continued the advanced stage of treatment with isoniazid therapy regimen, rifampicin, ethambutol for five months (Ismail, Handayany, & Bakri, 2016).

The drug category is ATD category one because category 1 is a treatment for a new positive BTA in patients. Category 2 is a treatment for relapsed TB cases or where patients who have had previous treatment and recovered are rediagnosed with a positive BTA. The categories for this treatment were adjusted to patients' classification and the BTA examination results.

Many new cases are due to physical contact factors in the patient's environment, which are related to the transmission rate of cases. For example, one of the factors a person is contaminated with TB germs is determined by how long the individual is at the contaminated site (Ismail, Handayany, & Bakri, 2016).

7. ATD Consumption Compliance

Based on the results of this study, the most ATD consumption compliance was 99 patients (84.6%). This study is in line with the research conducted by Suyadniyani in Bulelang District, with the most TB patients obediently consuming ATD, namely 32 patients (80.0%) (Pasek, 2013).

Another study, at the East Perak Health Center found that the results of patients complying with ATD consumption were 37 patients (62.7%). 29 Factors that cause patients to comply with ATD consumption are due to five interconnected factors, namely patient, therapeutic, health, and socioeconomic factors (Safii, Putri, & Suparto, 2018).

Indicators for measuring compliance can be interpreted in two definitions, the definition of the process and the definition of the impact of treatment. Orientation to the process can be seen in establishing an appointment between the doctor and the patient or taking drugs used to measure compliance. Orientation to the impact of treatment can be seen from the final result of the treatment (Safii, Putri, & Suparto, 2018).

The majority of the reasons patients are obedient to consume ATD are because they want to recover quickly from their illness, be able to carry out normal activities, support from the patient's family, and information from health workers at the health center is very good so that patients are motivated to consume the specified ATD obediently.36 The Factors of patients not complying with taking ATD because the patient feels bored with the treatment. He is undergoing so and the patient lacks the motivation to treatment regularly.

In this study, there was non-compliance of patients to consume due to some patients being afraid to take medicines. That is caused COVID-19 pandemic situation. However, it does not prevent treatment for other pulmonary TB patients during the pandemic. The reason is that the public health center has prepared patient health protocols. With the health protocols carried out by the health institutions, so it is not a problem for patients to comply with their treatment.

CONCLUSION

Based on the results of the research obtained, it can be concluded that the most characteristics of Pulmonary TB sufferers at the Lubuk Buaya Padang Health Center are men with a productive age of 26-45 years. The most patient occupations are self-employed with a moderate level of education. The most stage of treatment in pulmonary TB patients is the stage of treatment in the advanced phase with category 1 and a significant degree of adherence. It is hoped that medical personnel can record the condition of patients who are fully treated. The Puskesmas is expected to improve the organization of medical records so that it is easier when conducting further research. Medical personnel can improve health promotion about pulmonary tuberculosis and the importance of consuming ATD regularly in TB patients using print and electronic media, especially in public areas and densely populated settlements. Thus, public health centers can improve the evaluation and monitoring of patients who are not compliant with treatment. Training is carried out for cadres to be optimal in providing education to patients and their families.

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