European Journal of Molecular & Clinical Medicine
ISSN 2515-8260 Volume 07, Issue 03, 2020

Characteristics Of Patients With Pulmonary Tuberculosis, Side Effects Of Antituberculosis Drugs, And Accuracy Of Diagnosis Of Patients With Pulmonary Tuberculosis

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ABSTRACT

Pulmonary Tuberculosis (TB) is a disease caused by Mycobacterium tuberculosis. TB cases in Indonesia reached more than 300 per 100.000 populations meanwhile in Jakarta as many 24.775 cases, for East Jakarta as many 7.520 cases. Properly diagnose, and the granting of anti-tuberculosis drugs as well as monitoring of side effects are expected to reduce the number of TB incidence. The research aims to know the characteristic and side effects of anti-tuberculosis drugs against TB patients who were hospitalized in UKI Hospitalon January 2015 – September 2017. The method used is content analysis document that is retrospective with 212 populations. The research results obtained that most patients are male, age group 45 - 54, the level of education is senior high school, entrepreneurs, and has lived in Jatinegara. The most clinical manifestation of TB is cough and in the physical examination is vesicular sound with Ronchi (rales or crackles). The most work up of TB is x-ray and LED.Meanwhile, BTA examination only 40% with the most result is BTA positive. The most imaging of x-ray is infiltrating. The most prescribed is FDC. The distribution of adverse effect due to these drugs is the same (one each)

Keywords: Characteristic of Pulmonary TB, Adverse effect, Fixed-Dose, Combination, Separated Drug, BTA

1. INTRODUCTION

Tuberculosis (TB) is a common health problem in today's world society. It is classified as a contagious infectious disease and is the 9th most common disease-causing mortality. The risk factors for TB disease depend on three things, namely: the host (host), the causative bacteria (agent) and environmental conditions (environment). TB disease transmission is effortless, namely through droplets (sputum splashes) that have been contaminated with the bacteria Mycobacterium tuberculosis (M.tb) [1; 2]. There are two types of TB symptoms, namely: respiratory symptoms (chronic cough, bloody cough (hemoptysis), chest pain, and shortness of breath) and systemic symptoms (night sweats, fever, malaise, and weight loss) [3; 4]. If this is not given proper treatment, it can lead to death. Global records conducted by the World Health Organization (WHO) on the estimated incidence of TB in 2016 reached 10.4 million cases with a male: female ratio of 1.7: 1 [5].

For the Asian region, three countries have an estimated TB incidence of 45%, namely: China, Indonesia, and India. In Indonesia, there are more than 300 new cases per 100 thousand population which are estimated to occur in 2016 so that this makes Indonesia one of the 30 countries with the heaviest burden of TB disease (high burden countries) and puts Indonesia in the second position as a country with incidence cases. Most TB in 2016 [6; 7]. Meanwhile, according to the Indonesian Ministry of Health (Kemenkes), in 2016 around 298,128 TB cases were occurring in Indonesia and 24,775 cases that occurred in DKI Jakarta (14,481 TB cases occurred in men and the rest occurred in women). It makes DKI Jakarta Province the fourth-highest for all TB cases. At the municipal level, East Jakarta ranks first for all TB cases, with 7,520 cases [8; 9]. Based on a confirmed bacteriological examination using BTA (Acid Resistant Basil), the Indonesian Ministry of Health reported that in Indonesia, there were around 156,723 new TB cases with BTA positive. Meanwhile, the new cases that occurred in DKI Jakarta Province were 9,516 new cases, making DKI Jakarta Province the fifth-highest. Based on the municipal level, East Jakarta ranks first for new cases of TB with positive smear-positive, which is 3,024 cases [10].

Based on the data source from the data processing unit at the *UKI Hospital*, there were 84 TB cases in the inpatient department in 2015. In 2016 it decreased to 35 cases, but in early 2017 to September 2017 there was an increase in TB cases, namely to 91 cases. Therefore, the high incidence of TB in *UKI Hospital* made researchers interested in researching the hospital. The *UKI Hospital*, as a teaching hospital, does not yet have sufficient and detailed data regarding the characteristics of pulmonary TB sufferers, so further research needs to be carried out. Besides, one way to find out people with pulmonary TB is to know the characteristics of the disease so that it helps efforts to manage pulmonary TB more optimally [11; 12].

To control TB cases, WHO has developed a program known as the DOTS (Directly Observed Treatment Short-Course) strategy. The DOTS program consists of 5 components, one of which contains the diagnosis of TB using a quality-assured smear microscopic examination [13]. BTA examination is one of the gold standards [14]. In addition to the BTA examination, other tests are often used, namely the chest X-ray examination. The purpose of chest X-ray examination is to identify abnormalities in lung conditions, one of which is abnormalities in TB (infiltrates, fibrosis, calcification, cavities, pleural effusions or a combination of lesions) [15]. Making the diagnosis by only chest X-ray without confirmation by microscopic examination of AFB is not justified by the Indonesian Ministry of Health and WHO [16; 17; 18]. However, WHO said that the microscopic examination of AFB that was carried out was only 57% of the total cases [19]. Therefore, the researcher wanted to study the accuracy of diagnosis by using the BTA examination that had been carried out at the UK General Hospital to help evaluate the handling of TB cases.

The DOTS program also talks about standard treatment for TB sufferers, namely using a predetermined dose of anti-tuberculosis drugs. Treatment for TB is divided into two groups of drug administration, namely: administration with a fixed-dose combination (anti-tuberculosis drugs-KDT/Fixed-Dose Combination) and single anti-tuberculosis drugs (Separated Drugs Formulation) [20; 21] WHO recommends using a combination administration (Fixed-Dose Combination) instead of a single anti-tuberculosis drugs because it is more practical and safer. However, both drugs can still have side effects. The side effects of anti-tuberculosis drugs depend on the type of regimen consumed. However, one of the drawbacks of the KDT anti-tuberculosis drugs is not being able to determine which type of anti-tuberculosis drugs causes side effects [22].

Based on the explanation described above, the authors are interested in seeing the characteristics of pulmonary TB sufferers, the side effects of anti-tuberculosis drugs, and the accuracy of the diagnosis of pulmonary TB sufferers in *UKI Hospital* in 2015-2017. The problem in the study is: "What are the Pulmonary TB characteristics of the patient, the side effects of anti-tuberculosis drugs, and the accuracy of the diagnosis of pulmonary TB patients in the *UKI Hospital* in the period January 2015-September 2017?", With the aim of the research, namely to determine the characteristics of pulmonary TB sufferers, side effects of anti-tuberculosis drugs, and the accuracy of the diagnosis of pulmonary TB patients in the inpatient section of the *UKI Hospital* in the period January 2015-September 2017.

2. LITERATURE REVIEW

Pulmonary tuberculosis is a chronic parenchymal infectious disease caused by the Mycobacterium tuberculosis complex [23; 24]. According to 2016 WHO report, TB disease is included in the top 10 category of diseases that can cause the most mortality and Indonesia is among the 30 countries that have the highest burden of TB disease (high burden countries) in terms of TB disease, drug-resistant TB disease and TB disease. -infection with HIV. Globally, WHO reports that the incidence of TB disease in 2016 reached around 10.4 million cases. Most cases occurred in Asia (45%), Africa (25%), the Western Pacific (17%), the Eastern Mediterranean (7%), Europe (3%), and America (3%). Besides, about 87% of the incidence of TB cases that occurred in 2016 came from 30 countries with the highest burden of TB disease (high burden countries) [25; 26]. Mycobacteria are members of the Mycobactericeae family and the species known to be pathogenic to humans is Mycobacterium tuberculosis complex (M. tuberculosis, M. bovine, M. africanum, M. microtia, M. Canetti).

Of these pathogenic species, it is known that the most common attack is Mycobacterium tuberculosis [27]. Based on its microscopic morphology, M.tb has a shape like a bacillus (stem) measuring 3 x 0.5 µm and the image in the seedlings is coccoid and filamentous. M.tb bacteria do not have spores and are not flagellated and difficult to stain, but when stained successfully, it is difficult to remove with acid. Therefore, these bacteria are also called acid-resistant bacilli (rod) bacteria (BTA) [28]. The cell wall of bacteria consists of various components, one of which is the fat component of acylated trehaloses which is responsible for the virulence factor of M.tb by stimulating cytokine reactions. Besides, there are also components of the lipoarabinomannan molecule which are responsible for interaction with the host and facilitate the bacteria to survive against macrophage attack. Another component is a component of tuberculin protein which will cause a tuberculin reaction [29]. The most common transmission of M.tb bacteria is through sputum splashes of TB patients when coughing, talking, or sneezing. One cough episode can produce about 3000 sputum sparks, and each splash contains three bacteria. The infectivity of a patient is determined by the number of bacteria removed from the body [30; 31].

Besides, the risk of transmission is also influenced by the cough intensity of TB sufferers, the closeness of contact between non-sufferers and TB sufferers and length of time of contact [32; 33]. Meanwhile, based on the factors of the host (host) are as follows: a) The increasing age, the more most likely infected with TB. Besides, 75% of TB cases in Indonesia are predicted to occur between the ages of 15 - 50 years [32]; b) Men are more likely to come in contact with other people; c) Education. Education level is related to knowledge about pulmonary TB; d) Occupational status is strongly associated with TB incidence; e) The state

of malnutrition will affect a person's immune system which in turn will affect the risk of becoming ill with TB; f) Immunity positively affects a person's risk of becoming sick with TB. The risk of becoming sick with TB once infected is about 10%. Patients with immunocompromised and other systemic diseases have a greater risk of developing TB; and f) Behaviors such as consuming alcohol, smoking, use of wrong fuel for cooking can influence the incidence of TB [34; 35; 36].

Environmental conditions (environment) also play a role as a risk factor for transmission. Dense environmental conditions tend to trigger the environment to become slum and humid so that it can cause M.tb bacteria to thrive. Environmental conditions assessed include poor housing sanitary conditions, ventilation, occupancy density, temperature, lighting and humidity [37]. Diagnosis of TB is determined through clinical symptoms, physical examination, and investigations. Classic clinical symptoms found in patients with pulmonary TB are divided into two, namely: respiratory symptoms (chronic cough, bloody cough (hemoptysis), shortness of breath, and chest pain) and systemic symptoms (fever, malaise, weight loss, and night sweats [38; 39]. The goals of pulmonary TB treatment are: to cure, maintain the quality of life and patient productivity, prevent death from active TB or its aftereffects, prevent TB recurrence, reduce TB transmission to others, prevent the development and transmission of drug resistance. The principle of TB treatment is that anti-tuberculosis drugs is given in a combination form in sufficient quantities and the right dose according to the category of treatment. Ensure compliance with patients taking medication, direct supervision is must be carried out (DOT = Direct Observed Treatment [40].

Based on the category of anti-tuberculosis drugs (anti-tuberculosis drugs), it is divided into two categories, namely: the first line category and the second line category. The first category consists of Isoniazid (H), Ethambutol (E), Pyrazinamide (Z), Rifampicin (R), Streptomycin (S), and second-line drugs consisting of kanamycin, amikacin, capreomycin, ofloxacin, levofloxacin, moxifloxacin, ethionamide, cycloserine, and para aminosalicylates. Generally, these second class drugs are used if there is resistance to the use of first-line drugs [41]. Meanwhile, the stages of TB treatment are divided into intensive stages; Patients must undergo treatment for two months by consuming Isoniazid, Rifampin, Ethambutol, and Pyrazinamide. In this phase, it is hoped that there will be a reduction in the number of bacteria accompanied by clinical improvement. Patients with the potential to transmit the infection become non-infectious within two weeks; b) the advanced stage is the stage of treatment that the patient takes for four months after the intensive stage. At this stage, the patient is given Isoniazid and Rifampin. This phase aims to clean up bacterial residue [42]. The combination of anti-tuberculosis drugs used in Indonesia (according to WHO and ISTC recommendations) is divided into several categories, namely; a) Category I (2RHZE/4 (HR) 3) is given to new AFB positive patients or new smear-negative TB patients with TB symptoms or positive radiological examination results, and mild extrapulmonary TB; b) Category II (2RHZES/RHZE/5 (HR) 3E3) is given to patients with smear-positive TB who previously dropped out of medication (at least one month of taking medication before stopping), relapse patients, or patients with treatment failure; c) Category III (2RHZ/4 (HR) 3) is given to new TB smear-negative patients with positive radiological examination results or extrapulmonary TB patients (moderate to severe); and d) Category IV (second-line anti-tuberculosis drugs) is intended for chronic cases, such as MDR TB [43].

Based on the drug packaging, it is divided into two, namely: Fixed-Dose Combination anti-tuberculosis drugs (anti-tuberculosis drugs KDT) and single anti-tuberculosis drugs. Both forms of medicine have advantages and disadvantages. The advantages of a single anti-

tuberculosis drugs, namely: a) if there are side effects to the drug, it will be easier to detect, and b) It is easier to determine the appropriate drug for the patient's condition, for example, anti-tuberculosis drugs for category I, is different from category III. Single anti-tuberculosis drugs also has weaknesses, namely: a) the number of drugs taken is more so that it affects adherence, and b) Difficult drug distribution [44]. WHO and IUALTD recommend replacing a single drug with KDT anti-tuberculosis drugs in primary TB control. anti-tuberculosis drugs KDT is a combination of 2 or 4 drugs in 1 tablet. The KDT dosage based on WHO is shown in table 4. In addition to drug administration, it is also necessary to pay attention to the side effects of drugs that can be experienced. WHO has promoted the DOTS strategy as the most effective strategy. The DOTS program can help to complete treatment [45]. The DOTS strategy includes five components, namely: a) Political commitment, with increased and sustainable funding; b) Case finding through microscopic sputum examination of guaranteed quality; c) Standard treatment, with supervision and support for sufferers; d) An effective anti-tuberculosis drugs management and availability system; e) Monitoring, recording and reporting systems capable of providing an assessment of patient treatment outcomes and program performance. In order for this strategy to work well before the first treatment started, the patient was given an explanation that there had to be a PMO. The requirements to become PMO prioritize health workers, but can also be outside the health sector [46]. The duties of the PMO are to monitor the patient's regularity in taking medication, encourage sufferers, and recognize the side effects of anti-tuberculosis drugs.

3. METHOD

The type of research to be carried out is a retrospective document analysis study (content analysis). Document analysis studies are conducted when our investigations include gathering information through examining archives and documents. The research was conducted at the General Hospital of the Christian University of Indonesia (*UKI HOSPITAL*). The study was conducted in November 2017 - December 2017. The population in this study were all pulmonary tuberculosis patients who were at *UKI Hospital* in 2015-2017, who lived 212 pulmonary TB patients. The sample size studied was several populations in the *UKI Hospital* (total sampling), namely 212 patients. From 212 patients, 40 patients fit the inclusion criteria. Researchers used medical record instruments to collect data. The medical records used were the medical records of patients with the principal diagnosis of pulmonary tuberculosis at the *UKI Hospital* for the period of January 2015 - September 2017. The data used came from the medical records of patients who had met the inclusion and exclusion criteria. Data processing in this study was carried out with the help of computer software (software), namely Microsoft Excel 2010 and the statistical program SPSS 19.0. For data analysis, univariate analysis and crosstabulation analysis were performed. The univariate analysis aims to explain or describe the characteristics of each research variable by creating a frequency distribution table. Crosstabulation analysis is used to see the frequency of a table based on the values of two or more variables.

4. RESULT AND DISCUSSION

In the following section, the characteristics of research subjects based on age will first be described, as outlined in the following table:

Table 1.
Characteristics of Research Subjects by Age

Variable Age	Number (N)	Percentage (%)
15 – 24	7	17,5
25 – 34	4	10,0
35 – 44	6	15,0
45 – 54	10	25,0
55 – 64	9	22,5
≥ 65	4	10,0
Total	40	100

Based on table 1, it is found that the most TB sufferers are patients aged 45-54 years as many as ten people (25.0%), then followed by the 55-64 years age group as many as nine people (22.5%), age group 15- 24 years as many as seven people (17.5%), the age group 35 - 44 years as many as six people (15.0%), and the last one is the age group 25 - 34 years and the age group ≥ 65 years respectively as many as four people (10.0%). This result is similar to a study conducted by the Ministry of Health in 2016 that the highest age group for someone suffering from TB is the productive age group, namely 15 64 years [7]. Nurkumalasari et al.'s research also proved that there were more people with pulmonary tuberculosis of productive age (15-55 years) than non-productive age, which was 70.4%. (36) The 45-54 age group was still classified as productive. Productive age is characterized by a high level of activity and interaction with the environment so that it increases the risk of spreading TB disease [37].
Based on the sex of TB patients (diagram 1), it was found that 24 patients (60%) were male, and 16 patients (40%) were female.

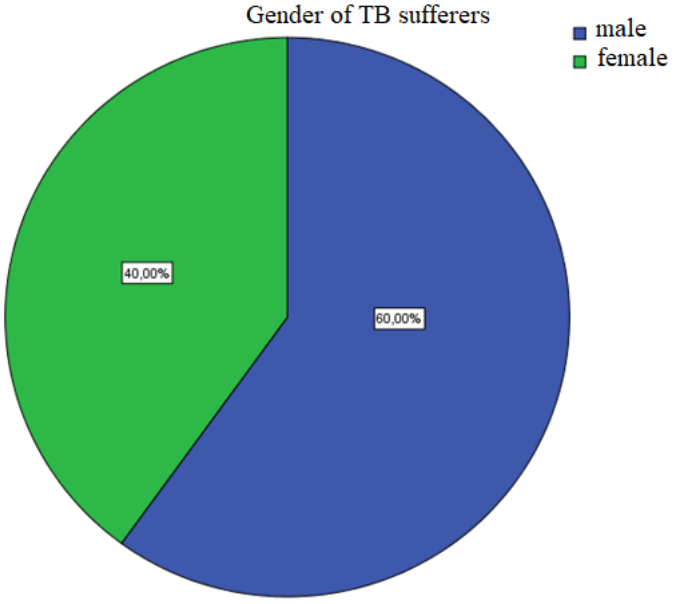

Diagram 1. Characteristics based on Gender

Based on the sex of TB patients (diagram 1), it was found that 24 patients (60%) were male, and 16 patients (40%) were female. This result is in line with the research conducted by Sari

et al. at five different hospitals in the Jakarta area in 2014, namely that the number of men suffering from pulmonary TB was 22 (66.7%) and 11 for women (33.3%). [38]. As discussed in the literature review, men are more susceptible to TB because of differences in activity levels between men and women. Men have a higher social interaction than women so that it facilitates the transmission of M.tb bacteria and is also supported by behaviour, one of which is smoking [19; 20]. Smoking can interfere with natural defence mechanisms mediated by macrophages, epithelial cells, dendritic cells (DCs), and NK cells, thereby increasing the risk, severity and duration of infection. Loss of mucosa can facilitate bacterial colonization [39]. According to research by Gustafon et al. l, said that the risk of men developing pulmonary TB is 2.58 times greater [40].

Based on the job characteristics diagram (diagram 2), it is found that there are 36 people with pulmonary TB who have jobs; types of work are as follows: 3 students (7.5%), 13 entrepreneurs (32.5%), nine employees (17.5%), seven housewives (17.5%), one person pastors (2.5%), one driver (2.5%), two labourers (5%), two retirees (5%) while two people who do not have a job (5%).

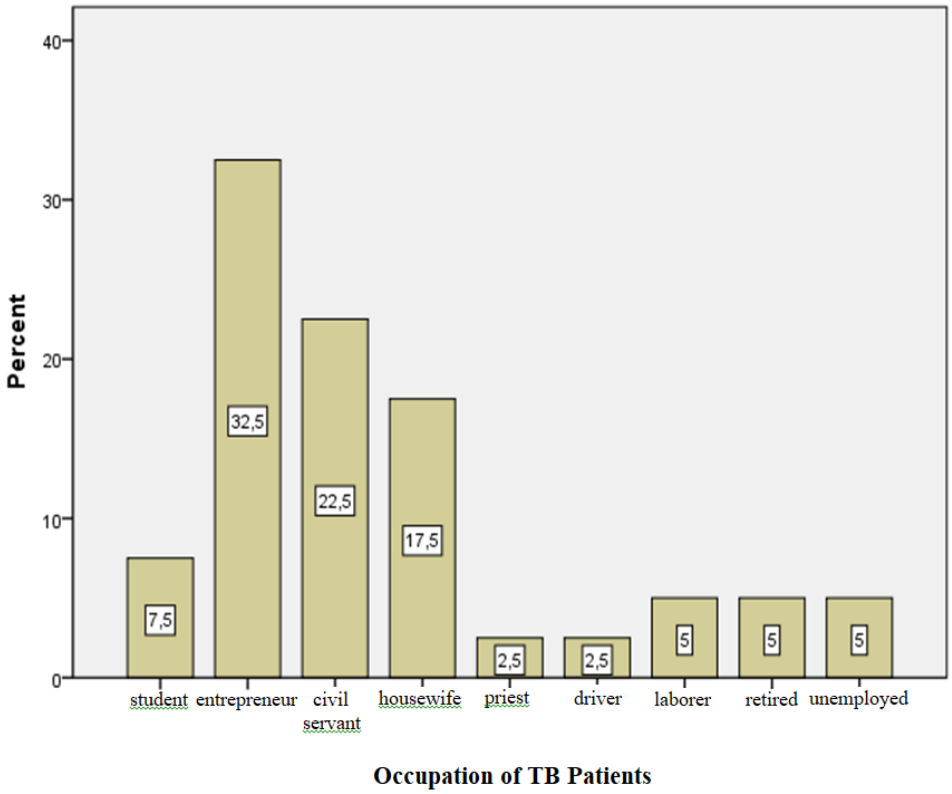

Diagram 2. Characteristics based on Occupation

Based on the job characteristics diagram (diagram 2), it is found that there are 36 people with pulmonary TB who have jobs; types of work are as follows: 3 students (7.5%), 13 entrepreneurs (32.5%), nine employees (17.5%), seven housewives (17.5%), one pastor (2.5%), one driver (2.5%), two labourers (5%), two retirees (5%) while two people who do not have a job (5%). This result is in line with a study conducted by Sari et al. In 2014. In this study, 18 people with pulmonary tuberculosis were found to have jobs (54.5%) [38]. It is, of course, because doing work indicates that someone will interact with others, frequent

interactions with other people can affect the level of transmission due to contact with people who have TB. Besides, an activity can increase the intensity of exposure to air pollution containing silica dust, making it susceptible to TB infection [20; 41].

According to the results of the level of education obtained from research at the *UKI Hospital* in 2015-2017 (diagram 3), patients with pulmonary TB on average can only complete their education at the high school level with a total of 18 people (45.0%), then in the next position is the Junior High School level with a total of 10 people (25.0%), then at the higher education as many as seven people (17.50%), and the last is the Elementary School level as many as five people (12.50%).

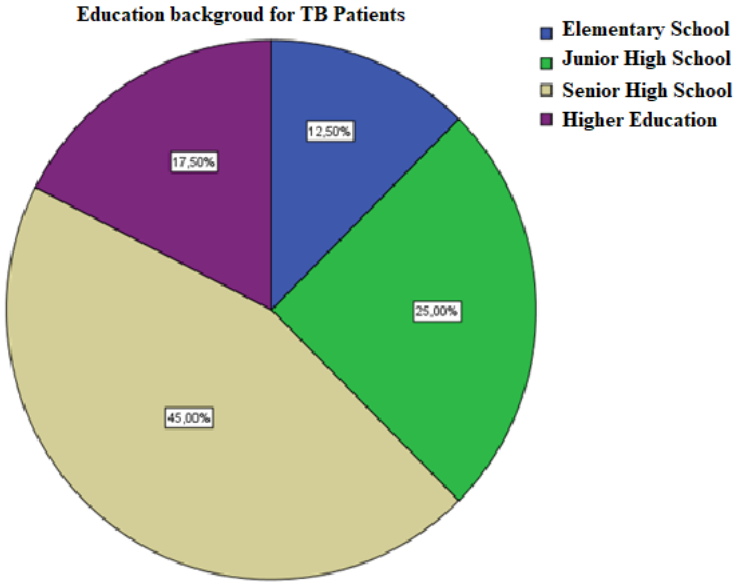

Diagram 3. Characteristics based on Education Background

According to the results of the level of education obtained from research at the *UKI Hospital* in 2015-2017 (diagram 3), on average, patients with pulmonary TB can only complete their education at the Senior High School with a total of 18 people (45.0%). In the next position is the Junior High School level with a total of 10 people (25.0%), then the tertiary level is seven people (17.50%), and the last is the Elementary School level as many as five people (12.50%). The results of this study are also similar to the research conducted by Siahaan et al. at *RSUP Prof. D. R. Kandou Manado* in 2015-2016, namely 16 people with TB who have graduated from high school (54%) [42]. One of the triggering factors that play a role in making a person's decision to behave healthily is knowledge which is influenced by the level of education. The healthy behaviours that are meant are the proper and correct way to get rid of phlegm, the use of masks, and the importance of opening windows every morning [19; 43]. The higher a person's level of knowledge, the better the knowledge of TB so that the prevention and control of TB will be maximized [21; 43].

Table 2.
Characteristics based on Patient Address

Patient Address Variable	Number (N)	(%)
Jatinegara	11	27,5
Duren Sawit	2	5,0
Kramat Jati	7	17,5
Makasar	6	15,0
Pasar Rebo	3	7,5
Ciracas	2	5,0
Cipayung	1	2,5
Cakung	1	2,5
Matraman	0	0
Pulo Gadung	0	0
Luar Jakarta Timur	7	17,5
Total	40	100

In terms of the residence characteristics of tuberculosis sufferers (table 2), 11 people (27.5%) came from Jatinegara district and were followed by patients who lived in Kramat Jati sub-district and from outside East Jakarta, namely seven people each (17.5%), then six people from Makassar sub-district (15.0%), two people from Duren Sawit and Ciracas districts (5.0%) and Cipayung and Cakung districts respectively -Each one person (2.5%).

As discussed in the literature review, dense environmental conditions are one of the risk factors for TB disease transmission [2; 21; 22]. Based on the Basic Health Research (Riskesdas) in 2013, the population density in DKI Jakarta Province is included in the five most populous provinces, namely 68.3% [44]. Meanwhile, the East Jakarta Health Office (Sudinkes) noted that Jatinegara sub-district had the second-highest population density after Matraman district in 2014 with a density of 26,362 people / km2 [45]. According to research conducted by Lahabama in 2013, it was stated that the denser the house, the easier and faster transfer of diseases, mostly airborne diseases. According to Lumbantobing in 2008, the risk of transmission for densely populated and ineligible residential areas, such as inadequate ventilation, will increase 3.3 times [46].

From the results of the study based on clinical symptoms obtained at the *UKI Hospital* (table 3), it was recorded that 30 patients complained of coughing (75.0%), 23 patients complained of fever (57.5%), 17 patients complained of shortness of breath (42.5%). %), 13 patients complained of malaise (32.5%), ten patients experienced night sweats (25.0%), eight patients complained of weight loss (20.0%), six patients complained of coughing up blood (15%), and six patients complained of chest pain (15.0%).

Table 3.
Characteristics based on Clinical Symptoms

Clinical Symptom Variables	Number (N)	%
Hard to breathe	17	42,5
Cough	30	75,0
Bleeding cough	6	15,0
Fever	23	57,5
Malaise	13	32,5
Night sweats	10	25,0
Weight loss	8	20,0
Chest pain	6	15,0

It is similar to a study conducted in 2015 by Wahyuningsih et al. at Kariadi Hospital Semarang which stated that TB sufferers often complained of cough (97.3%) and fever (73.2%). As discussed in the literature review, cough is the most frequent and quickest symptom (lasting 2-3 weeks) caused by irritation of the bronchi.Meanwhile, fever is a clinical manifestation that indicates an infection. The severity of M.tb infection determines the level of fever, and usually, the nature of fever in TB patients is subfebrile (40-41oC) and intermittent [4; 5]. According to WHO in the book International Standard for Tuberculosis Care (ISTC) in 2014 said to diagnose based on clinical symptoms, not only pay attention to whether a person has chronic cough symptoms (> 2 weeks) or not but symptoms such as night sweats, weight loss and fever as well. is an indication of TB disease [5; 11].
The most basic breath sounds in TB patients found in the study were 32 people (80%) of vesicular breath sounds, 4 (10%) bronchial breath sounds, 2 (5%) weakened vesicular breath sounds, and two bronchovesicular breath sounds. 2 people (5%).

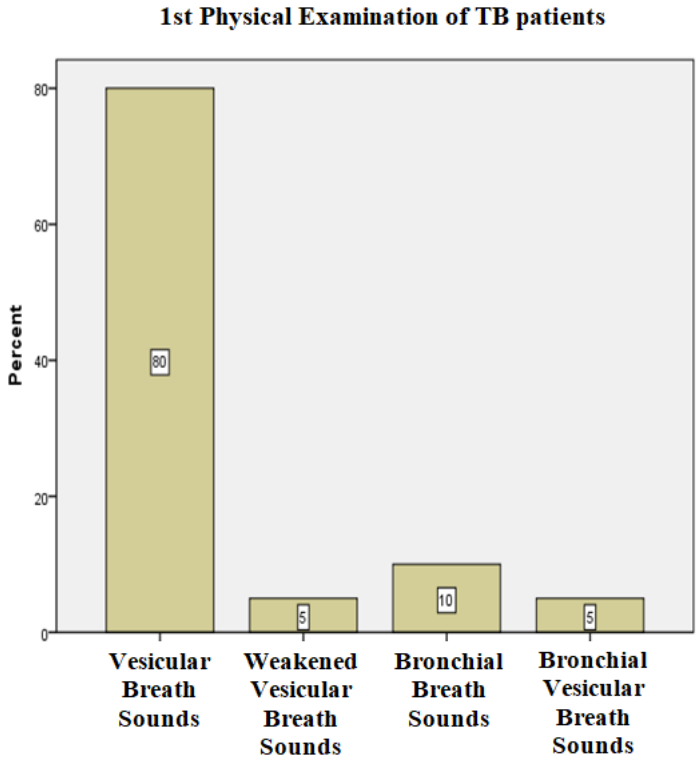

Diagram 4. Characteristics of Physical Examination based on Basic Breath Sounds

The same picture was also obtained from the research conducted by Tsany in 2012 at Dr. Kariadi Semarang. In this study, it was found that the most basic breath sounds were vesicular breath sounds (27.9%) and the second most were bronchial breath sounds (25.8%). As discussed in the literature review, sometimes in the early stages of lung disease development, it is complicated to find abnormalities. Therefore the breath sounds in 32 patients still sound normal (vesicular) while eight people found pathological breath sounds because based on their average duration of disease of having a cough for more than one month [10]. Vesicular breath sounds are normal pulmonary breath sounds while weakened vesicular breath sounds indicate a pathological process in the lung (pneumothorax, exudates,

pulmonary emphysema, massive atelectasis, massive infiltration and tumours). Meanwhile, bronchovesicular breath sounds are generally heard in the scapula area and on both sides of the sternum, and if they are heard in all parts of the lung, it indicates a pathological condition. Additional breath sounds found in this study were crackles (wet crackles) as many as 21 people (52.5%) and as many as 19 people had no crackles (47.5%).

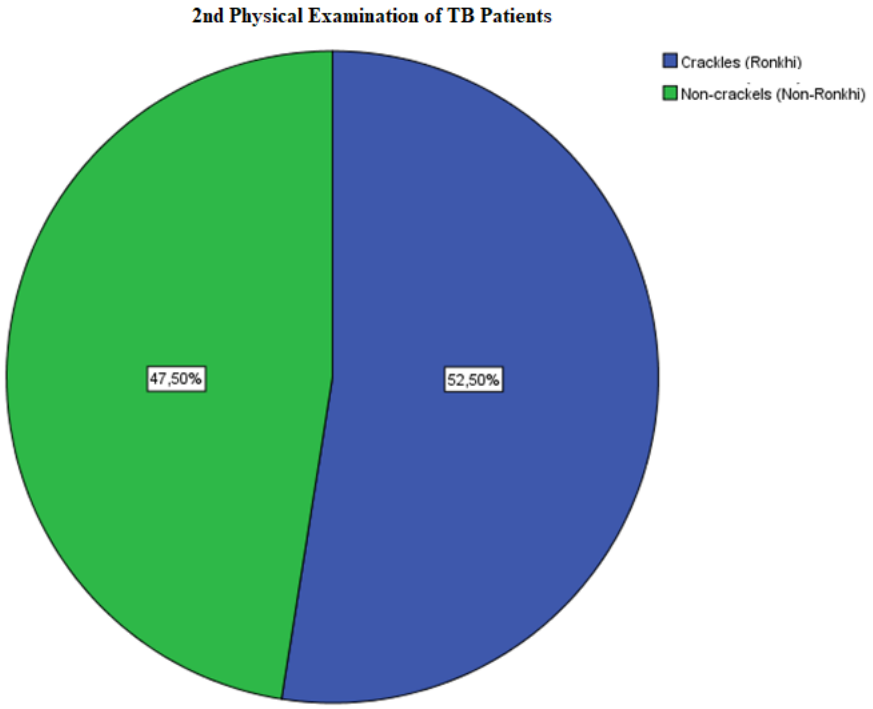

Diagram 5. Characteristics of Physical Examination based on Additional Breath Sounds

Research conducted by Wahyuningsih et al. in 2015 also gave the same results, namely on average, when the physical examination found additional breath sounds in the form of wet crackles (74.5%). Wet crackles occurred due to a burst of bubbles from the air through fluid and heard during the inspiratory phase. It also indicates inflammation or congestion in the lung area. The absence of crackles can also be caused by the minimal number of lesions that occur in the lungs [10].

Table 4.
Characteristics of Research Subjects based on examination

Supporting Inspection Variables	Number (N)	%
BTA	0	0
Chest X-ray	0	0
LED	2	5,0
AFB and chest X-ray	0	0
BTA and LED	2	5,0
Chest and LED photos	22	55,0
BTA, chest X-ray, and LED	14	35,0
Total	40	100

Based on the data in table 4, it was found that patients who were still carrying out a chest X-ray examination and sedimentation rate (LED) with a percentage of 55% (22 people), then a complete examination (AFB, chest X-ray, and LED) as many as 14 people (35.0 %), the examination of BTA and LED by two people (5.0%), and examination of LED alone as many as two people (5.0%). This result is similar to a study that noted more patients who underwent chest X-ray (81.96%) compared to the microscopic examination of AFB. According to WHO in the 2014 ISTC book, it does not recommend establishing a TB diagnosis with only chest X-ray due to its low specificity, making the microscopic examination of BTA a feasible examination, especially for areas where the incidence of TB is still high, such as Indonesia [11]. In line with the statement issued by WHO, the Ministry of Health of the Republic of Indonesia in 2014 said that examination using a chest X-ray could provide a less specific picture regarding that TB disease is known as The Great Imitator so that it can cause overdiagnosis or underdiagnosis [2; 4]. Meanwhile, as has been explained in the literature review, the LED examination cannot be used as a reference because this examination is not specific and is not recommended in active TB [4; 10].
Of the 40 TB patients, only 16 were recorded who underwent BTA examination (40%) while 24 others did not (60%).

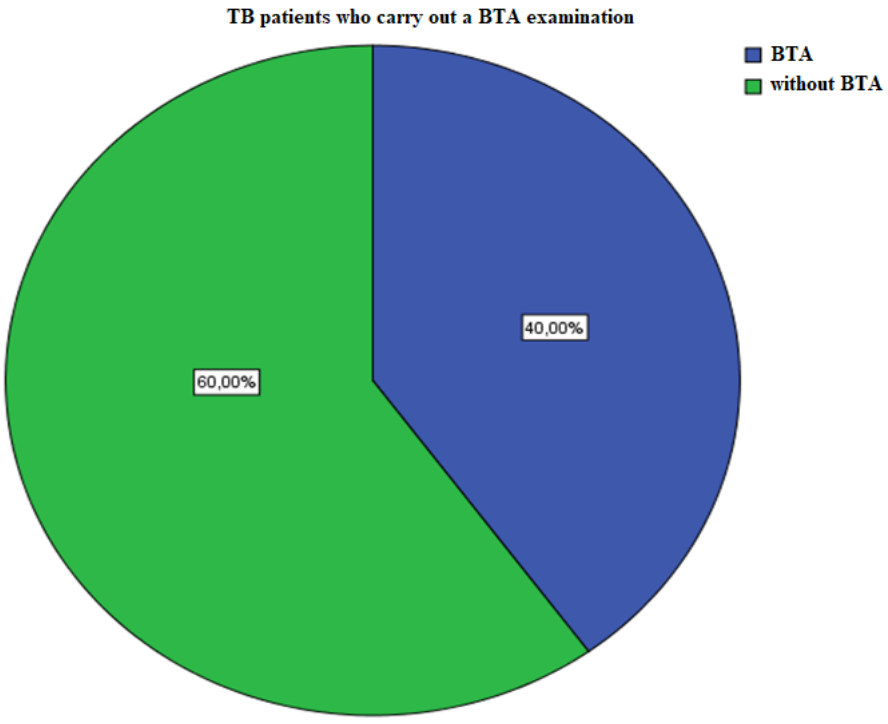

Diagram 6. Percentage of TB sufferers who run

Of the 40 TB patients, only 16 were recorded who underwent BTA examination (40%) while 24 others did not (60%).These results are similar to a study conducted by WHO in 2016. According to WHO, only about 59% of TB cases in Indonesia were confirmed through smear microscopic examination, while 41% were still confirmed through clinical symptoms and chest X-ray examination [1]. From these two results, it can be concluded that the microscopic examination of BTA is still low. However, the low number of patients undergoing a

microscopic examination of AFB certainly has several reasons; both in terms of sputum collection, sputum processing, the examination of smear preparations, and administration [27]. Most of the patients hospitalized at the *UKI Hospital* did not carry out a microscopic examination of AFB due to the possibility of problems with sputum collection, namely the sputum required was not sufficient to be studied (3.5 - 5 ml).
Of the 16 TB patients who underwent a microscopic examination of AFB, ten people (62.5%) showed a positive image, while six people (37.5%) had a gloomy picture.

Table 5
. Characteristics based on the results of the examination

Variable Results of BTA Examination	Number (N)	%
BTA Positive	10	62,5
BTA Negative	6	37,5
Total	16	100

The same results were also obtained in a study conducted by Mallina et al. l in 2013 at Arifin Achmad Hospital Riau, namely 44 patients with positive AFB (88%) while for negative AFB were six people (12%) [40]. Based on Crofton's theory, patients who have a positive smear test result are more infective to transmit bacteria than patients with a negative smear test result. However, patients with negative smear test results also need to be aware of because it is not sure that they are not infected with bacteria. Therefore, every patient who has a negative smear microscopic examination results should be re-examined using a chest X-ray examination. One of the things that can cause the examination to give a negative result is that the specimen material taken is not sputum but saliva [37].
Based on table 6, the description of infiltrates lesions is still quite common in *UKI Hospital*, namely 13 patients (36.1%). Another picture obtained is combination lesions in 5 patients (13.9%), pneumonia in 5 patients (13, 9%), fibroinfiltrates in 4 patients (11.1%), only positive information in 4 patients (11.1%), pleural effusion in 3 patients (8.3%), and other lesions (in the form of para hilar patches) and miliary spots) in 2 patients (5.6%).

Table 6.
Characteristics based on X-ray Examination Results

Variable Results of Chest X-ray Examination	Number (N)	%
Infiltrates	13	36,1
Fibroinfiltrates	4	11,1
Pleural Effusion	3	8,3
Pneumonia	5	13.9
Combination Lesions	5	13.9
Others (Parahilar spots, miliary spots)	2	5,6
Only positive descriptions	4	11,1
Total	36	100

These results are the same as those obtained in a study by Ismail et al. l at Prof. Dr. R. D. KANDOU Manado who found that the image of the infiltrate was the most frequently seen image on chest X-ray examination, namely 27 people from 90 samples (30%). As discussed in the literature review, infiltrates are a form of active TB lesions. Meanwhile, the picture of pneumonia is not a typical picture that indicates that an active process of TB is occurring [30]. The acquired pneumonia image is defined as a combination of infiltrates and tuberculoma lesions. (54) Therefore, it can be concluded how important the microscopic examination of AFB as a definitive diagnostic tool.
Based on diagram 7, the most therapy received by TB patients at *UKI Hospital* was therapy using KDT anti-tuberculosis drugs, which was 31 people (77.50%) while for single anti-tuberculosis drugs only nine people (22.50%).

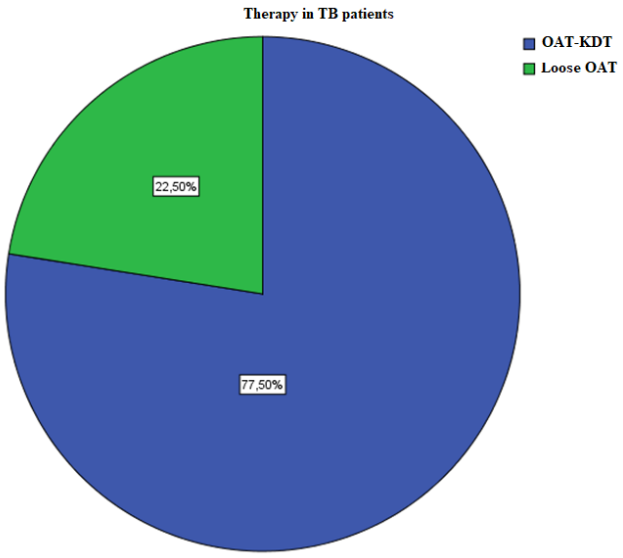

Diagram 7. Characteristics based on received therapy

Similar to the results of the author's research, research conducted by Bakri in 2016 found that the Jumpandang Baru Makassar Health Center prescribed more KDT anti-tuberculosis drugs (98.3%) than single anti-tuberculosis drugs. As previously explained in the literature review, the anti-tuberculosis drugs-KDT has several advantages, especially the ease of taking drugs compared to single anti-tuberculosis drugs [33].

Table 7.
Distribution of the number of side effects arising from the administration of anti-tuberculosis drugs

Treatment Variables	Side effects				Total	
	Yes		No			
	Number (N)	%	Number (N)	%	Number (N)	%
anti-tuberculosis drugs KDT	1	2,5	30	75,0	31	77,5
Single anti-tuberculosis drugs	1	2,5	8	20,0	9	22,5
Total	2	5	38	95,0	40	100

Note: KDT = Fixed Dose Combination

The distribution of the emergence of side effects to the administration of anti-tuberculosis drugs-KDT and single anti-tuberculosis drugs (table 7) both gave the same number, namely as many as one person for administering anti-tuberculosis drugs KDT (2.5%) and one person for administering single anti-tuberculosis drugs (2.5%)) whereas 30 people who were treated with anti-tuberculosis drugs KDT (75%) and eight people who were treated with a single anti-tuberculosis drugs (20%) did not complain of any side effects experienced. It proves that both of them can have side effects after consumption. A study conducted in Pakistan stated that the number of patients who experienced side effects of a single anti-tuberculosis drugs was greater than that of KDT. However, according to the results of a study from Sitepu, it was stated that the number of patients who experienced more side effects was in the KDT anti-tuberculosis drugs group than the single anti-tuberculosis drugs (33.3% versus 23.3%). It is also supported by research conducted which states that there is no significant difference in the number of side effects caused by administering the KDT or single anti-tuberculosis drugs. Therefore, research on the distribution of side effects of KDT and single drug drugs in TB patients should be investigated more deeply with a larger population. Based on medical record data, the side effects experienced by patients due to consuming a single anti-tuberculosis drugs experience redness on the skin so that the anti-tuberculosis drugs must be stopped. This incident is following the theory that if one consumes a single anti-tuberculosis drugs, it will be easier to find out which type of anti-tuberculosis drugs causes side effects; in these patients the anti-tuberculosis drugs that was stopped was Rifampin. In theory, Rifampin can cause itching and redness of the skin [2; 15]. For one other person, experienced a drug reaction due to consuming the anti-tuberculosis drugs-KDT, but the doctor could not determine the anti-tuberculosis drugs causing the side effect, so the anti-tuberculosis drugs-KDT was temporarily stopped until the complaint disappeared.

5. CONCLUSION

The following are some conclusions from the author's research: a) The sociodemographic characteristics of the most TB sufferers are men (60%), the age group 45 - 54 years (25%), high school education level (45%), entrepreneurial work (35%), and the address in Jatinegara sub-district (27.5%); b) The highest proportion of clinical symptoms complained of was chronic cough (75%) with the most physical examination being vesicular breath sounds (80%) and additional sounds of crackles (crackles) (52.5%); c) Lack of accuracy in diagnosing pulmonary TB using AFB examination. It can be seen that the largest proportion is the chest X-ray and LED examination (55%). Meanwhile, only 40% of patients undergoing AFB examination; d) The most proportion of the results of the BTA examination was positive (62.5%) while the chest X-ray image was infiltrates (36.1%); e) The proportion of therapy that became the choice was anti-tuberculosis drugs-KDT therapy (77.5%), and f) The proportion of TB patients experiencing side effects as a result of both anti-tuberculosis drugs therapy is the same (2.5% each). So it is necessary to carry out further research with larger sample size, the longer time and more variables as well as research with better methods to obtain a better and more complete picture of TB characteristics statistically. Besides, the hospital needs to make improvements to the clear and neat recording of the health status of TB sufferers to make it easier for further researchers to conduct research.

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