

## About Changes in the Nutritional Status of Pulmonary Tuberculosis Patients Previously and Afterward Treatment at Bairopite Clinic Dili Timor Leste (2025)

Carlos Boavida Tilman, ESE FMCS UNTL, Constancia Sofia Cornelio Barros de Jesus, DCS FCS UNTL, Ana Cristina de Jesus Silveira Martins, DCS FCS UNTL, José Ximenes da Conceição, ESSE FMCS UNTL, José Boavida Simões, MESCTC, Alexandre Gentil Corte Real Araújo, DD FD UNTL.

*\*Correspondence:* Carlos Boavida Tilman

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### Abstract

**Introduction:** Based on data from the World Health Organization (WHO, 2024), there were 10 million people in the world who were infected with TB germs (WHO, 2022). In 2023 there were 9.8 million people in the world infected with TB germs (WHO, 2019). In 2018, the highest number of pulmonary TB cases were in the African region (36%), the Southeast Asia region (27%), and the Eastern Mediterranean region (15%) (WHO, 2017). At the Bairopite Clinic, there were 36 cases and in 2019 the first quarter was 22 cases and the second quarter was 18 cases.

**Research Objectives:** To investigate the changes in the nutritional status of pulmonary TB patients previously and afterward treatment at the Bairopite Clinic Dili Timor-Leste.

**Research Methodology:** A quantitative research of study conducted using a pre-experimental approach with a one group pre and post-test design with sampling technique were Simple Random and population of this study was 34 respondents. Data analysis is carried out use Pair T-Test statistic by using a SPSS version 24.

**Result Discussion:** In comparison with the population sample, the population is composed of only secondary schools of junior at the state level of malnutrition previously and subsequently treatment. Level of complementary treatment and clinical outcomes were also analyzed with logistical regression and adjustments to pre-specified factors that were disordered. Kaplan-Meier survival estimates were used to examine the relationship between intervention and the time of death. Signification based on  $P < 0.05$ .

**Conclusion:** There are changes in the nutritional status of pulmonary TB patients previously and afterward treatment at the Bairopite Clinic Dili, with the results of the Paired Samples Test shows that the Mean Paired Changes value is 2.123.

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**Keywords:** Nutritional status, Pulmonary Tuberculosis and Bairopite Clinic Dili Timor-Leste.

## Introduction

Tilman, CB., et al, 2025).

Timor-Leste has exposed a reduction from the incidence of tuberculosis case (TB) in 2024, conferring to the World Health Organization (WHO, 2024) newly released global TB report. The tuberculosis incidence in the country had been still at 496 per 100,000 population for the past many years, but in 2022, the incidence showed a 2.3% decline to 485 per 100,00. The report also highlighted two other positive trends in Timor-Leste of the country recorded a 90% success rate in TB treatment and the testing coverage with the use of rapid diagnostics at the time of diagnosis had improved 30%. In comparison, the treatment success rate in 2021 was 82% and the testing coverage stood at 10%, based on the results. According to the WHO in 2019 there were 8 million people in the world who were infected with TB germs (WHO, 2018). In 2017 there were 9.2 million people in the world infected with TB germs (WHO, 2016). In 2015, the highest numbers of pulmonary TB cases were in the African region (36%), the Southeast Asia region (27%), and the Eastern Mediterranean region (15%). Second (WHO, 2017). Currently, pulmonary TB is a disease of global concern, with various control efforts carried out, the incidence and deaths from pulmonary TB have decreased, but pulmonary TB is estimated to still attack 9.2 million people. Globally, in 2019, there were 102 million TB incident cases (CI 8.8 million-11 million) which is equivalent to 118 million cases per 100,000 population. Tuberculosis in Indonesia is a disease that ranks 2nd in the world after India and China, the Philippines, Pakistan, Nigeria and South Africa. Tuberculosis disease data in Indonesia in 2018 was 1,020,000 patients. The incidence and prevalence of tuberculosis in the community itself is still quite large and the death data in 2020 were 272 cases (WHO, 2022; cited by

Based on research conducted by Ernawati et al. 2018 with the title variances in the nutritional status of pulmonary TB patients between earlier treatment and during the advanced phase of treatment in Johari New, Central Jakarta with the results of the study showing that there was no significant difference in the nutritional status of pulmonary TB patients between beforehand treatment and during the advanced phase of treatment ( $p = 0.763$ ) and the conclusion, that the comparison of the nutritional status of patients previously treatment and during the follow-up phase of treatment is that there is a decrease in undernutrition status and an increase in normal nutritional status. At the Bairopite Clinic Dili, there were 35 cases and in 2019 the first quarter was 20 cases and the second quarter was 15 cases, (Head of Department Bairopite Clinic Dili-Timor-Leste). Malnutrition in patients with TB disease can be influenced by several factors including: 1) economic factors; 2) comorbidities such as TB with HIV infection or with Diabetes Mellitus; 3) type of food consumed, knowledge; 4) information; 5) patient behavior towards food and health; 6) long time suffering from pulmonary TB (Martins N. Soares M.et al. 2018; Samuel, 2017; Puspita, 2016).

The problem of nutritional status is important because refining nutrition is one of the efforts to prevent transmission and extermination of pulmonary TB. Poor nutritional status will increase the risk of pulmonary tuberculosis. On the other hand, pulmonary TB contributes to poor nutritional status due to the course of the disease that affects the body's resistance. Based on the report above, conducting research on the changes in the nutritional status of

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pulmonary TB patients between beforehand and subsequently treatment at the Bairopite Clinic Dili-Timor Leste.

**Research Objective:** To investigate the changes in the nutritional status of pulmonary TB patients beforehand and subsequently treatment at the Bairopite Clinic Dili-Timor - Leste.

**Specific Objectives:**

- To recognize the nutritional status of patients with pulmonary TB beforehand treatment.
- To classify the nutritional status of patients with pulmonary TB subsequently treatment.

**Theoretical Outline**

Pulmonary tuberculosis is an infectious disease that attacks the lung parenchyma caused by mycobacterium tuberculosis. This disease can also spread to other body parts such as the kidneys, bones and lymph nodes (WHO, 2023). Pulmonary tuberculosis is an infectious disease caused by the bacillus mycobacterium tuberculosis which is one of the respiratory tract diseases the lower respiratory tract where most of the tuberculosis bacilli enter the lung tissue through airborne infection and then undergo a process known as the primary focus. Additionally, the bacteria infection which attacks the lung tissue where the bacteria enter the lung tissue through airborne infection and the bacteria will implant at the point of location in the alveoli and the bacteria will multiply (multiplying). Transmission of pulmonary tuberculosis occurs because germs are sneezed or coughed out into droplet nuclei in the air. These infectious particles can remain in the air for 1-2 hours, depending on the presence or absence of ultraviolet light, poor ventilation and humidity. In a humid and dark environment, germs can survive for days to months. When these infec-

tious particles are inhaled by healthy people, they will stick to the airways or lungs. Particles can enter the alveolar if the size is less than 5 micro millimeters.

Nutritional status is a measure of a person's body condition which can be seen from the food consumed and the use of nutrients in that nutritional status is a state of the body which is the end result of balance between the nutrients that enter the body and their use. In addition, nutritional status is a state of the body that has a strong resistance because the food consumed by the body contains balanced nutrients. Factors related to the nutritional status of adults were; age, genders, income, education, socio-cultural, eating-behavior, physical activities, and environment. Malnutrition or lack of calories, protein, vitamins, iron and others will affect a person's immune system so that he is vulnerable to diabetes including pulmonary TB. This condition is an important factor influencing in poor countries, both in adults and in children, the most important to empathetic the status nutritional cited by (Tilman, CB., et al, 2025).

**Preceding Research Study**

According to Shamiyah Lateef, et al, (2018) conducted a study entitled Changes in Nutritional Status of Patients with Pulmonary Tuberculosis Beforehand and Subsequently Treatment at Ibnu Sina Hospital Makassar, the purpose of the study was to determine the nutritional status of pulmonary TB patients beforehand and subsequently treatment at Ibnu Sina Hospital Makassar, the research method used This research is a comparative analytic study with cross sectional study and method Analytical data using paired sample t test. The results of the research are. Based on the results of the paired sample t test analysis above with the aim of sub-

mitting a hypothesis, the Sig value is obtained. which is 0.000 less than 0.05, then H0 is rejected and H1 is accepted, which means that there is a significant alteration in the nutritional status of pulmonary tuberculosis patients beforehand and subsequently treatment. It can also be seen from the BMI value of pulmonary tuberculosis patients after treatment is greater than the BMI value of pulmonary tuberculosis patients before treatment.

According to Cholis Herniate et al, (2017) conducted a study entitled Changes in the Nutritional Status of Pulmonary Tuberculosis Patients between Before Treatment and During the Advanced Phase of Treatment in Johari New, Central Jakarta. New, Central Jakarta. The research method used is this research is a descriptive study. The study was conducted in January–March 2019 in Johari New District, Central Jakarta. The population is adult pulmonary TB patients (age 18 years) who are in the advanced phase of treatment (treatment 4 months) who are in the working area of the Johari New Health Center as many as 51 people.<sup>6</sup> The sampling technique is by quota sampling. The results of the study are the results of this study concluded that the intervention of high-protein milk can improve nutritional status by increasing body weight and increasing energy and protein intake. The results of the Wilcoxon Signed Ranks test obtained a sig value of 0.763 (greater than 0.05), so there was no significant difference between the nutritional status of respondents before treatment and during pulmonary TB treatment. This is different from the study conducted by Forhold-Jepsen et al. (2016) that during two months of treatment TB patients will experience an increase in body weight of 3 kg, but in TB patients with DM there is a weight loss of 1.3 kg at the same time point of treatment.

**Research Methodology**

This study is a quantitative study, this study was conducted using a pre-experimental approach with a one group pre and post-test design, at the Bairopite Clinic Dili-Timor Leste. This study uses the Simple Random Sampling technique, population of this study were 34 respondents. The data analysis is carried out use Pair T-Test statistic by using a (Statistical Package for the Social Sciences » SPSS» 24 version.

**Results Discussion**

**Overview of Research Locations**

Bairopite Clinic Dili Timor-Leste was founded in 2000 by the Daniel Murphey Foundation in the Dili area, of Timor Leste. At the time of joining Government, this clinic was known as Bairopite Clinic Dili has facilities such as 4 buildings, 28 bedrooms and a total of 36 staff members who work in this clinic. The Bairopite Clinic is run by the Timor-Leste people who run the home, including all cooking, cleaning, driving, administration, maintenance and security care. Overall control of the house rests with Doman’s Holiday Management Board. At this time the Bairopite Clinic Coordinator and all staff are carrying out their respective duties in the jobs.

**Research Results**

Table 1. Characteristics of the study sample according to gender in pulmonary tuberculosis patients at the Bairopite Clinic Dili in Municipality of Dili.

Sex	N	%
Male	21	62
Female	13	38
Total	34	100

Table 2. Characteristics of the study sample according to age in patients with pulmonary tuberculosis.

Age	N	%
18-29 years	2	6
30-45 years	7	21
46-59 years	15	29
> 60 years	10	44
Total	34	100

Table 3. Occupation Frequency based on distribution of pulmonary TB Patients.

Occupation	N	%
Government employs	1	3
Self or private employs	4	12
Farmers	14	41
Employs	15	44
Total	34	100

Table 4. Characteristics of the study sample according to nutritional status beforehand and subsequently treatment in pulmonary tuberculosis patients.

Nutritional status	Before-hand treatment (N)	%	Subsequently treatment (N)	%
Under-weight	32	94	1	3
Normal	2	6	33	97
Over-weight	0	0	0	0
Obesities 1	0	0	0	0
Obesities 2	0	0	0	0
Total	34	100	34	100

Table 4. above shows that based on nutritional status in patients' beforehand treatment, 32 people were underweight (94%), 2 people were normal (6%), 0 people were overweight (0%), and there are no patients classified as obesity 1 and obesity 2. Nutritional status in patients after treatment was

underweight as many as 1 people (3%), normal as many as 33 people (97%), overweight as many as 0 people (0%), and there were no patients classified as obese 1 and obesity 2 persons.

Table 5. Changes in nutritional status in patients with pulmonary tuberculosis beforehand treatment and subsequently treatment.

Paired Sample T test	Nutritional status	Before-hand treatment (N)	Subsequently treatment (N)	P Value (0.05)
	Under-weight	32	1	0.547
	Normal	2	33	
	Over-weight	0	0	
	Obesities 1	0	0	
	Obesities 2	0	0	
Total		34	34	

The majority of the respondents with tuberculosis contributed to 34 analyses, of which data came from a sample test analysis that had been conducted with the aim of presenting a hypothesis, the value of this research was 0.547 higher than the value of 0.05 range. The use of H0 (rejected) and the use of H1 (rejected) as the intervention did not have significant positive or negative impacts on the treatment of the nutritional status of patients with pulmonary tuberculosis before and after treatment. The results of the analysis can be measured by the BMI of the patient with pulmonary tuberculosis previously treatment with a higher AS value and to compare the BMI of the patient with pulmonary tuberculosis subsequently treatment with a lower value. Finally, it is to conclude that food does not improve the results of the treatment of tuberculosis in patients with a higher number of patients beforehand treatment than the lower number of patients

subsequently treatment in Bairopite Clinic Dili of Timor-Leste. Additional studies are required for other institutions that have the competence to measure the results (Tilman CB., et al, 2025).

## Conclusion

Positively conducted a quantitative study of the perspective involving 34 participants with pulmonary TB to assess the nutritional status beforehand and subsequently treatment, it concluded:

- Nutritional status of patients with pulmonary TB previously mostly with poor nutritional status as much as 32 (94%).
- Nutritional status of patients with pulmonary TB after treatment mostly normal nutritional status as much as 33 (97%).
- There are changes in the nutritional status of pulmonary TB patients beforehand and subsequently treatment at the Bairopite Clinic Dili Timor-Leste.

In addition, results of the "Paired Samples Test" above, it shows that the "Mean Paired Changes" value is 2.123. This value shows the modification between the average results before and the average results afterward treatment is  $17.14 - 19.27 = -2.13$  and the change between the changes is between -2.475 to -1.770 (95% Confidence Interval of the Variance Lower and Upper). This study has suggested that Health workers should be able to facilitate the community by socializing the nutritional status of pulmonary TB patients in order to prevent the transmission of tuberculosis, or the formation of new active health cadres so that more people have the knowledge, attitude to prevent tuberculosis and make home visits. Besides, It is necessary to increase the family's considerate of tuberculosis through an active role in utilizing existing health services and increasing supervision of the daily ac-

tivities of tuberculosis sufferers at home as well as monitoring the communication that happens between tuberculosis sufferers and other family members as well as paying attention to nutritional status or nutritional self-actualization in patients with tuberculosis, under observation by health professionals (Tilman CB., et al, 2025).

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