



Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/19171

DOI URL: <http://dx.doi.org/10.21474/IJAR01/19171>



RESEARCH ARTICLE

THE FACTORS CONTRIBUTE TO INCIDENCE TUBERCULOSIS AT IN PATIENT DEPARTMENT IN REFERRAL HOSPITAL OF BAUCAU, TIMOR-LESTE

Joaquim Gregorio de Carvalho, Joaquim Pinto, Saturnina Fernandes Belo, Maximiano Oqui, Eduardo C.
Gaio and Sonia Cristina Fernandes Reci
National University of Timor Loro Sa'e.

Manuscript Info

Manuscript History

Received: 31 May 2024

Final Accepted: 30 June 2024

Published: July 2024

Key words:-

Enviroment, Nutrition status, Incidence
TB

Abstract

Background: Tuberculosis (TB) is a communicable disease that not only causes illness health but also ranks among, one of the top 10 causes of death worldwide. In fact, it is and the leading cause of death from a single infectious agent (surpassing even HIV/AIDS). TB is caused by the bacillus *Mycobacterium tuberculosis*, which is spread through the air when individuals who are sick with TB expel bacteria; for instance, by coughing. Globally, an estimated 10.0 (range, 8.9–11.0 million) people fell illness with TB in 2019, a number that has been declining very slowly in recent years. TB can affect to anyone and, the number of cases at the national level varies. In most countries, the majority of cases occur in 30 areas with highest incidence of TB were more than 90% of cases are reported. The global burden also includes an estimated 1.3 million peoples who are infected with TB and at risk of developing the disease. In Timor Leste, the recent WHO report on TB indicated a reduction in the incidence of TB in 2021 (WHO, TB Epidemiological Review 2023 Timor-Leste, 2023). The country's incidence of TB has been 489 per 100.000 populations for the last few years. However, in 2021 there has been a decrease to 486 per 100.000 populations.

Objective: The purpose of this study is to identify the factors that contribute the occurrence of Tuberculosis at the Referral Hospital of Baucau.

Methodology: This descriptive study used both quantitative and quantitative methods together, specifically a cross-sectional study. Data were gathered using both methods concurrently. Quantitative data were analyzed using descriptive and analytic statistics with approach and spearman rank correlation coefficient as the statistical test The sampling technique that was employed the study was total sampling (50 sample). The data collected for of this study was primary data obtained gained from patients using a questionnaire as the instrument.

Results: The results indicated 58% the incidence TB by environmental, 66% of nutritional and 52% by access health information. And also enviroment contribution to incidence TB was postive relationship because the result analysis showed value $r=0,518$. It's mean 51.8% of TB incidence caused by enviroment but 48,2% by another factors. Another factor likely nutrition status also mayority factor contribute

incidence TB because value $r=0,799$. The hypothesis test indicated value significant from environment and nutrition status showed 0.00.

Conclusion: There was a significant value and positive contribution between the environment and nutritional status to incidence TB.

Copy Right, IJAR, 2024,. All rights reserved.

Introduction:-

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*. There are 10 million new cases of TB reported worldwide each year, resulting in 1.5 million deaths. The incidence of tuberculosis varies greatly in different regions. The number of TB cases in almost all high-income countries is in the range of 10 cases per 100,000 people, while in low- and middle-income countries, the number of cases reaches 500 cases per 100,000 people (Smith et al., 2022 in Ratnasari, Husna and Marni, 2019). In developing countries, 75% of TB cases are found in the reproductive age group between 15 and 50 years (Ratnasari, N.Y., Husna P.H., Marni, M., 2019).

TB is a significant global problem, second only to human immunodeficiency virus / acquired immunodeficiency syndrome (HIV/AIDS) in terms of mortality. It is estimated that approximately 1.2 million people worldwide are affected by TB, which accounts for one third of the world's population. In Southeast Asia alone, TB is responsible for 44% of the reported cases (Zaman, K., 2010). Also result of study (Solikhah, M.M., Astuti Yuni Nursasi, A.Y., Wiarsih, W., 2019) shows that most of TBC clients (60.6%) have good informational support. And that half of TBC clients (58.6%) have good treatment adherence. Table 3 shows that 24 respondents (61.5%) who get less informational support demonstrated low self-efficacy and the result of statistical test showed that self-efficacy was influenced by informational support (p value 0.002; α 0.05). It can be concluded that respondents with low informational support possible to have 4.047 times lower of self-efficacy than respondents who received good informational support (95% CI OR: 1.721; 9.519).

The government of Timor Leste committed to ending TB in Timor Leste on 2035 through national strategy plan as below :

Indicator	Baseline	Milestone		Targets	
				SDG	End TB
	1015	2020	2025	2030	2035
Reduction in number of TB deaths	1400	910	350	140	70
Reduction in TB incidence rate	498	398	249	100	50
TB affected families facing catastrophic costs due to TB (%)	83% in 2016	0	0		0

Source : National strategy plan for End TB, 2020-2024 (MoH-TL, WHO, 2020)

The TB burden of the country is estimated by the World Health Organization (WHO) using standard methodology and is published in the annual Global TB Report. According to the Global TB Report 2022, the country has an estimated total of 6400 TB cases (range 4300–9000) with an incidence rate of 486 (range 322–684) per 100,000 population. The country is ranked seventh globally, and second among the 11 countries in the WHO South-East Asia region, after DPR Korea (WHO, 2023). And also WHO Timor-Leste has identified five risk factors to contribute for TB cases, which include undernourishment, smoking, alcohol use disorder, diabetes, and HIV (WHO, 2021). But WHO Timor Leste reported incidence TB, there has been a reduction in the incidence of tuberculosis in Timor-Leste in 2021. The country's TB incidence has been 489 per 100,000 populations for the past few years. However, in 2021 there has been a decrease in incidence to 486 per 100,000. (WHO, 2023). The Ministry of Health Timor Leste (MoH-

TL, 2023), reported at Baucau Referral Hospital as table below :

No	Year	F				Total
		Male	%	Female	%	
1	2021	58	64,4	32	35,6	90
2	2022	109	61,9	67	38,1	176
3	2023	53	58,2	38	41,8	91
Total		220		137	115,5	357

Resource : Ministry of Health Reported,2023

Materials and Methods:-

The research conducted in this study utilized quantitative analytical methods with a cross-sectional approach to better understand the factors that influence the occurrence of TB at the Referral Hospital of Baucau, Dili Timor Leste. The chosen approach for this study was the cross sectional approach, which involves using all members of the population as samples, as the sampling technique. This is only done if the population is relatively small (Hidayat A. A., 2007). The population of this study consisted of all inpatients at the Internal Medicine Department at Baucau Referral Hospital of Timor Leste, with a total of 50 patients. A sample of 50 patients was selected using the total sampling technique from this population. Data was collected through questionnaires and with Spearman rank statistical test.

Results:-

Univariate Analysis

Environmental Factors

Table 1:- Frequency Distribution based on Environmental Factor is influencing the Occurrence of TB at Baucau Referral Hospital.

ENVIRONMENTAL FACTOR	Frequency	%
Eligible	29	58,0
Not eligible	21	42,0
Total	50	100%

Based on table 1, it is evident that the majority of the respondents who were inpatients at the Referral Hospital of Baucau reported that the environmental conditions at the hospital were eligible specifically, 29 (58.0%) respondents expressed this view, while a smaller number of respondents 21 (42.0%), felt that the environmental conditions at the hospital were not eligible.

Nutritional Status Factor

Table 2:- Frequency Distribution based on the Nutritional Status Factors that Influence The Occurrence of TB at the Referral Hospital of Baucau

Nutritional Status Factor	Frequency	%
Normal	33	66,0
Thin	17	34,0
Total	50	100%

Based on table 2, it can be observed that the majority of the inpatients at the Referral Hospital of Baucau stated that the nutritional status at the hospital was normal, with 33 respondents (66.0%) agreeing. However, a smaller number of respondents 17 or 34.0%) expressed thin with the nutritional factor at the hospital.

Occurrence of TB

Table 3:- Frequency Distribution Based on the Occurrence of TB at the Referral Hospital of Baucau

Patient Satisfaction	Frequency	%
Occurred	24	48,0
Not occurred	26	52,0
Total	50	100

Based on table 3, It can be seen that most of the respondents not affected by TB at the Referral Hospital of Baucau, namely 26 (52.0%) respondents, while a smaller number of respondents were affected by TB at the Referral Hospital of Baucau, namely 24 (48.0%) respondents.

Bivariate Analysis

The environmental Factors and Occurrence among TB of Inpatients at the Referral Hospital of Baucau.

The result of the Spearman Rank test, with a significant P value of 0,000 shows that this value is lower than 0.05. The correlation value is 0,818, which falls within the range of 0.00-1.00, indicating a strong positive relationship. The correlation is significant at the 0.01 level (2-tailed).

The nutritional Status and Occurrence of Tuberculosis among Inpatients at Baucau Referral Hospital of Baucau.

The result of the Spearman Rank shows a significant P- value of 0,000. This indicates that the value of 0,000 is lower than the threshold of 0.05, suggesting a significant influence between the nutritional state factor and the occurrence of TB. Furthermore, the correlation value score is 0,605, which falls within the range of 0,300-0,799, indicating a strong positive relationship. The Correlation is significant at the 0.01 level (2-tailed).

Discussion:-

The factor of Environmental

Based on the research findings, 21 participants (42.0%) reported that the environmental factors were not eligible, while 29 participants (58.0%) reported that and the environmental factors were eligible d.

The environmental factors were not eligible, with 21(42.0%) indicating that the condition of the house and land, residential density, the houses environment, and poor workplace sanitation can facilitate the transmission of pulmonary TB.

The research results show the same findings as those of the researchers (Martins, Nelson, 2021) On the topic of "Influence of risk factors for the transmission of lung tuberculosis to family members in the health services area of Baucau Municipality, with environmental factors were not being good, 154 (95.0%) respondents reported this.

The transmission of pulmonary TB can be facilitated by housing conditions, residential density, housing environment and poor workplace sanitation improving these factors in the environment can lead to increased productivity (Manalu, 2010).

The research results indicate that the researchers have obtained identical findings (Hasan, F., A., Nurmaladewi, Saktiansyah, L., O., A., 2023) On the topic of "the influence of the home physical environment and behaviour on the incidence of AFB smear-positive pulmonary tuberculosis: a case-control study", a study show that soil can humidify indoor air, there by affecting the likelihood of Mycobacterium tuberculosis in the environment. To prevent room humidity an increase in room humidity, it is important to use floor materials that are impermeable to water. This is because high humidity environments are conducive to the growth and spread of pathogenic bacteria, including tuberculosis bacteria.

The factor of Nutritional Status

Based on the research findings, 33 individuals (66.0%) had a normal nutritional status, while 17 individuals (34.0%) had a thin nutritional status.

The percentage of individual's with thin nutritional status was 17 (34.0%). This indicates a low intake of calories, protein, vitamins, iron, and other essential nutrients, which can weaken the immune system and make individuals more susceptible to diseases, such as pulmonary TB.

The research findings align with the WHO report on the prevalence of five risk factors in Timor-Leste in 2020, which include undernourishment, smoking, alcohol use disorder, diabetes, and HIV (WHO, Global tuberculosis report 2021. Geneva: World Health Organization Disclaimer: Tuberculosis country profiles are generated automatically based on data reported by countries and which are held in WHO's global TB database, 2021).

The research results indicate that the findings are consistent with those of the researchers (Yuniar, I., Sarwono., Lestari, S., D., 2017) on the topic of "the relationship between income, and nutritional state on the incidence of pulmonary tuberculosis at the Health Center of Sempor Municipality of Kebumen", the results indicated that a large proportion of the respondents had inadequate poor nutritional status, specifically out of the 80 respondents 56 (70%) had poor nutritional status. These respondents included 33 case respondents (individuals with pulmonary tuberculosis) and 23 control respondents (individuals without pulmonary tuberculosis).

The influence between environmental factors and the occurrence of Tuberculosis among inpatients at the Referral Hospital of Baucau

The result of the Spearman Rank test showed a P value of 0.000, which is below the threshold of 0.05. This indicates a significant influence between environmental factors and the occurrence of TB. The resulting correlation value was

$r = 0,518$ which falls within the range of 0, 00-1, 00. Therefore, the correlation can be classified as strong and positive.

The research results confirm the findings of the researchers (Hasan, F., A., Nurmaladewi, Saktiansyah, L., O., A., 2023) On the topic of "the influence of the home physical environment and behaviour on the incidence of AFB smear-positive pulmonary tuberculosis: a case-control study," it was found that out of the 62 houses surveyed 6 (9.7%) did not meet the floor type requirements and, while 56 (12.9%) did meet them. Additionally, 13 (21.0%) houses did not meet the requirements for wall types, while 49 (79.0%) did qualify.

Based on the results of measuring the ventilation area, 28 (45.2%) houses did not meet the eligibility requirements, while 34 (54.8%) house met the qualifying criteria.

The results of measuring residential density showed that 11 houses (17.7%) did not meet the requirements, while 51 houses (82.3) qualified under the qualifying category. Respondents with a smoking habit accounted for 53.2% ($n=3$), while the non-smoking category comprised 46.8% ($n=29$) of the respondents. The respondents who did not have the habit of opening windows were 19 (30.6%) respondents; whereas 43 (69.4%) respondents reported that they regularly opened windows. The respondents who did not dry their sleeping equipment were 42 (67.7%) respondents, while 20 (32.3%) respondents fell into the category of not drying their sleeping equipment.

The results of this study contrast with the findings of previous research conducted by (Wulandari, 2012) On the topic of the relationship between the physical environment of a house and the incidence of pulmonary tuberculosis, it was found that variables such as the type of floor ($p=0.37$), density of bedroom occupancy ($p=0.05$), family room ventilation ($p=1$) and bedroom ventilation ($p=0.75$) were not related to the incidence of pulmonary TB.

The influence between nutritional status and the occurrence of Tuberculosis among inpatients at the Referral Hospital of Baucau.

The results of the Spearman Rank test showed a P value of 0.000, which is below the significance level of 0.05. This indicates a significant influence between the nutritional status factor and the occurrence of TB. Additionally, the correlation value ($r = 0,605$) falls within the range of 0,500-0,799 suggesting a stronger positive relationship between the two factors.

Based on the Tuberculosis Country Profile 2021 for Timor-Leste shown that the cases of tuberculosis can be attributed to five main risk factors: undernourishment, smoking, alcohol use disorder, diabetes and HIV (WHO, Global tuberculosis report 2021. Geneva: World Health Organization Disclaimer: Tuberculosis country profiles are generated automatically based on data reported by countries and which are held in WHO's global TB database, 2021).

The research results indicate consistent findings among the researchers (Yuniar, I., Sarwono, Lestari, S., D., 2017) On the topic of the relationship between income, and nutritional status on the incidence of pulmonary tuberculosis, the research results indicated that out of 80 respondents, 56 (70%) had a poor nutritional status, while 24 (30%) had a sufficient nutritional status. This indicated that the majority of respondents have a poor nutritional status. The statistical test yielded a P-value of 0.028, indicating that $p < \alpha$ (0.05). Therefore, with a significance level of 5% we can conclude that there is a significant relationship between the nutritional status and the incidence of pulmonary tuberculosis. And also obtained a value of $OR= 3.484$ ($CI= 1.246 - 9.747$). This indicates that individuals with poor nutritional status are at a 3.4 times higher risk of developing pulmonary tuberculosis compared to those with adequate nutritional status.

The research results indicate consistent findings across different researchers (Dhanny, D., R., Sefriantina, S., 2021) on the topic of tuberculosis incidence in children under 5 years old, it is important to note that this problem can have long-term effects. Low energy and protein intake can hinder the improvement of under nutrition status, making underweight children more susceptible to pulmonary tuberculosis.

Conclusion:-

Based on the research findings, it was concluded that: (1) The majority of the environmental factors at the Referral Hospital of Baucau were eligible, specifically 29 (58.0%) of them. (2) The majority of the nutritional status factors at the Referral Hospital of Baucau were normal, specifically 33 (66.0%) of them. (3) Most of the respondents at the

Referral Hospital of Baucau (52.0%) were not satisfied with the TB treatment. (4) There is a strong positive correlation between the environmental factor and the occurrence of TB, with a calculated r value of 0.818 ($P = 0.000$, with $\alpha = 0.05$). (5) There is a fairly strong positive relation between the nutritional factor and the occurrence of TB, with a calculated r value of 0.605 ($P = 0.000$, $\alpha = 0.05$).

Bibliography:-

1. Dhanny, D., R., Sefriantina, S. (2021). The relationship between Energy Intake, Protein Intake and Nutritional Status Incidence of Tuberculosis in Children. Muhammadiyah Journal of Nutrition and Food Science, 1-11.
2. Gerson, F. R. (2006). Medir A Qualidade e A Satisfacao do Cliente. Lisboa: Monitor.
3. Hasan, F., A., Nurmaladewi, Saktiansyah, L., O., A.,. (2023). THE INFLUENCE OF THE HOME PHYSICAL ENVIRONMENT AND BEHAVIOR ON THE INCIDENCE OF AFB SMEAR-POSITIVE PULMONARY TUBERCULOSIS: A CASE-CONTROL STUDY. Ikesma: Jurnal Ilmu Kesehatan Masyarakat, 1-10.
4. Hasan, F., A., Nurmaladewi, Saktiansyah, L., O., A.,. (2023). THE INFLUENCE OF THE HOME PHYSICAL ENVIRONMENT AND BEHAVIOR ON THE INCIDENCE OF AFB SMEAR-POSITIVE PULMONARY TUBERCULOSIS: A CASE-CONTROL STUDY. 1-10.
5. Hidayat. (2007). Salemba Medika.
6. Hidayat. (2007). Mutu pelayan keperawatan. Jakarta: Citra medika.
7. Hidayat. (2007). Riset Keperawatan dan Teknik Penulisan Ilmiah. Jakarta: Salemba Medika.
8. Hidayat, A. A. (2007). Metode Penelitian Keperawatan dan teknik Analisis Data. Jakarta: Salemba Medika.
9. Hidayat, A. A. (2007). Metode penelitian keperawatan dan teknik analisis data (Edisi I). Jakarta.
10. Imbalo. (2003). Jaminan Mutu Pelayanan Kesehatan. Jakarta: Kesaint Blanc.
11. Manalu, H. S. (2010). Factors Affecting the Occurence of Pulmonary TB and Effort to Overcome. Jurnal Ekologi Kesehatan, 1340-1346.
12. Martins, Nelson. (2021). Influence of risk factors for transmission of lung tuberculosis to family members in the health services area of Baucau Municipality.
13. Ministerio da Saude, T. (2005). Jornal Mensal do Ministerio da Saude RDTL. Dili: Ministerio da Saude.
14. MoH TL. (2005). Anual Statistics Report. Dili: Office System Information and Surveillance Epidemiology.
15. MoH TL. (2023). Annual Statistic Report: Information and Surveillance Epidemiology. MoH.
16. MoH-TL,WHO. (2020). National Strategy plan for End TB 2020-2024, National Tuberculosis Control Programme Timor Leste. Dili. Retrieved 25 July, 2024, from <https://reliefweb.int/report/timor-leste/national-strategic-plan-ending-tb-2020-2024>
17. Nursalam. (2002). Manajemen Keperawatan. Jakarta: Salemba Medika.
18. Ratnasari, N.Y., Husna P.H., Marni, M. (2019). Knowledge, Behavior, and Role of Health Cadres in The Early Detection of New Tuberculosis Case in Wonogiri. Surabaya: Jurnal Keseshatan Masyarakat.
19. Setiadi. (2007). Konsep dan Penulisan Riset Keperawatan (Edisi Pertama ed.). Yogyakarta: Graha Ilmu.
20. Setiadi. (2007). Konsep dan Penulisan Riset Keperawatan. Yogyakarta: Graha Ilmu.
21. Setiadi. (2007). KOnsep dan Penulisan Riset Keperawatan (Edisi Pertama ed.). Yogyakarta: Graha Ilmu.
22. Setiadi. (2007). Metode Penelitian. Bandung: Alfabeta.
23. Solikhah,M.M, Astuti Yuni Nursasi,A.Y., Wiarsi,W. (2019). The relationship between family's informational support and self-efficacy of pulmonary tuberculosis client. Indoensia: Enfermaria Clinica. Retrieved 29 July, 2024, from www.elsevier.es/enfermeriaclinica
24. Supranto, J. (2006). Pengukuran Tingkat Kepuasan Pelanggan. Jakarta: Rineka Cipta.
25. Tjiptono, F. (2000). Manajemen Jasa. Yogyakarta: Andi.
26. WHO. (2020). Global TB Report. WHO.
27. WHO. (2021). Global tuberculosis report 2021 World Health Organization Disclaimer: Tuberculosis country profiles are generated automatically based on data reported by countries and which are held in WHO's global TB database. Geneva: WHO.
28. WHO. (2021). Global tuberculosis report 2021. Geneva: World Health Organization. WHO.
29. WHO. (2021). Global tuberculosis report 2021. Geneva: World Health Organization Disclaimer: Tuberculosis country profiles are generated automatically based on data reported by countries and which are held in WHO's global TB database. WHO.
30. WHO. (2021). Global tuberculosis report 2021. Geneva: World Health Organization Disclaimer: Tuberculosis country profiles are generated automatically based on data reported by countries and which are held in WHO's global TB database. WHO.
31. WHO. (2021). Tuberculosis Cuontry Profile. WHO.
32. WHO. (2023). TB Epidemiological Review 2023 Timor-Leste. Dili: WHO.

33. WHO. (2023). TB Epidemiological Review 2023 Timor-Leste. WHO.
34. WHO. (2023). TB Epidemiological Review 2023 Timor-Leste . Dili: WHO.
35. Wulandari, S. (2012). HE RELATIONSHIP OF THE PHYSICAL HOME ENVIRONMENT WITH THE INCIDENCE OF LUNG TB. Unnes Journal of Public Health, 1-4.
36. Yuniar, I., Sarwono, Lestari, S., D.,. (2017). The relationship between income, nutritional status on the incidence of pulmonary tuberculosis. Jurnal Perawat Indonesia,, 1-8.
37. Yuniar, I., Sarwono., Lestari, S., D.,. (2017). The relationship between income, nutritional status on the incidence of pulmonary tuberculosis. Jurnal Perawat Indonesia, 1-8.
38. Zaman, K. (2010). Tuberculosis: A Global Health Problem. J HEALTH POPUL NUTR.