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A COMPARATIVE STUDY OF TUBERCULOSIS KNOWLEDGE LEVELS BETWEEN MEDICAL AND BUSINESS ECONOMICS STUDENTS AT YARSI UNIVERSITY

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Abstract

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*, which has been recognized as a global health emergency by the World Health Organization (WHO). Despite widespread prevention and treatment programs, tuberculosis control continues to face challenges, particularly due to insufficient public knowledge about effective preventive measures. This study aims to compare the level of knowledge about tuberculosis between medical students and business economics students at Yarsi University. This study used a descriptive comparative quantitative design involving 183 respondents, consisting of 121 medical students and 62 business economics students class of 2021. Data were collected using a questionnaire consisting of 11 questions related to tuberculosis and grouped into three knowledge categories: good, sufficient, lacking. Data were analyzed using the Mann-Whitney test due to abnormal data distribution. The results showed a significant difference in the level of knowledge about tuberculosis between the two groups ($p < 0.05$). Medical students showed a higher level of knowledge, with 100% being in the good category, compared to 75.8% in business economics students. This study highlights the importance of structured education in influencing knowledge levels and recommends targeted health education for non-medical students. This study confirms the role of education in raising awareness about tuberculosis and supports the integration of health knowledge into non-medical curricula to support public health.

Keywords: Tuberculosis, Knowledge Levels, Medical Students, Business Economics Students, Comparative Study

Introduction

Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis* that is transmitted through droplets and has been recognized as one of the global health problems (PDPI, 2021). *Mycobacterium tuberculosis*, a rod-shaped bacterium, is acid-resistant and has a lipid-rich cell wall that is resistant to acid. The disease commonly affects the lungs, but can also affect other organs such as the bones, kidneys or brain. *Mycobacterium tuberculosis* bacteria have the ability to survive in the body in a latent state for many years before becoming active, especially in individuals with weakened immune systems. The main symptoms of tuberculosis include a cough lasting more than two weeks, fever, night sweats, weight loss, and fatigue. Factors such as radiographs of lung disease, positive skin test reactivity, and

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laboratory identification of *Mycobacterium tuberculosis* by microscopy or culture are required to establish a clinical diagnosis of tuberculosis. (Murray *et al*., 2021).

According to a 2022 WHO report, tuberculosis is the 13th leading cause of death globally, with more than 10 million new cases and 1.4 million deaths each year, making it the 13th leading cause of death in the world. In Indonesia, which ranks second in the world in the number of tuberculosis cases, there are approximately 969 thousand new cases and 93 thousand deaths each year, making it a significant health challenge for the community and government (Kemenkes, 2023). In the period January to June 2024, 30,270 new tuberculosis cases were found in DKI Jakarta. Most of them were drug-sensitive tuberculosis cases totaling 29,711, while drug-resistant tuberculosis cases were recorded at 559 cases (Dinkes, 2024).

Public knowledge about tuberculosis plays an important role in the prevention and control of this disease. According to Mahyarsni (2013), knowledge is a key factor in shaping one's behavior. Previous studies have shown that adequate knowledge can encourage preventive behaviors, such as recognizing early symptoms, conducting early examinations, and complying with treatment. Research conducted by Auwelia *et al*. (2022), found that medical students who had passed the respiration block had a better level of tuberculosis knowledge. However, there was no explanation regarding the comparison of knowledge between medical students and students from other study programs, such as business economics. This is important to explore, considering that students from various disciplines can be agents of change in raising awareness about tuberculosis in their social environment.

This study aimed to compare the level of knowledge about tuberculosis between medical students and business economics students at Yarsi University. Specifically, this study identified the level of knowledge of medical students of Yarsi University related to tuberculosis and the level of knowledge of business economics students of Yarsi University related to Tuberculosis, as well as comparing the level of knowledge about tuberculosis between medical and business economics students. This study is expected to contribute in several aspects, namely adding to the literature on the comparison of health knowledge between students from different educational backgrounds, especially related to tuberculosis, providing recommendations to the university to integrate basic health materials into the curriculum of non-medical students as a step to increase health knowledge and awareness, and increasing the awareness of students from various educational backgrounds about the importance of tuberculosis prevention so that they can contribute to reducing the prevalence of tuberculosis through preventive behavior and education.

Method

This study used a comparative descriptive quantitative design to compare the level of knowledge about Tuberculosis between medical and business economics students at Yarsi University. The study population was all 2021 medical and business economics students at Yarsi University, with a sample of 183 people selected using the quota sampling method, consisting of 121 medical students and 62 business economics students. The research instrument was in the form of a questionnaire with 11 questions covering basic knowledge, transmission, prevention, diagnosis, treatment, and stigma of tuberculosis, as well as 2 additional questions aimed at exploring information regarding whether students had received information about tuberculosis before and from which source the information was obtained. Answers were scored: correct (2), incorrect (1), and don't know (0). Total scores were grouped into three categories based on Arikunto (2006), good (76%-100%), sufficient (56%-75%), and lacking (<56%). The questionnaire was distributed online through google forms, and data were analyzed using SPSS. Univariate analysis was conducted to see the frequency distribution of knowledge levels, while bivariate analysis used the Mann-

Whitney test to analyze differences in knowledge levels because the data were not normally distributed based on the results of the Kolmogorov-Smirnov and Shapiro-Wilk tests ($p < 0.05$). The level of significance was determined at $\alpha = 0.05$, and $p < 0.05$ indicating a significant difference between the level of knowledge of medical and business economics students.

Results

1. Univariate Analysis

This analysis was conducted to see the distribution of respondents studied, namely medical faculty students and business economics students as independent variables, while the level of knowledge about tuberculosis as the dependent variable. Respondents in this study were 183 people consisting of 121 medical faculty students and 62 business economics faculty students at Yarsi University. Data on the distribution of knowledge level was analyzed to determine differences in knowledge categories (good, sufficient, lacking) between the two groups of respondents. The results of this analysis are useful to provide a basis for comparing the level of knowledge between the two groups in more depth.

Table 1. Distribution of Knowledge Level of All Respondents

Knowledge Level	Frequency	Percentage (%)
Correct	168	91,8
Incorrect	14	7,7
Don't Know	1	0,5
Total	183	100

Table 1 shows that the majority of respondents, 168 students (91.8%), had good knowledge about tuberculosis. A total of 14 students (7.7%) had sufficient knowledge and only one student (0.5%) had lacking knowledge.

Table 2. Distribution of Knowledge Level of Medical Students

Knowledge Level	Frequency	Percentage (%)
Good	121	100
Total	121	100

Table 2 shows that 121 medical students of class 2021 have good knowledge about tuberculosis with a percentage of 100%. This shows that the level of knowledge of medical students class of 2021 is very high and evenly distributed.

Table 3. Distribution of Knowledge Level of Business Economics Students

Knowledge Level	Frequency	Percentage (%)
Good	47	75,8
Sufficient	14	22,6
Lacking	1	1,6
Total	183	100

Table 3 shows the distribution of the level of knowledge of business economics students class of 2021. A total of 47 students (75.8%) have a good level of knowledge, 14 students (22.6%) have a moderate level of knowledge, and 1 student (1.6%) has a lacking level of knowledge.

2. Bivariate Analysis

Before analyzing the comparison of the level of knowledge of medical and business economics faculty students, it is necessary to test the normality of the data using the Kolmogorov-Smirnov and Shapiro-Wilk methods.

Tabel 4. Normality Test

Study Program	Normality Test	Statistics	df	Sig. (*p-value*)
Business Economics Students	Kolmogorov-Smirnov	0,179	62	0,000
	Shapiro-Wilk	0,925	62	0,001
Medical Students	Kolmogorov-Smirnov	0,198	121	0,000
	Shapiro-Wilk	0,860	121	0,000

Table 4 shows the results of the normality test using the Kolmogorov-Smirnov and Shapiro-Wilk methods for each group based on the study program. The *p-value* <0.05 for both methods indicates that the data on the level of knowledge of medical and business economics students are not normally distributed. Therefore, the Mann-Whitney test was used as the statistical analysis to compare the two groups.

Table 5. Mann-Whitney Test Results of Knowledge Level Based on Study Program

Study Program	N	Mean Rank	Sum of Rank
Business Economics Students	121	106,91	12.936,50
Medical Students	62	62,90	3.899,50

Table 5 shows the results of the Mann-Whitney test comparing the level of knowledge about tuberculosis between medical and business economics students. Based on the analysis, the mean rank of medical student's knowledge was 106.91, while the mean rank of economics student's knowledge was 62.90. This shows that the level of knowledge of medical students tends to be higher than that of business economics students. The overall rank (sum of rank) for medical students amounted to 12,936.50, and for business economics students amounted to 3,899.50.

Table 6. Mann-Whitney Test Results of Knowledge Level Based on Study Program

Test Statistic	Value
Mann-Whitney U	1.946,500
Wilcoxon W	3.899,500
Z-score	-5,471
Asymp. Sig. (2-*tailed*)	0,000

Table 6 shows the statistical results of the Mann-Whitney test comparing the level of knowledge about tuberculosis between medical students and business economics students. The Mann-Whitney U value of 1946.5 and Wilcoxon W value of 3899.5 support the calculation results and indicate a significant difference in knowledge level. Z score is -5.471 and Asymp. Sig. (2-*tailed*) of 0.000 ($p < 0.05$) indicates a statistically significant difference between the two groups.

The very small *p-value* of 0.000, it can be concluded that the level of knowledge of medical students is higher than business economics students. This result supports the previous average calculation in table 5 which shows the average of medical students is higher than business economics students.

Discussion

The results of this study showed a significant difference in the level of knowledge about Tuberculosis between medical and business economics students at Yarsi University. A total of 100% of medical students had a good level of knowledge, while business economics students showed more varied results with 75.8% having good knowledge, 22.6% having sufficient knowledge, and 1.6% having lacking knowledge. This difference was supported by the results of the Mann-Whitney test which showed that the mean rank of medical students' knowledge (106.91) was higher than that of business economics students (62.90), with a significant value (p = 0.000). This finding indicates that educational background also directly influences students' level of knowledge about tuberculosis.

This difference in knowledge level can be explained by the medical education curriculum that explicitly covers health materials, including tuberculosis. Medical students gain a deeper understanding through clinical and theoretical approaches, while business economics students do not have direct access to health materials in their formal education. This is in accordance with the statement of Nuraini *et al.* (2021), that people with low education levels have a higher risk of developing tuberculosis. In contrast, higher education not only contributes to increased knowledge but also encourages healthy behavior, thus reducing the incidence of tuberculosis. From a student perspective, medical students are exposed to more health materials through the formal curriculum, which contributes significantly to their higher level of knowledge compared to business economics students.

This study is also consistent with the study of Auwelia *et al*. (2022), which found that medical students had higher knowledge of tuberculosis, especially after completing the respiration block in medical curriculum. However, this study did not make an additional contribution by comparing the knowledge level of medical students with students from non-health majors, namely business economics. This finding also reinforces the results of Insana Maria (2020)'s study, which showed that access to adequate information through formal education can improve an individual's knowledge about tuberculosis.

This study provides a unique comparison between medical and non-medical students, highlighting the influence of educational background on knowledge of Tuberculosis. The inclusion of both groups allows for a broader understanding of how curriculum design affects health awareness. However, this study has some limitations. The use of self-completed questionnaires may introduce response bias, where respondents may overestimate their knowledge. Additionally, this study was conducted in a single university, which may limit the generalizability of the findings to other institutions or contexts. Future research is recommended to consider a larger and more diverse sample to validate these results.

The results of this study have important implications for the field of public health. Business economics students' lack of knowledge about tuberculosis can be a barrier to disease prevention and control, especially if information related to symptoms, transmission, and treatment is not well conveyed. Therefore, there is a need to integrate health education into the non-health curriculum to increase students' awareness and knowledge across disciplines. In addition, optimizing social media and other educational platforms can be an effective means to widely disseminate health information.

Increased knowledge in all groups of society, including students from various backgrounds, is expected to create better awareness towards the prevention and management of Tuberculosis. Good knowledge will encourage individuals to better understand the early symptoms, modes of transmission, and steps that should be taken to prevent the spread of this disease. Students, as an educated group, have great potential to become agents of change in their environment, both at the university and in the general public. This increased knowledge can help students protect themselves from the risk of tuberculosis but also spread the right information to their family, friends, and community, which can be one of the important strategies

in supporting more comprehensive tuberculosis control efforts. This will help to create a more health-conscious society that is better prepared to face the challenges of controlling infectious diseases such as Tuberculosis at the local, national and global levels.

Conclusion

This study showed a significant difference in the level of knowledge about tuberculosis between medical students and business economics students at Yarsi University. Medical students had a higher level of knowledge than business economics students, with 100% in the good category, while business economics students showed a more varied distribution. These findings reaffirm that the significant influence of educational background on student's knowledge levels about tuberculosis. Therefore, there is a need to integrate basic health materials in the non-health curriculum and optimize educational media to increase awareness and knowledge of students from various disciplines, in order to support comprehensive tuberculosis control efforts at the university level and the general public.

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