



Health promoting university programs as a strategy for reducing tuberculosis stigma and enhancing environmental

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ABSTRACT

Introduction: Tuberculosis (TB or TBC) is a deadly infectious disease that surpasses HIV and malaria as the leading cause of infectious death. Indonesia ranks second in global TB cases. The main challenges in eliminating TB are stigma, social problems and low adherence to treatment due to access to services. The Health Promoting University aims to increase health awareness in universities. This study encourages the participation of the younger generation to voice TB issues in their surroundings and on social media. **Method:** This research uses a descriptive qualitative method, analyzing secondary data from regulations and literature and a mini survey to measure Indonesian students' understanding of Tuberculosis. **Findings:** The results of the research show that Indonesia has the second highest TB cases in the world, with vulnerable groups such as students exposed through droplets when sufferers cough or sneeze. Risk factors for students include fatigue from studying, smoking habits, and intense social interactions. WHO data shows that the TB death rate in Indonesia will reach 134,000 in 2022. TB also triggers stigma and discrimination, hindering patients in education and employment. Increasing awareness supported by concrete policies is the main solution in overcoming the spread of TB. **Conclusion:** Universities in Indonesia have a strategic role in creating a healthy campus environment, in accordance with Law No. 12 of 2012 concerning Higher Education and Regulation of the Minister of Education and Culture No. 3 of 2020. Through the Health Promoting University, universities are expected to integrate health education, such as TB prevention, into campus culture. **Novelty/Originality of this article:** This program involves various efforts, such as the formation of TB prevention communities, socialization of clean living behavior, routine health checks, and a "Zero Tolerance" policy for health risks. With this approach, campuses contribute to national efforts to eradicate TB, create a healthy learning environment, and increase students' health awareness.

KEYWORDS: tuberculosis; elimination; health promoting university; young generation; stigma and discrimination.

1. Introduction

Tuberculosis (TB) is a deadly infectious disease caused by the bacteria *Mycobacterium Tuberculosis*. Tuberculosis is the leading cause of death from infectious diseases in the world, surpassing HIV and malaria. Globally, TB is ranked 13th as the leading cause of death

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and the second leading cause of death from infection after COVID-19 (WHO, 2024). In 2022, there were 10.6 million cases of TB with 1.6 million people dying, including 187,000 people who were also infected with HIV positive. In the Southeast Asia Region, Indonesia ranks second after India, with an estimated number of TB cases by the Ministry of Health in 2022 reaching 1,060,000 new cases and 134,000 deaths (WHO, 2022).

Every individual is at risk of being infected with TB if there is a source of transmission around them. The most common transmission of TB is through the air, when an infected person coughs or sneezes, releasing TB germs into the air. However, the risk of transmission does not always occur automatically, because it depends on several factors, such as the condition of the immune system, the quality of air circulation, ventilation, and how often contact with TB sufferers (Ministry of Health of the Republic of Indonesia, 2020).

People with pulmonary tuberculosis are at risk of transmitting the disease to people around them, especially those who have close contact with the sufferer. One person infected with pulmonary tuberculosis has a risk of transmitting it to 10-15 people per year. This transmission rate depends on the amount of bacteria released from the lungs. Around 75% of people with pulmonary tuberculosis are in the most economically productive age group (15-50 years). Symptoms of tuberculosis vary depending on the location of the infection, but common symptoms of pulmonary infection are coughing that lasts more than 2 weeks or more, chest pain, coughing up phlegm to blood, fatigue, weight loss, fever and sweating at night (Deliananda & Azizah, 2022).

In addition to symptoms that affect physical health, TB sufferers also experience social and psychological impacts. Sufferers often experience stigma and discrimination, both in society, the workplace and the world of education. This phenomenon has an impact on non-compliance with treatment and even discontinuation of treatment. As a result, the quality of life of sufferers decreases, worsening their health condition. Although support from family and community can act as a positive social encouragement, it also has the potential to create stigma towards the disease and TB sufferers. Based on various studies, the stigma experienced by TB sufferers can have a negative impact on the patient's recovery process, causing delays in treatment and prolonging healing time (Hasudungan et al., 2020).

This stigma also worsens the condition of TB sufferers, hinders proper treatment and has a negative impact on the continuity of their treatment process. Wrong mindset and ignorance about this disease cause stigma and discrimination so that sufferers are reluctant to seek treatment. On the other hand, lack of knowledge also has an impact on increasing the risk of transmitting pulmonary TB to other individuals (Aryani et al., 2021). Public knowledge about TB, healthy lifestyles, and TB treatment is very important to prevent transmission and support successful treatment. Continuous education will increase public awareness to play an active role in the prevention and treatment of TB (Damayanti, 2020).

The challenges of TB elimination in Indonesia in the context of low patient compliance are influenced by access to services, drug side effects, social stigma and socio-economic problems. Lack of awareness of tuberculosis is also a challenge that has an impact on the emergence of stigma and discrimination against tuberculosis patients (Silaban et al., 2024). Tuberculosis can have an impact on various aspects both socially and economically including stigma, discrimination and poverty. Therefore, concrete efforts are needed to overcome this problem such as education and increasing access to treatment services.

Referring to research conducted by Lina Yunita, et al., explained that effective knowledge and attitudes towards tuberculosis prevention efforts still require intensive and continuous counseling. This is especially about basic knowledge such as the causes, transmission methods, and prevention of TB (Yunita et al., 2023). Then, Siti Nur Hasina, et al. showed that there was a relationship between the level of knowledge and patient compliance in undergoing treatment. So that there is a need for self-care-based health promotion activities in overcoming patient non-compliance with treatment programs in order to improve the health of tuberculosis patients (Hasina et al., 2023). Both of these studies underlie the novelty of this research, namely by making comprehensive efforts starting from policies and health promotion in overcoming discrimination against

tuberculosis patients, especially in State Universities by increasing the knowledge of campus residents regarding the urgency of TB problems in Indonesia.

The government through the Health Promoting University still faces significant challenges in its implementation. Although there are around 4,500 universities that have the potential to implement this program, many of them have not fully implemented policies that support campus community health effectively. The Health Promoting University aims to improve health among the entire campus academic community, but its implementation is still in the trial stage at several universities such as Andalas University, University of Indonesia, Sebelas Maret University, and Hasanuddin University.

One of the main obstacles is the lack of involvement from various faculties in implementing supportive health programs, which are often only run by certain faculties, such as the Faculty of Public Health. Limited resources and lack of coordination are challenges in implementing the Health Promoting University. In addition, the COVID-19 pandemic has also disrupted the continuity of disease prevention programs, including early detection of non-communicable diseases. The Ministry of Health has attempted to encourage universities to become agents of change in the health sector through pro-health policies, such as a ban on cigarette sales on campus and promotion of physical activity. However, to achieve this goal, a stronger commitment from the university and support from the entire academic community is needed so that the Health Promoting University can be implemented comprehensively and sustainably (Ramdani, 2012).

Therefore, this research aims to increase the participation and involvement of the younger generation in TB issues in order to build a shared commitment to voice tuberculosis issues both in the surrounding environment and social media, especially in the campus environment. By involving the academic community in broader educational efforts, it is hoped that a healthy and tuberculosis-free campus environment will be created. This aims to expand the reach and scope of tuberculosis awareness education, as well as strengthen the role of universities in facing public health challenges, especially TB.

2. Methods

This research uses a Qualitative research method, namely descriptive research with a tendency to use analysis. This research process will analyze and interpret facts, symptoms and events based on what happens so that they become study material for follow-up (Kusumastuti & Khoiron, 2019). This research was conducted through a study when collecting secondary data on laws and regulations and literature studies available on Google Scholar, Science Direct, other sources such as WHO annual reports and related references. Then, collecting document data through a mini survey of the level of knowledge of Indonesian students regarding tuberculosis to measure students' understanding of basic information about Tuberculosis.

In addition, a Focus Group Discussion (FGD) was conducted involving all student representatives in Indonesia at the "*National Conference TB Care Youth Summit on Public Health UNHAS*". This approach was chosen to explore perspectives, experiences, and suggestions related to the topic discussed, namely the implementation of the Health Promoting University in preventing Tuberculosis. This discussion involved students with diverse backgrounds and regions, thus providing rich and representative data. The results of the discussion were then transcribed and analyzed thematically to gain in-depth insights into the obstacles, opportunities, and recommendations for strengthening the Health Promoting University in universities in Indonesia.

To support data validity, this study also involved source triangulation through cross-checking between FGD results, survey results, and references reviewed. This process aims to ensure that the data obtained truly supports the research findings. With this holistic approach, the study is expected to be able to produce applicable and relevant recommendations for TB prevention efforts in the campus environment in accordance with the Healthy Campus guidelines.

3. Results and Discussion

3.1 Tuberculosis problem affects health quality of students in Indonesian universities

Tuberculosis, often abbreviated as TB or TBC, is an infectious disease caused by the bacteria *Mycobacterium Tuberculosis*. This disease can attack anyone and the organs of the body that are usually attacked are the lungs, spine, skin, brain, lymph nodes, and heart (Ministry of Health of the Republic of Indonesia, 2024). Regardless of who, tuberculosis can attack any organ of the body, occurs when a TB sufferer coughs or sneezes without covering their mouth, the bacteria will spread into the air in the form of phlegm splashes or droplets. One cough can produce 3000 phlegm splashes containing up to 3500 M. tuberculosis germs. While one sneeze produces 4500 -1 million M. Tuberculosis germs (Yudiana, 2022).

In 2020, the World Health Organization (WHO) reported that Indonesia was the second country with the highest number of Tuberculosis sufferers in the world. One of the groups of people who suffer from TB is young people, especially students. Consultant Pulmonary Specialist Doctor at Sebelas Maret University Hospital (UNS) Surakarta, dr. Hendrastutik Apriningsih, Sp.P (K), M.Kes. said that TB is generally suffered by young children and adults. This is because their immune systems are considered quite vulnerable so that they are easily attacked by germs. It is very unfortunate that students as agents of change cannot continue the nation's ideals, because they have to fight their own disease first (Yanti & Riyan, 2022).

Every day, there are 385 tuberculosis patients in Indonesia who die or 16 people die every hour due to TB. This was stated by Professor Erlina Burhan, Permanent Professor in Pulmonology and Respiratory Medicine, Faculty of Medicine, University of Indonesia (FKUI). This figure was obtained through the Global TB Report 2023 launched by the World Health Organization (WHO). In the publication, in 2022 the mortality rate of TB patients without HIV and TB with HIV in Indonesia was 134,000 and 6,700 cases, respectively. In the previous edition, he said, the report also stated that there were 834,000 new cases in Indonesia in 2010. This number increased to 842,000 in 2019 and peaked at 1,060,000 cases in 2022 (Danur, 2024).

Several cases of students contracting TB are very varied, not only difficult to cure but also fatal. Like a student from Muhammadiyah University of Yogyakarta (UMY) with the initials UA (21) who died from tuberculosis or TB. So that UMY conducted screening of lecturers and students (Pradito, 2023). This case is one of thousands of undetected cases, if left untreated it will certainly claim more lives. The results of a mini survey of the level of knowledge of Indonesian students regarding Tuberculosis on October 13-15, 2024 via online Google Forms, obtained results, a total of 113 respondents consisting of 86 women and 27 men. Respondents are students throughout Indonesia aged between 12-18 years. Respondents are students from health faculties 60.2% and non-health 39.8%. More than 75% of respondents have good knowledge and understand basic information about TB, such as symptoms, risk of transmission, diagnosis, control, prevention, treatment and stigma/discrimination. Based on the survey results, it can be categorized that out of 113 student respondents throughout Indonesia, 29.20% or 77 respondents have TB knowledge in the good category, 68.14% or 33 respondents have TB knowledge in the sufficient category, and 2.66% or 3 respondents have TB knowledge in the poor category (TCYSPH, 2024).

3.2 College fatigue

Students who experience stress at a mild level actually make them enthusiastic about studying, but at a later stage, students experience complaints. Complaints due to repeated stress. Complaints from students such as fatigue and feeling sleepy because they come home late every day and after that have to do a lot of assignments from the lecturers of the Course and have different levels of difficulty (Metanfanuan, 2023). This can take up all of the students' energy, causing them to...fatigue or tired. When this happens, the overload can

cause stress, in the form of physical and mental fatigue, decreased endurance, Students who are exhausted from studying often forget to eat. This habit, in addition to leading to stomach ulcers, also decreases endurance. Decreased endurance can make it easier for diseases to attack the immune system, such as TB.

Smoking can reduce lung capacity, reduce endurance, and decrease muscle strength. These three elements are important to support students. Lack of lung capacity can cause insufficient oxygen supply to the muscles during physical activity, which can have a negative impact on students' health (Shabrina et al., 2024). Active smoker students will be susceptible to TB germs. Even according to WHO, the body of an active smoker who has TB will reject the drugs given. Passive smokers are also affected. This is because exposure to cigarette smoke will cause the body's immune system to decrease and increase the risk of TB.

Students are identical with crowd activities such as organizations or studying together. This needs to be watched out for because the people they meet could be TB sufferers. Based on the results by Waella Septamari Budi, et al. in 2024 who conducted a bivariate analysis on the variable of household contact with positive BTA Tuberculosis sufferers, results obtained from the p value of 0.027, meaning that there is a relationship between household contact with a positive BTA Tuberculosis patient and the incidence of Tuberculosis. The OR obtained was 2.471 (1.1-5.547), meaning that respondents who have a history of household contact with a positive BTA Tuberculosis patient can increase the risk 2 times greater than respondents who do not have a history of household contact with a positive BTA Tuberculosis patient. The length of time of interaction between Tuberculosis patients and people the closest, such as family, neighbors or friends interacting around (Budi & Nurjazuli, 2024).

The TB problem continues to increase due to the suboptimal prevention of undetected TB transmission, causing the condition to spread to the community. In addition, it is accompanied by low compliance of TB patients in treatment which increases the risk of drug-resistant TB. The decline in the desire for recovery of patients is also caused by TB patients facing stigma, discrimination, and losing opportunities to study, work, and socialize (Novita & Elon, 2021). So a concrete solution is needed for this problem, especially in terms of law enforcement to regulate community compliance and commitment to preventing tuberculosis in Indonesia.

Tuberculosis is one of the infectious diseases that remains a serious challenge in efforts to improve public health in Indonesia. Based on data from the Ministry of Health of the Republic of Indonesia, Indonesia is ranked third in the world with the highest number of TB cases, after India and China. The high prevalence rate shows that handling TB requires serious attention from various sectors, including a more comprehensive approach to prevention and treatment (Samai et al., 2025).

Tuberculosis is caused by infection with the bacteria *Mycobacterium tuberculosis*. This bacteria spreads when someone inhales droplets of saliva when a TB sufferer coughs, talks, sneezes, laughs, or sings. Although TB is categorized as an infectious disease, it is not as contagious as colds and flu. However, there are several groups that are at high risk of contracting TB, namely people who live in dense and slum areas, health workers who treat TB sufferers, the elderly and children, drug users, people with advanced kidney disease, people with malnutrition and smokers (Ministry of Health of the Republic of Indonesia, 2024).

TB disease is a serious threat to human resource development, which requires deep attention from various parties. The death rate can increase if TB sufferers do not get proper treatment. This can trigger bigger problems, such as the emergence of Multidrug-Resistant TB (MDR-TB), which is a form of TB that is resistant to drugs. Without proper treatment, the incidence of TB can continue to increase, given the very high risk of transmission. It is estimated that a TB sufferer who is of productive age will lose an average of 3-4 months of work time, which has an impact on reducing the household's annual income by around 20-30%. In addition, TB also has social impacts, such as exclusion from society (Nurjannah, et al., 2022).

Tuberculosis is a disease that causes significant health problems. Based on data from the World Health Organization (WHO) in 2019, TB is the leading cause of global death. Globally, it is estimated that in 2018 there were around 10 million people (with a range of 9.0-11.1 million) suffering from TB, and this figure has shown stability in recent years. In the previous year, there were an estimated 10 million people with TB, including 5.8 million of them, consisting of 3.2 million women and 1 million children. Indonesia is ranked third as the country with the highest TB cases in the world, after India and China. The estimated number of TB sufferers in Indonesia at the end of 2019 reached around 845,000 people, an increase compared to around 842,000 people in 2018 (Pane, et al., 2024).

Tuberculosis is a significant health problem among college students. This disease is caused by infection with the bacteria *Mycobacterium tuberculosis* which can spread through the air. In Indonesia, the prevalence of TB among college students is quite worrying, especially in areas with limited access to health care. Research shows that students who live in dormitories or densely populated areas have a higher risk of being infected with TB. This is influenced by factors such as population density, poor ventilation, and minimal awareness of TB prevention among students (Diantara, et al., 2022).

The increase in TB cases can also be caused by a lack of knowledge. Universities are places where many students do activities. Students are among the most vulnerable groups to TB infection. Low levels of awareness about TB infection have the potential to cause stigma and discrimination against individuals at risk of contracting the disease. Conversely, those who lack knowledge or have negative attitudes towards the disease tend to avoid using inadequate health services and unsafe preventive measures. Therefore, it is important to understand the current level of knowledge about TB in various community groups, in order to help identify and understand the disease. In efforts to prevent tuberculosis, good knowledge and positive attitudes are important factors that must go hand in hand to prevent disease transmission. Students, as part of an educated society, play an important role in having the right knowledge about tuberculosis (Purba et al., 2024).

Universities, as an environment with high levels of student mobility, are one of the places that are vulnerable to the transmission of tuberculosis. Students, especially those living in dormitories or areas with high population density, are in a group that is more at risk of being infected with TB. Transmission of this disease can occur easily in places with intensive social interaction, such as on campus, classrooms, and dormitories. Therefore, it is important to highlight student groups as the main target in prevention efforts, so that they gain the right knowledge about TB and how to avoid it. In addition, environmental factors, such as poor ventilation and lack of awareness about prevention, can increase the potential for the spread of this disease in the university environment.

Research on knowledge, attitudes, and behavior of tuberculosis prevention among college students has been conducted in several regions in Indonesia, including West Java. The results of the study showed significant differences between students from health faculties and non-health faculties in terms of knowledge and attitudes towards TB. Students from health faculties tend to have a better understanding of the disease and are more proactive in implementing preventive measures. They are also more involved in TB prevention education and practices compared to non-health students, who may have less access to information or less attention to the importance of preventing this infectious disease. Therefore, it is important for universities to take a more inclusive approach to health education for all students, in order to create broader awareness of the importance of TB prevention among them.

Higher education is a place where there is a lot of student mobility. Students are one of the groups that are vulnerable to tuberculosis transmission. Research on knowledge, attitudes, and prevention of tuberculosis has been conducted in Indonesia, especially in West Java, involving students. The results of the study showed that health students had better knowledge and attitudes and were more involved in preventive behavior compared to non-health students (Sa'diah et al., 2023).

Tuberculosis not only has a negative impact on physical health, but also significantly affects the mental health of individuals, including students. The social stigma that is often

attached to a TB diagnosis can trigger various psychological disorders, such as anxiety, depression, and feelings of isolation. This pressure results in a decline in overall quality of life, which impacts students' ability to participate in academic and social activities. Students who experience stigma tend to withdraw from their social environment, which ultimately worsens their psychological condition.

To overcome these psychological impacts, integrated psychological and social support is needed. Universities have a strategic role in providing friendly and inclusive counseling services for students infected with TB. In addition, educational efforts to reduce social stigma in the academic environment are very important to create an environment that supports student recovery (Sarifuddin, 2023). With a holistic approach, students with TB can undergo better treatment, maintain their academic productivity, and re-interact positively with their community.

3.3 Efforts to implement health regulations in Indonesian universities in creating a healthy campus environment tuberculosis

Higher education institutions in Indonesia have a very important role in creating a healthy campus environment free from disease, including tuberculosis. This is in line with the opening of Law No. 12 of 2012 concerning Higher Education, which states that higher education institutions function to improve student education and literacy, so that they are smarter and more critical in dealing with various situations. This also includes public health efforts that must be integrated into the higher education curriculum to support improving the quality of life of students (Muslich, 2022).

In addition, Article 1 of the Regulation of the Minister of Education and Culture Number 3 of 2020 concerning National Standards for Higher Education explains that "National Standards for Higher Education are standard units that include National Education Standards, plus Research Standards, and Community Service Standards." Therefore, universities have an obligation to conduct outreach to students regarding various health issues, one of which is the prevention of tuberculosis, as part of community service. This outreach must also aim to embrace TB sufferers so that they are not discriminated against in the campus environment, in accordance with the principle of inclusivity in the objectives of the Tridharma of Higher Education. Through this outreach, it is hoped that students can become agents of change in preventing TB and increasing health awareness in the community. In addition, in terms of research and community service, each academic community can develop research for innovative solutions in campaigning for the prevention and reduction of stigma against TB.

Tuberculosis is still a public health problem that causes high morbidity, disability, social discrimination and mortality. Therefore, universities have a responsibility to contribute to TB control efforts, by involving the potential of the academic community. This is in line with the objectives of Article 1 of the Regulation of the Minister of Health of the Republic of Indonesia No. 67 of 2016 concerning Tuberculosis Control, that, "TB control is all health efforts that prioritize promotive and preventive aspects, without ignoring curative and rehabilitative aspects aimed at protecting public health physically and mentally, reducing morbidity, disability or death, discrimination, breaking transmission, preventing drug resistance and reducing the negative impacts caused by Tuberculosis. " Thus, Tuberculosis control must be carried out in an integrated, comprehensive and sustainable manner involving all parties, both government, private and community, especially students as part of society. TB control must be carried out comprehensively and involve all parties, including universities, which are one of the institutions with a large and dynamic population.

TB control in universities lies in the strategic role of universities as educational institutions that involve large and dynamic populations, so they have a high risk of spreading TB. This is because universities are a gathering place for thousands of students, lecturers, and staff with high mobility, so they have the potential to become TB transmission clusters. Minister of Health Regulation No. 67 of 2016 also regulates the importance of TB

screening for at-risk groups, which can be implemented in universities through routine health checks for students and staff, as well as study room facilities with good ventilation to minimize the spread of *Mycobacterium tuberculosis bacteria*. Therefore, universities must be cooperative in ensuring an environment that supports access to TB health services, by providing early detection services for TB such as sputum examinations or X-rays and referrals to health centers or hospitals if TB symptoms are indicated.

This problem must be addressed immediately, one effort that can be made is through a healthy campus program. A healthy campus is a systematic and comprehensive effort to realize higher education as an institution that integrates health as part of the culture of higher education, namely creating a safe and comfortable environment for the academic community. This goal then gave birth to a program for its implementation, through the Health Promoting University. The Health Promoting University is an initiative launched by the Indonesian Ministry of Health to create an educational environment that supports health and well-being in higher education. This concept aims to integrate health aspects into campus culture, create a healthy learning environment, and empower individuals to achieve their best potential. This program is in line with efforts to prevent the spread of tuberculosis in Higher Education in Indonesia (Ministry of Health of the Republic of Indonesia, 2019).

In addition, a healthy campus can be a place for research and community service that focuses on innovation in TB prevention and treatment. Academics can be involved in research that produces new solutions in campaigning for TB prevention, both through technology and through a more inclusive social approach, to reduce the stigma against TB sufferers. Through collaboration between the campus, government, and community, it is hoped that this program can accelerate TB control efforts in Indonesia.

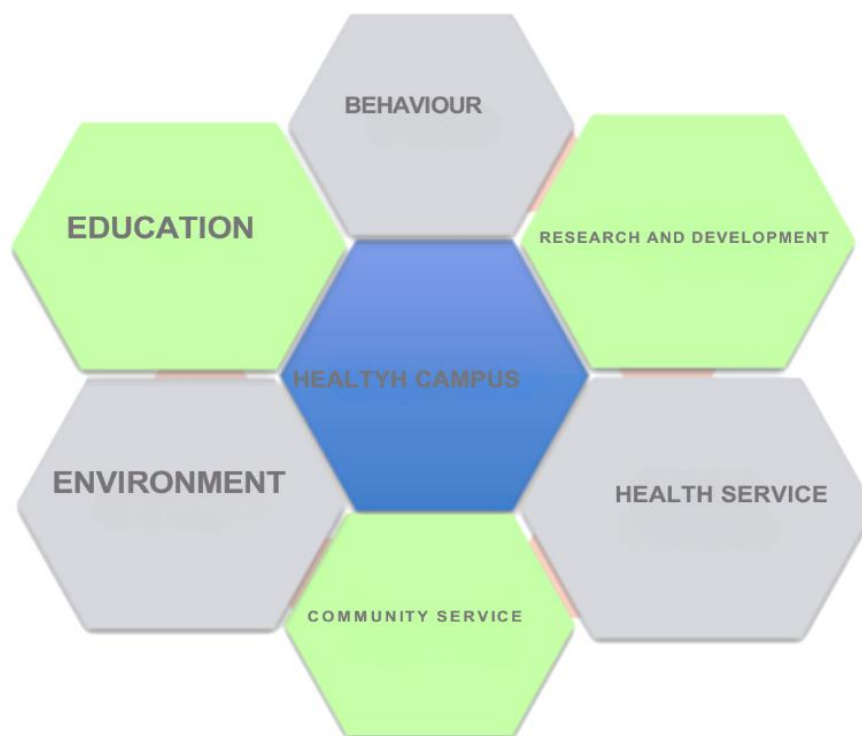


Fig. 1. Healthy campus concept
(Ministry of Health, 2019)

The concept of the Health Promoting University is to integrate the Tridharma of Higher Education with factors that influence public health that can be modified (Modified Factors). This concept is in line with the Regulation of the Minister of Health No. 67 of 2016 concerning the Control of Tuberculosis because it emphasizes the strategic role of universities in promoting health, including the prevention and control of TB. Through its implementation, a healthy campus can create an environment that supports healthy living

behavior. This program is a form of step in reducing the stigma against TB sufferers through educational and implementative approaches. The presence of this program is a solution for the prevention and control of Tuberculosis in Indonesian Universities in accordance with the guidelines for healthy campus management, namely as follows.

Table 1. A program for the prevention and control of tuberculosis

Effort	Environment	Community Behavior	Health services
Forming a community to prevent the transmission of tuberculosis in the campus environment	Improving Environmental Cleanliness, Environmental Awareness, and Reducing Disease Risks.	Healthy Behavior Change, Increased Health Awareness, and Community Engagement.	Improving Access to Health Services, Quality of Health Services, and Multisectoral Collaboration.
Conducting education/socialization about PHBS	Creating a Healthy Environment, Reducing Infectious Diseases, and Environmental Awareness.	Increasing Health Awareness, Adoption of Healthy Habits, and Active Participation in Public Health.	Improving Access to Health Services, Reducing the Burden of Health Services, and Improving the Quality of Health Services
Forming peer leaders and peer groups	Inspiring positive action in the community, Tuberculosis Promotion, and Community Strengthening.	Increased Social Engagement, Healthy Behavior Change, and Social Skills Development.	Increasing Access to Health Information, Emotional and Social Support, and Increasing Participation in Health Programs.
Conducting health checks on students in each faculty	Student awareness of health, Reducing the Spread of Disease, and Promoting a Healthy Lifestyle.	Increasing Personal Health Awareness, Health Behavior Change, and Social Support in Health.	Early Detection of Health Problems, Increasing Access to Health Services, and Centralized Health Data for Intervention.
Implementation of the "Zero Tolerance" area	Waste Reduction, Natural Resource Conservation, and Better Environmental Quality.	High Environmental Awareness, Healthy Behavior Changes, and Increased Social Participation	Disease Prevention, Access to Better Health Services, and Public Health Promotion.
Universities create policies that support TB prevention actions	Reducing the Risk of Disease Spread, Higher Environmental Awareness, and Promotion of Healthy Lifestyles.	Increasing Health Awareness, Healthy Behavior Change, and Involvement in Health Activities.	Early Detection of TB Cases, Access to Health Services, and Improving Cooperation with Health Institutions.

The concept above is an effort to prevent transmission and stigma against TB sufferers in the campus environment, so that many agents of change are motivated to form a Tuberculosis transmission prevention community. This community is present in the campus environment by involving students as a very strategic step. The formation of a Tuberculosis transmission prevention community has various significant positive impacts in efforts to improve public health. This community acts as an agent of change, in increasing public awareness of the dangers of TB, how to prevent it, and the importance of early detection. With the right education, they help reduce the spread of misinformation and erode the stigma against TB sufferers, so that they feel more accepted and supported in the treatment process. In addition, this community will provide emotional and social support for TB sufferers, which contributes to the success of treatment and prevents discontinuation

In addition, the formation of a community or cross-disciplinary officer unit can help collect health screening data that will later be published in a bulletin for further program evaluation. Education through seminars and counseling about TB in all faculties and universities in Indonesia also needs to be improved to create a health-conscious campus environment. Another effort is to provide easily accessible health access for all levels of society so that ODTBC can immediately receive treatment. This program also needs to be strengthened with community service, provision of educational content related to cough etiquette, and interventions based on interpersonal communication theory and planned behavior. Then, the implementation of public lectures on health and optimization of campus health services are expected to support the goal of a TB-free Indonesia that targets all campus elements (WHO, 2023).



Fig. 3. Hybrid focus group discussions (fgd) in national conference TB care youth summit on public health UNHAS at the faculty of public health, Universitas Hasanuddin

In efforts to prevent TB, the formation of a special task force in the campus environment is important. These officers can use social media to campaign for preventive measures, while also involving the surrounding community, including students living in boarding houses or dormitories. To ensure the effectiveness of the program, the implementation team must be audited annually and given special training to carry out promotive, preventive, curative, and rehabilitative efforts. Not only on campus, empowering communities outside campus through TB screening and treatment is also an integral part of this program (STPI, 2021).

The approach through peer leaders and peer groups has also proven effective in health promotion, especially in preventing infectious diseases such as TB. By involving peers as agents of change, health messages can be delivered more relevantly to target groups. Furthermore, conducting regular health checks for students in each faculty is a crucial step to maintain their health and create a healthy campus environment. This activity allows early detection of various health problems, including TB. The implementation of the "Zero Tolerance" area also plays an important role, where there is no tolerance for certain violations, including those related to health (Rambe, S. 2021). This concept can be applied to increase awareness of TB by setting boundaries for student behavior, such as smoke-free, alcohol-free, and drug-free areas. Finally, the university's initiative to formulate policies that support TB prevention is a positive step that is in line with global efforts to eradicate this disease and reduce stigma and discrimination in the campus environment. This certainly shows a commitment to overall campus health. A healthy campus must be optimized properly, so that more students can play a role in this prevention effort.

These efforts will certainly be supported by monitoring and evaluation efforts by a special team that has been formed by the University. Prevention of Tuberculosis transmission in the campus environment is very important because it can increase students' knowledge and awareness of this disease, including reducing stigmatization of TB sufferers. This can certainly provide social support to TB sufferers and their families, help them comply with treatment and undergo the recovery process better.



Fig. 4. Conducting health checks as an effort to prevent TB transmission in the campus environment

Campuses can also be more active in providing the necessary health facilities, such as TB screening, vaccination campaigns, and health education. Of course, the problem of TB in universities is a very urgent problem, considering that the growing globalization is starting to affect the quality of life of students, especially those who are away from home. Without any efforts by all parties, it will threaten the future of the nation. In its implementation, this program is integrated with counseling services to reduce stigma and discrimination against ODTBC (Aulia, 2024). Emotional support from the campus environment, both through counseling and educational campaigns, can help create an inclusive and conducive atmosphere for their recovery.

TB control in campus environments faces various challenges, from providing affordable health services to raising awareness among academics. Early detection through free health services is the first step that must be prioritized. Personal approaches such as counseling sessions or group discussions are also needed to overcome ignorance about TB and build awareness among students. Eliminating the negative stigma against ODTBC is the next challenge. An inclusive and supportive campus environment must be created to help TB sufferers feel accepted and comfortable. Educational campaigns that involve real stories of sufferers can also change public perception and instill empathy. Collaboration with relevant stakeholders is key to strengthening cross-sector partnerships. This includes joint funding, training, and implementation of more integrated and effective prevention activities (Ministry of Health, 2024). With coordinated joint efforts, the campus environment can be at the forefront of encouraging a TB-free Indonesia.

4. Conclusion

Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis* and is a major global health challenge, surpassing HIV and malaria as the cause of infectious deaths. Indonesia ranks second in the world for TB cases in 2022, with more than one million new cases and 134,000 deaths. This disease is spread through droplets and mainly attacks the

productive age group (15-50 years). Risk factors such as fatigue due to academic activities, smoking habits, and intense social interactions in the campus environment increase the vulnerability of students to TB infection. In addition, social stigma and discrimination experienced by TB sufferers in the campus environment exacerbate non-compliance with treatment, prolong the healing period, and potentially increase the risk of transmission. The survey showed that students have good knowledge about TB, but challenges such as stigma, discrimination, and non-adherence to treatment worsen the situation. Continuous education efforts and policies are needed to encourage community awareness and compliance in preventing the spread of TB.

Universities have an important role in supporting TB elimination through the Health Promoting University. Through the Health Promoting University, universities can integrate health into campus culture and raise student awareness of the importance of TB prevention. Education on *Clean and Healthy Living Behavior* (PHBS), the formation of prevention communities, and the implementation of the "Zero Tolerance" policy are important steps. By involving students in health promotion and early detection activities, universities can create an environment that supports health, reduces stigma, and helps handle TB more effectively. The Health Promoting University aims to improve health and TB knowledge among students, but still faces obstacles in implementation and support. Through cross-sector collaboration, such as government, universities, and communities, TB elimination can be more organized. Support in the form of routine health screening, increasing access to health services, and providing a learning environment that supports physical and mental health is needed. With this comprehensive approach, universities can reduce stigma and discrimination against TB sufferers, increase treatment compliance, and support Indonesia in achieving the target of TB elimination by 2030.

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Author Contribution

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Conflicts of Interest

The authors declare no conflict of interest.

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