



Student contribution to the healthy campus program for supporting tuberculosis elimination by 2030: A strategic approach to public health and environmental health awareness

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ABSTRACT

Background: Optimizing the role of students in supporting the elimination of Tuberculosis (TB) 2030 is a strategic step in achieving national health targets. The main problem faced is the high prevalence of TB in Indonesia, especially in the productive age group, which can hinder the development of the younger generation. **Method:** The purpose of this study is to analyze the contribution of students in the Healthy Campus Program to support TB elimination through an educational approach, socialization, and utilization of technology. The method used in this study is a literature study by reviewing various literature, scientific articles, and relevant program reports. **Findings:** The results of the discussion show that students have great potential as agents of change in educating the public regarding TB prevention, early detection, and treatment. The Healthy Campus Program is a strategic forum that allows students to play an active role, for example through independent screening activities using the SOBAT TB application, healthy living campaigns, and the formation of anti-TB volunteer groups. The use of social media and collaboration with health institutions also strengthen the role of students in disseminating health information. **Conclusion:** The conclusion of this study confirms that the active involvement of students in TB elimination can have a significant impact on creating a healthier campus environment that is responsive to health issues. **Novelty/Originality of this Study:** This study offers an innovative approach by integrating the role of students as agents of change through the Healthy Campus program that utilizes the SOBAT TB application for self-screening, health education, and social media campaigns, creating a technology-based active participation model in supporting Tuberculosis elimination.

KEYWORDS: students, tuberculosis, healthy campus, elimination 2030.

1. Introduction

Tuberculosis (TB) is an infectious disease caused by the bacteria *Mycobacterium tuberculosis*. This germ usually attacks the lungs, but can also spread to other organs and tissues of the body. TB transmission occurs when a sufferer coughs, sneezes, talks, or spits, spreading the bacteria into the air which can then be inhaled by others. After entering the body through breathing, the bacteria can spread from the lungs to other parts of the body through the circulatory system, lymphatic system, respiratory tract, or through direct spread to other tissues (Breakmans et al., 2023). Socially and psychologically, TB sufferers often feel inferior to interact, have difficulty working optimally, become a burden on their

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families, and face negative stigma from society. The lack of public understanding about TB also strengthens this stigma, making it difficult to eliminate (Chomaerah, 2020; Yulanda et al., 2020). From an economic perspective, TB sufferers often lose income because they cannot work for a certain period of time. According to the WHO Tuberculosis Report 2023, there is an increase in the number of TB cases globally, with an estimated 10.6 million people suffering from TB in 2022, up from 10.3 million in 2021 and 10.0 million in 2020. Approximately 87% of the world's total TB cases are found in 30 countries with a high TB burden, mainly in India (27%), Indonesia (10%), and China (7.1%). In 2022, WHO reported 7.5 million new cases of TB diagnosed, the highest number since global monitoring began in 1995, indicating a significant recovery from the negative impact of the COVID-19 pandemic. Meanwhile, the number of deaths from TB globally is estimated to reach 1.3 million in 2022, down from 1.4 million in 2020 and 2021 (World Health Organization, 2023).

Tuberculosis (TB) remains a major public health challenge, with efforts to control the disease being hindered by multiple factors. One of the primary challenges in combating TB is the delay in diagnosis and treatment, particularly in low-resource settings. Many individuals, especially in rural or underserved communities, may not have access to timely medical care or diagnostic tools. As a result, TB can spread undetected for extended periods, increasing the risk of transmission. Moreover, the development of drug-resistant strains of *Mycobacterium tuberculosis*, such as multidrug-resistant (MDR) and extensively drug-resistant (XDR) TB, has further complicated efforts to treat the disease. These forms of TB require longer, more complex treatment regimens, which can be difficult to adhere to, leading to treatment failures and the emergence of even more resistant strains (Madona, 2023).

Efforts to control TB require a comprehensive approach that includes improving public awareness, enhancing diagnostic capabilities, and ensuring access to effective treatment. Public health campaigns that address misconceptions and stigma surrounding TB are crucial to reducing discrimination against those affected by the disease. Additionally, strengthening healthcare systems, increasing funding for TB research, and promoting global partnerships are essential for achieving the World Health Organization's goal of ending the TB epidemic by 2035. This involves not only addressing the medical aspects of TB but also considering its social determinants, such as poverty, malnutrition, and inadequate living conditions, which contribute to the spread of the disease (Smith et al., 2023).

The increase in Tuberculosis (TB) cases has encouraged the Indonesian government to make efforts to overcome it through the TB Prevention and Control (P2TB) program. This P2TB program involves various health efforts that emphasize aspects of promotion and prevention, but still consider aspects of treatment and rehabilitation. The purpose of this program is to protect public health, reduce morbidity, disability, and mortality, stop transmission, prevent drug resistance, and reduce the negative impacts of TB (Ministry of Health of the Republic of Indonesia, 2020). According to Minister of Health Regulation Number 67 of 2016, there are several main indicators to evaluate the success of the national TB control strategy at the Regency/City, Province, and Central levels, namely (Yurianto, 2020): coverage of treatment of all TB cases (case detection rate/CDR) treated; notification rate of all TB cases (case notification rate/CNR) treated per 100,000 population; percentage of successful treatment in all TB patients; coverage of detection of drug-resistant TB cases; percentage of successful treatment of drug-resistant TB patients; and percentage of TB patients who know their HIV status. The main strategy in the DOTS program focuses on case finding and patient healing, especially for patients with infectious TB (Franzidis & Zinder, 2017).

In order to achieve the elimination of Tuberculosis (TB) by 2030, the Indonesian Ministry of Health is transforming the health system by focusing on six aspects, namely primary services, referral services, health resilience, health financing, human resources (HR), and health technology. One of the priorities is secondary prevention through screening for major diseases that cause death in each age group, such as TB, HIV, and malaria, as well as increasing control of infectious and non-infectious diseases (Cowley et

al., 2024). The Healthy Living Community Movement (GERMAS) has also been strengthened to encourage a healthy lifestyle. The Ministry of Health is working with universities in Indonesia to develop the Healthy Campus Program and Health Promoting University (HPU), an initiative that creates a healthy learning environment on campus, supports community welfare, and empowers students as agents of change in health promotion and disease prevention (Fitriangga, 2020).

The Healthy Campus Program is implemented in several universities, including those launched by the Yogyakarta Health Office in 2021 on campuses such as the Ministry of Health Polytechnic of Health, Ahmad Dahlan University (UAD), Respati University of Yogyakarta (UNRIYO), Islamic University of Indonesia (UII), and Muhammadiyah University of Yogyakarta (UMY). This program also supports the achievement of national targets related to TB prevention as stated in Presidential Regulation Number 67 of 2021 (Adima et al., 2020). On September 30, 2022, the TB-Free Healthy Campus was launched online, followed by socialization and education with the theme "Recognize TB, Early Detection, and Accelerate Elimination," with the kick-off of independent TB screening using the SOBAT TB application (Dewi, 2023).

In this campaign, 1,499 campus community members in DIY conducted independent screening with the results that 1,348 people were declared not suspected TB, 141 suspected TB, and 10 suspected Drug-Resistant TB (RO). The follow-up process for suspected cases is regulated through coordination with the local Health Office and Health Center. By carrying the slogan "Healthy Campus Community, Free of TB, Supporting TB Elimination 2030," this movement is expected to be continued and expanded to various sectors to accelerate TB elimination, in line with the mission of "Find, Treat, Until Cured" (TOSS TB) for a healthier Indonesian society (Sari & Rachmawati, 2019).

The purpose of this study was to identify and analyze the form of student contribution in the Healthy Campus Program as an effort to support the elimination of Tuberculosis (TB) in 2030. This study focuses on the role of students as agents of change in increasing awareness, education, and early detection of TB in the campus environment and surrounding communities. In addition, this study aims to evaluate the effectiveness of strategies used by students in supporting government programs related to TB elimination, as well as provide recommendations for optimizing the role of students in achieving the national TB elimination target.

2. Methods

This study uses a literature study method, an approach that involves collecting and analyzing data from various written sources that are relevant to the research topic. The sources used include scientific journals, books, government program reports, and articles published in credible media. Literature searches were conducted using keywords such as "the role of students in eliminating tuberculosis," "Healthy Campus," and "TB elimination strategy 2030" through online databases such as PubMed, Google Scholar, and national research portals. The main focus of this study is to identify and analyze the various strategic roles of students in supporting TB elimination based on findings and best practices that have been applied in various contexts. The analysis process was carried out through a descriptive-qualitative approach, by comparing and evaluating information from various sources to gain a comprehensive understanding of the topic discussed. Each data obtained is grouped by theme, such as community education, utilization of technology, and institutional collaboration. The results of this analysis are then used as a basis for formulating applicable recommendations for strengthening the role of students in eliminating TB. This literature study method was chosen because it allows researchers to explore a wide range of literature efficiently and gain in-depth insights without the limitations of geographical location or direct research costs.

Additionally, this study emphasizes the importance of student involvement in TB elimination as part of a broader public health strategy. Students, as part of the younger and often more tech-savvy population, have the potential to leverage their knowledge, energy,

and networks to raise awareness and drive community-based interventions. They can play a crucial role in spreading accurate information about TB prevention, encouraging early detection, and promoting treatment adherence among their peers and local communities. Furthermore, students can collaborate with healthcare providers, government agencies, and non-governmental organizations to implement targeted campaigns and initiatives that align with the "Healthy Campus" concept, fostering environments that prioritize health and well-being. By examining successful case studies and interventions where students have made significant contributions, this study aims to highlight best practices that can be adapted and scaled to support the global effort to eliminate TB by 2030.

3. Results and Discussion

Students play an important role as drivers of education and socialization in supporting efforts to eliminate Tuberculosis (TB) by 2030. With their deep understanding and creativity, students can convey information related to TB in an interesting and effective way. This education can be done through various methods such as seminars, group discussions, and campaigns on social media. The information conveyed includes what TB is, how it is transmitted, symptoms to watch out for, and preventive measures that must be taken. Technology-based campaigns are also one approach that students can use (Van Leth et al., 2009). Making short videos, infographics, and informative articles on social media has been proven to be able to reach a wider audience. In addition, students can collaborate with campus organizations or Student Activity Units (UKM) to organize activities aimed at raising awareness of the dangers of TB and the importance of early detection. A creative informal approach also allows students to reach young age groups, who are the strategic target population in public health campaigns (Dharma, 2024).

In addition to education and awareness campaigns, students can actively engage in advocacy efforts to influence policy decisions related to TB elimination. Through campus-based lobbying, petitioning, and participating in relevant public health discussions, students can encourage the government and local authorities to allocate more resources for TB prevention and treatment. This could include advocating for increased funding for diagnostic tools, medicines, and outreach programs (Joshi et al., 2006). By actively participating in policy discussions, students can help bridge the gap between communities affected by TB and policymakers, ensuring that the concerns of vulnerable populations are addressed. Their voices can amplify the urgency of TB elimination as a public health priority, pushing for stronger government action on both local and national levels (Song & Zhang, 2022).



Fig. 1. Community service: TB education and ptm screening

Another key role for students in TB elimination is promoting early detection and treatment adherence. As trusted figures in their communities, students can encourage individuals to seek medical help if they experience symptoms of TB, especially in remote or underserved areas where access to healthcare might be limited. Students can organize free health screenings or partner with local healthcare providers to facilitate regular TB check-ups (Zhang et al., 2020). By creating an environment where individuals feel comfortable seeking medical assistance and talking about TB, students contribute to early intervention, which is critical in reducing the spread of the disease. Encouraging people to complete their full course of treatment and adhere to medication schedules can prevent the development of drug-resistant TB, ensuring better long-term outcomes for those affected (Purdin, 2024).

Furthermore, students have the ability to conduct research and contribute to the ongoing scientific understanding of TB. By taking part in research projects, internships, or collaborations with academic institutions and health organizations, students can contribute valuable insights into TB transmission, prevention strategies, and treatment innovations. Through research, students can help develop new approaches to addressing TB, from improved diagnostic methods to better educational materials tailored to specific populations. Their involvement in research provides a fresh perspective that can help shape the future of TB elimination efforts (Trisnowati et al., 2024; Marissa et al., 2024). As part of the global fight against TB, students' contributions to the scientific community can lead to innovative solutions that make a lasting impact on TB control worldwide.

Students can also engage in peer-to-peer education, where they serve as educators for their friends, family, and community members. Peer education has been proven to be an effective tool for increasing awareness and changing behaviours, particularly among young people. Students can take advantage of their positions within peer groups to normalize conversations around TB, reduce stigma, and encourage others to adopt healthy behaviours. By creating safe spaces for these discussions, students help demystify TB, making it easier for individuals to seek help without fear of judgment (Anshar et al., 2023). Peer education programs can be implemented through campus clubs, dormitories, or social media groups, where students can exchange knowledge, share personal experiences, and promote TB-related health messages in a non-threatening and relatable manner.

Another significant aspect of students' involvement in TB elimination is through their participation in community-based outreach programs. Students can organize health fairs, street campaigns, and community meetings to directly engage with the public and disseminate essential TB information. These initiatives provide an opportunity to interact with people who may not have easy access to traditional healthcare services or public health campaigns. Students can also utilize local radio stations, community centres, and public spaces to host events that raise awareness about TB (UNICEF, 2022). In rural or isolated areas, students can play a vital role in reaching out to marginalized populations who may not have the same access to health education as urban residents. These community-based programs are instrumental in creating a more informed and proactive society, equipped to prevent and manage TB effectively (Indarto et al., 2020).

Media and communication advocacy is a strategic effort carried out through mass media to support various community-based efforts that focus on advancing social justice and public health campaigns, as well as contributing to the creation of effective news in conveying relevant social policy issues. The media has the power to rally support and shape public opinion, to influence the processes that occur in policy-making institutions. This power places the media in a strategic position in society and the state. The voice and interests of the community can be conveyed through the media, while policies made by the state can be known and controlled through the media. The mechanisms carried out by students in media and communication advocacy are making educational videos and posters, making policy briefs and visiting print media and publication media to follow up on this activity. The output of the media and communication advocacy activity is the successful publication of educational videos and posters about TB information to each student's social media as an effective socialization effort. This activity also succeeded in attracting public

attention so that it could increase public awareness about TB. This review, from a journalistic point of view, highlights how students are intelligently utilizing mass media to drive positive changes in society and improve health. This approach is in line with the principles of Health Communication, which sees communication as an important tool to improve health, prevent disease, and improve quality of life (Schiavo, 2013). The production of educational videos and posters by students is an effective example of health communication, as it can convey complex information in an easy-to-digest visual format.

The use of social media as the main channel for disseminating educational information is also relevant to the current development of digital communication. Social media offers a wide reach, affordable cost, and the opportunity to interact directly with the public. However, it is important to remember that the effectiveness of a social media campaign is not only measured by the number of likes or shares, but also by the quality of the content, target audience, and promotional strategies implemented. In addition, the preparation of policy briefs and visits to print media and publications show students' efforts to communicate with policymakers and form public opinion on TB. A concise and informative policy brief can help decision-makers understand crucial issues related to TB and find data-driven solutions. Interaction with print and publication media can help students build relationships with journalists and gain wider coverage of their activities. The success of the publication of educational videos and posters about TB on student social media, as well as the increasing public attention to the issue, shows that media advocacy and communication carried out by students have great potential in increasing public awareness and encouraging policy change. However, to ensure sustainability and long-term impact, a systematic evaluation of the effectiveness of media campaigns, as well as ongoing support from universities, governments, and non-governmental organizations is required.

Lastly, the role of students extends to promoting the integration of TB elimination efforts into broader public health initiatives. As global health ambassadors, students can encourage a holistic approach that combines TB prevention with efforts to address other diseases such as HIV/AIDS, malnutrition, and respiratory infections. By emphasizing the interconnectedness of public health issues, students can advocate for comprehensive programs that tackle TB alongside other health challenges (Meier et al., 2007). This approach ensures that TB elimination is not treated as an isolated issue but as part of a wider framework aimed at improving overall health outcomes. Additionally, students can help raise awareness about the importance of vaccination and strengthening healthcare systems, both of which play essential roles in preventing the spread of TB and other infectious diseases. Their advocacy can contribute to creating stronger, more resilient public health infrastructures globally (Dai et al., 2024).

One example of the success of the education program is the collaboration of University of Indonesia students with the local Health Office to hold a seminar on TB. In this seminar, students are given the opportunity to become facilitators and deliver materials to participants consisting of other students and the community around the campus. This program not only provides education to participants, but also trains students to become competent agents of change in public health issues (Atuyambe et al., 2016).

This collaboration between the University of Indonesia students and the local Health Office is a strong example of how educational programs can be designed to benefit both students and the wider community. By positioning students as facilitators, the program not only empowers them with public speaking and leadership skills but also reinforces the importance of active involvement in health initiatives. Students are given the platform to research, design, and deliver content on TB, allowing them to deepen their understanding of the disease while simultaneously equipping them with practical skills for future professional endeavours. This experiential learning approach helps students develop a sense of ownership and responsibility for promoting health within their communities, which can have a lasting impact on their personal and professional lives (Stover et al., 2016).

Furthermore, the seminar's success lies in its ability to bridge the gap between the academic world and the community. By involving both university students and local residents, the program creates an inclusive space where knowledge and perspectives can be

shared. This exchange is particularly important in addressing public health issues like TB, where misinformation and stigma are prevalent. Students act as trusted figures in their communities, and their participation as facilitators helps to establish credibility and relatability (Tam & Lai, 2019). As a result, the message about TB prevention, symptoms, and treatment adherence reaches a wider audience, making it more likely that individuals will take proactive steps to safeguard their health.

In addition to education, this program fosters collaboration between academic institutions and public health authorities. The partnership between the University of Indonesia and the local Health Office creates an avenue for both parties to work together in addressing health challenges within the community. The local Health Office gains access to a group of motivated students who can amplify their public health messages, while the university students benefit from real-world experience in designing and executing health initiatives (Jiang et al., 2017). This synergy between academia and public health agencies is essential in creating sustainable programs that contribute to long-term health improvements in the community.

The seminar also serves as a platform for students to engage in problem-solving and critical thinking. Students are encouraged to not only disseminate information but also to assess the specific needs and challenges faced by the local community in relation to TB. By conducting surveys, engaging in discussions, and gathering feedback from participants, students can tailor their messages and interventions to the unique circumstances of the community. This participatory approach ensures that the seminar is not just a one-size-fits-all presentation but a dynamic and responsive event that actively addresses the concerns of attendees. It also allows students to learn how to adapt their communication strategies based on the audience's level of understanding and cultural context.

Moreover, the program's emphasis on peer-to-peer education strengthens its impact. Students, who are often more relatable to their peers and community members, are in a prime position to challenge stigmas surrounding TB and promote positive health behaviours. The informal, accessible nature of the seminar allows students to present TB information in a way that resonates with others, breaking down barriers to understanding. This peer-led approach is especially effective in reaching younger populations, who may feel more comfortable learning from their contemporaries than from health professionals or older generations. Through relatable anecdotes, engaging discussions, and interactive activities, students can create a space where attendees feel encouraged to ask questions, share experiences, and take action toward preventing and managing TB.

The success of this seminar highlights the importance of integrating TB education into broader public health initiatives. As part of a larger campaign to eliminate TB, such educational programs should be seen as essential components of a comprehensive strategy that involves awareness raising, prevention, early detection, and treatment adherence. By engaging university students in these efforts, we not only enhance the effectiveness of public health messaging but also build a network of future health advocates who will carry forward the knowledge and skills gained through these programs. As these students graduate and enter the workforce, they will continue to serve as valuable assets in the fight against TB, ensuring that public health remains a priority throughout their professional careers.

Additionally, the program has the potential to inspire similar initiatives at other universities and institutions across the country. The success of this seminar can serve as a model for other higher education institutions looking to make a tangible impact in their communities. By replicating the program's structure, other universities can collaborate with local health offices to create their own TB education campaigns. This grassroots approach, driven by students and supported by public health professionals, can become a powerful tool for spreading awareness about TB on a national scale. If scaled effectively, this model could contribute significantly to achieving the World Health Organization's goal of eliminating TB by 2030, one community at a time.

One important initiative that students can support is the use of the SOBAT TB application, a technological tool developed to facilitate the TB self-screening process. Students can act as health ambassadors who promote this application in the campus

environment. They can help their friends understand how to use the application and the importance of early detection in preventing the spread of TB. The use of the SOBAT TB application allows students to recognize early symptoms of TB, such as prolonged coughing, fever, and weight loss. If the screening results indicate the possibility of TB, students can provide directions to immediately consult the nearest health facility. In addition, students can hold training on the use of this application in healthy campus activities, so that more individuals are involved in the early detection process (Mugerwa et al., 2013).

An example of the implementation of this application can be seen in a program initiated by the Makassar Ministry of Health Polytechnic. In this program, students are involved as facilitators to introduce the SOBAT TB application to the campus community and the surrounding area. They not only help with the installation and use of the application, but also provide education about the importance of early detection and proper treatment for TB. As a result, the level of public awareness of TB has increased significantly.

Another impactful way students can support the use of the SOBAT TB application is by integrating it into campus health campaigns and peer-to-peer education programs. By organizing workshops, seminars, and interactive sessions, students can create a supportive environment that encourages open discussions about TB prevention and early detection. For example, student organizations can collaborate with health experts to provide deeper insights into TB management while simultaneously demonstrating the practical use of the application. These activities not only enhance awareness but also foster a culture of health consciousness within the campus community. Through such collective efforts, students can amplify the reach and impact of the SOBAT TB application, ensuring that its benefits extend beyond the campus to the broader community.

TB prevention requires fundamental behavioral changes in society, especially in implementing a healthy lifestyle. Students can be pioneers in the healthy living campaign through the Healthy Campus program. This campaign includes promoting habits such as proper coughing etiquette, maintaining air ventilation in public spaces, and maintaining environmental cleanliness. In its implementation, students can work together with the campus to provide facilities that support a healthy lifestyle, such as handwashing facilities on campus, promoting the consumption of nutritious food, and providing green open spaces. These programs are not only beneficial for TB prevention but also improve the overall quality of life.

The formation of anti-TB volunteer groups on campus can be a strategic step to increase student involvement in the TB elimination program. This group can be tasked with various activities such as counseling, patient assistance, and organizing mass screening activities. With the existence of volunteer groups, the campus can create an organized system to address TB problems comprehensively. Volunteer groups also play an important role in reducing the social stigma against TB sufferers. This stigma is often a barrier for individuals to undergo treatment. Through an empathetic approach, students can help TB patients feel supported and not isolated, so they are more motivated to complete their treatment.

To further strengthen the impact of these initiatives, collaboration with external stakeholders such as local health authorities, non-governmental organizations, and community health centres can be established. Students can act as intermediaries to bridge campus activities with broader public health campaigns, ensuring a unified and coordinated effort in TB prevention. For instance, students can organize joint events such as public seminars, health fairs, and community outreach programs that emphasize the importance of TB awareness and healthy lifestyle practices. By involving diverse stakeholders, these activities can gain wider reach and impact, fostering a community-wide commitment to eradicating TB and creating a healthier society.

Collaboration between students and health institutions is an important element in supporting TB elimination. Students can work with the Health Office, community health centers, or non-governmental organizations working in the health sector to run programs such as mass screening, health education, and patient assistance. For example, in Makassar, the Laboratory Community Serves Indonesia involves students from various universities in a community service program. This program includes education about TB, free health

checks, and socialization of the importance of TB treatment until complete. Through this collaboration, students not only gain field experience but also strengthen the network of inter-sectoral cooperation that supports the success of the TB elimination program.

Students also have a role in encouraging the creation of health policies on campus that support TB prevention. This advocacy includes efforts to increase access to health services, provide facilities that support a healthy lifestyle, and carry out routine health education. For example, students can propose the provision of handwashing facilities in various corners of the campus, provide good ventilation in classrooms, or a sick leave program for students infected with TB to prevent transmission. With supportive policies, the campus environment can become a healthier and safer place for all its residents. In addition, students can collaborate with campus administrators to establish a health monitoring system that includes periodic TB screening and follow-up programs for early detection and treatment. This system can involve regular health check-up campaigns, where students actively participate in organizing and promoting these initiatives. By integrating health policies into the campus's strategic plan, such as making TB education part of student orientation or embedding health promotion into academic activities, the campus community can collectively prioritize health. This proactive approach not only strengthens TB prevention efforts but also builds a culture of care and responsibility among students, faculty, and staff.

Social media is a very effective tool for disseminating health information, especially among the younger generation. Students can use this platform to create educational content about TB, such as articles, videos, or infographics. With the right digital marketing strategy, information about TB can reach more people and significantly increase public awareness. For example, a student community in Yogyakarta created a social media campaign entitled "Stop TB Now". This campaign contains information about how to prevent TB, the importance of early detection, and proper treatment. By using the hashtag #StopTBNow, the campaign managed to attract the attention of thousands of social media users in a short time.

Students from various disciplines can contribute to health research on TB. This research includes studies on the effectiveness of the healthy campus program, factors that influence student awareness of TB, and obstacles in the treatment process. The results of this research can be the basis for more effective health policies in the future. For example, students from the Faculty of Public Health in Surabaya conducted research on the level of student awareness of the SOBAT TB application. The results of this study showed that although this application is very useful, many students are still unaware of its existence. Recommendations from this study were used to design a more effective application marketing campaign on campus.

Students can also collaborate with influencers or public figures who have a strong presence on social media to further strengthen the TB prevention message. This collaboration can take the form of live sessions discussing TB awareness, sharing personal stories of people who have battled TB, or promoting campaigns such as #StopTBNow. By taking advantage of the popularity of influencers, the messages conveyed can be more effectively received by the younger generation, making it easier to remove stigma and encourage proactive behavior in seeking health services. TB patients who have self-stigma tend to have thoughts and feelings of fear of being judged by others as well as feelings of shame and guilt towards themselves. If not overcome, self-stigma can cause isolation from the social environment, patient non-compliance with treatment, and often drop out of treatment. It needs to be understood that TB can be cured through routine complete treatment. However, stigma and discrimination among TB patients can be an obstacle for them to undergo treatment. So, it is our role to support those who are infected, so that they can undergo treatment until completion without any stigma and discrimination. By creating interactive content such as quizzes, polls and contests related to TB knowledge, it becomes an interesting way to educate and engage social media users.

In the academic sphere, students can work alongside lecturers and researchers to produce innovative tools and methodologies for TB awareness and prevention. For instance, students from the Faculty of Computer Science might develop mobile apps or gamification

platforms that educate users on TB symptoms, prevention, and treatment. Such tools can be integrated with existing applications like SOBAT TB, making the screening process more engaging and user-friendly. Collaboration across disciplines fosters a holistic approach to combating TB, ensuring that medical, technological, and behavioural aspects are all addressed.

Organizing community outreach programs is another impactful way for students to contribute. They can conduct door-to-door campaigns in neighbourhoods surrounding the campus, providing free TB screening and educational materials. These outreach programs can target vulnerable populations who may have limited access to health information or facilities. Partnering with local health centres or government initiatives can enhance the reach and effectiveness of these efforts. By building trust and rapport with the community, students can serve as vital connectors between healthcare systems and the public. Students can also participate in advocacy efforts at the regional or national level. By joining health-focused student organizations, they can collaborate with NGOs and public health agencies to push for broader TB eradication programs. For example, students can contribute to drafting proposals for increased funding for TB research or improved healthcare infrastructure. Through dialogue with policymakers, they can help highlight the importance of TB prevention initiatives and advocate for prioritizing such programs in government budgets.

Furthermore, educational institutions can provide platforms for students to voice their ideas and innovations in combating TB. Hosting TB awareness competitions, hackathons, or seminars can stimulate creative solutions among students. For instance, a university-wide competition to design the most impactful TB awareness campaign could yield fresh ideas that can be implemented both on campus and in the wider community. Such initiatives not only encourage student participation but also foster a sense of ownership and responsibility toward public health issues. Volunteer groups on campus can expand their activities by organizing peer education programs. These programs train student volunteers to educate their peers about TB prevention, diagnosis, and treatment. Peer education is particularly effective because it leverages the influence of social networks and ensures that the information is conveyed in a relatable and approachable manner. By creating a network of well-informed students, the campus can develop a sustainable system for ongoing TB awareness efforts.

Lastly, international collaborations can bring fresh perspectives and resources to TB prevention initiatives. Students can connect with global health organizations or participate in exchange programs that focus on public health challenges. Learning from successful TB eradication campaigns in other countries can inspire new approaches and strengthen local strategies. For example, students can adapt strategies from regions with high TB success rates and tailor them to fit the cultural and social context of their own communities. Such collaborations not only enrich students' knowledge but also contribute to the global fight against TB.

4. Conclusions

The contribution of students in a healthy campus shows that their active involvement has a significant impact on campus residents and the surrounding area. Students who are involved in education and socialization about tb not only play a role in reducing the stigma of this disease, but also help build a campus environment that is more caring and responsive to health issues. As the younger generation, their ability to adapt to technology and disseminate information quickly is a distinct advantage in supporting tb elimination.

The role of students in this program, from health promotion to involvement in early detection, reflects their commitment to realizing the vision of a healthy campus free of tb while helping indonesia achieve the target of eliminating tb by 2030. As a suggestion, in order for this program to be more effective, the campus together with the local health office should hold regular training for students about tb and public health, facilitate easier access to screening and treatment, and expand the network of cooperation with health

organizations. This collaboration will strengthen the role of students as agents of change and increase the success of tb elimination efforts in the campus environment and its surroundings.

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Author Contribution

This research was conducted by E. E was responsible for the conceptualization, methodology, data collection, analysis, and drafting of the manuscript. Then, Elfiani also contributed through critical review, manuscript editing, and supervision throughout the research process.

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The authors declare no conflict of interest.

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