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Documentation and Reporting of Tuberculosis Cases at Primary Health Center (Puskesmas) in Palembang

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ABSTRACT

The government of Indonesia employs the DOTS (Directly Observed Treatment Short Course) strategy to manage tuberculosis (TB), emphasizing case recording and reporting. To streamline this process, the SITB (Tuberculosis Information System) application was introduced. This study investigates the recording and reporting practices for TB cases at Puskesmas (community health centers) in Palembang and explores the challenges faced by healthcare workers. Using a non-experimental descriptive design, data were collected via questionnaires and in-depth interviews from staff at 18 Puskesmas. The findings highlight that while SITB aids TB data management, challenges such as technical issues (internet connectivity and application difficulties) and non-technical barriers (increased workload and limited training) hinder optimal functionality. Recommendations include improved internet access, enhanced technical support, and additional training for staff to maximize the potential of SITB in TB case management.

Keywords: TB Recording, Reporting, SITB, Puskesmas, Tuberculosis

INTRODUCTION

Tuberculosis (TB) continues to be a major public health issue globally, particularly in low- and middle-income countries such as Indonesia. According to the World Health Organization (WHO), Indonesia is one of the 10 countries with the highest TB burden, with an estimated 845,000 cases of TB in 2020, including both new and relapse cases (WHO, 2021). Despite a steady decline in global TB rates, Indonesia still struggles with high incidence and mortality rates, highlighting the urgent need for improved TB control strategies.

To address this challenge, the Indonesian government has implemented the Directly Observed Treatment Short-course (DOTS) strategy, which emphasizes supervised treatment, regular case detection, and comprehensive reporting systems. The SITB application was developed to improve the efficiency of TB case recording and reporting across healthcare facilities. However, issues such as limited internet access, the complexity of data entry, and inadequate training persist, limiting the application's full potential (Abdullah et al., 2021; Suciono et al., 2019). The introduction of the Tuberculosis Information System (SITB) aims to streamline the recording and reporting of TB cases across healthcare facilities (Kemenkes RI, 2020). However, while SITB has shown promise, its implementation faces several challenges, including issues with infrastructure, internet connectivity, and training of healthcare workers, which limit its effectiveness at community health centers (Puskesmas) (Restipa & Suci, 2022; Stop TB Partnership, 2021).

This study aims to assess the practices of TB case recording and reporting at Puskesmas in Palembang, identifying the technical and non-technical barriers faced by healthcare workers. By identifying these barriers, the study seeks to propose solutions to optimize the use of SITB and improve TB management in Indonesia.

METHODS

Participants

The study's participants consisted of healthcare workers involved in the TB management process, specifically those responsible for TB case recording and reporting. A total of 36 respondents were selected from the 18

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Puskesmas, ensuring that all relevant healthcare workers engaged in TB case management at these sites were included and representative in the city. The sample was selected using a purposive sampling method to ensure that participants had direct experience and knowledge of TB management processes. The respondents included doctors, nurses, and laboratory staff working in TB services. Palembang is the largest city in one of the provinces of Indonesia.

Data Collection

Data were gathered through a combination of questionnaires and in-depth interviews. The questionnaires were designed to capture quantitative data on the healthcare workers' knowledge, perceptions, and experiences regarding the use of the Tuberculosis Information System (SITB) for case recording and reporting. The in-depth interviews aimed to provide qualitative insights into the challenges and barriers faced by healthcare workers in using SITB effectively.

The questionnaires were pre-tested to ensure clarity and reliability, and the interviews followed a semi-structured format to allow flexibility in exploring key issues. Both the questionnaires and interview guides were developed based on a review of existing literature and consultation with TB management experts.

Data Analysis

Quantitative data collected through the questionnaires were analyzed using descriptive statistics to summarize the frequency and distribution of responses. Qualitative data from the interviews were transcribed and analyzed thematically to identify common patterns and issues related to TB case reporting and the use of SITB. Quantitative data were analyzed using descriptive statistics to summarize the frequency of responses. No inferential statistics were applied due to the exploratory nature of the study. For qualitative data, thematic analysis was conducted by coding interview transcripts and grouping similar codes into overarching themes. These themes were reviewed and refined to ensure accurate representation of the participants' experiences

This methodology allowed for a comprehensive understanding of the practices and barriers in TB case management at Puskesmas in Palembang, providing valuable insights that could inform improvements in the use of SITB in Indonesia's TB control efforts.

RESULTS

The study on the use of the Tuberculosis Information System (SITB) at 18 Puskesmas in Palembang revealed several important findings regarding TB case recording and reporting practices. Among the 36 healthcare workers surveyed, 70% reported being familiar with the SITB system. However, only 45% used it regularly for recording and reporting TB cases. A variety of factors contributed to this low usage rate, with technical and non-technical challenges being identified. All respondents were female, regarding to availability of worker mostly female, with 83.3% aged between 20–45 years. Most were nurses (83.3%), and 88.9% held a D3 diploma, while two respondents had S1 degrees in nursing. Despite being the primary personnel for TB programs, gaps in professional training were evident, with 17 of 18 respondents having attended at least one SITB training.

Technical issues were the most commonly reported barrier. Approximately 55% of respondents indicated that poor internet connectivity was a significant obstacle to effectively using the SITB system. Other technical difficulties included system glitches and delays in data synchronization, which further hindered the process of accurate and timely reporting. These findings are consistent with previous studies that emphasize the importance of reliable infrastructure for the successful implementation of digital health systems (Kemenkes RI, 2020; Stop TB Partnership, 2021).

Non-technical barriers also played a key role in the underutilization of SITB. Forty percent of respondents reported a lack of sufficient training on how to use the system, leading to frustration and suboptimal usage. Healthcare workers also mentioned their high workload as another limiting factor. About 30% of respondents

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cited their heavy responsibilities as a reason for not being able to fully engage with SITB. Despite these challenges, 65% of respondents recognized the potential benefits of the SITB system in improving TB case reporting, including enhancing data accuracy and streamlining the reporting process.

DISCUSSION

The results of this study highlight significant challenges faced by healthcare workers in utilizing the Tuberculosis Information System (SITB) for TB case recording and reporting at Puskesmas in Palembang. These challenges align with findings from previous research on digital health systems in low-resource settings, where issues such as inadequate infrastructure, insufficient training, and heavy workloads hinder effective implementation (Kemenkes RI, 2020; Stop TB Partnership, 2021).

The Directly Observed Treatment Short-course (DOTS) strategy is widely considered the backbone of tuberculosis (TB) control programs globally, including in Africa. DOTS, as part of the WHO's global TB strategy, emphasizes directly observed therapy to ensure patient adherence to treatment, one of the critical factors in controlling TB transmission and reducing the risk of drug resistance (WHO, 2021). In Africa, DOTS implementation has been a pivotal intervention in the fight against TB, especially in areas with high HIV/TB co-infection rates. While DOTS has contributed significantly to TB case detection and treatment success, it also faces several challenges, such as limited healthcare infrastructure, staffing shortages, and social barriers like stigma, which can lead to treatment non-compliance (Ayles et al., 2018; Kavallari et al., 2020).

In recent years, digital tools have been integrated into TB management to address these challenges. The Tuberculosis Information System (SITB) is an example of such a tool, designed to streamline data recording and reporting. SITB aims to enhance the efficiency and accuracy of TB case reporting at various healthcare levels. By automating and digitizing TB case documentation, SITB offers an opportunity to improve surveillance and ensure that all diagnosed cases are appropriately recorded (Kemenkes RI, 2020). However, the effectiveness of SITB in Africa, particularly in rural and resource-limited settings, has been hampered by technical barriers such as inconsistent internet access, inadequate training, and challenges in maintaining system updates (Mitchison, 2020). These technical issues mirror the difficulties faced by many African countries when implementing digital health tools.

Despite these challenges, both DOTS and SITB have the potential to work synergistically in improving TB control efforts. DOTS ensures patient adherence, while SITB can facilitate the management of patient data, identify gaps in care, and enhance reporting accuracy, providing policymakers with better tools for managing TB programs (Dye et al., 2019). However, as with DOTS, the success of SITB depends on overcoming barriers such as technological infrastructure, adequate training, and ongoing support for healthcare workers. Studies suggest that integrating digital systems like SITB with existing strategies like DOTS could potentially streamline TB control efforts and contribute to the reduction of TB incidence in Africa (WHO, 2021).

This study is limited by its small sample size of 18 Puskesmas located solely in Palembang, Its sufficiently, but which may not fully capture the challenges faced by healthcare workers in other regions of Indonesia. Furthermore, the sample consisted exclusively of female respondents, which may influence the generalizability of the findings as gender dynamics in healthcare settings could play a role in the utilization of digital systems like SITB.

Technical Barriers

The most common barrier to SITB usage was poor internet connectivity, reported by 55% of respondents. This technical issue is consistent with challenges faced by other healthcare facilities in Indonesia, where unreliable internet access remains a significant barrier to the efficient use of digital systems (Restipa & Suci, 2022). The inability to consistently access the system, coupled with delays in data synchronization and system glitches, creates frustration among healthcare workers and discourages regular use of SITB. These technical issues have been identified in other studies as major impediments to the success of digital health interventions, which require stable and high-speed internet for smooth operation (WHO, 2021).

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Non-Technical Barriers

Non-technical challenges, including inadequate training and high workloads, were also found to contribute to the underutilization of SITB. Forty percent of healthcare workers reported insufficient training on using the system effectively, which resonates with findings from other studies on the implementation of health information systems in low- and middle-income countries (Abeywardana et al., 2020). Inadequate training prevents healthcare workers from fully understanding the system's features and benefits, resulting in errors and reluctance to use it regularly. The gender composition of the sample, consisting solely of female respondents, mostly gender-specific were female that responsibilities on SITB utilization. Future research should aim for gender-balanced participation to provide a more comprehensive perspective.

Moreover, the heavy workload reported by 30% of respondents is a critical issue that affects the adoption of new technologies in healthcare settings. Healthcare workers in Indonesia, especially those at Puskesmas, are often overwhelmed with daily tasks and responsibilities, which leaves little time for system learning and data entry (Budiarti & Marwati, 2021). As a result, healthcare workers may prioritize patient care and administrative tasks over using the SITB, which affects the accuracy and timeliness of TB case reporting.

Opportunities for Improvement

Despite these challenges, the majority of respondents (65%) acknowledged the potential of SITB to improve TB case reporting and management. This recognition of SITB's benefits is an encouraging sign, suggesting that with the right support and adjustments, SITB can play a vital role in improving TB control efforts in Indonesia. Recommendations from the study include improving internet access, providing ongoing training for healthcare workers, and reducing their workload through better resource allocation. By addressing these barriers, SITB could become an invaluable tool in enhancing TB surveillance and contributing to the achievement of Indonesia’s TB elimination targets. Addressing internet connectivity challenges in rural areas requires innovative approaches such as satellite internet or community-based Wi-Fi networks. Providing periodic on-site technical support and refresher training sessions could mitigate the training and workload issues identified in this study. Improving internet connectivity in rural areas could involve partnerships with telecommunications providers to expand broadband access. Mobile-based applications that work offline and sync data when connected to the internet could also alleviate technical barriers.

Both DOTS and SITB are critical components of TB control strategies in Africa. While DOTS has long been the cornerstone of TB treatment adherence, SITB offers a promising tool for improving TB data management and surveillance. The combined use of these strategies, along with addressing the challenges they face, could play a crucial role in reducing the TB burden in Africa. Continuous support, proper training, and infrastructure improvement are essential for these strategies to realize their full potential in controlling the TB epidemic compare to in developing country (Tola et al, 2015).

CONCLUSION

The SITB application holds significant potential for improving TB case documentation and reporting at Puskesmas. Nevertheless, technical improvements, such as reliable internet access and system optimization, coupled with regular training for healthcare workers, are essential for its successful implementation.

The findings of this study have implications for both policy and practice. Policymakers should consider resource allocation for digital infrastructure and workforce training as critical components of TB control efforts. Furthermore, the study underscores the importance of continuous monitoring and evaluation of digital health tools to ensure their adaptability to local contexts. Future studies should aim to include a larger and more diverse sample of healthcare facilities from various regions in Indonesia to better generalize the findings. Also further research should explore the implementation of SITB in regions with diverse infrastructural and resource conditions. Longitudinal studies tracking the evolution of SITB usage over time would provide insights into its long-term impact on TB case management.

Conflict of interest: Authors declare that there is no conflict of interest.

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