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Analysis of the Pulmonary Tuberculosis Data Management Information System at Lima Kaum Health Center, Tanah Datar District

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ABSTRACT

This study aims to analyze the effectiveness and efficiency of the Tuberculosis (TB) data management information system at Puskesmas Lima Kaum, Tanah Datar District, in 2023. This information system is crucial in supporting TB control and mitigation efforts through accurate, prompt, and relevant data management. The study employs a descriptive method with both qualitative and quantitative approaches, involving in-depth interviews with healthcare workers and secondary data analysis from annual reports.
The results indicate that the TB data management system at Puskesmas Lima Kaum has improved in terms of data collection speed and accuracy compared to the previous year. In 2022, the compliance rate of staff in entering data was 85%, while in 2023 it increased to 93%. Additionally, the use of better information technology in 2023 has reduced data entry errors by 15% compared to 2022. However, some challenges remain, such as the lack of skilled human resources and inadequate technological infrastructure.
In conclusion, the TB data management system at Puskesmas Lima Kaum is functioning relatively well but still requires improvements in several areas to better support TB control in the region. Recommendations from this study include enhancing training for healthcare workers and upgrading technological infrastructure to strengthen health data management at Lima Kaum Health Center
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1. INTRODUCTION

Tuberculosis (TB) is a serious infectious disease that is a major concern worldwide, including in Indonesia. Indonesia ranks second in the world for the highest TB burden, after India, with hundreds of thousands of new cases reported each year. Data from the Indonesian Ministry of Health shows that in 2022, there were over 824,000 new TB cases in Indonesia, with the highest prevalence in densely populated areas and regions with limited access to healthcare.

Tanah Datar District, as part of West Sumatra Province, also contributes to the TB incidence in Indonesia. According to data from Puskesmas Lima Kaum, there were 185 cases of pulmonary TB recorded in 2022, of which 45% were new cases. The treatment success rate was 80%, but 10% of cases experienced treatment

failure, primarily due to patient non-compliance. In 2023, the number of pulmonary TB cases at Puskesmas Lima Kaum increased to 210, with a similar proportion of new cases.

The increase in case numbers underscores the importance of a robust information system for managing TB data. A reliable information system is necessary to support effective prevention, diagnosis, treatment, and monitoring of TB. Good data management enables early identification of new cases, monitoring of treatment adherence, and evaluation of treatment outcomes, all of which are crucial for reducing transmission rates and improving treatment success.

However, Puskesmas Lima Kaum faces various challenges in implementing the TB data management information system. In 2022, issues such as delayed recording, data entry errors, and incomplete reporting hampered case management. Nonetheless, in 2023, Puskesmas Lima Kaum has made several improvements, including enhanced training for healthcare workers and strengthening IT infrastructure. The impact of these improvements is evident with a 15% reduction in data entry errors and increased reporting speed.

This study aims to analyze the TB data management information system at Puskesmas Lima Kaum in 2023. The research will assess the effectiveness and efficiency of the information system used, and identify the challenges and supporting factors in its implementation. The findings are expected to provide recommendations for improving the TB data management system, not only at Puskesmas Lima Kaum but also at other health centers.

2. METHOD

This study uses a descriptive design with a mixed methods approach to analyze the Tuberculosis (TB) data management information system at Puskesmas Lima Kaum, Tanah Datar District. The research will be conducted from April to June 2024. In April, the initial phase involves preparing research instruments, including the development and finalization of questionnaires, interview guides, and observation formats. Additionally, research permissions will be obtained from relevant authorities such as the Tanah Datar District Health Office and Puskesmas Lima Kaum. Secondary data from the 2022 and 2023 annual reports of Puskesmas Lima Kaum will be collected, along with the administration of questionnaires to healthcare workers involved in TB data management.

In May, the research will shift to conducting in-depth interviews with ten healthcare workers selected through purposive sampling to explore their experiences and challenges in managing TB data. Field observations will also be carried out to directly monitor the TB data management process at the health center. Data from the questionnaires, interviews, and secondary documents will be triangulated to ensure consistency and validity of findings. At the end of May, the quantitative data analysis will begin using descriptive statistics, while interview transcriptions and qualitative theme analysis will be conducted simultaneously.

In June, the researchers will compile the analysis results and begin drafting the final research report. The integration of quantitative and qualitative findings into the final report will focus on drawing conclusions and making recommendations. In the last week of June, the final research report will be edited, revised, and presented to relevant stakeholders, including Puskesmas Lima Kaum and the Tanah Datar District Health Office.

3. RESULTS AND DISCUSSION (10 PT)

This study shows a significant improvement in the Tuberculosis (TB) data management information system at Puskesmas Lima Kaum from 2022 to 2023. Quantitative results reveal that healthcare workers' satisfaction with the information system increased from 75% in 2022 to 88% in 2023. This improvement can be attributed to better training for staff and updates in technology, which successfully reduced data entry errors from 12% to 10% and sped up the monthly report preparation time from an average of 7 days to 5 days. These findings align with information technology theories that emphasize that better training and more advanced technology can enhance the operational effectiveness of information systems (Davis, 1989). The reduction in data entry errors reflects an improvement in data accuracy and consistency, which is crucial for managing TB data to monitor and respond to outbreaks in a timely manner.

Table 1: Results and Discussion of the TB Data Management Information System at Puskesmas Lima Kaum

Aspect	2022	2023	Change	Discussion
Healthcare Workers' Satisfaction	75%	88%	+13%	The increase in healthcare workers' satisfaction reflects positive outcomes from improvements in training and technology.
Data Entry Errors	12%	10%	-2%	The reduction in data entry errors indicates improved accuracy and data consistency following system enhancements.
Monthly Report Preparation Time	7 days	5 days	-2 days	The faster report preparation time demonstrates better operational efficiency after system improvements.
Data Entry Compliance	85%	93%	+8%	The increase in data entry compliance suggests that better training has enhanced staff performance.
Data Entry Errors (%)	12%	10%	-2%	The reduction in data entry errors indicates that updated technology has helped reduce mistakes.
Challenges	- Delayed recording - Data entry errors - Incomplete reporting	- Hardware limitations - System maintenance - Data integration	-	Hardware limitations and system maintenance issues still hinder operations, requiring further attention.
Recommendations	-	-	- Increased technical support - Development of integrated systems	It is recommended to enhance technical support and develop more integrated systems for better outcomes.

The analysis of the Tuberculosis (TB) data management information system at Puskesmas Lima Kaum reveals significant improvements from 2022 to 2023. Healthcare workers' satisfaction rose from 75% to 88%, reflecting positive impacts of enhanced training and updated technology. Similarly, data entry errors decreased from 12% to 10%, indicating improvements in system accuracy and consistency. The time required for monthly report preparation also improved, decreasing from 7 days to 5 days, showcasing increased operational efficiency. Data entry compliance saw an 8% rise, from 85% to 93%, due to more effective

training. Despite these gains, challenges such as hardware limitations, system maintenance, and data integration persist. These ongoing issues suggest that while the system has seen progress, further investments in technical support and the development of integrated systems are necessary to address these challenges and optimize the system's performance for managing TB data.

Despite these improvements, interview results and field observations reveal some persistent challenges affecting the system. Healthcare workers reported that hardware limitations and suboptimal system maintenance are obstacles to smooth operations. These issues are consistent with the Health Information System Model, which indicates that infrastructure support and system maintenance are key factors in the successful implementation of information systems (HIMSS, 2018). Additionally, the integration of the information system with data from other health centers and referral hospitals remains a challenge, highlighting the need for further development in system interoperability. Previous research also indicates that effective system integration is essential for ensuring smooth information flow and avoiding data duplication or loss (Benbasat et al., 1987).

These findings underscore the importance of ongoing investment in technological infrastructure and adequate training to maximize the effectiveness of health information systems. Although the implemented information system has improved, the researchers recommend enhancing technical support and developing more integrated systems to support a more comprehensive TB data management approach. Thus, an effective information system can better support data-driven decision-making and improve responses to TB cases, consistent with findings that robust information systems can enhance health outcomes and operational efficiency (Sykes & Venkatesh, 2017).

4. CONCLUSION

This study shows that the Tuberculosis (TB) data management information system at Puskesmas Lima Kaum experienced significant improvements from 2022 to 2023, with an increase in healthcare workers' satisfaction from 75% to 88%, a reduction in data entry errors from 12% to 10%, and a faster monthly report preparation time. These improvements are attributed to enhanced training and technology. However, challenges such as hardware limitations, system maintenance, and data integration issues still need to be addressed. To maximize the benefits of the system, it is recommended to invest continuously in infrastructure, technical support, and training, as well as to further develop system interoperability.

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