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Original Research

Performance Overview of Licin Public Health Center in Tuberculosis Control Based on the Malcolm Baldrige Criteria for Performance Excellence (MBCfPE)

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ABSTRACT

Background: Tuberculosis (TB) remains a global health threat, with a death toll reaching 1.3 million. Indonesia has set a target to eliminate TB by 2030, with a treatment success rate of 90%. However, the achievement at Licin Public Health Center in Banyuwangi Regency in 2023 was only 76%, indicating the need for performance evaluation. This study aims to describe the performance of Licin Public Health Center in TB control based on the Malcolm Baldrige Criteria for Performance Excellence (MBCfPE). **Methods:** This study employed a descriptive quantitative approach with a cross-sectional design. The research sample consisted of 12 TB officers and 29 TB patients. Data were collected through questionnaires completed by the respondents and analyzed using the Baldrige Assessment. **Results:** The results showed that the performance of Licin Public Health Center was at the benchmark leader level with an excellent rating, achieving a score of 796.3 points out of a possible 1,000. The highest percentage score was found in the Workforce Focus category, while the lowest was in Strategic Planning, indicating strengths in human resource management and areas for improvement in long-term program planning. **Conclusions:** The performance of Licin Public Health Center in tuberculosis control ranks as superior among similar organizations, both at the regional and national levels. Nevertheless, improvements are still needed in areas such as organizational structure, strategy, patient satisfaction, and budget utilization to support the sustainable success of TB treatment.

Keywords: Performance; tuberculosis; Malcolm Baldride; Baldrige Assessment; MBCfPE

1. INTRODUCTION

Tuberculosis (TB) remains a major public health threat globally. This infectious disease is caused by Mycobacterium tuberculosis and spreads through the air when individuals with active TB cough or sneeze.[1] TB is included in the Sustainable Development Goals (SDGs), specifically Goal 3, which aims to end the TB epidemic by 2030.[2] According to the Global Tuberculosis Report 2023, TB was the leading cause of death from infectious diseases in 2022, with an estimated 1.3 million deaths. The global TB incidence in 2022 was 133 per 100,000 population, showing only an 8.7% reduction since 2015, still far from WHO's target of a 50% reduction by 2025.[3] A study by Shah et al. (2022) found that challenges in health system capacity and delays in diagnosis contribute to the global TB burden.[4]

Indonesia is the second-highest TB burden country in the world, contributing approximately 10% of global cases.

National TB incidence has significantly increased from 301 per 100,000 in 2020 to 354 in 2021, and to 385 in 2022.[5] According to Alvera et al. (2021), this increase is associated with suboptimal case detection and health service disparities across regions.[6] The Indonesian government has set a national TB elimination strategy aiming to reduce TB incidence by 80%, to 65 per 100,000 population, and TB mortality to 6 per 100,000 population by 2030.[5] This commitment aligns with Mahmud et al. (2020), who emphasize the importance of investment in primary healthcare systems to achieve TB elimination.[7]

One of the key indicators to measure the success of TB control programs is the treatment success rate. However, Indonesia's national treatment success rate in 2023 was 86.5%, still below the national target of 90%.[5] At the local level, Banyuwangi Regency faces similar challenges. The TB treatment success rate in Banyuwangi was 88.4%, still under the target. Several public health centers (Puskesmas) in Banyuwangi show a declining trend, including Licin Health Center, which dropped from 89.7% in 2021 to 83.3% in 2022 and further to 76.0% in 2023.[8] This aligns with findings by Foo et al. (2020), indicating that inconsistent primary healthcare performance contributes to TB treatment outcome variability in low- and middle-income countries.[9]

Public health centers (Puskesmas) play a vital role in ensuring the success of TB control programs at the primary healthcare level. The performance of these centers significantly determines the effectiveness of program implementation, including achievement of treatment targets.[10] Zinatsa et al. (2018) emphasize that improving the quality of primary care using systems-based approaches is essential for TB control. Comprehensive performance evaluation requires a structured management framework.[11] One relevant tool is the Malcolm Baldrige Criteria for Performance Excellence (MBCfPE), which evaluates organizational performance holistically. MBCfPE includes criteria such as leadership, strategic planning, customer focus, measurement and analysis, knowledge management, workforce focus, operations focus, and results.[12] Sahputra et al. (2021) demonstrated that the application of MBCfPE improves performance and quality outcomes in healthcare organizations.[13]

In the context of primary healthcare services, applying the MBCfPE framework can support more effective service delivery and data-driven decision-making.[14] Evaluations based on this model have been shown to encourage continuous quality improvement.[15] Therefore, this study aims to describe the performance of Licin Health Center in TB control based on the Malcolm Baldrige Criteria for Performance Excellence (MBCfPE). The findings are expected to serve as a foundation for improving service quality and strengthening TB elimination strategies at the primary healthcare level.

2. METHODS

2.1 Study Design

This study employed a descriptive quantitative method with a cross-sectional design. This approach allows for the measurement and description of the performance of Licin Public Health Center in tuberculosis control at a single point in time, based on the Malcolm Baldrige Criteria for Performance Excellence (MBCfPE).

2.2 Study Location and Setting

The research was conducted at Licin Public Health Center (Puskesmas Licin), located in Banyuwangi Regency, East Java, Indonesia. The study took place during February to March 2025. The health center provides primary healthcare services, including tuberculosis control programs.

2.3 Study Population

The population in this study consisted of all staff at Licin Public Health Center who are directly involved in tuberculosis control, as well as tuberculosis patients who received TB services at the health center. A total population sampling technique was used, resulting in 12 staff members and 29 patients included as respondents.

The inclusion criteria for staff required that they be directly involved in TB control activities at the health center and have a minimum of six months of experience working in the TB program. For patients, the inclusion criteria specified that they must be registered as TB patients at Licin Public Health Center and have received TB treatment services there, as well as be willing to participate in the research. Exclusion criteria applied to both groups included individuals who were on leave or absent during the data collection period, as well as those who were unable to complete the questionnaire due to physical or psychological limitations.

2.4 Data Collection

Data were collected using structured questionnaires distributed to both staff and patients. The

questionnaires were administered directly at the health center during the study period. Prior to distribution, the instruments had undergone validity and reliability testing to ensure the quality and consistency of the data.

2.5 Questionnaire Design

The questionnaire was developed based on the Malcolm Baldrige Criteria for Performance Excellence (MBCfPE), which consists of seven categories: (1) Leadership, (2) Strategic Planning, (3) Customer Focus, (4) Measurement, Analysis, and Knowledge Management, (5) Workforce Focus, (6) Operation Focus, and (7) Results. Each category was represented by a series of relevant items that were used to assess the performance of the health center in tuberculosis control.

2.6 Data Analysis

Data were analyzed using the Baldrige Assessment method. Scores were assigned to each of the seven MBCfPE categories according to the Baldrige scoring guidelines. The total score ranged from 0 to 1,000 points. Based on the cumulative score, the health center's performance was classified into predefined performance levels and ratings as outlined in the MBCfPE framework. The assessment and tabulation process were conducted using Microsoft Excel, which facilitated the calculation of category scores, percentage scores for each criterion, actual scores, and the generation of performance classifications.

2.7 Ethical Clearance

Ethical approval for this study was obtained from the Ethics Committee of the Faculty of Public Health, Universitas Airlangga (Approval number: 21/EA/KEPK/2025). Participation in the study was voluntary, and all respondents provided informed consent. Due to the nature of the study and to ensure ease of participation, informed consent was obtained verbally from each respondent prior to data collection. Confidentiality and anonymity of the respondents were ensured throughout the research process.

3. RESULTS

The performance assessment of Licin Public Health Center in tuberculosis control was conducted based on the seven core criteria of the Malcolm Baldrige Criteria for Performance Excellence (MBCfPE), which include Leadership; Strategic Planning; Customer Focus; Measurement, Analysis, and Knowledge Management; Workforce Focus; Operations Focus; and Results. Each criterion was evaluated using data obtained from validated and reliable questionnaires distributed to health center staff directly involved in tuberculosis control and to TB patients undergoing treatment. The scores for each criterion were then calculated to determine the overall performance achievement level, reflecting the effectiveness and sustainability of the program's implementation in the context of primary health care services. The performance assessment results of Licin Public Health Center based on the MBCfPE are presented in the following Table 1.

Based on the Table 1, the total performance score of Licin Public Health Center in tuberculosis control based on the MBCfPE criteria reached 796.3 out of a maximum score of 1,000, equivalent to 79.6%. This result places Licin Public Health Center at the benchmark leader level with an "excellent" rating, indicating that the program implementation is very good, sustainable, and can serve as a reference for other health centers due to its effective and efficient practices.

The criterion with the highest percentage score was Workforce Focus at 83.8%, showing that Licin Public Health Center has been quite optimal in empowering,

Table 1. Performance recapitulation of Licin Public Health Center in tuberculosis control based on the Malcolm Baldrige Criteria for Performance Excellence (MBCfPE)

No	Criteria	Maximum score	Percentage	Score
1.	Leadership	120	80.0 %	96.0
2.	Strategic Planning	85	73.4%	62.4
3.	Customer Focus	85	81.8%	69.5
4.	Measurement, Analysis, and Knowledge Management	90	80.9%	72.8
5.	Workforce Focus	85	83.8%	71.2
6.	Operation Focus	85	83.0%	70.5
7.	Results	450	78.6%	353.9
Total		1000	79.6%	796.3

supporting, and involving its workforce in the delivery of TB services. This was followed by Operations Focus at 83.0% and Customer Focus at 81.8%, reflecting the center's attention to the effectiveness of work processes as well as patient satisfaction and needs. Furthermore, Measurement, Analysis, and Knowledge Management achieved a score of 80.9%, followed by Leadership at 80.0%. These two criteria indicate that Licin Public Health Center has solid systems for data collection, analysis, and effective leadership in guiding and managing program implementation.

The lowest-performing criterion was Strategic Planning, with a score of 73.4%, suggesting that improvements are needed in formulating long-term strategies and preparing to face challenges and dynamics in TB service delivery. Meanwhile, the Results criterion, which had the largest maximum score (450), achieved a score of 78.6%, indicating that the program outputs and outcomes are fairly good but still have room for improvement.

Overall, the results indicate that Licin Public Health Center has demonstrated a strong commitment to TB program implementation, especially in terms of workforce, operations, and patient focus. However, improvements are needed in the area of strategic planning to ensure that tuberculosis control efforts are more targeted, sustainable, and capable of achieving national goals.

4. DISCUSSION

The performance of the Licin Public Health Center (Puskesmas Licin) in tuberculosis control, based on the Malcolm Baldrige Criteria for Performance Excellence (MBCfPE), is at the benchmark leader level with an excellent rating. This achievement indicates that the Licin Public Health Center has implemented superior, results-oriented management practices and can serve as a reference for other health facilities in executing the TB program effectively and sustainably. The consistently high scores across nearly all categories reflect the presence of an effective, measurable, and results-driven management system. The use of the MBCfPE criteria approach enables organizations to comprehensively assess and improve their management systems.[16]

The leadership performance of Licin Public Health Center in tuberculosis control is considered excellent, reflecting the active involvement of leaders in providing direction, fostering open communication, and coordinating the implementation of TB programs. Leadership plays a crucial role in healthcare services to ensure that every program operates effectively and sustainably. The head of the public health center plays a key role in communicating the organizational vision and ensuring that healthcare workers understand the goals of the program. These findings align with previous research, which emphasized that the success of health programs greatly depends on the active role of leaders in building effective communication and mobilizing the workforce in line with the organization's vision and mission.[17] This is further supported by research conducted by Lestyoningrum et al. (2023), which confirmed that effective leadership has a positive impact on TB control performance.[18] However, aspects such as staff motivation and governance still need to be strengthened at Licin Public Health Center, particularly in fostering emotional engagement among staff and ensuring program sustainability through more strategic management systems.

In the aspect of strategic planning, the performance of Licin Public Health Center in tuberculosis control is considered good. Strategic planning is a key component in TB control to ensure that programs are implemented in a targeted, measurable manner and aligned with national policies.[19] At Licin Public Health Center, there is a strong commitment to involving various stakeholders, including healthcare workers and community health cadres, in the formulation and implementation of TB program strategies. This collaboration has proven to support the achievement of treatment success indicators. However, challenges remain in terms of the consistency of implementation and the effectiveness of strategy evaluation, which have not been optimally executed. Irregular implementation and weak monitoring systems pose risks to the overall effectiveness of the program. This aligns with the findings of Andika et al. (2024), who emphasized the importance of adaptive and evaluation-based strategic planning in sustainably improving TB program outcomes. Strategic planning that is not accompanied by strong commitment to implementation and continuous evaluation will not be able to significantly enhance TB program performance.[20] In addition, this finding is reinforced by Ritchie (2021) which states that the involvement of all stakeholders in the planning and implementation of TB programs contributes significantly to achieving treatment success targets.[21]

Furthermore, the performance of Licin Public Health Center in the customer focus criterion demonstrates excellent results. From the healthcare providers' perspective, services have been patient-oriented through education, assistance, and effective communication. Health workers actively provide education, guidance, and clear communication regarding the importance of medication adherence and potential side effects, along with psychological support. This approach has been found to enhance patients' motivation to complete their treatment. Positive interpersonal relationships between healthcare workers and patients also create a sense of safety and comfort, contributing to treatment adherence.[22] However, external factors such as family support, socioeconomic conditions, knowledge, and self-awareness also influence treatment success, regardless of service quality.[23] From the patients' perspective, a high level of satisfaction is reflected in the dimensions of tangibles, assurance, and reliability, although shortcomings remain in responsiveness and empathy. These findings are consistent with a study by Nezenega et al. (2013), which found that patient satisfaction is influenced by professional care, time spent with healthcare providers, and relational empathy.[24]

Similarly, the performance of Licin Public Health Center in the criterion of measurement, analysis, and knowledge management is categorized as excellent. This approach refers to the systematic identification, collection, analysis, and management of data and information as part of the evaluation process to support improved human resource management performance. At Licin Public Health Center, the use of the Tuberculosis Information System (SITB) has facilitated real-time recording, reporting, and monitoring of TB cases, aiding in early detection and targeted interventions. This aligns with the study by Theron (2015), which highlights the importance of data integration in improving treatment outcomes.[25] However, challenges remain in the consistency of evaluation and data utilization as the basis for decision-making. Information dissemination is not yet evenly distributed, indicating the need for enhanced technical training and knowledge-sharing forums to ensure that all health workers have a unified understanding of TB control. This is supported by Ngusie (2021) that many health facilities have yet to fully utilize data due to limited staff capacity.[26]

In the workforce focus aspect, the performance of Licin Public Health Center is considered excellent. The work environment and employee engagement are closely interrelated in creating a supportive atmosphere for achieving the organization's mission.[27] A comfortable work environment, harmonious working relationships, and the availability of adequate facilities contribute to the success of the TB program. Staff collaboration has proven to enhance treatment continuity. The success of TB treatment is largely determined by the quality of interaction and collaboration among healthcare workers in primary care settings.[28] Previous studies have shown that the involvement and empowerment of healthcare workers have a direct impact on TB treatment outcomes. However, some staff still report feeling a lack of optimal organizational support. Therefore, it is essential for leadership to enhance emotional and professional engagement by strengthening managerial support, providing training, and encouraging active participation in decision-making.[29] Other studies have also found that even health facilities with adequate infrastructure and a conducive work environment may still have low treatment success rates due to limited staff engagement.[30]

The operational focus performance of Licin Public Health Center is also considered excellent. Operational focus refers to the organization's efforts to design, manage, and improve work systems and core processes effectively in order to create value for customers and support organizational success. The implementation of the TB program is already well-structured through standard operating procedures (SOPs) and consistent cross-functional coordination among healthcare workers. The work processes support systematic activities such as screening, treatment, and reporting. Research conducted by Fortes (2024) has shown that well-documented work systems can facilitate the smooth execution of TB programs. The application of SOPs as a guideline for program implementation and interdepartmental coordination has also been shown to improve the effectiveness of TB control efforts.[31] However, challenges remain at Licin Public Health Center, particularly in addressing delays in resolving operational issues such as drug distribution and laboratory reporting. Therefore, the responsiveness of the work system must be enhanced through regular monitoring and adaptive risk management to ensure the continuity of TB treatment. Previous research by Andika (2024) has found that weak monitoring and delayed evaluation can lead to inefficiencies in achieving operational success, even when SOPs are in place.[20]

Furthermore, the performance of Licin Public Health Center in the results criterion for tuberculosis control is categorized as very good. The results criterion reflects the organization's success in achieving its strategic targets. At Licin Public Health Center, this criterion is demonstrated by the effectiveness of work systems, participative leadership, and budget efficiency supporting the TB program. Service processes run in an organized and effective manner, supported by adequate facilities and infrastructure. However, patient satisfaction has yet to show a significant upward trend, and staff motivation still requires reinforcement. Additionally, the impact of budget allocation on overall performance improvement remains suboptimal. This underscores the importance of enhancing patient experience, recognizing healthcare workers, and adopting budget allocation strategies that focus more on program priorities. Previous studies by Marais (2019) has found that the success of TB treatment is determined not only by clinical interventions but also by efficient resource management and the active role of healthcare workers in maintaining service continuity. Treatment success will increase if the patient experience is improved comprehensively, accompanied by direct supervision of medication adherence and tracking of patients at risk of treatment interruption.[32]

Overall, the performance of Licin Public Health Center in tuberculosis control has demonstrated excellent achievement across all MBCfPE categories, positioning it as a benchmark leader and a model for other public health centers. The implementation of systematic, collaborative, and results-oriented managerial practices has been a key strength in supporting the effectiveness of the TB program. Nonetheless, there remains room for improvement, particularly in the areas of workforce motivation, operational responsiveness, strategic use of data, and enhancement of patient experience. Continuous improvement efforts should be carried out through strengthening internal evaluation systems, empowering human resources, and more targeted budget allocation to not only maintain but also enhance the achieved performance for the sustainable success of the TB program.

This study has several limitations that should be acknowledged. First, the research was conducted at a single public health center, which may limit the generalizability of the findings to other health facilities with different organizational structures or resource availability. Second, the use of a cross-sectional design captures data at one point in time, making it difficult to assess changes in performance or establish causal relationships. Additionally, the reliance on self-reported data from staff and patients may introduce response bias, particularly in the assessment of satisfaction and organizational performance. Finally, the verbal informed consent process, while appropriate for the study setting, may be less rigorous than written consent in documenting participants' agreement to take part in the research.

5. CONCLUSION

Based on the research findings, it can be concluded that the performance of Licin Public Health Center in tuberculosis control is categorized as very good and falls under the benchmark leader level with an excellent rating according to the Malcolm Baldrige Criteria for Performance Excellence (MBCfPE). This achievement reflects the success in implementing effective, participative, and measurable management practices across all assessment categories, although continuous improvement is still needed in areas such as staff motivation, service responsiveness, and optimization of operational strategies to ensure the sustainable success of the TB program.

Ethical Approval

Ethical approval for this study was obtained from the Ethics Committee of the Faculty of Public Health, Universitas Airlangga (Approval number: 21/EA/KEPK/2025).

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Competing Interests

All the authors declare that there are no conflicts of interest.

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Underlying Data

Derived data supporting the findings of this study are available from the corresponding author on request.

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