

# Analysis of the System management data to improve the quality of health services in the Lospalos CHC, Lautém Municipality

Daniela Rolandia Maria Umbelina Fernandes\*<sup>1</sup>, Marcos Carvalho<sup>2</sup>,  
<sup>1,2</sup>Faculty of Public Health and Medical Science, UNPAZ, Timor-Leste  
e-mail: \*[marcosd4valho@gmail.com](mailto:marcosd4valho@gmail.com),

## Abstract

Quality services are vital indicators of healthcare quality, prompting both government and private sectors to focus on this issue. This research examines the data management system related to healthcare quality at the Lospalos Community Health Center in Lautém Municipality for the year 2021. Utilizing a quantitative analysis method with a cross-sectional approach, the study surveyed 43 healthcare personnel and applied univariate and bivariate analyses, specifically Chi-Square Analysis. The findings reveal that the management of data for health service quality was deemed poor, with a total score indicating poor management. In contrast, good management was represented by 97.6% of instances recorded. The analysis shows a significant relationship ( $p$ -value = 0.03) between effective data management (X variable) and quality of health attendance (Y variable). The study advocates for the Health Center Chief to prioritize compliance with established procedures and collaborate with the relevant Ministry to improve human resources and health facilities, ultimately enhancing service delivery and public health outcomes.

**Keywords**— Data management system, quality of health care.

## INTRODUCTION

Quality services are a key indicator of healthcare quality, making the quality of care a significant issue in both the public and private sectors. This concern arises partly from community efforts to enhance care quality over the years, as well as from notable improvements in care administration. (Asare et al., 2024). The healthcare delivery model aims to provide efficient, high-quality care (Anderson, 2013). To ensure healthcare quality, it is essential to implement effective, efficient, and comfortable practices, with continuous quality improvement as a suitable strategy. The various terms associated with efforts to enhance the quality of continuous care are often collectively referred to as Continuous Quality Improvement. (Carvalho, Ximenes, et al., 2025; Melinda Tamonob, Yoseph Kenjam, 2023).

Effective data quality management within organizations requires a strong data governance framework that enables employees to make the most of the company's information assets. This framework depends on the active participation, collaboration, and insights of all staff members. Key components of the data governance model include technical leadership, oversight, strategic direction, and stewardship, all of which play a crucial role in maintaining high standards of data quality. (Hikmawati et al., 2021). Data management is an essential process that ensures the quality of information, significantly impacting planning and decision-making in health care. For data to be effective, it must meet specific standards, allowing for accurate and informed decisions regarding patient visits to health facilities throughout the year. This includes ensuring the integrity of patient identities in the registration unit, maintaining accurate patient identification during visits, and providing clear information to patients. (Ximenes et al., 2025).

An effective information system can offer data and insights about productive activities in a transparent, public, legal, straightforward, accurate, integrated, and efficient manner. This is particularly beneficial in facilitating political efforts to enhance the hospital care system, especially in administration. Hospitals rely on information systems to assess care quality easily

and to operate more optimally (Carvalho et al., 2024). A commitment to providing quality healthcare is essential for hospitals as they aim to become competitive institutions in the healthcare landscape. This goal requires comprehensive planning and development at the general hospital level. Accurate documentation of each patient’s identity is crucial, which includes registering their patient number and entry number on their identification documents to ensure accountability during medical examinations. Additionally, personal health records for hospitalized patients must be maintained, and reports should be generated daily, weekly, monthly, and annually for hospitalization records. (Alharbi, 2023).

Research conducted at the Lospalos Community Health Center in the Lospalos Administrative Post, Lautém Municipality, in 2021 shows that while the electronic patient registration system is functioning effectively, health personnel still encounter significant challenges. Issues such as power outages and slow internet connections hinder the data management process, requiring more time to register patient information. Both manual and online systems for managing data face problems with duplication, incompleteness, and delays. Health personnel are overwhelmed by their workloads, which decreases their effectiveness and efficiency. Additionally, inconsistent formats that do not comply with national standards further complicate the situation. The limited resources available for data management are insufficient, and the monitoring mechanisms for the data system are weak, leading to additional limitations. These challenges directly affect healthcare delivery and contribute to patient dissatisfaction, primarily due to delays in receiving treatment caused by varying conditions (Peter Cronemyr, 2021).

Moreover, there is a shortage of human resources at the Community Health Center in Lospalos, with a total of 43 health staff members, including 28 women and 15 men. The team comprises 9 general practitioners, 8 nurses, 10 midwives, 5 analysts, 2 dentists, 4 pharmacists, 3 nutritionists, and 2 administrators. Data from the Lospalos Community Health Center indicates that the number of patients receiving health treatment was as follows: 125,369 in 2016, 134,468 in 2017, 112,862 in 2018, and 102,543 in 2019, within a total population of 68,445 in Lautém Municipality. The objective of this research is to analyze the data management system to enhance the quality of care at the Lospalos Community Health Center in 2021 (Data Statistics CHC Lospalos, 2021). The study aimed to identify system management data to enhance health service quality.

**RESEARCH METHODS**

This research utilizes a quantitative, cross-sectional approach to evaluate the data management system and improve health service quality at the Lospalos Community Health Center in Lautém Municipality during 2021. The study involves 43 health personnel from the center, selected using a saturated sampling technique. Data collection is vital and is achieved through interviews, observations, and documentation. The analysis aims to answer research questions by utilizing appropriate methods to ensure quality data gathering. SPSS software is employed for data analysis, utilizing Univariate Analysis to describe the frequency distribution of independent variables and characterizing respondents. Additionally, Bivariate Analysis is performed using the Chi-Square test ( $X^2$ ) to assess the relationship between the independent variable (X) and its impact on the dependent variable (Y) in two stages.

**RESULTS AND DISCUSSION**

**Table 1. Distribution of characteristics of respondents at the Lospalos Community Health Center**

No.	Gender	Frequency	Percentage (%)
1.	Female	28	65
2.	Male	15	35

<b>Aged</b>			
1.	25 – 34	23	53
2.	35 – 44	8	19
3.	<45	12	28
<b>Profession</b>			
1.	Administration	2	4
2.	Nurse	8	19
3.	Midwife	10	23
4.	Pharmacist	4	9
5.	General doctor	9	21
6.	Nutritionist	3	7
7.	Dentist	2	5
8.	Analyst	5	12
<b>Nivel Edukasaun</b>			
1.	Secondary	2	5
2.	Diploma 3 (D3)	25	58
3.	Bachelor Degree	16	37
<b>Marital Status</b>			
1.	Single	19	44
2.	Married	<b>24</b>	56

Based on the analysis found the total number of health personnel at the Lospalos Community Health Center is 43. This includes 28 females, accounting for 65%, and 15 males, representing 35%. This indicates that there are significantly more females than males among the staff. The report reveals that health personnel aged 25-34 consist of 23 individuals, which is 53% of the total. In comparison, there are 8 personnel aged 35-44, making up 19%, and 8 personnel aged 45 and older, also representing 28%. The age group of 25-34 is notably larger. The composition of the health personnel includes 2 Administrators (4%), 8 Nurses (19%), 10 Midwives (23%), 4 Pharmacists (9%), 9 General Doctors (21%), 3 Nutritionists (7%), 2 Dentists (5%), and 5 Analysts (12%). The Midwifery profession has the highest representation among the staff. The results indicate that among the 43 health personnel surveyed, 2 individuals (5%) have a Secondary education, 25 individuals (58%) hold a Diploma, and 16 individuals (37%) possess a Bachelor's degree. The percentage of those with a Diploma is significantly higher than that of Bachelor's degree holders. The study concludes that among the 43 health personnel, 24 individuals (56%) are married, while 19 individuals (44%) are single. There is a notable majority of married individuals in the staff.

**Table 2. Analysis of the system management data to improve the quality of health services**

System Management Data	Improve the Quality of Health Service				Total		p-value
	Less		Good		f	%	
	f	%	f	%			
Good	11	25.6	27	62.8	38	88.4	0.024
Less	4	9.3	1	2.3	5	11.6	
Total	15	34.9	28	65.1	43	100	

<b>Proses</b>							
Good	10	23.3	27	62.8	37	86	0.007
Less	5	11.6	1	2.3	6	14	
Total	15	34.9	28	65.1	43	100	
<b>Output</b>							
Good	9	20.9	28	65.1	37	86	0.000
Less	6	14.00	0	0.0	6	14	
Total	15	34.9	28	65.1	43	100	

This study indicates that effective data management systems significantly enhance the quality of health services. Specifically, when evaluated using the "Input" indicator, these systems improve service quality by 62.8%. Conversely, inadequate data management systems only result in a minimal 2.3% increase in health service quality. Similarly, when measured by the "Process" indicator, effective data management systems again enhance health service quality by 62.8%, while inadequate systems lead to a mere 2.3% uptick. Furthermore, when assessed through the "Output" indicator, effective data management systems improve the quality of health services by 65.1%. In stark contrast, inadequate data management systems contribute no improvement—0%—to health service quality.

Improving the quality of health data is essential for effective clinical decision-making and evaluating health programs, as previous studies have shown. However, ensuring the quality of health data poses a significant challenge in public health. The development of information systems within the health sector is advancing rapidly, increasing the need for effective data management across all health organizations. (Pereira et al., 2025). According to previous studies, enhancing the capacity to provide quality, timely, and reliable data is one of the targets of the Sustainable Development Goals (SDGs), especially in small island states like Timor-Leste. (Carvalho et al., 2024; Carvalho, Deus, et al., 2025). One study indicated that at the Comoro Community Health Center, health workers and the Statistics Health Information department did not utilize statistical data to implement disease interventions. Instead, they relied solely on Excel to enter data, which was only used for documentation purposes. (Ximenes et al., 2025). Additionally, a separate study highlighted that the quality of health services is defined by patients' perceptions of receiving appropriate care in line with their perspectives and preferences. Another study found that the quality of service refers to the effectiveness and efficiency of service delivery according to professional standards. (Pacheco et al., 2025). It involves implementing comprehensive service standards that respond to patient needs, utilizing appropriate technology, and developing health or nursing services to achieve optimal health outcomes. Overall, the need to improve data capacity and service quality in health care is evident. (Carvalho, Ximenes, et al., 2025; Exposto et al., 2023, 2025).

The system is composed of integrated components designed to achieve multiple objectives through effective planning, organizing, coordinating, and controlling of resources. Effectiveness is measured by the achievement of goals, while efficiency refers to orderly and timely processes. Information is generated from data through processing to meet specific needs. The quality of health services is influenced by visible improvements that enhance user satisfaction and adhere to ethical standards and guidelines. Previous observations have shown a significant relationship between the data management system and service quality, underscoring its vital role, along with other factors such as system type, workload, and power reliability.

### CONCLUSION

The study addresses a critical issue regarding the management of variable X, which has been linked to a significant decline in the quality of health services at the Lospalos Community Health Center. This decline is primarily due to inadequate oversight and resource allocation.

Interestingly, while data management is important, it does not appear to significantly impact the overall quality of service delivery at the center. The analysis reveals that although the current management system demonstrates good service quality, it still faces challenges that prevent optimal performance. A significant relationship was identified between the effectiveness of the management system and the quality of health services, indicated by a p-value of 0.03, which is below the critical significance level of 0.05. This highlights the need for strong management practices to improve service delivery outcomes. In light of these findings, the researchers strongly recommend the urgent recruitment of qualified health professionals to address the ongoing human resource shortages that are negatively affecting the quality of public health services. Additionally, they advocate for a collaborative effort between the Ministry of Health and the Lospalos Community Health Center. This partnership should focus on conducting thorough assessments of available resources and adhering strictly to established healthcare protocols. Such initiatives are crucial for enhancing health service quality and developing a more skilled and professional workforce capable of meeting the health needs of the community.

## REFERENCES

- Alharbi, M. F. (2023). Patients' experience of service quality in government and private hospitals in the Qassim Region, Kingdom of Saudi Arabia. *Journal of Medicine and Life*, 16(11), 1622–1627. <https://doi.org/10.25122/jml-2023-0184>
- Asare, A. A., Otchi, E., & Manu, A. (2024). Relevance of meeting general outpatients' information needs to their perceptions of healthcare quality in a hospital in Ghana: A Healthcare Quality Survey using modified SERVQUAL analysis. *BMJ Open Quality*, 13(2), 1–8. <https://doi.org/10.1136/bmjopen-2023-002683>
- Carvalho, M., Deus, J. De, Da, A., & Pacheco, C. (2025). *Health Data in the Community : Birth and Death Registration in Timor-Leste. November*. <https://doi.org/10.38124/ijisrt/25oct347>
- Carvalho, M., Ximenes, L., Da, A., Pacheco, C., Pires, C. M., Anatolia, L., & Soares, M. (2025). The Quality of Health Service Towards Patient Satisfaction in Liquidoe Health Centre, Aileu Municipality, Timor-Leste. *International Journal of Scientific Multidisciplinary Research (IJSMR)*, 3(4), 617–626.
- Carvalho, M., Ximenes, L., & Exposto, L. A. S. M. (2024). Access to Publicly Available Health Data and Knowledge of Health Indicators Among Students at the Faculty of Public Health in Timor-Leste. *Asian Journal of Health and Science*, 3(11), 308–317.
- Exposto, L. A. S. M., Ida Mulyati, M., Magno, J., & Carvalho, M. (2023). Choosing Service Facilities In The Hospital Interior To Increase Patient Satisfaction. *Asian Journal of Healthy and Science*, 2(5), 213–224. <https://doi.org/10.58631/ajhs.v2i5.46>
- Exposto, L. A. S. M., Pacheco, C., Goncalves, M. J., Carvalho, H. D. F. P., Carvalho, M., & Paz, U. (2025). *Analysis Of Primary Health Care Activity Through The Integrated Health Program ( Pis ) In Ermera Municipality, Year 2025 Analysis of Primary Health Care Activity Through the Integrated Health Program ( PIS ) in Ermera Municipality, Year 2025. October*. <https://doi.org/10.58344/jws.v4i10.1523>
- Hikmawati, S., Santosa, P. I., & Hidayah, I. (2021). Improving Data Quality and Data Governance Using Master Data Management: A Review. *IJITEE (International Journal of Information Technology and Electrical Engineering)*, 5(3), 90. <https://doi.org/10.22146/ijitee.66307>
- Melinda Tamonob, Yoseph Kenjam, R. W. S. (2023). Effect of Quality of Health Care on Outpatients' Satisfaction (A Study from Laboratory of Ba'a General Hospital, Rote Ndao, East Nusa Tenggara, Indonesia, Year 2022). *Journal of Health Policy and Management*, 8(2), 74–85. <https://doi.org/10.26911/thejhpm.2023.08.02.01>
- Pacheco, C., Carvalho, M., Soares, A., Ximenes, E. B., Margo, J., Auxilio, N., & Martins, P. (2025). Health Facility Readiness and Health Service Quality for Patient Satisfaction in Hautio Community Health Center, Hato-Builico Administrative Post, Ainaro Municipality, Year 2020. *International Journal of Innovative Science and Research Technology*, 10(6).
- Pereira, E. D. C., Ximenes, L., & Pires, C. M. (2025). Analysis of Secondary Data Utilization for
-

- Hypertension Prevention in Maubara Community Health Centre, Liquiça Municipality. *International Journal of Scientific Multidisciplinary Research (IJSMR)*, 3(4), 607–616.
- Peter Cronemyr, M. E. (2021). The Use of Big Data in Process Management : A Literature Study and Survey Investigation. *LINKÖPING UNIVERSITET*.
- Ximenes, E. B., Pacheco, C., Moniz, E. P., Leandra, J., Pereira, S., & Carvalho, M. (2025). Use of Statistical Data and the Quality of Data for Dengue Disease Interventions at Comoro Health Centre, Dom Aleixo Post Administrative, Dili Municipality. *International Journal of Innovative Science and Research Technology*, 10(6), 480–487.