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Analysis of Logistics Management Strategy in Increasing Drug Availability at Dalu Sepuluh Tanjung Morawa Community Health Center

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ABSTRACT

Drug logistics management is a crucial aspect in ensuring drug availability in primary healthcare facilities. This study aims to analyze logistics management strategies to improve drug availability at the Dalu Sepuluh Tanjung Morawa Community Health Center. The research method used was descriptive qualitative, with data collection techniques through in-depth interviews with two key informants and direct observation. The results showed that all stages of logistics management—planning, procurement, storage, distribution, and disposal—have been implemented in accordance with applicable standard operating procedures (SOPs) and regulations. Planning was carried out using LPLPO and referring to DOEN. Drug storage applies the FIFO and FEFO principles, but storage space is still limited. Distribution is carried out routinely every two months, although delays are often encountered by the district pharmacy installation. Stock monitoring is still predominantly manual, despite the availability of applications such as SIMPUS and SIODANG. The process of eliminating expired drugs has not been routinely scheduled due to limited funds and space. In conclusion, the logistics strategy has been implemented comprehensively, but improvements are still needed in technology integration, storage capacity, human resource training, and drug disposal management to ensure optimal and sustainable availability.

Keywords: Management Logistics, Medicine, Health Center.

INTRODUCTION

Drug logistics management is a crucial component of the health care system at community health centers (Puskesmas). This process encompasses planning, procurement, storage, distribution, and disposal of drugs, with the goal of ensuring the availability of high-quality, safe, and timely medications. At the Dalu Sepuluh Tanjung Morawa Community Health Center, effective drug management is a key requirement to support the success of health programs and improve the quality of services provided to the community.(Shafa et al., 2021).

However, in practice, numerous obstacles remain, such as inaccurate drug requirement planning, distribution delays, and inadequate storage. This leads to stock discrepancies, both

shortages and excesses, which can lead to losses due to expired drugs or service disruptions. Furthermore, limited human resources and infrastructure also exacerbate the logistics management situation.(Ginting et al., nd).

Another issue is the lack of coordination between logistics stages, such as manual and poorly integrated planning processes, and procurement that is not always timely. As a result, medications often arrive with short expiration dates. The lack of a fixed schedule for drug disposal also leads to an inappropriate buildup of inventory.

Geographical conditions and variations in disease patterns in the community health center's work area also influence the types and quantities of medications needed. Therefore, planning must consider local characteristics to ensure that available stock meets patient needs (Wahyuningsih et al., 2024). Furthermore, pharmacists who have not received full logistics training and budget constraints also hinder the implementation of effective management.(Noorhidayah et al., 2022).

Although several studies have discussed drug logistics management in community health centers (Puskesmas) in general, few have specifically evaluated implementation strategies at the Dalu Sepuluh Community Health Center in Tanjung Morawa. Such local research is crucial, given the differences in resources, funding systems, and operational challenges in each region. Therefore, this study aims to fill this knowledge gap and provide an in-depth overview of logistics strategies implemented in the field.

Based on this description, this study aims to analyze logistics management strategies to improve drug availability at the Dalu Sepuluh Tanjung Morawa Community Health Center. The research focuses on all stages of logistics management: planning, procurement, storage, distribution, and disposal, to identify obstacles and formulate strategic solutions for optimal sustainability of health services.(Fadilla Dalimunthe et al., 2023).

RESEARCH METHODS

This study used a descriptive qualitative method to analyze logistics management strategies to improve drug availability at the Dalu Sepuluh Tanjung Morawa Community Health Center. Data were collected through in-depth interviews with key informants, including the pharmacist in charge and related staff who were knowledgeable about the drug logistics management process at the community health center. In addition to the interviews, direct observation was conducted to observe the actual process of drug planning, procurement, storage, distribution, and disposal.(Jumriah et al., 2023).

Data collection was conducted systematically using an open-ended interview guide that allowed for in-depth exploration of the constraints and strategies implemented in drug logistics management. During the interviews, the researcher acted as the primary instrument, supported by a voice recorder and field notes to ensure data accuracy. The collected data were then analyzed thematically to identify patterns, constraints, and solutions in drug logistics management. This approach is expected to provide a comprehensive overview of the effectiveness of logistics management strategies in maintaining optimal drug availability at the Dalu Sepuluh Tanjung Morawa Community Health Center.

RESULTS AND DISCUSSION

This study involved two key informants: one drug and pharmacy management staff member and one pharmacy SDK staff member, both aged 31. Both had direct roles in the drug logistics management process at the Dalu Sepuluh Tanjung Morawa Community Health Center and were the primary sources of empirical information in this study.

Table 1. Informant Characteristics

No.	Informant Name	Age	Position
1.	Key Informant	31 years old	Drug and Pharmacy Management Staff
2.	Supporting Informant	31 years old	SDK Pharmacy Staff

With the title "Analysis of Logistics Management Strategy in Improving Drug Availability at the Dalu Sepuluh Tanjung Morawa Community Health Center," the researcher selected only two informants based on their knowledge and experience related to the research topic. Observations and interviews were scheduled for April 29, 2025.

Planning of Drug Needs at the Daluh Sepuluh Tanjung Morawa Community Health Center

Drug needs planning at the Community Health Center (Puskesmas) is based on drug usage data from the previous period and the dominant disease patterns in the work area. The method used is consumption-based, with the Drug Usage Report and Drug Request Sheet (LPLPO)

serving as the primary reference for estimating drug needs. As exemplified by the following interview:

> *"We calculate drug needs based on average past usage plus projected future needs. Data is taken from the LPLPO."*
>
> (Key Informant)

In addition to referring to the LPLPO, Community Health Centers also use the National Essential Medicines List (DOEN) and the National Formulary as guidelines for determining the types of medications planned. As shown in the following interview excerpt:

> *"We use DOEN and the National Formulary to ensure that the medicines we prepare meet pharmaceutical service standards."*
>
> (Supporting Informant).

Coordination is also a crucial part of the planning process. The planning team involves doctors, health program stakeholders, and the District Health Office to align needs data with budgetary constraints.

> *"We synchronize data between doctors, program stakeholders, and the Health Department so that the budget and drug needs are aligned."*
>
> (Key Informant)

However, planning still faces challenges, particularly in data and network integration. The system used is not yet fully digital, resulting in data validity often being suboptimal. Furthermore, limited internet access also hinders synchronization with the Health Office application. These results demonstrate that the planning process was conducted systematically and adhered to applicable regulations. The consumption method, based on historical data and local disease patterns, was deemed relevant to primary care needs.

This finding aligns with research by Noorhidayah et al. (2022), which states that the Landasan Ulin Community Health Center also uses the LPLPO-based consumption method to prepare its annual Drug Needs Plan (RKO) and a monthly LPLPO for routine distribution. Meanwhile, Eviyan & Indrawati (2023) emphasized the importance of data validity and information system integration in formulating more accurate needs estimates—something that was also an obstacle at the Dalu Sepuluh Community Health Center.(Noorhidayah et al., 2022).

Drug Storage at the Daluh Sepuluh Tanjung Morawa Health Center

Medication storage at this community health center follows the FIFO (First In First Out) and FEFO (First Expired First Out) principles. Medications are arranged alphabetically and separated by dosage form, such as tablets, syrups, and injections. Medications requiring specific temperatures, such as vaccines, are stored using a cold chain and a pharmacy refrigerator. As quoted in the following interview:

> "The methods used here are FIFO and FEFO. We prioritize medications that expire quickly, and if they have the same expiration date, the ones that come in first are the ones that are used first."
>
> (Key Informant)

For medications such as narcotics, special locked cabinets are available in accordance with the storage regulations for prescription drugs. This classification ensures the safety and quality of the medications until they are used. Despite the well-established system, storage still faces space constraints. Shelves have been raised to accommodate more stock, but the sheer number of medications that must be separated makes storage space cramped. As the following interview excerpt illustrates:

> *"We've made the shelves taller, but because there are so many types of medicine that need to be separated, the space is still cramped."*
>
> (Supporting Informant)

This finding is in line with the research results(Ginting et al., nd)which states that storing drugs using the FIFO and FEFO principles, along with grouping by dosage form, is standard practice in many community health centers. Research by Safitri et al. (2025) also states that limited storage space and the lack of facilities for temperature-sensitive drugs are common challenges that can impact drug quality. Therefore, improvements to storage facilities are necessary to make logistics management more efficient and minimize the risk of drug damage.

Distribution and Stock Monitoring at the Daluh Sepuluh Tanjung Morawa Community Health Center

Drug distribution at the Dalu Sepuluh Tanjung Morawa Community Health Center (Puskesmas) is carried out routinely every two months. The Puskesmas collects the drugs

directly from the Deli Serdang District Pharmacy Installation (IFK) after submitting a LPLPO (Large-Scale Drug Order). However, in practice, delays in delivery and discrepancies between the quantity of drugs received and actual needs are common.

> "Sometimes distribution from IFK is late, and the stock sent does not match the demand at LPLPO."
>
> (Key Informant)

As a Community Health Center (Puskesmas) implementing a BLUD system, this facility has the flexibility to finance drug procurement through Pharmaceutical Wholesalers (PBF) if IFK stocks are insufficient. This is a crucial solution for ensuring rapid and independent drug availability.

> "If the IFK doesn't have enough, we can buy it ourselves using JKN capitation funds because we are a BLUD."
>
> (Supporting Informant)

Meanwhile, stock monitoring is still done manually using stock cards and monthly LPLPO reports. Although applications such as SIMPUS and SIODANG are available, their implementation is not optimal due to network limitations and data asynchronous.

> "We still use manual data because the network is often disrupted, and some drug data cannot be entered into the application."
>
> (Key Informant)

These findings reflect that the distribution and stock monitoring system at community health centers is still in transition from manual to digital systems, and relies on cross-agency coordination. Research by Faridz et al. (2024) states that an effective drug distribution system requires integration with a logistics information system and real-time data-based monitoring to prevent stockouts.

Meanwhile, research by Trianasari et al. (2024) confirmed that procurement flexibility, as implemented by Public Health Centers (Puskesmas) with Public Health Services (BLUD), can accelerate drug availability when distribution from the Public Health Information System (IFK) is delayed. However, the use of information systems such as SIMPUS and SIODANG needs to be enhanced through training and infrastructure improvements to ensure efficient, accurate, and real-time drug stock data management.

Removal of Drugs at the Daluh Sepuluh Tanjung Morawa Health Center

Medication disposal is carried out to ensure that damaged, expired, or unfit for use medications are no longer circulating in healthcare settings. This process begins with physical separation from active stock, data recording, and the preparation of a report.

The disposal process differs based on the source of drug procurement. Drugs obtained from the regional budget (APBD) through the IFK must be returned to the district pharmacy unit for collective destruction. Meanwhile, drugs obtained from the JKN capitation funds provided by the Regional Public Health Agency (BLUD) are destroyed directly by the community health center (Puskesmas) with the support of a third party.

> "If the medicine comes from IFK, we prepare a report and return it there. But if it comes from a BLUD, we destroy it ourselves, usually using a third party."
>
> (Key Informant)

However, this activity does not yet have a regular disposal schedule due to funding constraints and the need to wait for stock accumulation from various community health centers before being destroyed jointly by the Health Office. As a result, expired medications often remain in warehouses, causing backlogs.

> "The problem is, there's no regular schedule. So, expired medications often pile up while waiting for everything to be collected."
>
> (Supporting Informant)

The practice of drug disposal at this Community Health Center is in accordance with SOP and regulations, but has not been running optimally due to the absence of a fixed scheduling system and a special budget for destruction. This finding is in line with research by Jumriah et al. (2023) which shows that most Community Health Centers carry out drug disposal in stages and centrally, with long administrative procedures and tend to delay the physical process of destruction.

This risks the accumulation of damaged or expired drugs in storage areas, which can compromise safety and disrupt logistical efficiency. To improve effectiveness, a policy for routine drug destruction scheduling, budgetary support from local governments, and ongoing collaboration with third-party pharmaceutical waste managers are needed.(Jumriah et al., 2023).

Recording and Reporting of Medication at the Daluh Sepuluh Tanjung Morawa Community Health Center

Drug data recording and reporting at community health centers (Puskesmas) is conducted in a hybrid manner, combining manual and digital recording. Manual recording is done through stock cards and monthly LPLPO forms. Digital recording is done through various applications tailored to each program.

> "Recording still uses two methods: manual and digital. We input daily stock in SIMPUS, but there are also dedicated apps like Smile Immunization or Smile Logistics for HIV."
>
> (Key Informant)

In addition to SIMPUS, the primary application for daily stock management, programs such as HIV/AIDS, immunization, and tuberculosis have their own applications to support more accurate and programmatic reporting. The Smile app is used in several vertical programs, such as Smile Imunisasi for vaccination and Smile Logistics for HIV.

Although application use has begun, implementation is not yet optimal. Technical constraints such as weak network access and data asynchronous between systems are major obstacles to fully adopting the digital system.

> "Sometimes the SIMPUS application is slow due to network issues, and some medication data won't come in. That's why we still use the manual method."
>
> (Supporting Informant)

This dual-registration practice reflects the transition between legacy and digital systems. Digitalization efforts have shown progress, but infrastructure and human resource limitations mean manual recording remains necessary as a backup. This finding aligns with a study by Wahyuningsih et al. (2024), which highlighted that many community health centers in Indonesia still use hybrid systems due to network limitations and minimal information technology training.

A study by Girsang & Abdillah (2022) also confirmed that the effectiveness of drug logistics reporting is highly dependent on the quality of IT infrastructure and the competence of application system users. Going forward, increased human resource capacity in digital system

management and improved integration between applications are needed to ensure real-time, accurate, and efficient drug reporting.(Noorhidayah et al., 2022).

CONCLUSION

This study shows that drug logistics management at the Dalu Sepuluh Tanjung Morawa Community Health Center has implemented the planning, procurement, storage, distribution, and disposal stages of drugs in accordance with applicable guidelines. Drug needs planning is carried out by referring to previous consumption data and disease patterns in the work area, as well as referring to the National Essential Drug List (DOEN). However, the planning process is still manual, and even those using applications are still limited in terms of drug input in the application due to a lack of synchronization with the Health Office. Consequently, the accuracy of drug needs estimates is not optimal and has the potential to cause stock imbalances. Drug procurement is still hampered by delays in delivery and complex administrative procedures, while drug storage faces limitations in adequate facilities and equipment, especially for temperature-sensitive drugs.

Drug distribution and stock monitoring at this community health center are still carried out manually using Drug Usage Reports and Request Sheets (LPLPO), resulting in a less rapid and accurate response to stock shortages. The disposal of expired and damaged drugs is not routinely scheduled, and a dedicated budget for this activity is not yet available, resulting in suboptimal disposal management. Logistics management evaluation and monitoring are conducted periodically, but remain less systematic and do not fully involve coordination between relevant units. Overall, the drug logistics management strategy at the Dalu Sepuluh Tanjung Morawa Community Health Center already covers important aspects, but its implementation needs to be improved to ensure sustainable drug availability and optimal health services.

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