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APPLICATION OF THE ABC METHOD TO IMPROVE THE EFFECTIVENESS OF CONTROL OF DRUG INVENTORY FOR BPJS HEALTH PATIENTS

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Abstract

This study aims to analyze drug inventory control at Kasih Clinic using the ABC method with the help of POM-QM software for Windows. Based on the Pareto principle, the results of data processing indicate that inventory items can be classified into three main groups based on the contribution of usage value to total inventory costs. Group A consists of five main drug items that contribute the most to inventory value, which is around 87.48%, despite the relatively small number of items. This group requires strict control because it has a significant financial impact. Group B includes two drug items with a cumulative contribution of usage value up to 97.55% and requires periodic monitoring with a medium priority level. Meanwhile, group C consists of most drug items but only contributes around 2.45% of the total usage value, so it can be managed with a simpler control system. Overall, the application of the ABC method has proven effective in identifying drug inventory control priorities objectively and based on economic value, thus supporting more efficient hospital inventory management decisions.

Keywords: ABC Method, Inventory Control, BPJS Health, POM QM for Windows.

INTRODUCTION

The availability of medicines in hospitals is a crucial aspect that directly impacts the quality of healthcare services. Excessive drug supplies can potentially pose a risk of damage and expiration, given that most drugs have high economic value. Conversely, drug shortages can disrupt the continuity of services and trigger patient complaints, particularly among National Health Insurance (JKN) participants. This situation is exacerbated by the implementation of an online tiered referral system by BPJS Kesehatan, which has a direct impact on drug demand and distribution patterns in referral hospitals [1]. Furthermore, drug procurement through the E-catalog system has also changed the inventory planning and control mechanisms, particularly in terms of ordering flexibility and procurement timeliness [2]. The large variety of drug types that must be managed, especially BPJS Kesehatan patient drugs, makes conventional or visual inventory control ineffective [3]. The main problem that arises is how to determine the priority of controlling drugs that have a high cost value, high usage rate, and high criticality level, so that a more systematic inventory management method based on quantitative analysis is needed [4].

To address these issues, this study employed a classification-based inventory control analysis approach. The ABC analysis method was applied to group drugs based on their contribution to value-of-use [5], [6], while the VEN (vital, essential, non-essential) method was used to classify drugs based on their criticality to healthcare [7]. The combination of ABC–VEN analysis is considered more comprehensive because it considers not only financial aspects but also clinical aspects [8]. The research focused on the AE drug group, which is classified as having high usage value and essential importance. Furthermore, the Economic Order Quantity (EOQ) method was applied to the AE drug group to determine the optimal order quantity that balances ordering and holding costs. This approach is expected to improve the efficiency of the drug management cycle and minimize the risk of overstocking or understocking.

Previous studies generally discuss ABC, VEN, or EOQ analysis separately in the context of pharmaceutical inventory management. Some studies combine ABC–VEN for determining drug control priorities, but these are still limited to the general hospital context [9] and have not specifically linked them to the JKN system, the implementation of a tiered referral system, or the drug procurement mechanism through the E-catalogue (Andryani et al., 2015). The novelty of this research lies in the integration of ABC–VEN analysis with the EOQ method, focusing on BPJS Kesehatan patients' AE medications, and examining them within the context of tiered referral policies and the e-catalogue. This approach provides a new perspective on drug inventory control, not only in terms of cost efficiency but also in adapting the inventory system to national healthcare policies.

METHOD

This study used a descriptive analytical design with a retrospective approach. The data analyzed were BPJS Kesehatan patient drug usage data for the period January to December 2018. This study aimed to determine whether there was an improvement in BPJS Kesehatan patient drug inventory control at Kasih Clinic Pharmacy Installation after the implementation of the EOQ method. The study population included data on planning, procurement, and drug usage for BPJS Kesehatan patients in 2018 obtained from the Head of Pharmacy Installation, Head of Procurement, and Head of Warehouse. The study sample was BPJS Kesehatan patient drug data in 2018 included in the AE group. Drug analysis for AE classification is performed by calculating the percentage of each drug item and then grouping them. The calculations are performed using the POM QM for Windows software application. The results of the data processing using POM QM are then analyzed to draw conclusions.

RESULTS AND DISCUSSION

A useful management technique for improving inventory effectiveness and efficiency can be the use of ABC (Pareto) analysis. Table 1 shows the results of the analysis using ABC analysis. Table 1 in groups A, B and C, the percentage of the number of drug items and usage values when compared with Satibi (2015) where the study was conducted before the BPJS era, group A is drugs that use 75% of the total cost and the drug items amount to 20% of the total drugs. Group B is drugs that use 15% of the total cost and the drug items amount to 30% of the total drugs. Group C is drugs that use 10% of the total cost and the drug items amount to 50% of the total drugs. The number of drug items for BPJS Kesehatan patients at the Kasih Clinic Pharmacy Installation shows a significant difference caused by too many drugs in group C and most of these drugs are included in the slow-moving drug group. Slow-moving medications are perishable products that will decrease in value over time or expire. Medications in this slow-moving category are more likely to expire. Planning and controlling the inventory of slow-moving medications is essential to reduce the remaining quantity of medications stored in the warehouse and the risk of them expiring before they are sold. Medications in this category require further management to ensure inventory efficiency. A high inventory of slow-moving medications can increase the risk of losses for hospitals.

Table 1. Data on Drug Use and Purchase Prices

No	Drug Name	Usage (unit)	Purchase Price (Rp)	Usage Value (Rp)	Pareto
1	Novorapid Flexpen	5.165	87,000	449,355,000	A
2	Levemir Flexpen	5,045	78,288	394,962,960	A
3	Seroquel XR 400 mg	19,669	18,616	366.158.104	A
4	Seroquel XR 300 mg	21,497	15,548	334,235,356	A
5	Inf Sanbe RL SP	46,693	7,150	333,854,950	A
6	MST 10 mg	1,453	15,620	22,695,860	B
7	Hyoscine Injection	2,714	8,360	22,689,040	B
8	Norfion INJ 4mg/4ml	889	25,520	22,687,280	B
9	Curcuma	48,652	462	22,477,224	B
10	Lapifed TAB	8,846	2,530	22,380,380	B
11	Durogesic Path 25 mg	35	237,050	8,296,750	C
12	Tamoliv 1000mg inf	296	27,500	8,140,000	C
13	Ferlin Drop	245	33,110	8,111,950	C
14	Gamaras 20%	4	2,009,150	8,036,600	C
15	Tamoliv 500mg inf	243	33,000	8,019,000	C

Based on the results of inventory data processing using the ABC method with the help of POM-QM software for Windows, inventory items are classified into three main categories, namely A, B, and C, which are based on the

contribution of usage value (dollar volume) to the total inventory cost. This method emphasizes the Pareto principle, where a small number of items provide the largest contribution to the overall inventory value.

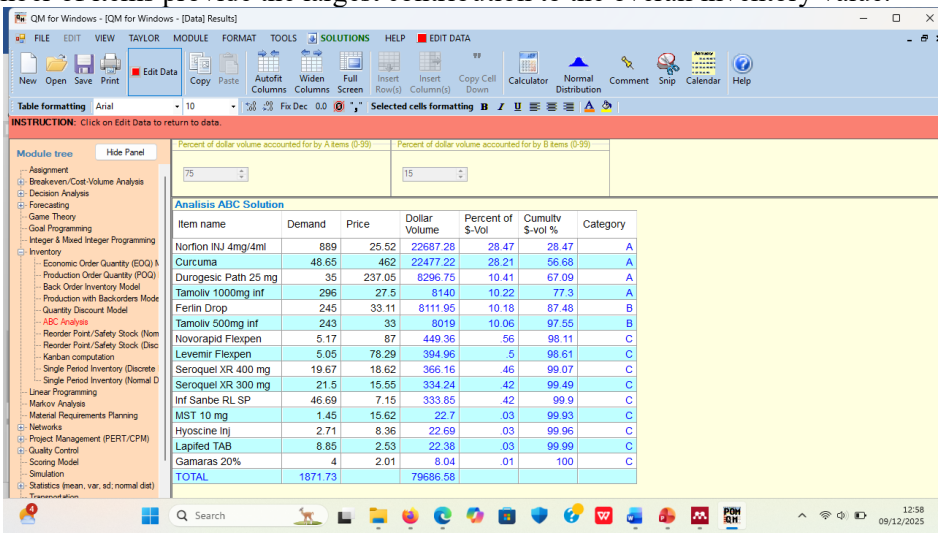

Figure 1. Results of ABC Method Data Analysis using POM QM

The analysis results show that group A consists of five main items: Norfion INJ 4mg/4ml, Curcuma, Durogesic Patch 25 mg, Tamoliv 1000 mg inf, and Ferlin Drop. This group accounts for approximately 87.48% of the total usage value, despite the relatively small number of items. This condition indicates that group A items have a very significant financial impact on inventory, thus requiring strict control, starting from demand planning, ordering frequency, to continuous stock monitoring. Mismanagement of this group has the potential to cause significant losses for the hospital. Furthermore, group B consists of two items: Tamoliv 500 mg inf and Ferlin Drop, with a cumulative contribution to the usage value reaching approximately 97.55%. Items in this group still have a significant impact on inventory costs, but their control priority is lower than group A. Control for group B is carried out through periodic monitoring and a more flexible ordering policy than group A.

Meanwhile, group C includes most inventory items, such as Novorapid Flexpen, Levemir Flexpen, Seroquel XR 400 mg, Seroquel XR 300 mg, Inf Sanbe RL SP, MST 10 mg, Hyoscine Inj, Lapifed TAB, and Gamaras 20%. This group only contributes around 2.45% to the total usage value, despite having the largest number of items. This indicates that financially, group C items have a relatively small impact, so their management can be carried out with a simpler system, for example by ordering in large quantities but with low frequency to reduce administrative costs. Overall, the application of the ABC method through POM-QM for Windows has proven capable of identifying inventory control priorities objectively and based on economic value. The results of this study provide practical implications for hospital inventory management, particularly in allocating control resources more efficiently. The primary focus should be directed to group A, followed by group B, while group C can be managed with minimal supervision without sacrificing operational efficiency. Thus, the ABC method can be the basis for strategic decision-making in drug inventory control in hospitals.

CONCLUSION

This study confirms that controlling the inventory of medicines for National Health Insurance (JKN) patients in hospitals requires a more systematic and quantitative approach than conventional methods, particularly due to the complexity of the BPJS Kesehatan (Indonesian Health Insurance) tiered referral system and the E-catalogue procurement mechanism. Through the integration of multidimensional ABC–VEN analysis, medication items were successfully prioritized based on their financial value contribution and clinical criticality. Specifically, the ABC analysis results indicate that Group A, despite consisting of only five items, contributes almost 100% of the total value of BPJS Kesehatan patients' medication usage. This finding has crucial implications for management, namely the need to focus tight control resources on Group A to minimize the risk of financial loss due to damage or expiration. Furthermore, the application of the Economic Order Quantity (EOQ) method to the AE (high-value and essential) priority group is a strategic step to optimize order quantities, thereby balancing operational and storage costs. Overall, the integration of the ABC–VEN and EOQ methods has proven effective in providing an objective

framework for strategic decision-making, ultimately improving the efficiency and effectiveness of the medication management cycle and ensuring the continuity of healthcare services in hospitals.

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