

# Drug Management Problems Distribution Stage Indicators in Hospital

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## Drug Management Problems Distribution Stage Indicators in Hospital

### ABSTRAK

**Background:** The distribution stage is an important part of drug management in hospitals. However, there are problems with the indicators of the drug distribution stage in hospitals. Thus, the purpose of this study is to determine problems in distribution indicators in hospital pharmaceutical installations based on the Ministry of Health of the Republic of Indonesia, Pudjaningsih (1996) and WHO (1993).

**Method:** A Systematic literature search performed in October 2023 using Google Scholar, Garuda Kemendikbud dan Scopus. Methodological quality was assessed using tools from the Joanna Briggs Institute (JBI).

**Result:** We retrieved 3.237 articles and included seven studies. Regarding the design, they were non-experimental observation documents retrospective (n=7). It was found that there were problems in the distribution stage indicators, such as turn over ratio, expired or damaged drugs, dead drug stocks and drug availability that was not optimal in hospitals. The assessment of methodological quality was characterized by a lack of clarity and/or lack of information in primary studies.

**Conclusion:** Most articles report discrepancies in drug distribution indicators based on WHO, Ministry of Health and Pudjaningsih. This shows that drug management in hospitals is not optimal. The findings of this study may be of interest to pharmacists, doctors and other health workers to pay attention to the smooth cooperation of drug management in hospitals.

**Keyword:** drug management, distribution, indicators, hospital

## INTRODUCTION

One part of logistics management is drug distribution. Distribution is part of drug management where a series of activities (Crystallography, 2016) in order to distribute pharmaceutical preparations, medical devices, and consumables from storage to service units. Effective drug distribution has a good system and management by maintaining a stable drug supply, maintaining good drug quality, minimizing unused drugs due to expiration or damage (Quick, J.P., Rankin, L., R.O., O., R.W., 2012). Indicators used in drug distribution include the suitability of drugs with stock cards, Turn Over Ratio, expired and damaged drugs, dead drug stocks and the level of drug availability set by the Ministry of Health of the Republic of Indonesia, Pudjaningsih (1996) and WHO (1993) (Crystallography, 2016).

However, several studies show that there are still various problems found in drug distribution indicators in Indonesian hospitals. A study at Poso Hospital, Central Sulawesi Province, found a mismatch between physical drugs and stock cards by 95.89%, expired and damaged drugs by 11.42%, and dead stock by 4.24%. (Herman *et al.*, 2019). Another study reported a discrepancy in the Turn Over Ratio in Indonesian hospitals. In other studies such as in the study at Muntilan Hospital, there was a discrepancy in the TOR (Turn Over Ratio) indicator, this shows that the value of inventory at Muntilan Hospital has not been economically efficient (Ghozali, Darayani and Latifah, 2021). Distribution that does not work well results in drug vacancies and will affect pharmaceutical services, for example in TOR (Turn Over Ratio), if a low TOR illustrates that there is still unsold stock (Primadiamanti, Saputri and Sari, 2022). Stock dies or drugs that do not experience transactions within at least 3 months caused by several factors such as lack of planning and commitment of doctors in the allocation of good drugs so that the available drugs are not the drugs needed (Andriani, 2023).

The purpose of this systematic review aims to identify and thoroughly analyze problem drug distribution indicators and influencing factors in Indonesian hospitals. This study uses a systematic review method. The results of this systematic review are expected to provide a comprehensive picture of the current condition surrounding drug distribution in Indonesian hospitals. So that it can be used as a reference for policy makers and other researchers for research or further improvement efforts related to drug distribution in hospitals.

## METHODE

## Search Strategi

<sup>1</sup> A systematic search of the literature was performed in April 2021 using the following databases: Garuda Kemdikbud, Google Scholar, Researchgate dan Scopus. The search strategy used standard (MeSH terms) and non-standard terms related to “analisis management obat OR management logistik AND indikator tahap distribusi AND Apoteker Rumah sakit OR farmasi logistik rumah sakit”. Each term was grouped through Boolean operators (AND and OR) to their synonyms and subcategories and adapted to each database. Additionally, we manually searched the reference lists of all eligible studies. The databases were searched for publications 2015 until 2024.

## <sup>1</sup> Eligibility Criteria

Studies were eligible for inclusion if they met the following criteria; (i) Published in English or Indonesian; (ii) The year the article was published between 2015 to 2023; (iii) Discuss the management of distribution-stage drugs in hospitals; (iv) Contain complete and relevant information related to indicators in the hospital distribution stage; (v) Articles containing ISSN Numbers. The following literature and studies were excluded; (i) Articles published before 2015; (ii) literature review; (iii) systematic reviews or meta-analyses; (iv) studies not available in full; (v) The article is irrelevant and incomplete according to the required database; (vi) Thesis and Handbook.

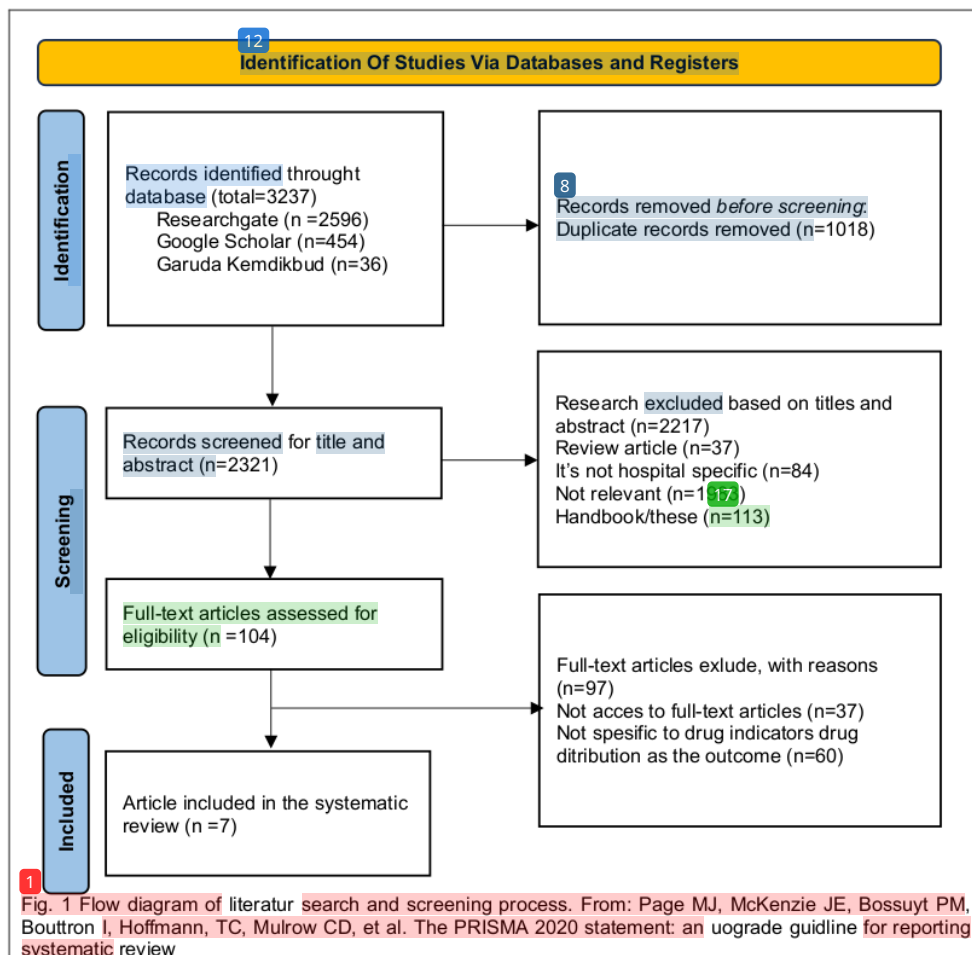
## Quality Assessment

JBI's critical appraisal tools (eight items) (Institute, 2020). Each item was marked “yes,” if the article met the criteria of the item; “no,” if it did not meet the criteria; “unclear” if sufficient information to make a judgment was lacking; and “Not Applicable,” if the item did not apply to the article.

## RESULT

### Search and Study selection

A total of 3.237 articles were identified from the initial search. After excluding duplicated or irrelevant articles based on titles and abstracts, 104 potentially relevant articles were retrieved for full-text evaluation. Out of these, seven met the inclusion criteria and were included in this systematic review. Figure 1 illustrates the study selection process.



**1**  
**Study Characteristics**

The characteristics of the included studies are shown in Table 1. All eight articles were published in English or Indonesian between 2005 to 2024. This research was conducted in several hospitals in Indonesia. This research was conducted in Java and outside Java. The study was conducted in the Nusa Tenggara Barat (1), in several cities in the provinces of East Java (n = 2), Central Java (n = 3), and province of Aceh (n = 1), the study was carried out in hospitals type A (1), type B (3), type C (3), and some hospitals in Nusa Tenggara Barat did not mention hospital accreditation (1). The study used descriptive methods with retrospective observation documents or concurrent, as shown in table 1.

Several studies assessed indicators of stock card suitability (n = 8), Turn Over Ratio (n = 7), expired and damaged drugs (n = 5), dead stock of drugs (n = 5), and drug availability (n = 5), as shown table 3.

**Tabel 1.** Study Characteristics

Author/Year	Design	Setting	Hospital Type	Data Collection Mrthode
(Nugroho, Purwidyaningrum and Harsono, 2022)	Deskriptive Observation	Air Force Hospital dr. Efram Harsana, Madiun	Air Force Hospital	Observasion Document, retrospective and concurrent
<u>MT Ghozali</u> , Aiman Darayani, Dini Nur Latifah, 2021	Deskriptif, non-experimental	Muntilan Hospital, Central Java	General Hospital	Observasion Document, retrospective
<u>Muhammad Thesa Ghozali</u> , Dini Nur Latifa et, al, 2021	Deskriptif, non-experimental	Psychiatric Hospital Prof. Dr. Soerojo	Mental Health Hospital	Observasion Document, retrospective
Satibi, Tri Murti Andayani, et al. 2020	Deskriptif, non-experimental	Hospital In Banyuwangi	General Hospital	Observasion Document, retrospective and concurrent
Maulina M, Wiryanto W, Urip Harahap, 2020		Langsa Hospital in Aceh	General Hospital	Observasion Document, Retrospektive and prospektive
Nur Oktaviani, Gunawan Pamudji, Y. Kristanto, 2018	Descriptif Observation	Hospital in Nusa Tenggara Barat	General Hospital	Observasion Document, retrospective and concurrent
Ika Purwidyaningrum, 2011	Descriptif Observation	Hospital in Tarakan	General Hospital	Observasion Document, retrospective and concurrent
Akhmad Fakhriadi, Marchaban, Dwi Pujaningsih, 2011	Descriptif Observation	Muhammadiyah Hospital In Temanggung	PKU Muhammadiyah Hospital	Observasion Document, retrospective and concurrent

## Quality Aesement

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According to the finding of the JBI Critical Appraisal used to evaluate the article's quality, all articles obtained a score of at least seven, indicating that the methodological quality of the article was extremely high. The result of the quality evaluation re shown in table 2.

**Tabel 2.** Quality Aesement of Articles

Author/Year	Score
(Nugroho, Purwidyaningrum and Harsono, 2022)	
<u>MT Ghozali</u> , Aiman Darayani, Dini Nur Latifah, 2021	
<u>Muhammad Thesa Ghozali</u> , Dini Nur Latifa et, al, 2021	
Satibi, Tri Murti Andayani, et al. 2020	

Maulina M, Wiryanto W, Urip Harahap, 2020  
 Nur Oktaviani, Gunawan Pamudji, Y. Kristanto,  
 2018  
 Ika Purwidyaningrum, 2011  
 Akhmad Fakhriadi, Marchaban, Dwi  
 Pudjaningsih, 2011

**Tabel 3.** Checklist Results of Conformity or Non-conformity of Distribution Stage Drug Management indicators

Researcher & Year	Indicator Distribution Drug in Hospital				
	Compatibility between the physical drug with the stock card	TOR	Expired and Damaged Drugs	Dead Stock	Avaibility Drug
(Nugroho, Purwidyaningrum and Harsono, 2022)	x	✓	NA	NA	✓
(Ghozali, Darayani and Latifah, 2021)	✓	✓	X	✓	NA
(Ghozali, Latifah and Darayani, 2021)	✓	-	NA	x	x
(Satibi <i>et al.</i> , 2020)	✓	✓	NA	NA	✓
(*Jurnal Fix_1.Pdf, no date)	✓	x	x	x	✓
(Oktaviani and Pamudji, 2018)	x 16	x	x	x	NA
(Purwidyaningrum, 2011)	x	x	x	NA	NA
(Akhmad Fakhriadi, Marchaban, Dwi Pudjaningsih, 2008)	x	✓	x	x	x

**Tabel 4. Data Extraction**

Problems with drug distribution indicators in hospitals						
No	Researcher & Year	Compatibility between the physical drug with the stock card	TOR	Expired and Damaged Drugs	Dead Stock	Availability Drug
1	(Nugroho, Purwidyaningrum and Harsono, 2022)	Warehouse officers do not only do work in the warehouse, so in serving drug requests from outpatient pharmacies, inpatients and treatment rooms, it is very likely not to immediately record every drug dispensing. Human Resources	Already efficient	NA	NA	Already efficient
2	(Ghozali, Darayani and Latifah, 2021)	Already efficient	The accumulation of drugs in warehouses and large purchases that inhibit the circulation of drugs and cause the stacked drugs to be damaged or expired	Already efficient	There is a buildup of drugs in warehouses, causing financial losses	NA
	Influencing factors	supervision and monitoring are not optimal, lack of socialization and recording training according to SOPs	Disease patterns, decreased patient visits to hospitals, lack of communication between health workers	Lack of maximum supervision and monitoring of drugs that will expire soon, poor drug inventory system, less optimal rotation of drug inventory using the FEFO system	Brand changes, doctors no longer prescribe certain drugs, fluactive disease trends and drugs that are available in warehouses but are not used in pharmaceutical services.	NA
3	(Ghozali, Latifah and Darayani, 2021)	Already efficient	NA	Already efficient	Drug buildup in pharmaceutical warehouses	NA



Influencing factors	supervision and monitoring are not optimal, SIM	NA	Already efficient	Human error, disease trends are not decisive, doctors do not prescribe certain drugs	NA
4 (Satibi <i>et al.</i> , 2020)	Already efficient	RSUD Kab Ngawi is appropriate, while RSUD Kab Banyuwangi is not yet suitable due to the accumulation of drugs (over stock) in the drug warehouse. Purchasing drugs in large quantities is one of the triggers for drug buildup	NA	NA	Already efficient
Influencing factors	Supervision and monitoring have not been optimal	lack of communication between health workers	NA	NA	Improper drug procurement, lack of communication between health workers and low frequency of drug monitoring of drug stock levels
5 ( <i>Jurnal Fix</i> , 1.Pdf, no date)	Already efficient	NA	Lack of optimal control on drugs that are approaching expiration, many drugs from previous year's purchase	Doctors do not prescribe certain drugs, mistakes occur by officers because of lack of control on drug stocks that are close to expiration / damaged so that there is a buildup of drugs	Already efficient
Influencing factors	Supervision and monitoring have not been optimal by pharmaceutical warehouse officers	NA	Lack of maximum supervision and monitoring of drugs that will expire soon	Procurement of drugs that are not on target, drug purchases do not apply just in time, lack of	

6	(Oktaviani and Pamudji, 2018)	The information system in logistics is not optimal so that pharmacy warehouse officers need a long time to match between stock and physical drugs through the system and sometimes officers choose to use manual methods	NA	The lack of accuracy of IFRS employees in recording expired drugs and hospitalization stocks, and in drug procurement in 2017 did not pay attention to RKO in the previous year, so that they did not pay attention to RKO in the previous year, so that there were some expired / damaged drugs, this can happen because the percentage of conformity between drug planning and the reality of use is large, which exceeds 120.64% exceeding the standard of 100-120% so that many drugs experience dead stock	communication between health workers
7	Purwidyaningrum, (2011)	Lack of accuracy of warehouse officers when entering data on drug receipt and dispensing, when receiving or removing drugs	There's still a lot of unsold/used supplies	Human error, disease trends are not decisive, doctors do not prescribe certain drugs	This level of availability is up to standard but not yet efficient because of the level of availability that is large or sufficient but has not been managed properly and even so that there are piled up in one of the pharmaceutical depots.

Influencing factors

Improper drug procurement, lack of communication between health workers, and inadequate storage that have the potential to cause supply disruptions

Medications that are not needed or that patients usually take

NA

NA

<p>officers do not immediately enter data into the computer so that finally the officer forgets</p> <p>Human resources, inventory system is not good, supervision and monitoring are not optimal, lack of socialization and recording training according to SOP</p>	<p>Decrease in patient visits to hospitals, lack of communication between health workers</p>	<p>Lack of maximum supervision and monitoring of drugs that will expire soon</p>	<p>NA</p>
<p>8 (Akhmad Fakhriadi, Machbana, Dwi Pudjaningsih, 2008)</p> <p>Influencing factors</p>	<p>lack of accuracy and discipline of employees in recording the actual amount at the time of dispensing and entering drugs.</p> <p>Already efficient</p>	<p>Drugs that have existed since one to three years ago that have been damaged or returned from patients who are already in incomplete form so that they cannot be returned to the distributor.</p> <p>Lack of maximum supervision and monitoring of drugs that will expire soon</p>	<p>NA</p>
<p>Influencing factors</p>	<p>Supervision and monitoring have not been optimal by pharmaceutical warehouse officers</p> <p>Reduced patient visits to hospitals, lack of communication between health workers and other health workers</p>	<p>Lack of maximum supervision and monitoring of drugs that will expire soon</p>	<p>NA</p>

## DISCUSSION

The results of 8 articles of drug management analysis at the distribution stage in hospitals still have problems with mismatch of drug management indicators at the drug distribution stage in hospitals, including the following:

### Compatibility between the physical drug with the stock card

The results showed that the percentage of conformity of the drug with the stock card was 100%. This means that all drugs recorded on the stock card correspond to the drugs that are actually in the pharmacy warehouse. This shows that the system of recording and monitoring drug stocks in pharmacy warehouses is running well and accurately. The high suitability of the drug to the stock card has several positive implications. First, it ensures the availability of appropriate and sufficient medication in the hospital, so that patients can get the appropriate treatment. Second, this fit helps prevent shortages or overstocks of drugs that can cause logistical and financial problems for hospitals. Third, with high suitability, decision making related to drug procurement and distribution can be carried out more efficiently and accurately (Ghozali, Darayani and Latifah, 2021) (Satibi *et al.*, 2020).

However, there are hospitals that are not optimal, this is because warehouse officers do not only do work in warehouses, so that in serving drug requests from pharmacies, hospitalizations, and treatment rooms do not directly record every drug expenditure (Nugroho, Purwidyaningrum and Harsono, 2022). In addition, other problems that are problematic in this indicator are The information system in logistics is not optimal so that pharmacy warehouse officers need a long time to match between stock and physical drugs through the system and sometimes officers choose to use manual methods (Oktaviani and Pamudji, 2018).

Some factors that can affect the mismatch between physical drugs and stock cards in hospitals are that the surveillance and monitoring system is not optimal. Supervision and monitoring of the process of selection, procurement, distribution and use of drugs need to be carried out more intensively and structured. It is important to ensure that the entire process runs according to applicable standard operating procedures. In addition, the lack of training socialization on proper recording procedures according to SOPs affects data discrepancies. Pharmacy workers, pharmacists and other health workers involved in the process do not fully understand the applicable regulations. In fact, accurate recording and reporting are important to ensure compatibility between physical conditions and

administrative data. Less than optimal communication such as pharmaceuticals, warehouses, pharmaceutical installations and emergency rooms are also involved. If coordination is not good, this can cause errors in recording during the process of distributing drugs from warehouses to service units so that data accuracy is disrupted (Ghozali, Latifah and Darayani, 2021) (Nugroho, Purwidyaningrum and Harsono, 2022)

### **Turn Over Ratio (TOR)**

Most TOR scores in hospitals are still low or not up to standard (Ghozali, Darayani and Latifah, 2021) ('Jurnal\_Fix\_1.Pdf', no date) (Oktaviani and Pamudji, 2018) (Purwidyaningrum, 2011). The large number of medium and high frequency drug items shows the ability of hospital pharmacy installations to adapt to variations in drug demand by adjusting quantity requirements. Repeated drug purchases also show that the demand for drugs in hospital pharmacies is very high Based on the table above. The low purchasing frequency, which can cause slow turnover of medicines and the possibility of dead stock or even expired medicines if there is no supervision (Purwidyaningrum, 2011). Possible losses include the need for larger drug storage space and the risk of drugs being buried and damaged.

The influencing factor in this indicator is the buildup of drugs in hospital pharmacy warehouses which causes a lack of efficiency in drug distribution in hospitals. Large purchases of drugs that are carried out routinely result in drug stocks experiencing a buildup in warehouses. Though the storage space in the warehouse has limited capacity. Due to the accumulated stock of drugs, the process of distributing drugs from warehouses to service units has been hampered. This will affect the delay in drug turnover in each unit. On the other hand, drug buildup in warehouses also increases the risk of drug damage due to moisture and limited storage space (Satibi *et al.*, 2020) (Ghozali, Latifah and Darayani, 2021).

Generally, the factors causing the ineffectiveness of TOR are due to disease patterns, decreased levels of patient visits to the hospital, and lack of communication between staff in pharmacy warehouses and other health workers which can result in drug buildup (Ghozali, Darayani and Latifah, 2021). Efforts are made to control drugs whose turnover is slow and must be closely monitored to avoid expired drugs and dead drug stocks (Oktaviani and Pamudji, 2018).

### **Expired and Damaged Drugs**

No Hospital Pharmacy Installation has reached a value of 0% on the indicator of expired or damaged drugs (Oktaviani and Pamudji, 2018) (Purwidyaningrum, 2011) (Ghozali, Darayani and Latifah, 2021). Stagnant drugs without quality control and control will be able to cause damaged and expired drugs. The occurrence of damaged, expired and stagnant drugs is caused by management and supporting systems. Damaged and expired drugs reflect the poor distribution system, or lack of quality observation in drug storage due to carelessness of officers, for example drugs or drug stocks purchased last year that have been damaged or returned from patients who are already in incomplete form so that they cannot be returned to the distributor, drugs that are not prescribed by doctors, and negligence of officers in controlling drugs that are close to expiration resulting in excess stock causing expired drugs due to unused drugs or changes in disease patterns (Oktaviani and Pamudji, 2018) (Purwidyaningrum, 2011). In addition, the pattern of prescribing and the varying demand of doctors, can cause changes in using pharmaceutical preparations and BMHPs so that there are supplies that are not moving and slow moving. Immovable inventory causes stock to die, and expire. Efforts made to overcome so that damaged and expired stocks do not occur need to evaluate stock planning, storage of goods and also the ability and cooperation of pharmaceutical personnel, nursing and hospital doctors in monitoring slow-moving inventory (Oktaviani and Pamudji, 2018).

In some Indonesian hospitals there is a problem of expired and damaged drugs that are quite high. A search shows there are some systemic constraints that affect this. First, supervision and monitoring of drugs that will expire drugs, so that drugs that are almost expired are not detected and not immediately distributed to doctors for use. Second, drug supply systems that do not apply the FEFO principle. If drugs enter and are stored in the warehouse not in the order of expiration period, it has the potential to cause the longest stored drugs to expire first (Ghozali, Latifah and Darayani, 2021).

#### **Dead Stock**

Table 4 shows that most hospitals have not met the 0% standard (Arief and Kartikasari, 2021) (Ghozali, Darayani and Latifah, 2021). Supplies of pharmaceutical preparations and BMHPs that died in hospitals were related to the planning process. This condition is because the doctor did not prescribe the drug and chose another brand according to the patient's clinical condition at that time (Ghozali, Latifah and Darayani, 2021) (Oktaviani and Pamudji, 2018) (Котлер, 2008). This indicator discrepancy is caused by doctors not

prescribing the drug and human error in procurement resulting in a buildup of drug stocks.

According to the analysis conducted, the increase in cases of expired and damaged drugs in several Indonesian hospitals is increasing. This is due to the lack of accuracy of Hospital Pharmacy installation employees in recording expired drugs and drug stocks. This causes the nearest expiration drug not to be tracked. then, In drug procurement does not pay attention to the number of expired drugs in the previous year as a reference, so that many drugs purchased exceed the actual need (Oktaviani and Pamudji, 2018).

Factors that cause dead stock in pharmaceutical warehouses include brand changes, doctors no longer prescribe certain drugs, fluctuating disease trends, and drugs that should be available in pharmaceutical warehouses but are not used in pharmaceutical services (Ghozali, Darayani and Latifah, 2021). An effort to control in the regulation of pharmaceutical preparations and BMHP is to evaluate supplies that are not used by doctors for more than three consecutive months. Hospital losses due to dead stock are a restrained financial turnover, and have the potential to expire drugs and even damage to supplies due to too long storage. One of the pharmaceutical installation programs in reducing losses is to exchange inventory or return the inventory to distributors. Hospital pharmacists are advised to be more active in communicating and coordinating dead stock information through the Pharmacy and Therapy Team to functional medical staff doctors and monitored every month, this aims to reduce the occurrence of dead stock (Oktaviani and Pamudji, 2018).

#### **Availability of the Drug**

Drug planning and pharmaceutical preparations are part of the inventory management process after the selection of drug types and other pharmaceutical preparations. The amount of medicine is adjusted to the needs and budget of the hospital, with the aim of avoiding the availability of drugs. This is adjusted using consumption patterns, epidemiology, and a combination of both so that it is adjusted to the budget available at the hospital (Ghozali, Darayani and Latifah, 2021). Based on the research of Elimati Latifah et al, it was explained that the availability of drugs in hospitals was not fully in accordance with the stipulated provisions. There are several problems in drug procurement that become obstacles in increasing drug availability such as drug procurement policies that are not optimal due to ineffective drug procurement management that can cause delays in drug delivery to hospitals or inadequate drug needs. There is a difference in availability between public hospitals and private hospitals.

This may be due to differences in drug procurement policies, available resources or other factors affecting drug management. The availability of these medications can affect health services and cause patient difficulty getting the necessary treatment. The level of availability of existing drugs is considered sufficient. However, the management and distribution of existing drugs have not been evenly distributed and good. This is because these drugs are not managed with good procedures, causing a buildup of drug stocks at one of the hospital's pharmacy depots. Even though these drugs must be distributed to all service installations to support the treatment process and patient needs. With this buildup, it ultimately causes inefficiencies in the drug management system even though the availability of drugs is actually adequate. Therefore, it is necessary to improve the management and distribution of drugs that are more structured to support health services that run well (Oktaviani and Pamudji, 2018).

Efforts made to overcome this problem made improvements in drug procurement and drug inventory management in hospitals. These recommendations can be a guide for hospitals and related parties in increasing drug availability and ensuring optimal health services (Latifah *et al.*, 1994).

#### Research limitations

This review was limited by the lack of complete information regarding the distribution indicators of each hospital in the literature. No hospital has fully discussed the five indicators at the drug distribution stage in hospitals. In the future, we recommend conducting a complete study of the five indicators along with reasons and factors that consider why drug distribution indicators are not in accordance with the provisions of the Ministry of Health of the Republic of Indonesia, Pudjaningsih (1996) and WHO (1993). To optimize the quality of research results, it is imperative that future studies consider the reasons and factors that may affect drug distribution in hospitals.

#### Conclusion

This systematic review explains that there are problems in the indicators of the drug distribution stage in hospitals that need attention. There is a discrepancy between the physical drug and the stock card which indicates a problem in drug inventory management. The drug turnover ratio in hospitals is also not optimal, indicating inefficient drug use. Another problem is that there are still many expired and damaged drugs in hospitals, as well as dead drug stocks resulting in waste of resources. The availability of drugs in hospitals is also not optimal overall, influenced by suboptimal procurement



policies and inefficient inventory management. In conclusion, targeted and continuous improvement efforts are needed in drug distribution in hospitals. This includes improved accuracy of drug inventory recording, optimization of drug procurement policies, better monitoring of expiration dates, improved inventory management, and better collaboration between related parties. Thus, it is hoped that the availability of drugs in hospitals can be increased, so that patients can receive optimal health services.

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