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## **An Analysis of Determinant Factors of Drug Planning for Basic Health Services in Health Center Inpatient Care Facilities in the Working Area of the Health Department of Malaka Regency**

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### **Abstract**

Background: Drug planning is critical for fulfilling drug demand in primary health care. In order to achieve the specified needs, the planning stage must be as well-designed as feasible. Objective: To investigate the factors that influence drug planning for basic health services at health center inpatient care facilities in the Malaka Regency Health Office's working area. Methods and design: This is an analytical observational study with a cross-sectional design. This study included 28 respondents from four health center inpatient care facilities in the Malaka Regency: Weoe Health Center, Biudukfoho Health Center, Namfalus Health Center, and Kaputu Health Center. Simple logistic regression and multiple logistic regression were employed in the statistical study. The factors investigated were drug demand, drug types and dosages, drug dose forms, compilation of drug usage, and pharmacists. Results: Bivariate analysis revealed that drug demand ( $p=0.040$ ;  $OR=6.41$ ), drug types and dosages ( $p=0.017$ ;  $OR=10.50$ ), drug dosage form ( $p=0.007$ ;  $OR = 16.00$ ), and compilation of drug usage ( $p = 0.002$ ;  $OR = 60.00$ ) had a significant influence on drug planning, but there was no effect between pharmacists ( $p = 0.497$ ;  $OR = 1.75$ ).

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Conclusion: The compilation of drug usage is a determining factor in drug planning for basic health services at the health center inpatient care facilities in the working area of the Malaka Regency's Health Office.

**Keywords:** Determinants; Drugs; Planning.

## **1. Introduction**

The regency/city government is responsible for all aspects of drug management in the regency/city, including planning, procurement, storage, distribution, and reporting. Appropriate drug planning must start with identifying needs, which must consider several factors, including the selection of pharmaceuticals from the list of basic health service drugs (PKD) and the list of national essential drugs (DOEN) [1]. Drug demand must be fulfilled well to deliver primary health care to the community; thus, they must be created as well as possible during the planning stage [2].

The first step in drug demand is to look at consumption and epidemiological patterns [3]. Drug planning under the consumption pattern technique begins with a logistical study of prior usage, with each health center producing the data and reporting them to the Health Office [4]. The epidemiological technique, on the other hand, bases the estimation of demands on illness patterns from the prior era. [1] Following a review of medicine requirements, the Health Office adjusts the requirements in accordance with the pharmaceutical sector's regular special allocation funding [5].

According to the Malaka District Health Office's budget implementation document (DPA), drug spending in 2017 was 4,699,753,000 rupiahs, 3,396,588,000 rupiahs in 2018, and 2,793,580 rupiahs in 2019. The budget is sourced from the special allocation fund for the health sector in the pharmaceutical sector. According to the statistics above, the special allocation for health in the pharmaceutical sector has decreased between 2017, 2018, and 2019, which has influenced the provision of health services, particularly in first-level health facilities [2].

## **2. Materials and Methods**

This study is analytic observational with a cross-sectional design [6,7]. This study was carried out in April and May of 2022 at Weoe Health Center, Biudukfoho Health Center, Namfalus Health Center, and Kaputu Health Center. 2 health center inpatient care facility drug managers, 1 head of the inpatient facility, 2 general practitioners of inpatient facility, 1 inpatient facility planning division, 1 head of inpatient facility administration, and 1 head of the pharmacy installation at the health office comprised the research samples, totaling 28 respondents. [8] The variables evaluated were the drug demand variable, drug types and quantities, drug dose forms, compilation of drug usage, and pharmacy staff. Simple logistic regression and multiple logistic regression were used to analyze the data. [9]

## **3. Results**

### **3.1 Characteristic of Samples**

Characteristics of respondents based on age, job title, and place of work.

**Table 1:** Characteristics of the respondents

Variable	Category	n	%
Age	≤ 30 years old	8	32.0
	> 30 years old	17	68.0
Job title	Head of Health Center	4	14.3
	General practitioners	8	28,6
	Planning Manager	4	14,3
	Drug Manager	7	25,0
	Head of Administration	4	14,3
	Head of the Health Office Pharmacy Installation	1	3,6
Working Place	Weoe Health Center	6	24.0
	Biudukfoho Health Center	6	24.0
	Namfalus Health Center	6	24.0
	Kaputu Health Center	6	24.0
	Health Office	1	4.0

**Table 1** reveals that the majority of respondents' mothers are over the age of 30, with a total of 17 respondents (68.0 percent). Furthermore, most of the respondents work as general practitioners, with a total of 8 respondents (28.6 percent), and the majority of respondents work at the four health centers, with a total of 6 respondents each (24.0 percent).

### 3.2 Factors influencing drug planning

In this study, factors influencing drug planning include the necessity for drugs, drug types and quantities, drug dose forms, compilation of drug usage, and pharmacists. Table 2 shows the effect of each factor on drug planning.

**Table 2** shows that the majority of drug demand is not met with a total of 60%, most drug types and quantities are not met with a total of 64%, and the majority of drug dosage forms are not met with a total of 60%, the most of of the compilation of unused drug usage is not met with a total of 52%, and the majority of pharmacists are not met with a total of 56%. The majority of respondents (56%) believe that drug planning for basic health services at health center inpatient care facilities is inadequate. The drug demand variable received a p-value of 0.040, the type and quantity of drug variable received a p-value of 0.017, the drug dosage form variable received a p-value of 0.007, the compilation of drug usage variable received a p-value of 0.002, and the pharmacist variable received a p-value of 0.497 in the statistical test. The variables of drug demand, type and quantity of drug, drug dosage form, and compilation of drug usage all influenced drug planning, whereas the pharmacy staff variable did not affect drug planning, according to statistical analysis.

**Table 2:** Factors influencing drug planning

Variabel Independen	Category	n	%	p
Drug Demand	Not fulfilled	15	60.0	0,040
	Fulfilled	10	40.0	
Type and Quantity of Medicine	Not fulfilled	16	64.0	0,017
	Fulfilled	9	36.0	
Drug dosage form	Not fulfilled	15	60.0	0,007
	Fulfilled	10	40.0	
Compilation of Drug Usage	Unused	13	52.0	0,002
	Used	12	48.0	
Pharmacists	Not fulfilled	11	44.0	0,497
	Fulfilled	14	56.0	
Dependent Variable	Category	n	%	
Drug Planning	Not well	14	56.0	
	Well	11	44.0	

### 3.3 Determinants of drug planning

The most influential factor on drug planning

**Table 3:** Determinants of drug planning

Variable	<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>df</i>	<i>Sig.</i>	<i>Exp(B)</i>	<i>95% C.I. for EXP(B)</i>	
							Lower	Upper
Compilation of Drug Usage	3.464	1.465	5.592	1	.018	31.934	1.809	563.676

The multivariate test findings revealed that compilation of drug usage was the most dominating variable in drug planning, with a 31.93 times larger risk of drug planning in health center inpatient care facilities in the Malaka Regency health office.

## 4. Discussion

### 4.1 The Impact of Drug Demand on Drug Planning Basic Health Services at Malaka Regency Health Office Inpatient Care Facilities

A simple logistic regression test between drug demand and drug planning yielded a p-value of 0.040 (p 0.05), indicating that drug demand and drug planning have a substantial impact. According to the findings of the research, the value of OR = 6.417, implies that if the need for drugs is not fulfilled, the risk is 6.41 times greater than if the need for drugs is met, with a probability of 73%.

Determining the demand for pharmaceuticals is a difficult challenge that pharmacists or pharmacy managers at the Health Center or the Regency/City Health Office must encounter [10]. If the information is entirely based on

theoretical information demands, the problem of drug vacancies or drug excess might arise. The consumption approach and the morbidity method can be used to determine drug demand [11,10].

Researchers discovered that there was a need for drugs in health center inpatient care facilities that experienced vacancies due to a lack of planning calculations and that there were several types of drugs that experienced excess because they were not used within the specified time, implying that drug planning effectiveness in their respective health centers was closely related to this.

#### ***4.2 The Impact of Drug Demand on Drug Planning Basic Health Services at Malaka Regency Health Office Inpatient Care Facilities***

The results of a simple logistic regression test between the types and quantities of drugs on drug planning obtained a p-value of 0.017 ( $p < 0.05$ ), indicating that there is a significant effect between the types and quantities of drugs on drug planning. Based on the results of the analysis, the OR value = 10.500, indicating that if the types and quantities of drugs are not met, the risk is 10.50 times greater than if the type and number of drugs are met, with a 75% chance.

Generic drugs are those that have the official name of the nutritious substances they contain defined in the formulary [12]. Over-the-counter drugs, restricted over-the-counter drugs, prescription drugs, and narcotic drugs are the different types of drugs [13]. Over-the-counter drugs are those that can be purchased without a doctor's prescription and are not included in the categories of narcotics, psychotropics, prescription drugs, and restricted over-the-counter drugs [14]. The marking of over-the-counter drugs is governed by the Minister of Health of the Republic of Indonesia's Decree No. 2380/A/SK/1983 on specific marks for over-the-counter drugs, which is a green circle with a black border [5].

Drugs that can be provided without a doctor's prescription but come with warning labels are known as limited over-the-counter drugs. The warning signs are black and are 5 cm long by 2 cm broad and contains a white notification. The Minister of Health of the Republic of Indonesia issued Decree No. 2380/A/SK/VI/1983, which established a specific symbol for restricted-free drugs in the form of a blue circle with a line black edge [2].

Prescription drugs are those that require a prescription from a doctor. The Minister of Health of the Republic of Indonesia issued Decree No. 02396/A/SK/VIII/1986 regulating special markings, which includes a red round circle with a black border and the letter K touching the border. Narcotic drugs are medicinal substances generated from plants or non-plants, either synthetic or natural, that can cause a loss of consciousness, loss of taste, pain reduction or elimination, and addiction [5].

The researchers discovered in this study that some types of drugs did not meet the number of drugs that should be planned to be procured by the health office's pharmacy installation, which would affect the type and quantity of drugs obtained by each health center inpatient care facility and could result in a drug shortage.

#### ***4.3 The Impact of Drug Dosage Forms on Drug Planning Basic Health Services at Malaka Regency Health Office Inpatient Care Facilities***

The results of a simple logistic regression test between drug dosage forms and drug planning achieved a p-value of 0.007 (p 0.05), indicating that there is a significant effect between drug dosage forms and drug planning. The OR value = 16,000, indicating that the form of unfulfilled drug preparations has a 16.00 times risk that of fulfilled drug dosage forms and has a 79 percent chance.

Inventory is a collection of policies and procedures that monitor inventory levels and determine how much inventory must be maintained, when inventory must be replenished, and how much order must be placed. This system aims to identify and assure the availability of the appropriate resources in the appropriate quantity and at the appropriate time [15].

Pharmaceutical Inventory Management is a pharmaceutical service activity that begins with planning, asking, receiving, storing, distributing, regulating, documenting, and reporting and ends with monitoring and assessment [17]. The goal is to assure the continuity of availability and affordability of Pharmaceutical Inventory that is efficient, effective, and reasonable, to increase the competence/ability of pharmaceutical people, to implement a management information system, and to carry out service quality control [15].

The researchers discovered in this study that the availability of drugs at the health centers was severely limited owing to a shortage of accessible drugs, which affected the stock of drugs in each health center's inpatient care facility. On the other hand, some drug stockpiles are still available for a limited length of time.

#### ***4.4 The Impact of Compiling Drug Usage on Drug Planning Basic Health Services at Malaka Regency Health Office Inpatient Care Facilities***

A simple logistic regression test between compiling drug usage and drug planning yielded a p-value of 0.002 (p 0.05), indicating that there is a significant effect between compiling drug usage and drug planning. According to the analysis results, the value of OR = 60,000, which implies that the compilation of unused drugs has a risk of 60,00 times that of the compilation of used drugs and a 92 percent probability.

Complications of drug usage are used to calculate the monthly consumption of each type of drug over a year and as comparative data for the minimum stock [18]. The compilation process for drug use is: Making the name of a specific drug that you want to compute the compilation by the drug planning in each Technical Implementation Unit (UPT) of the Health Center, gathering data on drug usage in each Health Center Technical Implementation Unit (UPT), including missing medications purchased or originating from outside the stock of drugs accessible at the Health Center pharmacy installation, collected data from the Usage Report and Drug Request Sheet (LPLPO) forms from the drug usage sheet, adding up the prescribed medication consumption each month, calculating the average drug usage each month by dividing the number of drugs used in a year by 12, and calculating the average use of specific drugs [15].

The following information is obtained from drug usage complications: the number of uses of each type of drug

in each Health Center Unit, the percentage of use of each type of drug to the total annual use of all Health Center Units, and the average use of each type of drug at the regency/city level [3]. The information gained may be used to calculate the demand for drugs for usage in the following year, as well as to calculate safety stock/inventory to help the formulation of distribution plans [12].

The researchers discovered in this study that the monthly drug usage of each category fluctuated substantially over one year, influencing drug planning for the following year. As a result, certain health centers may have a drug shortage or an overabundance of drugs since the disease that arises varies significantly.

#### ***4.5 The Impact of the Number of Pharmacists on Drug Planning Basic Health Services at Malaka Regency Health Office Inpatient Care Facilities***

A simple logistic regression test between the number of pharmacists and drug planning yielded a p-value of 0.497 ( $p > 0.05$ ), indicating that the number of pharmacists had no meaningful influence on drug planning. According to the findings of the research, the value of OR = 1.75, implying that the number of pharmacists who are fulfilled is at risk 1.75 times more than that of pharmacists who are not fulfilled, with a probability of 63%.

A pharmacist is a pharmacy graduate who has graduated and taken the oath of office as a pharmacist. [16] In this scenario, pharmacists' competency is based on pharmaceutical services provided at the health center as the person in charge and as functional personnel [19]. Pharmacy technical employees, which include Pharmacy Bachelors, Pharmacy Associate Experts, Pharmacy Analysts, and Pharmacy Intermediate Assistants / Pharmacists Assistants, support pharmacists in carrying out pharmaceutical operations [5].

Pharmacists in charge should attend training, including drug management in districts/cities, integrated drug planning and management, drug management in the health centers, rational use of drugs, utilization of Usage Report and Drug Request Sheet (LPLPO) data, drug management for health programs in districts/cities, general management (finance, administration), and computer training (spread sheet, word processor) [16]. Pharmacy technical employee should attend training including recording of reporting on public drugs and health supplies, storage, and distribution of public drugs and health supplies, introduction to LPLPO, and computer basics [2].

Each health center inpatient care facility in the Malaka Regency area presently has at least one pharmacist and can fulfill the health centers' need for pharmacists, therefore improved training for pharmacists in drug management in their local health center pharmacy is all that is required. In general, the availability of pharmacists has a large influence on drug planning; however, there was no influence in this study because the research data analyzed were not balanced, so the results obtained showed that the number of pharmacists had no effect on drug planning for basic health services at inpatient health centers.

#### ***4.6 Determinants of Drug Planning for Basic Health Services at Malaka Regency Health Office Inpatient Care Facilities***

The multivariate test findings revealed that the compilation variable of concurrent drug usage had a substantial influence on drug planning, with a significant value of 0.018 and an OR of 31.934. Compilation of drug usage is

the most dominating variable in drug planning, with a 31.93 times increased risk of drug planning in the working area of Malaka Regency Health Office's health center inpatient care facilities and a 97 percent possibility.

The researchers discovered in this study that the compilation of drug usage has a significant impact on drug planning. This is due to the pattern of diseases that develop in the community, which sometimes grows and decreases, causing the usage of each type of drug to increase and reduce every month. This can result in drug shortages or excesses for certain types. It is critical to plan carefully to identify the trend of increasing and decreasing disease patterns so that the demand for drugs for monthly usage in a year does not suffer a shortage or excess.

Inpatient facilities in the Malaka Regency Health Office's working region sometimes have a lack or excess of drugs. The shortfall is produced by two factors: a surge in specific types of diseases and a lack of certain types of drugs, resulting in a void in the stock at the pharmacy installation of inpatient facilities. The advantages are that some types of medications are not utilized optimally since the disease's trend has lessened.

## **5. Conclusion**

The most prominent variable in drug planning is the compilation of drug usage, which has 31.93 times higher risk of drug planning in inpatient care facilities in the Malaka Regency Health Office.

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