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Original Article

An Analysis of Drug Requirement Plan and Its Relationship with Anti-Hypertension Drug Availability at Community Health Centers

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Drug availability is a critical factor in ensuring rationality of drug use. In addition, availability is essential since drugs are part of the link between patients and healthcare. Drugs save lives, improve public health and drive trust and public participation in healthcare services. Issue of drug availability, especially for chronic disease drugs such as anti-hypertensives, is often found in healthcare at Community (Puskesmas). Considering that a Community Health Center is a First-Level Healthcare Provider (PPK I) in National Health Insurance (JKN) era, lack of drugs is a distinct problem in terms of guaranteeing the success of therapy, especially for chronic disease patients, such as with hypertension. A design of the observational study was applied to 20 Centers in Pamekasan Regency to determine the Drug Requirement Plan for anti-hypertensive drugs at Health Centers related to their availability. The results showed that the on aspects plan analysis system and requirement quantification, Drug Requirement Plan had a relationship with availability of anti-hypertensive drugs with a p-value of 0.0006 each, while planning time was not significantly related to the drug availability. It was suggested that the medication management at Community Health Centers is performed by health workers who have competence and authority, namely pharmacists

Keywords: Drug requirement plan, quantification, drug availability.

1. INTRODUCTION

The availability of drugs at healthcare facilities is a very critical factor in ensuring the rationality of drug use by patients. In addition, availability is essential since drugs are a part of the link between patients and the healthcare service. Drugs save lives and improve public health^{14, 11}. They also drive trust and public participation in the healthcare service. For those reasons, the availability of drugs is a

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determinant of the success of healthcare management in the community¹¹.

The problem of drug availability is often found in healthcare activities at Community Health Centers. In the National Coordination Meeting of the Ministry of Health of the Republic of Indonesia in 2014, it was revealed that there were still many types of drugs that are not in the electronic catalog. Some of the drugs had not been distributed. The drug purchase system was not easy to use. The delivery time was long. The drugs arrived late. There were difficulties in terms of internet network connection for drug reservations. Officers had not been specifically trained. There were generic drugs that were not yet available in the National Formulary. Finally, there were manufacturers who cannot provide prices according to the electronic catalog¹².

In the era of National Health Insurance (*Jaminan Kesehatan Nasional*/JKN), which has been in effect since 1 January 2014, there is still a vacuum of drugs, especially in hospitals and back-referral service facilities. This condition was discussed at a coordination meeting between representatives of the Pharmaceutical Industry, Pharmaceutical Wholesalers, and representatives of hospitals and the professional organization (Indonesian Pharmacist Association/*Ikatan Apoteker Indonesia* (IAI) in 2015 at the Ministry of Health. According to the Pharmaceutical Industry, they had already been producing drugs according to government demand. According to representatives of hospitals, they had submitted requests for drugs, commonly called as Drug Requirement Plan, in certain amounts, but less than half of the requested drugs had run out. In that meeting, it was concluded that the possible reason for drug unavailability was the lack of accuracy in Drug Requirement Plans nationwide. In accordance with the direction of the Secretary of Director-General at the National Pharmaceutical Committee Meeting in Yogyakarta in 2015, the main obstacle of drug vacancy was the lack of skilled officers in health facilities in writing the drug requirement plan.

Pharmaceutical service at Community Health Centers is an integrated activity with the aim of identifying, preventing, and resolving drug issues and health-related issues. The issue of drug availability has been linked with the rational use of drugs in accordance with the Quick's (1997) remark that doctors, patients, drug availability, and service quality are mutually influencing parts of a cycle¹¹. Community Health Centers have functions of pharmaceutical preparation management and clinical pharmacy service^{7, 14, 10}. The function of drug management consists of; requirement plan; demand plan; reception; storage; distribution; control; recording; reporting and filing; monitoring and evaluation of management.

The issue of drug availability is closely related to the planning and procurement system or the so-called drug requirement plan, which is the initial stage in determining drug availability. Drug requirement plan actually refers to the standard of pharmaceutical services in each health facility

issued by the Minister of Health of the Republic of Indonesia.

Community Health Center is the first-level health facility that is accessible by the community at the district (*kecamatan*) level. Community Health Center is a health facility that has service programs that can reach rural areas. Each district in a regency has a Community Health Center, and some even have more than one. The availability of drugs is an important factor for healthcare at Community Health Centers, especially for chronic diseases such as hypertension. Chronic illness has a major impact on people's lives in both developed and developing countries and can significantly impair physical and mental capacities and reduce a person's ability to perform daily activities². Based on the above description, it is necessary to find the right solution in order to avoid the drug unavailability at Community Health Centers¹.

Hypertension is a disease that has a very high incidence rate, which doubled from 1995 to 2005 and is expected to increase 24% from 2000 to 2025 in both developing and developed countries⁵.

Hypertension is a condition in which an increase in arterial blood pressure exceeds the normal limit. Hypertension becomes one of the causes of complications of blood vessels that can cause heart disease, stroke, renal failure, and death if not detected early and treated appropriately. Obesity is a risk factor for hypertension and DM¹³. Work stress is a contributor to the occurrence of DM and hypertension⁷.

The prevalence of hypertension increases with lifestyle changes such as smoking, obesity, physical inactivity, and psychosocial stress. Hypertension is now a public health problem, and this problem will be greater if not addressed early. The treatment for hypertension should be performed for life, meaning that the availability of antihypertensive drugs is a critical factor to ensure the successful treatment of hypertension.

Based on previously described backgrounds, the following problems can be formulated: Is there a relationship between the Drug Requirement Plan for the aspects of: planning time, planning analysis system, and procurement quantification with the availability of anti-hypertensive drugs at Community Health Centers in the Pamekasan Regency.

2. METHOD

An Observational Cross-Sectional Method were applied on 20 persons in charge for drug management at Community Health Centers in Pamekasan Regency with the aim of analyzing correlation of the Drug Requirement Plan components, i.e. planning time, analysis system used to determine priority of drugs to be procured, considerations in terms of requirement consideration on drug availability at Community Health Centers. In addition to the questionnaire instrument used, researchers also made direct observations on the availability, arrangement, and storage of drugs at the Community Health Centers.

3. RESULTS AND DISCUSSION

The results can be described as follows: the persons in charge for drug planning at the majority of Community Health Centers were non-pharmacy-competent personnel. Of the 20 Community Health Centers, 14 did not have Pharmacy-competent persons in charge, 4 had persons who were Pharmacist Assistant, and 2 had Pharmacists as persons in charge. As many as 10 persons in charge had less than or equal to 5 years of working experience. Among those, only 1 person had attended a training related to pharmacy. As many as 17 Community Health Centers did not have written SOPs in executing the drug management. All Community Health Centers had not used the Formulary as a guide for the selection of drugs required in their respective Community Health Centers. Furthermore, the quantification of drug requirement at 4 Community Health Centers employed the combination of consumption and epidemiology patterns. The drug procurement at all Community Health Centers was only by acquisition from the Regency Health Office. They did not make their own purchases despite the availability of Capitation Fund for each Community Health Center from the Social Security Agency (*Badan Penyelenggara Jaminan Sosial/BPJS*). A majority of 14 Community Health Centers only conducted planning at the start of the year, while only 6 Community Health Centers planned every 3 months. The drug arrangement at 18 Community Health Center was through FIFO and FEFO system. At 17 Community Health Centers, there were spoiled drugs due to the lack of separation of different drugs. At all Community Health Centers, damaged or expired drugs were found.

Most respondents were female, amounting to 60% as indicated in Table 1. As many as 50% of respondents had 1-5 years of work experience as shown in Table 2.

As many as 30% of respondents came from non-health educational background, while only 10% were pharmacists and 20% were pharmaceutical technicians, as listed in Table 3. In the process of managing pharmaceutical preparations, the person in charge should be pharmaceutical personnel, in accordance with Health Minister Regulation 74 of 2016 on the Pharmaceutical Care at Community Health Centers. In addition, in accordance with the Health Law no. 36 of 2009, it is required that those who are allowed to perform pharmaceutical practices are pharmaceutical personnel¹⁵. With the presence of pharmaceutical personnel responsible for the management of pharmaceutical preparations, the monitoring of drug quality and drug use rationalization will be more ensured.

Only 5% of respondents had attended a pharmaceutical training, as indicated in Table 4 above. 85% of Community Health Centers did not have standard operational procedures as in table 5. Training and standard operating procedure (SOP) for pharmaceutical care at pharmaceutical service units at Community Health Centers can increase the guarantee of pharmaceutical care quality.

Table 6 shows that the drug procurement guidelines at Community Health Centers in Pamekasan had not used guidelines such as the National Formulary. This can lead to problems related to drug availability at Community Health Centers due to inconsistent planning compared to the National Formulary.

In the planning of drug procurement program and some considerations taken by the person in charge for drug preparation procurement in Pamekasan, most used the estimated amount of drug consumption in the previous period, namely 80%. The rest used the basis of disease patterns and consumption in the previous period. The basis for provision of pharmaceutical preparations which only depends on previous consumption record is susceptible to inconsistency with the actual needs. This is due to the rapidly changing consumption needs with the development of diseases that occur in the community.

Most of the personnel at Community Health Centers in Pamekasan did not conduct a procurement analysis system, either using VEN or ABC analysis systems. Only 20% of respondents used the VEN system in the drug procurement requirement analysis. The pharmaceutical preparation procurement analysis system can assist the procurement person in charge to more accurately predict the procurement of pharmaceutical preparations. This will assist the pharmaceutical care provider team to be able to provide pharmaceutical preparations accurately without any drug shortage events. This would enable people who need access to pharmaceutical preparations to get the drugs quickly in accordance with their needs.

The planning time of drug procurement at Community Health Centers in Pamekasan divided into two groups, namely procurement at the beginning of the year for the needs of one year and quarterly procurement. The majority of procurement planning activities was performed at the beginning of the year, amounting to 70%. The difference in the time of planning depends on the policy taken by the person in charge for pharmaceutical preparation procurement at the Community Health Centers by paying attention to the healthcare requirement at each Community Health Center.

The suitability of drug storage will ensure the drug quality, especially in terms of stability. Table 11 above shows that the majority of storage is not in accordance with the standard, amounting to 55%. This occurred because at most Community Health Centers in Pamekasan, drug management was not performed by pharmacists or pharmaceutical workers. Drug Arrangement mostly followed a combination of first-in first-out (FIFO) system with the first expired date first out (FEFO) system^{10, 15}, performed by 90% of Community Health Centers as indicated in Table 12.

Of the 20 Community Health Centers studied, more than half experienced drug shortage and drug unavailability events. Only as many as 35% of the Community Health Centers had a secure stock of pharmaceutical preparations. These findings show that improvements are still by looking at the

factors that affect the availability of drugs at Community Health Centers. This is especially the case for anti-hypertensive drugs, which is a drug for a chronic disease. Many chronic diseases cannot be cured but can only be controlled, meaning that drug availability is absolutely necessary to control the progression of the disease.

The relationship between Procurement Time and Drug Availability was analyzed by the Mann-Whitney test, which obtained $p = 0.506^3$, meaning that there is no significant difference between the start-of-the-year procurement with quarterly procurement on the availability of drugs.

The relationship of the analysis used in the planning, namely VEN, ABC, or others with the availability of drugs was analyzed by Mann-Whitney test was measured, obtaining $p = 0.006$, which means that there is a significant difference in the availability of drugs at the Community Health Centers who used VEN analysis compared to others in drug planning.

The relationship between quantification with the consideration of disease and consumption patterns and epidemiology pattern on the availability of drugs was analyzed by Mann-Whitney test was measured, yielding $p = 0.006$, which means that there is a significant difference in drug availability at the Community Health Centers between those who used consumption patterns and those who used consumption with epidemiology patterns.

Table 1: Sex of Respondents

Sex of respondents	N	%
Male	8	40
Female	12	60
Total	20	100

Table 2: Respondents' Work Experience

No	Work Experience (years)	N	%
1	1-5	10	50
2	6-10	7	35
4	11-15	1	5
5	16-20	0	0
6	21-25	1	5
7	26-30	1	5
Total		20	100

Table 3: Education of respondents

Education	N	%
Pharmacist	2	10
Pharmaceutical Technician	4	20
Nurse	5	25
Midwife	2	10
Doctor	1	5
Others	6	30
Total	20	100

Table 4: Pharmacy-background Respondents' Training Experience

No	Pharmaceutical Training	N	%
1	Never	19	95
2	Has experience	1	5
Total		20	100

Table 5: The existence of SOPs at Community Health Centers

No	SOP	N	%
1	Applicable	3	15
2	Not applicable	17	85
Total		20	100

Table 6: Guidelines for drug procurement

No	Guideline	N	%
1	Formulary	0	0
2	Not applicable	20	100
Total		20	100.0

Table 7: Drug requirement quantification

No	Basis of quantification	Total	Percentage
1	Disease pattern	0	0
2	Consumption	16	80
3	Disease + Consumption Patterns	4	20
Total		20	100

Table 8: Drug source

No	Drug source	N	%
1	Health Office	20	100
2	Health Office + Self-Purchase	0	0
Total		20	100

Table 9: Procurement analysis

No	Analysis	N	%
1	VEN	4	20
2	ABC	0	0
3	VEN + ABC	0	0
4	Not sure	16	80
Total		20	100

Table 10: Planning time

No	Planning time	N	%
1	At the start of the year	14	70
2	Quarterly	6	30
Total		20	100

Table 11: Suitability of drug storage

No	Drug storage	N	%
1	Suitable	9	45
2	Not suitable	11	55
Total		20	100

Table 12: Drug Arrangement System

No	Drug arrangement	N	%
1	FIFO	1	5
2	FEFO	1	5
3	FIFO + FEFO	18	90
Total		20	100

Table 13: Drug availability

No	Drug availability	N	%
1	Excessive	0	0
2	Secure	7	35
3	Insufficient	11	55
4	Unavailable	2	10
Total		20	100

Correlation Test

Variable		P (Sig.)
Drug availability	Procurement time	0.506
	Planning system	0.0006 *
	Drug requirement quantification	0.0006 *

4. CONCLUSION

From this study, it can be concluded that the persons in charge for drug management did not fit the educational qualifications needed for their positions. Regarding planning time, it was not related to drug availability. Moreover, there was a significant correlation between drug procurement planning system and drug availability and between quantification of drug requirement and drug availability at Community Health Centers in the Pamekasan Regency. Therefore, it is suggested to place personnel who have educational background in accordance with their responsibility, namely Pharmacy, as persons in charge for drug management at Community Health Centers.

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