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Research Article

Analisis of Factors Influencing the Availability of Medicine During JKN Era

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ABSTRACT

The availability of medicine is important during National Social Healthy Insurance (JKN**)** that put into effect in the hospital, one of health service facility. The purpose of this study was to look of the availability of medicines was during JKN era and what factors influence the availability in three Region General Hospitals in Sulawesi. This study was conducted using descriptive method of analytic to get a correlation among doctors, pharmacists and patients as independent variables toward the availability of medicine as dependent variable. The study has been performed in 3 hospitals in Sulawesi. This data obtained were analyzed using statistical model of *Linier Regression Analysis* with F test or *ANOVA test and* t test. R was the value of regression which showed the influence of one to another variable. The results showed the level of medicine availability in hospital A was 12.49 months. Factors that influence the availability of medicines were doctors (R=0.778, *p*= 0.000), pharmacists (*R*=0.619, *p*= 0.000) and patients (*R*=0.653, *p*= 0.000). All there factor significantly affect the availability of medicines in Hospital A (*R*=0.675, *p*=0.000). Hospital B had an excess supply of medicines, with the average of 23.31 month. Factors that influenced the availability of medicines in Hospital B was doctor (*R*=0.877), pharmacist (*R*=0.861) and patient (*R*=0.984) (p=0.000 all). From multiple regression there factors showed a significant correlation to the availability of medicines (*R*=0.901, p=0.000). Similarity on Hospital A and B, data of the availability of medicine in hospital C was categorized excess as the average of stock was 56.01 month. Factors that influenced the availability of medicines in Hospital C was doctor (*R*=0.753, *p*= 0.000), pharmacist (*R*=0.869, *p*= 0.000) and patient (*R*=0.545, *p*=0.001).

Keyword: JKN, availability of drugs, doctor factors, pharmacist factors and patient factors

INTRODUCTION

National Social Healthy Insurance (JKN) was one of social security conducted by Healthcare and Social Security Agency (BPJS) and implemented nationally started from January 2014. BPJS was a public law body that organize social programs from the government. The target of this program was all of Indonesian inhabitants will have sufficient healthy insurance in the coming year of 2019. Highly efficient medicine management determines the success of management in a manner overall, to avoid inaccurate calculations of drug requirements and not rational so that management needs to be appropriate medicine. Management of medicines aims guarantee the availability of medicines good quality, exact type, exact quantity, and exact time and so that the available funding can be used with the best and sustainable to meet the interests of the community treatment to basic health care unit (Oktaviani and Baroroh, 2015). What is given by this JKN program is not only provision of medicine at the time people suffer from chronic illnesses such as heart disease or cancer, but also including preventing of illnesses, such as immunity and healthy check. Other than those this healthy insurance was

able to be accepted in the various hospitals, government or private hospitals, if the patient has signed the contract. To measure the standard achievement proposed, an indicator or measurement was necessary that the result shows on the obedient toward that standard (The Decision of the Minister of Health No. 58 year 2014). During the implementation of JKN program, there were some problems complained by the patients in order to the service given, such as less of quality of services, insufficient of the health staff along with the medicines that patients need was not available.

Available means ready of facilities (manpower, things needed, capital, budget) at certain time. So that availability means the degree of availability of medicines that can be used to conduct medicinal treatment in the health care unit. The availability of medicines in the primary health facility influenced by variable factors such as supply and using of medicines (Satibi, 2015). Availability of medicine was one of the goal of the government rule in the national rule of medicines, but availability was the main problem of the developing countries. During the implement-tation, JKN often gets problems with the availability of medicines in the hospitals. Among those factors are patient, doctor and pharmacist factors who are responsible to manage medicines in the hospital. Other things influenced are the different process of supply in each government body or private sectors along with the government or the board of directors intervention during the process of supply and taking the policy.

System of health service was good if structure and function of health service fulfill the following conditions. Available, equity, accessible and affordable, acceptable, appropriate, effective, efficient, comprehensive, integral, continues, and quality, along with sustainable (Tumwine, *et al.,* 2010). Some hospitals in Sulawesi region, they are, hospital A in Middle Sulawesi, hospital B in South Sulawesi and hospital C in North Sulawesi, had some problems related with the availability of medicines. On the basis of the present problem, the researcher wish to understand about factors influence the availability of medicines, they are doctor factor who writes the prescriptions, patient factor as the result of receiving the medicines, and pharmacist as the management of medicines in the pharmacy. The purpose of this research was to understand doctor factor, pharmacist factor and patient factor that influence toward the availability of medicines in the JKN era along with level of availability of medicines in each hospital.

MATERIALS AND METHODS

This research use *Descriptive Analytical Method of Cross sectional analysis*, conducting associative observation or variable measurement by learning the relationships between independent and dependent factors that are observed at the same time. Research has been done in 3 hospitals in Sulawesi. The samples was taken by using *disproportionate stratified random sampling* technique or *disproportional random sampling* in accordance to stratification. Questionnaire method was used to take primary data that was filled directly by the respondents, they are doctors, pharmacist staff, and Out patients. The inclusion criteria of the sample include a doctor who doing JKN Health services, pharmacist staff that performs JKN services Health and outpatient JKN Health in hospital. The sampling technique was used in this study was total sampling. Currently there are 59 power pharmacy, 59 doctors, and outpatient samples of JKN hospital using issac tables and michael, 332 samples every hospitals were obtained.

The measuring tool in this research was in the form of questionnaire. for physician factors, measured indicators include: physician's knowledge of Hospital Formulary, National Formulary, and E-catalog; the role of physicians in the process of planning, dissemination of available medicine information; doctor's motivation in prescribing in hospital Pharmacy department. For pharmacist staff, measured indicators include: planning process, procurement, acceptance, storage, medicine distribution in hospital Pharmacy department for patient factors, measurable indicators include: patient satisfaction on prescription medicines always available, fulfillment of medicine information, waiting time for delivery of medicines to patients in hospital Pharmacy department while for the availability of JKN medicines, judging from the percentage of

Table I. Level of Availability Level of Medicines in Hospitals, Sulawesi Region

V	< 6 months		6-12 months		12-18 months		>18 months	
	Σ	%	Σ	%	Σ	%	Σ	%
A	171	28.78	187	31.48	172	28.95	64	10.77
B	111	33.13	52	15.52	43	12.83	129	38.50
C	7	2.08	59	17.56	60	17.86	210	62.50

Source : Primary Data

average medication use of JKN which can be found in National Formulary and E-Catalog which compared the stock of medicines every month for 10 major diseases.

Data analysis in the research use Statistical *Regression to analyze the data, they used Analysis Linier model with* F test or *ANOVA test* and t test that should conduct instrument test and statistic test first. Instrument test covers *validity* and *reliability of the test*, then statistics and hypothesis test.

RESULT AND DISCUSSION

Level of Medicines Availability

The data of medicines availability and the report of using and supply medicines and total items medicines used, the average of using in a month, total incoming of medicines in a year along with the waiting time. According to Quick *et al,* (2012) the availability of medicines was the level of stock that can be used to serve the medicinal treatment in the health care unit. Level of medicines supply was the level of stock of the sort of or total number of medicines needed by the medicinal treatment service in the certain period, by way of calculating supply of medicines and the average of using it per month. According to the Minister of Health of RI (2016), the availability of medicines in the category of safe/good if the availability of medicines was for 12-18 months, if level of availability of medicines was <6 months, categorized in the group of dangerous level, if the availability of medicines 6-12 months, categorized in the minus group, and if the availability was >18 months, categorized as excess supply. The following was the level of the availability of medicines in hospitals, Sulawesi region.

On the basis of table I percentage of medicines availability with good category in hospital was hospital A was 28.95%. Grand total of all items is 595. For the medicines availability for dangerous category was 28.78%. The result of medicines availability in hospital B shows that from 335 items of medicines, 129 items of medicines was in excess category, 43 good category and 111 dangerous category, and 52 was in minus category. Result of medicine availability in hospital C in general includes in the excess category, from 336 items of medicines available there are 210 items of medicines or 62.50 %, whereas for safe/good category only around 60 items of medicines or 17.86 % from 336 items of medicines available and the rest was 59 items of medicines or 17.56 % included in the category minus and 7 items of medicines or 2.08 % was in level of dangerous. The medicines in the category of dangerous or empty level use the claim system by writing prescription for the empty to the outside dispensary then give the reimbursement to the patient. This claim system was only for JKN patients.

Correlation between doctor factor and the availability of medicines

On the basis of the result of simple regression linier of doctor factor with the availability of medicines, with correlation coefficient shows 0.778 on the position of interval 0.60-0.799, means it has a strong correlation, so that we can make a conclusion that doctor factor has a strong correlation toward the availability of medicines in hospital A, with *p value of* 0.000 < 0.05.Value of R^2 0,605 shows that 60.5% was the influence of doctor factor toward the availability of medicines. In hospital B correlation coefficient shows 0.877 that was located was in the interval of 0.80-1.000, it means it has a very strong correlation, so that we can conclude that doctor factor has a very strong correlation oward the availability of medicines in hospital B,

Table II. Result of simple regression test of doctor factor

Hospitals	Doctor Factor			
	R	***R²***	***t* calculation**	***Sig***
A	0.778	0.605	7.426	0.000
B	0.877	0.770	7.540	0.000
C	0.753	0.567	4.852	0.000

Source: Primary Data

with *p value* 0.000 < 0.05. For value of R^2 was 77.0 %, it shows doctor factor toward the availability of medicine. Analysis of data from hospital C, was able to get the value of R 0.753. From this value it can be interpreted that relationship between doctor factor as independent factor and the availability of medicine as dependent factor included in the strong category. The table II also shows the value of R^2 was 56.7 %. This value can be assumed that doctor factor has contribution to influence 56.7 % toward the availability of medicine. On the correlation table we are able to get *p value* of 0.000, so that it was smaller than level of mistake of 0.05 so that it can be assumed that doctor factor has significant influence toward the availability of medicines in hospital C.

This study was similar to the results of research conducted by Somantri and Sutrisna (2013), and Prabowo *et al* (2016) that the prescription of doctors varies, causing the medicines used to change, consequently many medicines that do not come out (experiencing dead stock) or not used. doctors in prescribing should refer to the applicable formulary and be guided by standard therapy

Correlation between pharmacist manpower and the availability of medicines

On the basis of the result of simple regression linier pharmacist manpower with the availability of medicines the correlation coefficient shows value of 0.619 that the position is between the interval of 0.60-0.799, it means it has strong correlation, so that we can conclude that the pharmacist manpower factor has a strong correlation toward the availability of medicines in hospital A, with *p value* 0.000 (<0.05), it means pharmacist manpower factor significantly influence toward the availability of medicine. Value of R' 0.383 shows 38.3% influence pharmacist manpower factor toward the availability of medicines. In hospital correlation of B coefficient shows value of 0.861 on the interval 0.80-1.000, it means they have a very strong correlation, so that we can conclude that doctor factor has a very strong correlation toward the availability of medicines in hospital B, with *p value* 0.000 (<0.05), it means that pharmacist significantly influence toward the availability of medicines. For R' value we are able to get 74.1%, we can clarify here that pharmacist factor has big influence toward the availability of medicines. From the data analyzed by hospital C, we are able to get R value of 0.869 and interpret that the correlation between pharmacist factor as an undependable variable with the availability of medicines as a dependable variable included in a very strong category. The table shows that the value of R' was 75.4 %. This value can be interpreted that pharmacist factor influence the contribution of 75.4 % toward the availability of medicines. On the table of correlation test we get significant level of 0,000, so we are able to assume that pharmacist factor significantly influence toward the availability of medicines in hospital C.

According to the results of the research Ningsih *et al* (2015), shows that the role of procurement (e-purchasing) was related to the efficiency of procurement and availability of medicines in hospitals. One factors that can ensure medicine availability quality can be monitored through the process procurement of medicines. This was also supported by research Prabowo *et al* (2016). Supporting management in the process of procurement of medicines include human resources, Organization, Facilities /Facilitiesand MIS as well budget is in accordance with the rules procurement of applicable medicines.

Table III. Result of simple regression test of pharmacist manpower

Hospital	Pharmacist Manpower Factor			
	R	***R²ᵃ***	***t* calculation**	***Sig***
A	0.619	0.383	5.166	0.000
B	0.861	0.741	8.112	0.000
C	0.869	0.754	7.435	0.000

Source : Primary Data

Table IV. Result of simple regression test patient factor

Hospitals	Patient Factor			
	R	***R²***	***t* calculation**	***Sig***
A	0.653	0.426	15.372	0.000
B	0.984	0.967	95.443	0.000
C	0.545	0.297	10.388	0.001

Source: Primary Data

Procurement process medicines are reviewed from time, frequency, and conformity with planning was appropriate with the theory and regulation of medicine procurement.

Correlation between patient factor with the availability of medicines

On the basis of the result of simple linier regression with the availability of medicines the correlation shows of 0.653 between interval 0.60-0.799, it means that they have a very strong correlation toward the availability of medicines in hospital A, with *p value* 0.000 (< 0.05). It means that patient factor influence significantly toward the availability of medicines. Value R' 0.426 shows that 42.6% influence patient factor toward the availability of medicines. In hospital B correlation coefficient shows of 0,984 was in the interval 0,80-1,000, it means it has a very strong correlation, so that we can conclude that doctor factor has a very strong correlation toward the availability of medicines in hospital B, with *p value of* 0.000 <0.05, it means that patient factor significantly influence toward the availability of medicines. For R' value we are able to get 96.7%, it can be clarified that patient factor influence the contribution toward the availability of medicines. From the data analyzed by hospital C, we are able to get R value of 0.545. This value can be interpreted that the correlation between patient factor as independent factor with the availability of medicines as dependent factor included in the medium category. The table also shows R' value of 29.7 %. This value can be interpreted that patient factor contributes 29.7 % toward the availability of medicines. Significant level used was 0.05, we are able to get significant value of 0,001 smaller than 0,05, so that we understand that patient factor influence toward the availability of medicines.

This study was supported from the results of research prabowo et al (2016), that the patient factor was very influential on the availability of medicines. the patient has influence in prescribing the doctor. The patient has problems with the disease and has a desire, as well as a party that has to pay can influence the writing of a doctor's prescription.

Correlation between patient factor, pharmacist manpower factor and the availability of medicines

On the basis of table 5, R value was 0.675 between interval 0.60–0.799. So we are able to conclude that there was a strong correlation between doctor factor, pharmacist manpower factor and patients factor toward the availability of medicines in hospital A. Value R^2 was 0.392, it shows that 39.2% was effective, the availability of medicines determined by doctor factor, pharmacist manpower factor and patients factor, whereas 60.8% determined by

Table V. Result of multiple regression test of doctor factor, pharmacist manpower factor and patient factor

Hospitals	Multiple Regression			
	R	***R²***	***F calculation***	***Sig***
A	0.675	0.392	7.239	0.001
B	0.901	0.811	21.471	0.000
C	0.769	0.591	7.716	0.002

Source: Primary Data

other factors. This result shows that other factors contribute bigger percentage compared with the three factors researched. Other factors that are able to influence the availability of medicines are supply and distribution of medicines through the *supplier* or distributor, policy intervention toward medicines management, how to manage medicines, how to manage pharmacy stock and medicines and the policy in hospital A Value of multiple linier regression F was 7.239 with level of significant (*p value*) 0.001 < 0.05, and we are able to conclude that independence variable, they are doctors, pharmacist manpower factor and patient factor together influence significantly toward the medicines availability in hospital A. In hospital B there was a very strong correlation between independence variable and dependence from the correlation coefficient value was 0.901. For R' value we are able to get 81.1 %, it can be clarified that independence variable influence the big contribution toward the availability of medicines. On T calculation value we are able to get 3.747 for doctor, 4.692 for pharmacist manpower and 6.771 for patient from significant level of 0.05 and tested on the basis of 2 significant sides with level of independence of (df) 18 and we are able to get a table, it was 2.101. This case can be seen that t calculation was bigger than t table, so that hypothesis zero was accepted and can be assumed that there was an influence from the three variables toward the availability of medicines. Whereas from the result of F test we are able to get value of 21.471 the significant was 0.000 and that value was smaller from value of 0.05 so that we are able to get the result stated that the three variables significantly influence the availability of medicines, in this case the availability or the completeness of medicines in hospital pharmacy B still necessary to get better evaluation in accordance to the research of Firday dan Muhlikisin (2010) that 70% people state that the complete availability of medicines was very important. the data analyzed by hospital C, we are able to get Value R *square of* 0.591, it means around 59.1% of variation of medicines availability influenced by doctor factor, pharmacist manpower factor and patients. The rest around 40.9 % influenced by other factor outside the regression model. On Anova test or F test we are able to get calculation value of 7.716 with level of significantly of 0.002. From the result of calculation we are able to get critical F value with $\alpha = 5$ %, *df numerator* = 2 and *denominator* = 17, was 3.69. Calculation value of *F* was 7.716 bigger than value of critical F 3.69 with $\alpha = 5\%$, so that we can conclude that doctor factor, pharmacist manpower factor and patient factor together influence the availability of medicines in hospital C. The value of significant probability was smaller than α, it was 0.005 or at the significant level 0.002 (< 0.005) so that regression model was able to be used to predict the availability of medicines.

CONCLUSION

The basis of the result of research and discussion analyzed, we are able to draw conclusion, as follows.The average of availability level of medicines in hospital A was 12.49 months, in hospital B was 23.31 months, in hospital C was 56.01 months. The doctor, pharmacist manpower and patient factor together influence significantly toward the availability of medicines in hospital A with value of *R* 0.675(*P* 0.001). Hospital B with value of R 0.901 (P 0.000). Hospital C *R* 0.545 (*P* 0.001).

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