



ANALYSIS OF FACTORS AFFECTING THE LEVEL OF KNOWLEDGE OF HEALTH PERSONNEL ABOUT VACCINE MANAGEMENT

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ABSTRACT

Drug storage is a series of activities that aim to store and maintain drugs or pharmaceutical preparations by placing stock of drugs or pharmaceutical preparations in a place that is considered safe. In a study conducted by Lestari in 2017, it was found that expired and damaged drugs at Benyamin Galuh Hospital were 5.79% (Lestari, 2017). Drug damage can cause negative effects that can harm the patient. In addition to storage, it is also necessary to have knowledge of qualified health personnel because it is the final storage place for vaccines before they are given to patients. The aim of this research is This study aims to determine the factors that influence the level of knowledge of health personnel at Karangmalang Health Center regarding vaccine management. This research is a cross-sectional type of analytical research, by distributing questionnaires and then analyzed descriptively about each respondent's characteristics and analyzed for predictor factors. The population of this study was taken from the population of health personnel who work at the Karangmalang Public Health Center, Sragen. The sample used was 69 health personnel consisting of medical and non-medical personnel. The results of the questionnaire distributed to 69 health personnel at the Karangmalang Public Health Center, Sragen, 79.71% were in the good knowledge category. In this case, if the vaccine preparation has good quality or is damaged, the vaccine will be inefficient. Therefore, it is necessary to have sufficient knowledge of health personnel to maintain the quality of vaccine preparations. The results of the analysis show that the predictor factors that affect the level of knowledge of Health personnel about vaccine management at the Karangmalang Health Center, Sragen, are the level of education and age. Knowledge level has a strong relationship with education level of 0.564 and age of 0.605. If the level of education increases, the level of knowledge will increase by 0.723 times as well as increasing age, the level of knowledge will increase by 1.6 times.

Keywords: health personnel; knowledge; predictor factors; vaccine management

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INTRODUCTION

Drug damage can cause several unwanted effects for patients ranging from harmless effects to negative effects that can harm patients, not only that drug damage can also have an impact on health care facilities according to research conducted by Lestari in 2017 found drugs that expired and damaged at Benyamin Galuh Hospital. Drugs found to be damaged and expired at Benyamin Galuh Hospital were 5.79% (Lestari, 2017). In order to minimize the above factors, it is possible to improve the management of pharmaceutical preparations at the storage stage. Drug storage is a series of activities that aim to store and maintain drugs or pharmaceutical preparations by placing stock of drugs or pharmaceutical preparations in a place that is considered safe from theft and causes that can interfere, damage, and affect the quality of drugs. Some of the purposes of drug storage include maintaining drug quality,

avoiding irresponsible use, maintaining continuity of supplies, and facilitating search and control. The quality of drugs stored in the warehouse of a hospital pharmacy installation must be maintained so as not to undergo physical or chemical changes. Drugs must be stored in accordance with established storage standards. Errors in storing drugs can damage the quality of the drug. If the quality of the drug is damaged, it could be that the level of the drug decreases before it reaches the patient's hands, thus causing the ineffectiveness of drug therapy. An example is the implementation of vaccines. In addition to storage, it is also necessary to have knowledge of qualified health workers because as a final storage place for vaccines before being given to patients, vaccine managers at health centers must have adequate knowledge to manage vaccines (Mavimbe and Bjune, 2007). Officers with less knowledge have a risk of 3.7 times causing the quality of vaccine management to be worse than officers with good knowledge (Kristini, 2008).

The success of immunization depends on several factors, namely the immune status of the host, genetic factors of the host, and the quality and quantity of the vaccine. The most influential factor on the success of immunization is the quality of the vaccine used. If the vaccine used is bad or damaged, the immunization program will not work, and it can even cause other diseases. Vaccine storage and transportation must meet the requirements of a good vaccine cold chain to maintain vaccine quality (Ranuh, 2011). Low vaccine quality can result in ineffective vaccines so that the protection produced is reduced or even has no effect at all. Steps that can be taken to increase the success of immunization include cold chain and vaccine logistics management. Both are the backbone of the immunization program. Vaccines must have two characteristics, namely they must be safe and have the potential as they should be. Vaccines will lose potency if not stored or transported at the right temperature and conditions. Vaccine potency must be maintained to obtain optimal benefits from the immunization program (UNICEF, 2010).

Knowledge is the first step in behavior modification, where there are many factors that can affect a person's level of knowledge. Knowledge of vaccine management is very important to enable health workers to take appropriate steps to protect themselves during work, as well as to provide education to patients (Ogundele, et al., 2017). Based on the above, the researcher intends to know what factors influence the level of knowledge of Health Workers about vaccine management at Karangmalang Health Center, Sragen.

METHOD

The method used in this study is an observational analytic research method with a cross sectional approach to determine the predictor factors that affect the level of knowledge of Health Workers about vaccine management at Karangmalang Health Center, Sragen.

The sampling technique in this study is Non Probability Sampling, which is a sampling technique that provides equal opportunities for each member of the population to be selected as a member of the sample. Using purposive sampling technique and the number of samples in this study were 69 people.

RESULTS

Test Instrument

Validity and reliability test is a test conducted before the research. Validity and reliability tests were carried out in order to obtain valid and consistent question items. Validity and reliability tests were conducted on 30 respondents. Respondents are health workers who work in Kedawung 2 Public Health Center, Sragen.

Validity test

The validity test was carried out using the product moment Pearson correlation method. The analysis was carried out by correlating each item's score with the total score. The results of the 10 questions validity test are as follows:

Table 1.
The results of the validity test using the SPSS application

No	Koefisien korelasi	r tabel	Keterangan
1	0,546	0,361	VALID
2	0,786		VALID
3	0,722		VALID
4	0,786		VALID
5	0,786		VALID
6	0,722		VALID
7	0,717		VALID
8	0,717		VALID
9	0,717		VALID
10	0,786		VALID

The total score is the total sum of all question items. The test uses a two-sided test with a significant level of 0.05 which has an r table value of 0.361 for a sample of 30 people. Items can be said to be valid if $r \text{ count} > r \text{ table}$, whereas if $r \text{ count} < r \text{ table}$ then the question is invalid.

The validity test in this study used a two-way significance level of 0.05 with a total of 30 samples. Before determining the significance value, you must first find the degree of freedom (df). By subtracting the number of samples by 2, the result will be 30-2, namely 28. The R table used is the 28th df with a significance value of 0.361.

Based on table 1, the results of the validity test of each question item are obtained. It was concluded that the 10 question items that were tested for validity were declared valid because all the results of the correlation coefficient of the items had $r \text{ count} > r \text{ table}$ (r table 0.361) and could be used

Reliability test

Reliability testing is carried out to obtain a reliable instrument in the sense that it must have a good level of consistency and stability. A reliable instrument will get the same results if it is used repeatedly if it is used to measure the same thing and will produce the same data. The results of the reliability test on 30 data collected are as follows:

Table 2.
Reliability test results using the SPSS application

Jumlah item	Cronbach's Alpha	Batasan	Keterangan
10	0,895	0,7	reliabel

The correlation coefficient is a large measure of the relationship that arises from the independent variable (X) with the dependent variable (Y). The value of the correlation

coefficient is between 0 to 1, the closer the value is to 1, the stronger the relationship is, and vice versa if the value is close to 0 then the relationship is weaker.

According to table 2 the results of the reliability test using the SPSS application, the results of the correlation coefficient are very strong or it can be said otherwise the results of the data are reliable. This is the result of Cronbach's alpha of 0.895. If the correlation is 0.8 or more, it is said that the item provides a very strong level of reliability, but on the contrary if the correlation value is below 0.4-0.599, it is said that the item is less reliable or the correlation coefficient is low.

Knowledge Level of Respondents

The following is a table of the results of the level of knowledge of health workers at the Karangmalang Public Health Center, Sragen regarding the management and distribution of vaccines at the Karangmalang health center.

Table 3.
Knowledge level of health workers in Karangmalang Public Health Center, Sragen

Knowledge	Frekuensi	Persentase (%)
Well	55	79,71
Enough	11	15,94
Not enough	3	4,35

Table 3 shows that the distribution of the questionnaire with the frequency of respondents was 69 health workers based on the level of knowledge. Based on the results of research at the Karangmalang Public Health Center, Sragen, on average, 55 respondents had a good level of knowledge with a percentage of 79.71%. This is because the health workers at the Karangmalang Public Health Center, Sragen, have the lowest education at the high school level and there are several supporting health workers with a bachelor's degree in economics. The level of education is very influential on a person's knowledge. A higher level of education will make it easier for a person or society to absorb and apply information in daily behavior and lifestyle, especially regarding health (Suhardjo, 2007). The intellectual level will also be influenced by the level of education of the person, according to Notoatmodjo in 2012. In general, someone with primary or secondary education is different from that of senior high school, diploma, and undergraduate.

The distribution of answers to the questionnaire by respondents can be seen in table 4.

Table 4.
Percentage of respondents' answers

No	Assessment Aspect	Answer Correctly	Wrong Answer
1	Vaccines are biological products in the form of dead or attenuated microorganisms which, when given to a person, will cause active specific immunity against certain diseases.	97,10 %	2,90 %
2	All vaccines to be used in immunization services must meet WHO standards and have a Certificate of Release (CoR) issued by BPOM	92,75 %	7,25 %
3	Cold Chain is a Vaccine management system that is intended to maintain and	92,75 %	7,25 %

No	Assessment Aspect	Answer Correctly	Wrong Answer
	guarantee the quality of Vaccines in distribution		
4	Before use, all vaccines must be diluted with sterile sodium chloride 0.9% USP	59,42 %	40,58 %
5	The Immunization Logistics Manager is tasked with storing, managing, distributing, maintaining and reporting vaccines, syringes, and cold chain equipment as well as other logistics needed in the implementation of Immunization.	94,20 %	5,80 %
6	The cold chain facility needed at the health center is a Vaccine Refrigerator	92,75 %	7,25 %
7	All vaccines must be stored in a cold room, freezer room, vaccine refrigerator, and freezer	47,82 %	52,18 %
8	First In First Out is a method of managing goods / supplies that are received first should be issued first	91,30 %	8,70 %
9	Residual vaccines with Vaccine Vial Monitor (VVM) C and D conditions may be used for other patients	66,67 %	33,33 %
10	The results of the immunization records carried out by each unit are then submitted to the district/city and provincial immunization program managers (according to the time specified).	97,10 %	2,90 %

Predictor Factor Test

The following is a table of the results of the Rank Spearman Correlation analysis:

Table 5.

The results of the Rank Spearman Correlation analysis of the relationship between age, last education, years of service and work units with knowledge

		level of education	Age
Spearman's rho	Level of education	Correlation Coefficient	
			.564**
			.605**
		Sig. (2-tailed)	.000
		N	69

Based on the results of the Spearman Rank Correlation test on the level of education, the value was 0.564, age was 0.605, which means that there is a strong relationship between the level of education and age on the level of knowledge of health workers.

Table 6.
Generalize Linear Model (GLM) Test Results

Source	Type III Sum of Squares	df	Mean Square	F	Sig
Corrected Model	8.035 ^a	4	2.009	11.930	.000
Intercept	22.484	1	22.484	133.531	.000
TingkatPen didikan	.723	1	.723	4.293	.042
UnitKerja	.487	1	.487	2.894	.094
Profesi	.013	1	.013	.078	.780
Usia	1.594	1	1.594	9.464	.003
Error	10.776	64	.168		
Total	542.000	69			
Corrected Total	18.812	68			

The results of the GLM test show that the level of education and age have a significant effect on knowledge. This is indicated by the p value of education level (0.042) and p value of age (0.003) < 0.05.

DISCUSSION

A total of 28 respondents answered incorrectly (40.58%) questions about the preparation for the use of vaccines. One of the steps that must be carried out by health workers before the vaccine is used on patients is that the vaccine must be dissolved using an appropriate solvent such as NaCl or aquadestilata. Vaccines in the form of reconstituted or powdered vaccines must first be dissolved with a suitable solvent so that they can be injected into the body. Vaccines in powder form require an appropriate solvent so that the powder can dissolve completely and not clog the blood vessels because if there is a blockage in the blood vessels it will cause Post Vaccination Adverse Events (AEFI) (Rezeki, 2000).

Thirty-six (36) respondents answered incorrectly (52.18%) questions regarding the Standard Operating Procedures (SOP) for vaccines. The SOP in the questionnaire is how vaccines should be stored in a cold room, freezer room, vaccine refrigerator, and freezer or not. Vaccines are divided into several groups, one of which is based on sensitivity to temperature. If vaccines that are sensitive to heat must be stored at cold temperatures or according to the SPO listed on the packaging, if stored at hot temperatures it can damage the content of the vaccine and 23 respondents answered incorrectly (66.6%) the question regarding the use of leftover vaccine. Vaccines can be used several times, some are used once. Vaccines that are used repeatedly must meet the appropriate conditions for use, such as the condition of the Vial Monitor Vaccine (VVM) A or B. This affects how the vaccine will provide effective results if used (Depkes RI, 2015). However, with health workers who were still wrong in answering the questionnaire, many health workers answered correctly. This is also influenced by the policy of the head of the Karangmalang Public Health Center, Sragen where all health workers or employees must participate in activities carried out by the Puskesmas. Thus indirectly health workers will gain knowledge from experience during field practice or through training.

CONCLUSION

The results of the analysis show that the predictor factors that affect the level of knowledge of Health Workers about vaccine management at the Karangmalang Health Center, Sragen, are the level of education and age. Knowledge level has a strong relationship with education level of 0.564 and age of 0.605. If the level of education increases, the level of knowledge will increase by 0.723 times as well as increasing age, the level of knowledge will increase by 1.6 times.

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