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Original Research Article

IMPLEMENTATION OF PROVIDING MEDICINES INFORMATION TO PATIENTS AT THE SEMARANG CITY SUB-PRIMARY HEALTH CENTERS

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ABSTRACT

Introduction. Providing medicines information is necessary to improve patient compliance and therapeutic efficiency. Limited knowledge regarding the correct use of medicines may lead to medication errors. The purpose of this study was to determine the implementation of providing medicines information at the Semarang City sub-primary health centers. **Method.** This study is a descriptive non-experimental study with a cross-sectional method. Sampling of patients by accidental sampling with samples of sub-primary health centers was conducted by simple random sampling, consisting of 17 sub-primary health centers. The independent variables in this research are respondents characteristics, while the dependent variables include medicine name, preparation, dosage, usage, storage, indications, contraindications, side effects, stability, and medicine interactions. Data collection was conducted observationally through an observation sheet containing a list of medicines information as specified in Regulation of the Minister of Health and Human Rights No. 74/2016 concerning Pharmaceutical Service Standards at the Health Center. Data analysis was conducted descriptively. **Result & Analysis.** The results indicated that the majority of medicines information was provided by non-pharmacy personnel (71%). The most common medicines information conveyed was dosage, how to use, and medicines indications. There were three sub-primary health centers with moderate levels of implementation of medicines information provision with 61.7%, 60%, and 33.7%, respectively. **Discussion.** The implementation of medicines information provision to patients in Semarang City sub-primary health centers has not been fully implemented. The most common components of medicines information include dosage, how to use, and indication, while the least common are medicines name, medicines preparation, storage, side effects, contraindications, stability, and medicines interactions.

Keywords: Sub-Primary Health Centers, Medicines Information, Semarang City

INTRODUCTION

Pharmaceutical service is an important component in the provision of health services at community health centers. Patient requests for quality pharmaceutical services require pharmacy personnel to improve their competencies, including knowledge, skills and behaviors, to engage directly in face-to-face interactions with patients. This has shifted the focus of pharmacy services from medicine-focused to patient-oriented. Standard guidelines for pharmaceutical personnel as regulated by Minister of Health Regulation No. 74/2016 concerning Pharmaceutical Service Standards at Community Health Centers in order to encourage the proper use of medicines while improving the quality of pharmaceutical services at community health centers.

Pharmacy service activities including the provision of medicine information aim to ensure that patients understand the essence of their medication and adhere to the instructions for use of the medicine (Indonesia, 2016). However, there are still many shortcomings in the provision of medicine information. Based on the findings in one of the sub-primary health centers in Semarang City, patients were not always given complete information regarding the medicines they were prescribed. In most cases, they only receive information about the dosage, instructions for use, and indications. Meanwhile, other information components such as medicine name, dosage form, storage method, stability, side effects, contraindications, and medicine interactions are rarely provided. In fact, pharmacy personnel should provide all of this information to encourage successful treatment for patients.

Improved patient adherence to medication use is associated with their knowledge of the medicine (Tumiwa, 2014). Most patients are not aware of how to take their medication correctly as they have limited knowledge of medication (Setia *et al.,* 2019). According to a study, the rate of misunderstanding of prescription and non-prescription medicine instructions increased in patients with lower health literacy, older age, lower education and regimen complexity in the number of medications taken (Kim *et al.*, 2022). Therefore, the role of pharmaceutical personnel in sub-primary health centers is particularly significant to maintain patient safety from medicine abuse by providing reliable, unbiased, and updated information.

Semarang City operates 37 sub-primary health centers (puskesmas pembantu) spread across 16 subdistricts. Based on observations, not all of the pharmaceutical services at the sub-primary health centers are performed by pharmaceutical personnel. This was not relevant to Article 51 of Government Regulation (PP) No. 51/2009 concerning Pharmaceutical Work, which states: "(1) Pharmaceutical services at community health centers can only be performed by pharmacists." "(2) In carrying out the duties of Pharmaceutical Services as referred to in Paragraph (1), Pharmacists may be assisted by Pharmaceutical Technical Personnel who have obtained a valid Professional Registration Certificate (STRTTK)." Therefore, health workers other than pharmaceutical workers have no authority to perform pharmaceutical services in accordance with the provisions of the applicable regulations. Based on the above problems, this study aims to determine the profile of medicine information providers at

the Semarang City sub-primary health centers and to determine the implementation of providing medicine information at the Semarang City sub-primary health centers including medicine name, dosage form, dosage, how to use, indications, contraindications, storage, side effects, stability and medicine interactions. Therefore, the purpose of this research is to determine the implementation of providing medicines information at the Semarang City sub-primary health centers.

METHOD AND ANALYSIS

This research is a descriptive non-experimental study. This study was conducted from March to May 2023 at the sub-primary health centers in Semarang City. The population of this research includes health workers who provide medicine information as well as the frequency of patients obtaining medicines at the sub-primary health centers in Semarang City. Sampling of the frequency of patient visits used an incidental technique while the sample of sub-primary health centers or health workers was carried out by simple random sampling. Samples of health workers were taken using the formula from Apriansyah (2018):

$$n = \frac{N.\ Z\,\alpha^2.p.q}{d^2.(N-1)+Z\alpha^2\ .p.q}$$

$$n = = \frac{37.\ 1{,}96.0{,}2.0{,}8}{0{,}1^2.(37-1)+1{,}96\ .0{,}2.0{,}8}$$

n = 17 sub-primary health centers

Notes:
n = Number of samples
N = Sub-primary health centers total population
P = Estimator of population proportion
q = 1-p proportion of occurrence of an event
$Z\alpha^2$ = Normal curve value that depends on α (α = 5% or significant level 0.05, thus, $Z\alpha^2$= 1.96)
d = Tolerance of error (10%)

Using the above calculations, a sample size of 17 sub-primary health centers was obtained.

The independent variables in this research are respondent characteristics, while the dependent variables include medicine name, preparation, dosage, usage, storage, indications, contraindications, side effects, stability, and medicine interactions.

Data on independent variables were collected according to age, gender, and profession. Data on dependent variables were collected by cross-sectional observation. The instrument used to collect data in this research was an observation sheet prepared based on the guidelines for providing medicine information referring to Regulation of the Minister of Health No. 74/2016. Assessment of the implementation of medicine inf-ormation provision using the Guttman scale, when information is provided, it is given a value of 1 and when information is not provided, it is given a value of 0.

Characteristics of medicine information providers were analyzed univariately. The percentage of medicine information components on the frequency of visits from patients per each auxiliary health center using the formula from Porayow, Lolo and Rundengan (2022):

$$P = \frac{Number\ of\ visits\ where\ patients\ receive\ drug\ information}{Total\ frequency\ of\ patient\ visits} \times 100\%$$

Percentage of the level of implementation of providing medicine information per each sub-primary health

center using the formula from Murniati and Jufri (2021):

$$\% \text{ implementation} = \frac{\text{Total score of answers conducted by Drug Information Services (PIO) by respondents}}{\text{Number of patient visits} \times \text{Number of PIO questions}} \times 100\%$$

The results of the percentage level of implementation of providing medicine information are divided into three categories, including:

Table 1. Medicine Information Implementation Level Category

No.	% Implementation	Implementation of Providing Medicine Information
1	0-33.3%	Low
2	33.4-66.7%	Medium
3	66.8-100%	High

Source: Murniati and Jufri (2021)

RESULTS

Characteristics of Respondents

Table 2. Characteristics of Respondents at the Sub-primary health centers in Semarang City

No.	Sub-primary health center	Frequency of Patient Visits (N)	Characteristics of Health Worker Respondents		
			Type of Profession	Age	Sex
1	Sub-primary health center A	12	Nurse	50	Female
2	Sub-primary health center B	23	Nurse	38	Female
3	Sub-primary health center C	25	Nurse	41	Female
4	Sub-primary health center D	15	Midwife	28	Female
5	Sub-primary health center E	6	Pharmacist	28	Female
6	Sub-primary health center F	6	Nurse	49	Female
7	Sub-primary health center G	13	Nurse	57	Male
8	Sub-primary health center H	41	Pharmaceutical Technician	24	Male
9	Sub-primary health center I	8	Nurse	59	Female
10	Sub-primary health center J	19	Nurse	33	Female
11	Sub-primary health center K	22	Midwife	38	Female
12	Sub-primary health center L	37	Midwife	36	Female
13	Sub-primary health center M	10	Pharmacist	29	Female
14	Sub-primary health center N	4	Midwife	48	Female

15	Sub-primary health center O	16	Nurse	39	Female
16	Sub-primary health center P	0	Pharmaceutical Technician	53	Female
17	Sub-primary health center Q	6	Pharmacist	25	Female

Source: Processed Data by Researchers

Based on the results presented in Table 2, the majority of pharmaceutical services are performed by non-pharmacy personnel, with 29% performed by pharmacists or pharmaceutical technicians (TTK) and 71% by non-pharmacy personnel. The majority of medicine information providers were between 26-45 years old, and there were more female respondents than male.

Implementation of Providing Medicine Information

Table 3. Percentage of Each Medicine Information Component

Sub-primary health centers	Sample	Information Provision (%)									
		Medicine name	Medicine preparation	Dose	Usage method	Storage	Indications	Contraindications	Stability	Side effects	Medicine interaction
A	12	0%	0%	100%	75%	0%	75%	0%	0%	0%	0%
B	23	0%	22%	100%	100%	0%	87%	0%	0%	0%	0%
C	25	0%	16%	100%	100%	0%	100%	0%	0%	0%	0%
D	15	0%	6,6%	100%	93%	0%	0%	0%	0%	0%	0%
E	6	100%	67%	100%	100%	100%	100%	0%	0%	50%	0%
F	6	0%	17%	100%	100%	0%	100%	0%	0%	0%	0%
G	13	0%	31%	100%	0%	0%	0%	0%	0%	0%	0%
H	41	0%	12%	100%	93%	0%	100%	0%	0%	0%	0%
I	8	0%	0%	100%	100%	0%	100%	0%	0%	0%	0%
J	19	0%	37%	100%	100%	0%	100%	0%	0%	0%	0%
K	22	0%	27%	100%	96%	0%	96%	0%	0%	0%	0%
L	37	0%	19%	100%	89%	0%	100%	0%	0%	0%	0%
M	10	10%	10%	100%	100%	0%	100%	0%	0%	0%	0%
N	4	0%	0%	100%	75%	0%	0%	0%	0%	0%	0%
O	16	0%	0%	100%	69%	0%	0%	0%	0%	0%	0%
P*	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Q	6	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%

Source: Processed Data by Researchers

The providing of information on the medicine name category was only achieved by sub-primary health centers E and Q at 100%, while sub-primary health centers M at 10% were in accordance with mentioning the name of the medicine to the patient. Based on events at the research location, health workers did not provide information on the medicine name as the medicine was still in the original packaging with the medicine name printed on it. Information on medicine preparation was not provided in several sub-primary health centers, including sub-primary health centers A, I, N, and O (0%). Information on medicine preparation provided was appropriate when health workers mentioned tablet, puffer, capsule, ointment, powder, and ear drops to

patients. Based on the research that has been conducted, the percentage value is below 100% because the most prescribed dosage form is tablets, causing health workers who do not provide information about the medicine preparation because they assume that many patients already know what the tablets look like.

The results of the evaluation of providing information on medicine dosage showed that all sub-primary health centers had implemented it properly (100%). The dosage information provided by health workers was appropriate, including the usage method and the number of doses to be consumed. Information on how to take the medicines was also provided correctly, including how to use and when to take the medicines (before/with/after meals). However, sub-primary health center G, did not provide information on how to use the medicine at all (0%). The sub-primary health center that did not reach 100% was mostly due to health workers not providing information on how to use compounded medicines in the form of poultices.

Providing information on medicine storage was only achieved in sub-primary health center E and Q (100%), while the others scored 0%. Sub-primary health center E and Q provided general information on medicine storage, which is in a medicine box at room temperature. Sub-primary health center D, G, N, and O did not provide information on medicine indications (0%). Sub-primary health center D, G, N, and O (0%) did not provide information on indications for puffer medicines because they consisted of a variety of medicines. Information related to contraindications was not provided in all sub-primary health center (0%) because the health workers considered the medicines to be safe.

Information related to medicine stability, such as expiration date (ED) or beyond use date (BUD), was also not provided by all sub-primary health center (0%). Information on medicine side effects was only provided in sub-primary health center E (50%), while the others did not provide it (0%). Health workers were reluctant to provide this information to reduce patients' fear of taking medicines, considering that most of the medicines provided at the sub-primary health center were considered safe and had no serious effects. Similarly, information on medicine interactions was not provided in every sub-primary health centers (0%).

Implementation Level of Providing Medicine Information

Table 4. Recapitulation of the Implementation Level of Providing Medicine Information

Sub-primary health center	% Implementation	Level of Implementation
A	17.5	Low
B	25	Low
C	31.6	Low
D	20	Low
E	61.7	Medium
F	31.7	Low
G	13.1	Low
H	30.5	Low
I	30	Low
J	33.7	Medium
K	31.9	Low
L	30.9	Low

M	32	Low
N	17.5	Low
O	16.9	Low
P	0	Low
Q	60	Medium

Source: Processed Data by Researchers

As shown in Table 4 above, only sub-primary health centers E, J, and Q are in the medium category, with the percentage results in sub-primary health center E obtaining 61.7%, sub-primary health center J with 33.7%, and sub-primary health center Q with 60%, while the other sub-primary health centers are in the low category as the percentage results are below 33.3%.

DISCUSSION

Based on the research, the majority of those who perform pharmaceutical services at sub-primary health centers do not come from pharmaceutical personnel. This is because each primary health center has a different number of sub-primary health centers. Primary health centers with few sub-primary health centers will provide pharmaceutical services at the sub-primary health centers by pharmacists, while primary health centers with many sub-primary health centers will authorize health workers (nurses/midwives) other than pharmacists to provide pharmaceutical services at the sub-primary health centers. The authorization is given because there are more nurses/midwives than pharmacists. Providing medicine information at sub-primary health centers is not entirely carried out by pharmaceutical personnel. Government Regulation No. 51/2009 explains "The administration and service of medicines based on a doctor's prescription and medicine information services are included in pharmaceutical work where these activities must be carried out by pharmacists who possess the expertise and authority." and also explains in the implementation of pharmaceutical services that "Pharmacists can be assisted by Pharmaceutical Technicians who hold a professional registration certificate (STRTTK)." Meanwhile, according to Article 286 of Law No. 17/2003 on Health, "In certain circumstances, medical and health personnel may provide services outside their authority. The definition of certain conditions is the absence of pharmaceutical workers, the needs of government programs, and/or in conditions of outbreaks, epidemics, and other disaster emergencies. Other health workers include doctors and/or dentists, midwives, and nurses." Semarang City is not included in the criteria for certain conditions described in the provisions above, therefore pharmaceutical workers who carry out pharmaceutical services should be included in the criteria.

The age of the respondents did not affect their capabilities, as respondents from all age categories had understood their roles and obligations in accordance with standard operating procedures. Work related to pharmaceutical services has also become their daily routine (Lilik Handayani, Ajeng Dian Pertiwi and Nur Atikah, 2020). Respondents in this research were more female than male. However, gender has no impact on performance, as high or low risk jobs are not determined by gender. Every individual who accepts responsibility must carry out and complete it properly, regardless of gender (Lilik

Handayani, Ajeng Dian Pertiwi and Nur Atikah, 2020).

Information on medicine names is a fundamental aspect that must be conveyed to patients when they receive medication. Even if the medicine is given in its original packaging, which includes the name of the medicine, health workers are still required to inform the patient of the name of the medicine. It is important for patients to know the name of the medicine they are taking, in order that if they have to seek treatment at another health facility, they can provide accurate information about the medicine they have taken. This aims to prevent the administration of the same medicine at different health facilities, thereby reducing the risk of medication errors.

However, based on the research, it was found that some medicines, such as prednisone, were sometimes detached from their original (factory) packaging as they were kept in large bottles containing dozens of tablets. In addition, there are cases where the medicine etiquette does not include the name of the medicine, leaving patients not knowing the name of the medicine they are taking. In a number of sub-primary health centers, an etiquette printing machine is available that clearly states the name of the medicine. However, many people still do not write the name of the medicine on the etiquette due to the small size of the etiquette and the handwritten etiquette is not enough to contain all the necessary information.

Proper information regarding the use of various medicine dosage forms is essential to ensure that the active substance in the medicine can be absorbed by the body and reach its site of action. This contributes to the achievement of the medicine's therapeutic effect in treating or preventing disease. Given that each type of medicine has its own characteristics and purpose, information on medicine preparations must be provided appropriately in order for the medicine to be used for its intended purpose. In this case, health workers have provided adequate information by mentioning preparations such as tablets, puffers, capsules, ointments, talcum powder, and ear drops to patients.

The patient's knowledge of medicine dosage is important as it helps in improving patient compliance, avoiding overuse of medicines and preventing side effects that may harm the patient's health (Nyabuti, Okalebo and Guantai, 2020). People's lack of understanding of how much medicine to take or use can lead to missed cures and medication errors. Prescription medicine in the form of poultices is prescribed to children because they find it difficult to swallow the medicine. How to use this medicine should be dissolved with liquid (water) prior to taking it. The information on how to use medicines is often provided to ensure that patients can take the medicines correctly and this will determine the success of treatment, thus patients should be instructed on how to take the medicines correctly.

The sub-primary health center that has provided general information that medicines are stored in a medicine box at room temperature is in accordance with the theory of Sharif *et al.* (2010) by storing medicines in medicine cabinets that are kept out of reach from children. Meanwhile, storing medicines near kitchens and bathrooms is not recommended as these areas are prone to high temperatures and humidity, which may accelerate medicine instability. Unfortunately, there are still many health workers who do not provide information on

the correct way to store medicines, even though proper storage is very important to maintain the stability and quality of medicines.

It is necessary to explain the indication of the medicine if the patient is unaware of its efficacy, as incorrect use of the medicine can be fatal. Patient adherence to medication can also be affected by a lack of knowledge about it (Suryandari, 2015). Information on medicine efficacy is closely related to patient adherence to medication. Patients who understand the purpose of their prescribed medication are more likely to have a clearer motivation and reason to adhere to the prescribed medication (Lau *et al.*, 2015). Information on contraindications of medicines can provide increased knowledge for patients to avoid taking the medicine if they have certain diseases according to the information on the medicine label.

Providing information on medicine stability includes the expiration date (ED) or beyond use date (BUD). However, the observation sheet found that sub-primary health centers (A, B, C, D, F, G, H, J, K, L, O) did not provide this information. The stability of puffers, which consist of a variety of medicines, changes as they are separated from the original packaging, making the expiration date irrelevant and following the BUD date. The BUD of the puffer is also shorter than the ED of each medicine. The difference between ED and BUD is vital to know in order to ensure that the medicine continues to have optimal quality, efficacy, and safety after being removed from the original packaging. However, due to time constraints, health workers often do not include important information related to BUD when prescribing medicines.

Side effects of medications are often unfamiliar or misunderstood by patients. When patients have to take medication on a regular basis, especially for chronic diseases, lack of knowledge about the importance of medication often leads patients to abruptly stop taking the medication after experiencing a severe response. In fact, all medicines have the risk of side effects, and non-adherence to treatment can worsen disease conditions. Therefore, it is important to provide a clear explanation of possible side effects for patients to understand and manage the risks during treatment or after therapy is completed.

In addition, medicine interactions are also an important aspect to consider. When a given medicine has potential interactions if used together, health workers often do not convey this information to patients, due to their limited knowledge of medicine interactions. While not every medicine interaction is harmful, it is important to be aware of potentially harmful interactions. At the very least, healthcare professionals should be knowledgeable about commonly prescribed medicine interactions in order to provide useful warnings. Certain patient groups, such as the elderly and those taking multiple medicines simultaneously, are more susceptible to medicine interactions, making this information particularly important for optimizing treatment outcomes.

Based on the category of medicine name information, it can be seen that only sub-primary health centers with pharmacists performed it, while all sub-primary health centers without pharmacists did not do so. Providing information related to medicine preparation was also not done at all by sub-primary health centers that did not have pharmacists. Providing

information on medicine storage was only carried out by sub-primary health centers with pharmacists. Similarly, information on medicine indications was not provided by sub-primary health centers without pharmacists. Information on medicine side effects was also only provided by sub-primary health centers with pharmacists. In general, the provision of medicine information in sub-primary health centers without pharmacists is more limited and less complete than in sub-primary health centers with pharmacists. This suggests that the provision of medicine information should be carried out by pharmacists, as pharmacists are expected to have a thorough and comprehensive understanding of medicines and therapies, enabling them to provide adequate and accurate information to patients (Neoh *et al.*, 2011). The provision of medicine information by pharmacists can improve the quality of pharmaceutical services and patient outcomes and ensure the safe, appropriate and rational use of medicines.

CONCLUSION

The implementation of medicine information provision to patients in Semarang City sub-primary health centers has not been completely implemented. The most common components of medicine information include dosage, how to use, and indications, while the least common are medicine name, medicine preparation, storage, side effects, contraindications, stability, and medicine interactions.

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