Indonesian Journal of Pharmaceutical Education (e-Journal) 2025; 5 (1): 41 – 51
ISSN: 2775- 3670 (electronic)
Journal Homepage: http://ejurnal.ung.ac.id/index.php/ijpe/index
DOI: 10.37311/ijpe.v5i1.29938

Implementation of Drug Information Services at Colomadu II and Jaten II Health Centers, Karanganyar Regency

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Article Info:
Received: 07 Desember 2024
in revised form: 18 Januari 2025
Accepted: 24 Januari 2025
Available Online: 25 Januari 2025

Keywords:
Drug Information Services;
Health Centers;
Minister of Health Regulation No. 74 of 2016 L

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ABSTRACT

Drug Information Service (DIS) is an activity provided by pharmacists to patients. However, some aspects of DIS are often not implemented, resulting in non-compliance and failure of therapy in patients. Health center pharmacists often do not explain to patients about the side effects, interactions and contraindications of drugs. This study aims to determine the implementation of drug information services in health care facilities in two health centers in Karanganyar Regency, namely Colomadu II and Jaten II Health Centers. This study is a cross-sectional study conducted in July and August 2023 at two health centers in Karanganyar Regency, Indonesia, namely Colomadu II and Jaten II Health Centers. This study used a survey questionnaire given to patients seeking treatment at Colomadu II and Jaten II Health Centers. This study involved a total of 50 participants, with the same number of respondents from both Colomadu II and Jaten II Health Centers. The results of this study indicate that the DIS given to patients at the Health Center, in six aspects of information, namely name, preparation, dosage, use, storage, drug indications have been (100%) conveyed, but four of the ten indicators, namely contraindications, stability, side effects, and drug interactions have not been provided optimally (below 100%). that there is no significant difference in the two health centers in each variable because the p value> 0.05. Based on the results of statistical analysis, it was found that there was no significant difference in the implementation of Drug Information Services between Colomadu II and Jaten II Health Centers in the implementation of PIO drug storage (p = 1.00), drug contraindications (p = 0.556), drug stability (p = 0.728), drug side effects (p = 0.222), and drug interactions (p = 0.095). This needs to be a concern for Pharmacists and pharmacy staff at the Health Center to support the safety of drug use and successful treatment.

Astuti,L.W.,Fajriah,S.,Rilawati,F.,Istiqomah,N. (2025). *Implementation of Drug Information Services at Colomadu II and Jaten II Health Centers, Karanganyar Regency*. *Indonesian Journal of Pharmaceutical Education (e-Journal), 5*(1), 41-51.

ABSTRAK

Pelayanan Informasi Obat (PIO) merupakan suatu kegiatan yang diberikan oleh apoteker kepada pasien. Akan tetapi, beberapa aspek dari PIO sering tidak terlaksana sehingga mengakibatkan ketidakpatuhan dan kegagalan terapi pada pasien. Apoteker puskesmas sering tidak menjelaskan kepada pasien mengenai efek samping, interaksi dan kontraindikasi obat. Penelitian ini bertujuan untuk mengetahui pelaksanaan pelayanan informasi obat di fasilitas pelayanan kesehatan di dua puskesmas di Kabupaten Karanganyar yaitu Puskesmas Colomadu II dan Puskesmas Jaten II. Penelitian ini merupakan penelitian potong lintang yang dilakukan pada bulan Juli dan Agustus 2023 di dua puskesmas di Kabupaten Karanganyar yaitu Puskesmas Colomadu II dan Puskesmas Jaten II. Penelitian ini menggunakan kuesioner survei yang diberikan kepada pasien yang berobat di Puskesmas Colomadu II dan Puskesmas Jaten II. Penelitian ini melibatkan total 50 partisipan, dengan jumlah responden yang sama baik dari Puskesmas Colomadu II maupun Puskesmas Jaten II. Hasil penelitian ini menunjukkan bahwa DIS yang diberikan kepada pasien di Puskesmas, pada enam aspek informasi yaitu nama, sediaan, dosis, cara pakai, penyimpanan, indikasi obat sudah tersampaikan (100%), namun empat dari sepuluh indikator yaitu kontraindikasi, stabilitas, efek samping, dan interaksi obat belum tersampaikan secara optimal (di bawah 100%). Hal ini menunjukkan bahwa tidak terdapat perbedaan yang bermakna pada kedua puskesmas pada masing-masing variabel karena nilai p > 0,05. Berdasarkan hasil analisis statistik diketahui bahwa tidak terdapat perbedaan yang bermakna pelaksanaan Pelayanan Informasi Obat antara Puskesmas Colomadu II dan Jaten II pada pelaksanaan PIO penyimpanan obat (p=1,00), kontraindikasi obat (p=0,556), stabilitas obat (p=0,728), efek samping obat (p=0,222), dan interaksi obat (p=0,095). Hal ini perlu menjadi perhatian Apoteker dan petugas kefarmasian di Puskesmas untuk mendukung keamanan penggunaan obat dan keberhasilan pengobatan.

Kata Kunci: Pelayanan Informasi Obat;Puskesmas; Peraturan Menteri Kesehatan Nomor 74 Tahun 2016 L.

1. Introduction

Pharmaceutical services are direct and responsible services to patients related to Pharmaceutical Preparations, with the aim of achieving definite results to improve the quality of life of patients. Pharmaceutical services follow standards known as pharmaceutical service standards, as a guideline for pharmaceutical personnel in providing pharmaceutical services [1]. Pharmaceutical care services include medication reviews, medication consultations, pharmaceutical assistance, prophylactic diagnosis, urgent interventions/visits, patient digitalization, and internal pharmaceutical consultations [2]. Quality pharmaceutical services combine operational function principles, method metrics, and outcome measures for effective delivery and comparison [3]. For example, pharmacists play an important role in implementing pharmaceutical service standards, such as managing pharmaceutical supplies, providing clinical pharmacy services, and ensuring quality evaluation services [4].

In an effort to improve health services, especially in the field of pharmacy, the government provides health facilities, one of which is the community health center. The community health center functions as a center for developing health services aimed at improving, preventing, curing diseases, and restoring the health of individuals in a particular area. The community health center has a primary role in promotional

(improvement), preventive (prevention), curative (treatment), and rehabilitative (health recovery) efforts [1]. Pharmaceutical services at community health centers are an integral part of the implementation of health efforts that play a major role in improving the quality of services for the community. According to the Regulation of the Minister of Health Number 74 of 2016, the Standards for Pharmaceutical Services at Community Health Centers include management of pharmaceutical supplies and disposable medical supplies, as well as clinical pharmacy services. Clinical pharmacy services involve prescription assessment and services, drug information, counseling, patient visits (especially for inpatient community health centers), monitoring of drug side effects, monitoring of drug therapy, and evaluation of drug use. The purpose of this research is to find out how the implementation of Drug Information Services is at the Colomadu II and Jaten II Health Centers concerning Pharmaceutical Service Standards at Health Centers, to find out whether there are differences in the implementation of Drug Information Services between the Colomadu II and Jaten II Health Centers.

Pharmaceutical services in health centers are an integral part of the implementation of health efforts that play an important role in improving the quality of services for the community. Drug Information Services (PIO) are one of the clinical pharmacy service activities in health centers that aim to provide and give information and recommendations for drugs. This activity is carried out by pharmacists to doctors, nurses, and other health professionals, as well as to patients and other parties outside the health center. The purpose of Drug Information Services (PIO) is to provide various information related to drugs to patients, health workers in the health center environment, and other parties outside the health center. In addition, the purpose of PIO includes providing information to assist in making policies related to drugs, pharmaceutical preparations, medical devices, and disposable medical materials. The benefits of Drug Information Services (PIO) include improving public health (promotive) through Community Movements (GeMa), disease prevention (preventive) through counseling, and disease healing (curative) through involvement in disease elimination programs [1].

According to the Regulation of the Minister of Health of the Republic of Indonesia Number 43 of 2019 concerning Community Health Centers (Puskesmas), Puskesmas is defined as a health service facility that implements public health efforts and first-level individual health efforts. Puskesmas emphasizes more on promotion and preventive efforts in their work areas. Duties and Functions of Puskesmas, namely Puskesmas is a first-level Public Health Unit and a first-level Primary Health Unit that plays a crucial role in achieving minimum service standards for districts/cities in the health sector, the Healthy Indonesia Program, and Puskesmas performance in implementing National Health Insurance. Some of the essential functions of Puskesmas include the following: Health promotion services; Environmental health services; Family health services; Nutrition services; and Disease prevention and control services [1]. In addition, Puskesmas promotes health justice and equality by connecting, understanding, and serving communities with complex health-related needs, addressing social needs and promoting staff growth in understanding structural barriers [5]. However, in carrying out its duties, Puskesmas often face various challenges. Challenges in carrying out health center duties include a lack of understanding of information technology, obstacles in implementing Electronic Medical Records, unstable data management, and internal employee performance problems [6].

Pharmacy services are critical to the operation of Community Health Centers (Puskesmas), as they enhance the overall health care delivery system by providing

accessible, comprehensive, and coordinated care. These centers serve vulnerable populations, including low-income individuals and those with limited access to traditional health care, and the inclusion of pharmacy services allows for integrated medication management and therapy optimization. Pharmacists at Puskesmas play a critical role in medication therapy management (MTM), patient education, and collaboration with the health care team [7].

The main task of pharmacists in the Health Center is to contribute to achieving the tasks and functions of the Health Center through the implementation of pharmaceutical services, involving the management of pharmaceutical supplies and Disposable Medical Materials (BMHP), as well as clinical pharmacy services. The management of pharmaceutical supplies and BMHP, together with clinical pharmacy services in the Health Center, is a series of activities carried out by a pharmacist. Pharmacists, as figures responsible for pharmaceutical services in the Health Center, are expected to have the ability to provide services according to standards, with the aim of improving the quality of service and patient safety [1].

2. Method

The study was conducted in two Health Centers, namely Colomadu II and Jaten II Health Centers located in Karanganyar Regency, the data taken were obtained from the results of a closed survey questionnaire conducted in July - September 2023. This study is a non-experimental study using a cross-sectional design with a quantitative descriptive research method. This study used a population of patients who were treated at Colomadu II and Jaten II health centers who received drug information services from pharmacists or pharmaceutical personnel at the health centers. In this study, the sample consisted of patients who received drug information services at Colomadu II and Jaten II health centers from pharmacists or pharmaceutical personnel. The sampling method used purposive sampling, where the sample met the inclusion criteria set by the researcher.

The materials used were respondents or patients at Colomadu II and Jaten II health centers who met the inclusion criteria set in this study and the results of a questionnaire containing questions about how drug information services were at Colomadu II and Jaten II health centers.

The tools used in this study were researcher questionnaires that had been tested for Reliability and Validity, as well as writing instruments used for recording. Validity tests are conducted on at least 30 respondents. Reliability tests also need to be carried out to find out whether the researched device is reliable as research data. The results of the reliability test showed a Cronbach's alpha value of 0.625 > 0.60, which means that the instrument used is reliable. The licensing process and submission of ethical clearance were carried out before data collection began. Ethical clearance was submitted to the Ethics Committee and the submission was carried out at the relevant health center in accordance with the regulations set by each agency. The following are the results of the validity test of the research instruments (table 1).

Table 1. Results of Expectancy Validity Test

Variable	Items	Calculated R	Table R	Information
	X.1	0,474	0,361	Valid
	X.2	0,549	0,361	Valid
	X.3	0,424	0,361	Valid
	X.4	0,456	0,361	Valid
	X.5	0,474	0,361	Valid
	X.6	0,474	0,361	Valid
	X.7	0,449	0,361	Valid
	X.8	0,502	0,361	Valid
	X.9	0,424	0,361	Valid
	X.10	0,558	0,361	Valid

3. Result and Discussion

Characteristics of Research Respondents

This study involved 100 respondents, 50 respondents from Colomadu II Health Center and 50 other respondents from Jaten II Health Center, each of which has characteristics of age, gender, and occupation of respondents as shown in table 2 and table 3.

Table 2. Characteristics of Respondents at Colomadu II Health Center

Age		
Age	Frequency	Percentage (%)
25-40 years	32	64
>40 years	18	36
Total	50	100
Gender		
Gender	Frequency	Percentage (%)
Male	13	26
Female	37	74
Total	50	100
Work		
Work	Frequency	Percentage (%)
Private	29	58
Retired	6	12
Housewife	15	30
Total	50	100

Table 2 shows that out of 50 respondents, 18 respondents were aged 25-40 years (36%) while 32 others were over 40 years old (64%). The table above shows that most of the respondents who filled out the questionnaire were over 40 years old, this is because at that age the body's cells experience aging which makes them susceptible to unexpected diseases, there is a decrease in the function of body organs and the immune system. This is in line with Rahayu's research (2023) which shows that hypertension or high blood pressure usually occurs at an older age. In the elderly, they will experience physical, mental and social decline. One example of physical decline in the elderly is the susceptibility of the elderly to disease, especially degenerative diseases. One of the common degenerative diseases suffered by the elderly is hypertension.

The gender of the respondents in this study was known to be 13 men (26%) and 37 other respondents were women (74%). This is in line with Safitri's research (2021) which shows that women visit health centers more often because women have a greater tendency to pay attention to symptoms of disease that appear so that women consult health workers more often.

Based on occupation, 29 respondents work in the private sector (58%), 6 respondents are retirees (12%), 15 respondents are housewives (28%). From the percentage above, the most visits to the health center are housewives because housewives have more free time so they pay more attention to their family's health. Inflexible work contributes to inequalities in health, with a greater impact on older employees, those living in poorer areas, and those with lower mental health scores [8].

Table 3. Characteristics of Respondents at Jaten II Health Center

Age		
Age	Frequency	Percentage (%)
25-40 years	22	44
>40 years	28	56
Total	50	100
Gender		
Gender	Frequency	Percentage (%)
Male	28	56
Female	22	44
Total	50	100
Work		
Work	Frequency	Percentage (%)
Private	8	16
Retired	9	18
Housewife	19	38
Laborer	14	28
Total	50	100

Table 3 shows that out of 50 respondents, 22 respondents were aged 25-40 years (44%) while 28 others were over 40 years old (56%). The table above shows that most of the respondents who filled out the questionnaire were over 40 years old, this is because at that age the body's cells experience aging which makes them susceptible to unexpected diseases, there is a decrease in the function of body organs and the immune system. This is in line with Rahayu's research (2023) which shows that hypertension or high blood pressure usually occurs at an older age. In the elderly, physical, mental and social decline will occur. One example of physical decline in the elderly is the susceptibility of the elderly to disease, especially degenerative diseases. One of the common degenerative diseases suffered by the elderly is hypertension.

The gender of the respondents in this study was known to be 13 men (26%) and 37 other respondents were women (74%). This is in line with Safitri's research (2021) which shows that women visit health centers more often because women tend to pay more attention to symptoms of disease that appear so that women consult health workers more often.

Based on occupation, 8 respondents work in the private sector (16%), 9 respondents are retirees (18%), 14 respondents are laborers (28%) and 19 other respondents are housewives (38%). From the percentage above, the most frequent

visitors to health centers are housewives because housewives have more free time so they pay more attention to their family's health.

Description of the Implementation of Pio

This study was conducted to find out the implementation of drug information services in Colomadu II and Jaten II Health Centers as shown in the following table 4. Based on table 4, it is found that the implementation of drug information services at Colomadu II and Jaten II Health Centers has been implemented although not optimally, there are still some aspects that need to be improved. Both health centers provide complete drug information about the name of the drug, drug preparation, drug dosage, drug use, and drug indications for patients which can be seen from the percentage of 100% where a total of 50 respondents stated that the provision of this information had been conveyed well. These results are in accordance with Santoso's research on the Evaluation of Drug Information Services for Patients at the Pharmacy Installation of Sultan Agung Islamic Hospital, Semarang City, Central Java, with the aspect of delivery in the very good category, namely 100% [9].

Table 4. Overview of The Implementation of Drug Information Services

Indicators	Implemented	
	Colomadu II	**Jaten II**
Drug Name	100%	100%
Drug Preparation	100%	100%
Drug Dosage	100%	100%
Drug Use	100%	100%
Drug Storage	98%	100%
Drug Indications	100%	100%
Drug Contraindications	94%	92%
Drug Stability	70%	74%
Drug Side Effects	90%	88%
Drug Interactions	86%	76%

There are several differences between the two health centers in terms of providing drug information about drug contraindications, drug stability, drug side effects, and drug interactions. Information about drug contraindications applied at Colomadu II Health Center is not perfect where it is applied with a percentage of 94% where only 47 respondents received drug contraindication information and Jaten II Health Center was only given to 46 out of 50 respondents with a percentage of 92% this is because the pharmacist only provides information if the drug given is against something that is indicated because it can be risky for the patient [10].

Information on drug side effects was only received by 45 out of 50 respondents or 90% for Colomadu II Health Center and 88% for Jaten II Health Center. This is because pharmacy staff only convey side effects that have a major impact on patients and interfere with patient activities. For example, patients who receive HCT and Furosemide drugs must be accompanied by information on the side effects of the drug, namely increased urine excretion, patients who receive rifampicin drugs must be accompanied by information on the side effects of the drug, namely urine turning red, because drug side effects are effects that arise during treatment other than the desired effects [11].

Providing information on drug interactions is very important to avoid the risk of increasing side effects that may occur. Information on drug interactions was obtained by

86% or 43 respondents for Colomadu II Health Center and 76% for Jaten II Health Center, this is because officers only provide information if there are drugs that interact with other drugs if consumed together or that will interact with certain foods or drinks so that special attention is needed [12].

The drug stability indicator is the lowest, only applied by 74% for Jaten II Health Center and 70% for Colomadu II Health Center. This is because these indicators have not been applied consistently by all respondents in both health centers. Factors that influence are limited time and the number of pharmacists working in the health center is not as much as the number of patients being treated, in delivering drug information, the influence of age on patient understanding is also important in the Drug Information Service provided. The stability of a preparation is very important in determining the quality, efficacy and safety of a product because a stable product can determine the success of treatment. Many factors affect a product becoming unstable. One factor that causes product instability is incompatibility which can occur during the mixing, formulation, manufacturing, packaging, storage and administration of drugs. The level of active substance in a pharmaceutical preparation determines the success of treatment because if the level is less than the effective dose it can make it difficult to cure a disease. Pharmaceutical preparations or drugs are said to be stable if there is no reduction in levels during the storage period, in addition there is no change in color, odor or shape and there is no microbial contamination [13].

Based on research conducted by Anggriani et al. on the Implementation of Drug Information Services in Several Health Centers in Makassar City, the results are in line with research at Colomadu II Health Center and Jaten II Health Center. In the study, it was found that several indicators of drug information services regarding drug names, drug preparations, drug doses, how to use drugs, and drug indications. In both studies, these indicators have been implemented (100%) [14].

Several Health Centers in Indonesia experience a shortage of pharmacists, so they rely on D3-educated Pharmacy Technical Personnel to provide pharmacology services. Based on the Regulation of the Minister of Health, clinical pharmacy services involve activities such as prescription review, drug dispensing, providing Drug Information Services (PIO), counseling, patient visits (especially in inpatient health centers), monitoring and reporting of drug side effects, monitoring drug therapy, and evaluation of drug use. The purpose of clinical pharmacy services is to improve the quality and scope of pharmacy services in community health centers, including the safety and efficiency of medicines [1].

In this study, it is also necessary to improve information on drug interactions. Providing this information can improve patient therapy compliance, improve patient satisfaction, and strengthen cooperation between patients and clinical pharmacists, especially in patients with dual diagnoses and undergoing complex treatment regimens. Information on drug interactions should be considered as important information that should not be ignored in providing drug information services.

Descriptive Analysis

Based on the research that has been carried out, descriptive data was obtained as shown in table 5. Based on table 5, it is known that the results obtained from the research of Colomadu II and Jaten II Health Centers show that respondents who answered "Yes" to the questionnaire had a minimum value of 6 and a maximum of 10, an average value of 9.28, and a standard deviation value of 0.882 for Colomadu II Health Center and an average value of 9.18, and a standard deviation value of 0.919 for Jaten II Health Center.

Table 5. Descriptive Analysis

Descriptive Statistics					
	N	Min	Max	Mean	Deviation
Colomandu II Health Center	50	6	10	9,28	0,882
Jaten II Health Center	50	6	10	9,18	0,919

The difference between the findings of this study and previous studies is caused by various variables, including the lack of the number of pharmacists and the quality of resources, recording services that are still carried out manually. Insufficient allocation of health resources for pharmaceutical services results in long waiting times when patient demand is high.

Mann Whitney Test

The Mann-Whitney test is a non-parametric statistical method used to test whether there is a significant difference between two independent groups on dependent indicators that are ordinal or interval. This test is also known as the U-test. The results of the Mann-Whitney test are shown in table 6.

Table 6. Results of the Mann Whitney Test Percentage Difference

Indicators	**Implemented**		
	Colomadu II	**Jaten II**	**Significance**
Drug Name	100%	100%	-
Drug Preparation	100%	100%	-
Drug Dosage	100%	100%	-
Drug Use	100%	100%	-
Drug Storage	96%	100%	1.00
Drug Indications	100%	100%	-
Drug Contraindications	94%	92%	0.556
Drug Stability	70%	74%	0.728
Drug Side Effects	90%	88%	0.222
Drug Interactions	86%	76%	0.095

In Table 6 above, the calculated z value is -0.579 and the significance is 0.563. The significance has a value greater than 0.05, so the decision H0 is accepted. This means that it can be concluded that there is no significant difference in the implementation of Drug Information Services between Colomadu II Health Center and Jaten II Health Center. In other words, both health centers have implemented Drug Information Services in accordance with Permenkes No. 74 of 2016.

Table 6 shows that there is no significant difference in the two health centers in each variable because the p value> 0.05. Based on the results of the statistical analysis, it was found that there was no significant difference in the implementation of Drug Information Services between Colomadu II and Jaten II Health Centers in the implementation of PIO drug storage (p = 1.00), drug contraindications (p = 0.556), drug stability (p = 0.728), drug side effects (p = 0.222), and drug interactions (p = 0.095).

This can be seen from the p-value which is greater than 0.05 in the statistical test. These results indicate that both health centers have excellent Drug Information Services. Certain factors can explain this. First, the services in both health centers have reached optimal standards. Pharmaceutical services in health centers play an important role in facilitating public health initiatives, especially in providing comprehensive drug

information to help patients use drugs properly. The certainty of drug information is crucial to achieving patient satisfaction, which is measured through the standards and effectiveness of health services [15].

The difference in the results of this study and previous studies is due to the limited number and quality of resources, as well as the reliance on manual service documentation. The limited number of professional pharmacy personnel creates a gap between the needs and availability of workers, especially when the number of patients increases, putting a heavy burden on pharmaceutical services [16].

Drug Information Services (DIS) are providers of drug information that work independently. WHO encourages drug information services as a means of providing impartial pharmaceutical information, facilitating the proper use of drugs. Pharmacists have an important role in providing information regarding the benefits and risks of therapy, as well as factors involving human aspects such as quality of life, patient compliance, side effects, and economic aspects [13].

4. Conclusion

Implementation of PIO Application in Colomadu II Health Center and Jaten II Health Center on six aspects of information, namely name, preparation, dosage, use, storage, drug indications have been submitted appropriately (100%), but four of the ten indicators, namely contraindications, stability, side effects, and drug interactions have not been provided optimally (below 100%). This study shows that there is no significant difference in the implementation of Drug Information Services between Colomadu II and Jaten II Health Centers in Karanganyar Regency.

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