

# DRUG INFORMATION SERVICES WITH THE LEVEL OF COMPLIANCE OF HYPERTENSION PATIENTS AT THE DISTRICT COMMUNITY HEALTH CENTER WEST PALELEH 2025

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## ABSTRACT

Hypertension is a progressive cardiovascular disease with a rising global prevalence. While patient adherence is a critical determinant of therapeutic success, maintaining consistent compliance remains a significant challenge in primary healthcare. Objective: This study aims to analyze the influence of Drug Information Services (DIS) on the medication compliance levels of hypertension patients at the Paleleh Barat District Health Center. Methods: A quantitative descriptive study with a correlational design was conducted involving 174 hypertensive patients selected through purposeful sampling. Data were collected using validated structured questionnaires. Statistical analysis was performed using univariate and bivariate methods, specifically simple linear regression. Results: Descriptive analysis revealed that DIS was predominantly rated as "Good" (98.9%), and patient compliance was largely categorized as "High" (75.9%). However, the linear regression analysis yielded a significance value of  $p = 0.440$  ( $p > 0.05$ ). Conclusion: The findings indicate that Drug Information Services do not have a statistically significant direct effect on medication compliance at this facility. The lack of statistical significance is likely attributed to data homogeneity and the 'ceiling effect,' suggesting that adherence in this rural context is driven by external factors such as family support and intrinsic patient motivation.

**Keywords:** *Drug Information Services, Hypertension, Medication Adherence, Pharmacist Role.*

## INTRODUCTION

Hypertension represents a significant global health challenge, particularly in low- and middle-income countries (LMICs). As a primary driver of cardiovascular disease and premature mortality, the prevalence of hypertension in LMICs continues to escalate exponentially [1]. Data indicate that while high-income nations have seen a decline in prevalence, LMICs face an uncontrolled hypertension burden reaching 70–90% due to low awareness and limited access to healthcare [1]. This condition is further

exacerbated by patient characteristics that often involve other systemic cardiovascular complications, necessitating comprehensive management [2].

In Indonesia, hypertension remains the most dominant non-communicable disease, with case numbers fluctuating but trending upward annually. Patient compliance in medication consumption serves as a primary determinant in controlling blood pressure and preventing fatal complications [3]. The factors influencing blood pressure control are highly diverse, spanning productive ages to

the elderly (15–64 years), where demographic characteristics and lifestyle play a pivotal role in therapeutic success [4]. Beyond pharmacological therapy, several non-pharmacological approaches, such as the use of aromatherapy, have also been studied as supportive measures to reduce blood pressure [5].

Community Health Centers (*Pusat Kesehatan Masyarakat or Puskesmas*) play a vital role as the frontline for hypertension management at the community level. As a primary healthcare facility, the Puskesmas is responsible for providing initial medical services, which include optimal pharmaceutical care [6]. However, the effectiveness of these services is often hindered by varying levels of patient compliance. Previous studies have demonstrated that patient characteristics, educational levels, and understanding of medication instructions correlate directly with the achievement of target blood pressure levels [7] (Darwati et al., 2022).

In this context, the role of pharmacists through Drug Information Services (DIS) is a crucial instrument. DIS aims to provide clear education regarding medication use, dosage, and side effect management to improve patient health literacy. Pharmacist-led interventions have been proven to increase adherence rates by up to 69.2% [8]. Evaluations of DIS across various regions show that high-quality services descriptively tend to be followed by high patient satisfaction, although the significance of the relationship with compliance may vary depending on the local socio-cultural context [9].

The Paleleh Barat Community Health Center is a core health service hub serving the community in the Buol Regency. Based on 2024 data, 563 cases of hypertension were recorded from January to December, with the highest peak in February (91 cases) and the lowest in June (22 cases). Although DIS has been implemented according to standard operating procedures, initial observations indicate variations in patient understanding, which impact medication adherence levels. This non-compliance poses a risk of therapeutic failure and fatal complications for the community within the West Paleleh Health Center's service area.

To date, there has been no specific study evaluating the relationship between DIS quality and hypertension patient compliance levels in depth at the Paleleh Barat Community Health Center. Given that DIS is a mandatory component of pharmaceutical service standards in health centers, an evaluation of its effectiveness is essential as a basis for future service quality improvements. Based on this urgency, this study aims to analyze the influence of Drug Information Services on the compliance levels of hypertension patients at the Paleleh Barat Community Health Center in 2025.

## **RESEARCH METHODS**

This study employs a quantitative correlational design to examine the relationship between drug information services (DIS) and patient compliance at the Paleleh Barat Community Health Center. A structured questionnaire served as the primary instrument to systematically quantify patient perceptions and adherence behaviors.

The use of structured tools in primary healthcare research ensures data reliability and reproducibility, particularly when evaluating pharmaceutical service effectiveness [10][11]. Furthermore, the integration of pharmacist roles in education especially regarding the coordination of prescription and supplementary treatments is essential for capturing the complexity of modern pharmaceutical care [12].

To analyze the resulting numerical data, simple linear regression was utilized. This statistical method is rigorously applied to model the impact of the independent variable (DIS) on the dependent variable (Compliance Level). Linear regression remains a standard in health service evaluation due to its interpretability and its capacity to quantify the strength of associations between service quality and clinical outcomes [13][14]. By converting categorical responses into standardized scores, this methodology provides a robust framework for evidence-based decision-making in rural healthcare settings.

**RESEARCH RESULT**

**1. Univariate Analysis**

This study involved 174 respondents at the Paleleh Barat District Health Center. The univariate analysis describes the distribution of research data, specifically focusing on respondent demographic characteristics such as gender and education level, alongside the frequency distribution of the primary variables. The following data presents a comprehensive overview of the participants' profiles and their baseline responses:

**a. Respondent Characteristics**

Table 4.1 Frequency Distribution of Respondent Characteristics at the Paleleh Barat District Health Center 2025 Respondent Characteristics n%

		Jenis Kelamin		Valid Percent	Cumulative Percent
		Frequency	Percent		
Valid	laki-laki	113	64,9	64,9	64,9
	perempuan	61	35,1		
<b>Pendidikan</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	pelajar/kul	1	,6	,6	,6
	sd	8	4,6	4,6	5,2
	smk	12	6,9	6,9	12,1
	s1	25	14,4	14,4	26,4
	smp	49	28,2	28,2	54,6
	sma	79	45,4	45,4	100,0
	Total	174	100,0	100,0	

As can be seen in the table above, of the 174 respondents studied, based on gender, the majority were male (113 respondents) and the minority were female (61 respondents) (35.1%). Based on education, the majority were high school (79 respondents) (45.4%), junior high (49 respondents) (28.2%), undergraduate (25 respondents) (14.4%), vocational high school (12 respondents) (6.9%), elementary school (8 respondents) (4.6%) and a minority of students/college students (1 respondent) (0.6%).

**b. Distribution of Drug Information Services (PIO) Frequency**

Table 4.2 Frequency of Drug Information Services (PIO)

		Pelayanan Informasi Obat			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	cukup	2	1,1	1,1	1,1
	baik	172	98,9	98,9	100,0
Total		174	100,0	100,0	

Based on the results of data analysis on the Drug Information Service (PIO) variable obtained from a total of 174 respondents. It is known that the majority of respondents assessed the drug information service at the Paleleh Barat Community Health Center in the "Good" category, namely 172 (98.9%), while only 2 respondents (1.1%) assessed the Drug Information Service (PIO) at the Paleleh Barat Community Health Center as "Sufficient". This shows that the Drug Information Service at the Paleleh Barat Community Health Center is included in the Good category.

c. Frequency Distribution of Hypertension Patient Compliance (KPH)

Table 4.3 Frequency of Hypertension Patient Compliance (KPH)

Kepatuhan Pasien Hipertensi					
Valid	Frequency	Valid		Cumulative	
		Percent	Percent	Percent	Percent
sedang	42	24,1	24,1	24,1	24,1
tinggi	132	75,9	75,9	100,0	100,0
Total	174	100,0	100,0		

Based on the results of data analysis on the Hypertension Patient Compliance (KPH) variable obtained from a total of 174 respondents, it was found that many respondents had a "High" Compliance Level, namely 132 (75.9%), and only 42 respondents (24.1%) had a "Moderate" Compliance Level. This indicates that the majority of patients are aware of

their treatment and therefore have a high level of compliance.

2. Bivariate Analysis

Frequency of Drug Information Services with Level of Compliance of Hypertension Patients

Table 4.4 Frequency of Drug Information Services with Level of Compliance of Hypertension Patients

Model	Coefficients <sup>a</sup>		Standardized Coefficients	t	Sig.
	Unstandardized Coefficients	Std. Error			
(Constant)	2,233	,598		3,731	,000
Pelayanan Informasi Obat	-,233	,300	-,059	-,774	,440

Based on the results of a simple linear regression analysis between Drug Information Services and the Level of Hypertension Patient Compliance, the results obtained are as shown in Table 4.4. The value (a) is 2.233 and the value (b) is -0.233.

From the test results, the calculated t value was obtained = -0.774 with a significance value (p) = 0.440, which is more than 0.05. This shows statistically, Drug Information Services do not have a direct effect on the Level of Compliance of Hypertension Patients. The negative regression coefficient value (-0.233) indicates the opposite direction of the relationship, meaning that every increase in the score on drug information services is not followed by an increase in the patient's compliance score. However, because the significance value is more than 0.05, this relationship is not statistically significant.

## DISCUSSION

This study evaluated the influence of Drug Information Services (DIS) on medication compliance among 174 hypertensive patients at the Paleleh Barat District Health Center. While the descriptive data indicates high service quality and strong patient adherence, the statistical analysis reveals a more complex relationship that necessitates a deeper scholarly examination.

### 1. Respondent Characteristics and Clinical Context

#### a. Gender

The study involving 174 respondents revealed a significant gender distribution, with 113 male respondents (64.9%) and 61 female respondents (35.1%). This indicates that male participants outnumbered females by nearly a two-to-one ratio. The dominance of male respondents in this study can be attributed to several factors. Professionally and socially, men in rural settings often have more flexible time to participate in research activities during community health visits. From a clinical perspective, this finding aligns with epidemiological trends suggesting that adult men are more likely to suffer from primary hypertension compared to women in similar age groups [3].

Furthermore, these results are consistent with several recent studies. [3] reported a male majority of 52.4%, while [2][7] found similar distributions at 56.1% and 57.9%, respectively. This consistency suggests that the

demographic profile of hypertension patients in primary healthcare facilities, particularly in Indonesia, remains predominantly male.

#### b. Education

Regarding educational background, the majority of respondents were high school graduates. This finding is in line with the study by [4], which observed a similar educational trend at 73.2%..

The high prevalence of secondary education among respondents is a critical factor in pharmaceutical care. It suggests a baseline level of health literacy that allows patients to better comprehend drug information services provided by pharmacists. Understanding the educational level of the community is essential for tailoring drug education strategies that are both effective and accessible.

### 2. Drug Information Services (PIO)

The assessment of Drug Information Services (DIS) at the West Paleleh Community Health Center reveals an exceptional standard of pharmaceutical care. Based on the data analysis from 174 respondents, an overwhelming majority of 172 individuals (98.9%) rated the quality of DIS as "Good," while only 2 respondents (1.1%) categorized it as "Sufficient." This nearly unanimous positive perception indicates that the pharmaceutical personnel have effectively implemented service protocols in accordance with established pharmaceutical care standards.

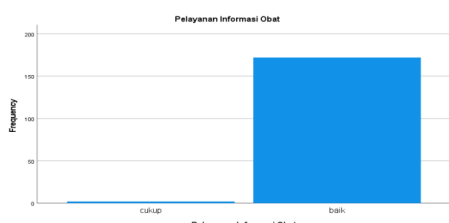


Diagram 4.1 Drug Information Services

The prevalence of "Good" ratings demonstrates that pharmacists have successfully fulfilled their professional obligations in providing comprehensive education, including clear explanations of medication indications, dosages, potential side effects, and proper storage. Such high-quality service is vital in chronic disease management, as it directly enhances patient knowledge and therapeutic awareness. Theoretically, superior drug information delivery correlates with a higher likelihood of patients utilizing their medications correctly and consistently.

However, the presence of a small minority (1.1%) who rated the service as "Sufficient" suggests room for minor improvements. This slight variation in perception may be attributed to several factors, including disparities in individual patient literacy, limited counseling time during peak hours, or the heavy workload faced by pharmacists in a primary healthcare setting. Continuous evaluation is necessary to ensure that even patients with lower levels of understanding can receive optimal benefits from their treatment.

These findings are consistent with the research conducted by [9], which noted that full implementation of drug

information protocols leads to a "Good" service category. Consequently, the effective delivery of DIS at the West Paleleh Health Center serves as a strong foundation for maintaining high-quality pharmaceutical services in the region.

### 3. Hypertension Patient Compliance (KPH)

The assessment of Hypertension Patient Compliance (HPC) among the 174 participants indicates a strong adherence to therapeutic regimens. Analysis of the compliance data reveals that a significant majority, comprising 132 respondents (75.9%), reached a "High" level of compliance, while 42 respondents (24.1%) were categorized within the "Moderate" level. Notably, no respondents fell into the "Low" compliance category. This high prevalence of adherence suggests that most patients possess a robust sense of awareness, motivation, and responsibility toward the treatment plans recommended by healthcare professionals.

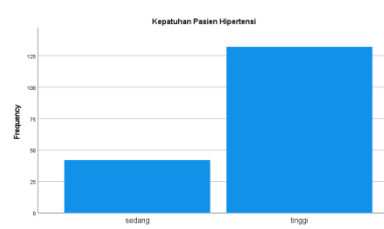


Diagram 4.2 Hypertension Compliance

Patients with high compliance levels typically demonstrate consistent medication-taking behavior, strict adherence to prescribed dosages, and a clear understanding of the necessity of long-term therapy to maintain blood

pressure control. This positive trend can be attributed to several factors, including effective communication between patients and pharmacists, the clarity of the Drug Information Services provided, and strong social support from family members. Furthermore, adequate patient knowledge regarding the pathophysiology of hypertension and the clinical benefits of antihypertensive agents plays a pivotal role in sustaining this adherence.

Despite the overall positive results, the 24.1% of respondents with "Moderate" compliance indicate that a segment of the patient population remains inconsistent in their therapy. Common barriers to full adherence identified in similar settings include forgetfulness, the tendency to discontinue medication upon feeling symptomatic relief, or a lack of deep understanding regarding the risks of intermittent treatment. However, the overarching finding of this study confirms that adherence among hypertension patients at the Paleleh Barat Health Center is predominantly high, reflecting an effective integration of pharmaceutical services and patient engagement.

#### **4. The Influence of Drug Information Services on the Compliance Level**

The simple linear regression analysis yielded a significance value of  $p = 0.440$ , indicating that Drug Information Services (DIS) did not have a statistically significant direct effect on the medication compliance level of hypertension patients at the Paleleh Barat District Health Center. Several critical factors contribute to this lack of statistical influence, primarily

rooted in the characteristics of the research data.

First, the DIS variable exhibited extreme homogeneity. Approximately 98.9% of the respondents (172 out of 174) rated the services as "Good," leaving only 1.1% in the "Sufficient" category. In statistical modeling, this phenomenon is often referred to as the 'ceiling effect' or restricted range. When nearly all respondents provide identical high scores, the lack of data variation makes it mathematically difficult for the regression model to detect a significant relationship or trend between the variables.

Second, the distribution of the dependent variable (Patient Compliance) was similarly skewed, with 75.9% of respondents in the "High" category and 24.1% in "Moderate." The absence of any "Low" compliance data points further limited the model's ability to measure how variations in service quality might lead to variations in adherence. This "uniformity" in both variables naturally leads to a non-significant correlation in linear regression analysis.

Third, qualitative insights gathered during data collection suggest that compliance was likely driven by external factors not measured in this quantitative model. Patients reported that their adherence was primarily motivated by long-term treatment habits, strong family encouragement, the perceived clinical benefits of the medication, and the fear of health complications (e.g., rising blood pressure).

Fourth, the impact of a "Good" DIS may vary based on individual patient circumstances. Despite pharmacists following standardized procedures, disparities in education levels and cognitive understanding can result in different behavioral outcomes. Finally, the localized nature of this study at a single primary health center with a homogeneous demographic further explains the lack of a visible statistical influence.

## CONCLUSION

Based on the research findings and data analysis conducted on 174 respondents at the Paleleh Barat District Health Center, the following conclusions are drawn:

1. Hypertension Patient Compliance (HPC): The majority of respondents demonstrated a "High" level of treatment compliance, accounting for 132 individuals (75.9%), while 42 respondents (24.1%) were in the "Moderate" category. No respondents were found in the "Low" compliance category. This reflects a strong sense of health awareness and motivation among the local community in managing their chronic condition.
2. The Influence of Drug Information Services (DIS) on Compliance: Simple linear regression analysis yielded a significance value of  $p = 0.440$  ( $p > 0.05$ ), indicating that Drug Information Services do not have a statistically significant direct effect on the compliance levels of hypertension patients. Although the quality of DIS was descriptively rated as excellent (98.9%), the lack of statistical significance is attributed to the 'ceiling

effect' and data homogeneity, where patient perceptions have already reached a maximum threshold. This phenomenon suggests that patient adherence in the West Paleleh region is driven by dominant external factors beyond formal pharmacist education, such as robust family support, established long-term medication habits, and the intrinsic fear of clinical complications.

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