

Effect of Adherence to Lipid Profiles of Dyslipidemia Patients: A Case Study at a Pharmacy Service in Medan

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Abstract:- Dyslipidemia is a lipid metabolism disorder in the body is a risk factor for cardiovascular disease which causes 17.9 million deaths each year or about 31% of total deaths in the world. This study aims to assess the effect of medication adherence on the lipid profile of dyslipidemic patients in pharmacies. This study was conducted in a cross-sectional manner by tracking the patient's condition, patient medication records, and assessing adherence based on the MMAS-8 questionnaire. The study involved 45 respondents who became patients at the pharmacy and then assessed compliance and the results of their therapy. The data were analyzed using the Spearman statistical test. The results showed that there was a strong correlation ($p < 0.05$) between adherence and total cholesterol ($r = -0.717$); LDL ($r = -0.541$); and TG ($r = -0.327$). However, adherence did not have a significant relationship with HDL levels ($p > 0.05$) with a correlation value of $r = 0.121$. The improvement in the lipid profile was indicated by a decrease in total cholesterol, LDL, and triglyceride levels towards normal and increased HDL levels. The results of the study concluded that patient adherence in taking medication had an effect on improving the lipid profile of dyslipidemic patients by reducing levels of K-total, LDL, and TG but did not significantly influence the increase in K-HDL levels.

Keywords:- Adherence; Lipid Profile; Dyslipidemia; Pharmacy Services.

I. INTRODUCTION

Dyslipidemia is defined as a lipid metabolism disorder that has an increase or decrease in the lipid fraction in plasma. The main lipid fraction abnormalities are increased levels of total cholesterol (K-total), LDL cholesterol (K-LDL), triglycerides (TG), and decreased HDL cholesterol (K-HDL) [1]. This is based on the consumption of foods containing high cholesterol and the synthesis of cholesterol in the liver so that the incidence of heart disease increases [2].

Management of dyslipidemia problems shows that only about 30% achieve the target of dyslipidemia treatment [1]. Adherence is an important factor in inpatient commitment. Adherence definition is a measure of the extent to which a patient can follow drug use. Non-compliance is still a concern for health workers, especially in situations of illness that require long-term therapy [3]. Grover et al. (2017) stated that increasing adherence in

the treatment process is more appropriate than changing the type of drug with a higher intensity [4]. Several studies have reported low patient adherence to follow medication recommendations. A low level of adherence occurred in hyperlipidemic patients in a private hospital in Jakarta [5]. Hypercholesterolemic patients at the Bitung Regional General Hospital showed that only 28% of patients had a high level of adherence [6]. The Health Maintenance Organization, a medical institution in Massachusetts also reports that patient adherence rates to statin therapy range from 53-55% after 6 months of treatment [7].

Adherence is one focus of the approach to patients to improve lipid profiles and contributes to reducing the prevalence of the cardiovascular disease. Dyslipidemia is an important factor for cardiovascular disease [1]. As many as 90% of heart disease is initiated by dyslipidemia [2]. The highest prevalence of the cardiovascular disease in Indonesia is coronary heart disease, which is 1.5% [8]. The SRS survey in 2014 in Indonesia showed coronary heart disease to be the highest cause of death for all ages after stroke, which was 12.9% [9]. A total of 17.9 million people worldwide die from cardiovascular disease or about 31% of total deaths worldwide [10].

Based on the description above, adherence plays an important role in the successful therapy of dyslipidemic patients, but there are still very few data that describe the effect of adherence to lipid profiles in pharmacies. This study aims to assess adherence to the lipid profile results of dyslipidemic patients.

II. RESEARCH METHODS

➤ Research design

This study was conducted in a cross-sectional manner involving 45 respondents who were pharmacy patients, July-August 2020 period. The study was approved by the Research Ethics Committee of North Sumatra, Faculty of Nursing, University of North Sumatra, Indonesia Number 2180 / VII / SP.2020.

➤ Data source

Data sources include prescriptions, patient medication records supplemented with the results of measurements of lipid profiles during the study, results of interviews with patients, and an adherence questionnaire in the form of MMAS-8.

➤ *Data Collection Method*

Patients were assessed based on medication adherence using the MMAS-8 questionnaire and then the patient's clinical outcome was measured in the form of lipid profile levels (K-total, K-LDL, TG, and K-HDL).

➤ *Analysis of Data*

Data expressed as a correlation between adherence with K-total, adherence with K-LDL, adherence with TG, and adherence with K-HDL were analyzed by the Spearman test with a 95% confidence level.

III. RESULTS AND DISCUSSION

The description of patient characteristics based on Table 1 shows that 45 patients who participated in the study consisted of 16 male patients (35.6%) and 29 female patients (64.4%) with an age range of 31-79 years (predominantly 66-72 years old.). The average patient had a Bachelor degree (51.1%) with 26.7% having a profession as a Civil Servant.

The patient lipid profiles in Table 2 show that 64.4% of the patients had a total K in the range 200-239 mg / dL and 33.3% with a total K level of ≥ 240 mg / dL; 55.6% of patients with K-LDL levels 130-159 mg / dL and 4.4% with K-LDL levels ≥ 190 mg / dL; 60.0% of patients with K-HDL levels 41-59 and 37.8% with K-HDL levels < 40 mg / dL; and 62.2% of patients with a TG level of 200-499 mg / dL.

The description of the level of adherence as in Table 3 shows that there are 62.2% of patients with low adherence and only 4.4% of patients who have high adherence. The correlation between adherence to lipid profile as a clinical outcome is described in Table 4. Adherence had a strong and significant correlation to total K-total and K-LDL levels ($p < 0.05$) with a negative correlation direction indicating that increased adherence could reduce K-total and K-LDL levels towards normal values. Adherence also has a significant correlation with TG levels ($p < 0.05$) with sufficient correlation strength and negative correlation direction. A significant correlation with very weak correlation strength was found in the relationship of adherence to K-HDL levels ($p > 0.05$) with a positive correlation, namely increasing adherence can also increase K-HDL levels but with a very weak correlation.

Dyslipidemia patient non-adherence is still a problem that requires the efforts of health workers to overcome this problem. This non-compliance has an impact on the success of the patient's therapy. 62.2% of patients in this study had a low level of adherence, causing 64.4% of patients with K-total levels within high limits, 55.6% K-LDL within high limits, 60.0% having K-HDL within low limits. , and 62.2% had a high TG. This also occurred in hyperlipidemic patients in one of the private hospitals in Jakarta with the number of patients who had low adherence rates reaching 86.36% [2]. Research by Guglielmi et al. (2017) stated that patient compliance in one of the primary health care facilities in Italy is still very low, even though some of these patients have had cardiovascular disease [11]. Some of the reasons

for non-compliance are economic problems, related to the price of medication or drugs needed, lack of information from health workers, the patient's lack of understanding of the therapeutic outcome goals, patients not reading the information in brochures, and lack of awareness for routine self-examination to health services [12]. The level of patient knowledge about the use of dyslipidemia drugs is also very important in supporting patient adherence [13].

High levels of K-total, K-LDL, TG, and low levels of K-HDL have the potential to increase risk factors for cardiovascular disease. A study related to adherence to prescribed statin drugs in a Canadian hospital stated that patients with low adherence rates were more likely to develop coronary artery disease, cerebrovascular disease, and chronic heart failure [14]. The importance of adherence in the treatment process has also been investigated by Hero et al. (2020) stated that the discontinuation of lipid-lowering drugs has the potential for 43% higher cardiovascular disease [15].

K-HDL levels in this study were found to have a very weak relationship with adherence. Mehrpooya and the team also stated that there was no correlation of adherence to K-HDL levels [14,16]. Adherence is a challenge in the management of chronic diseases requiring long-term treatment, especially asymptomatic diseases such as dyslipidemia [17,18]. Adherence can be influenced by factors of knowledge, motivation, availability of pharmaceutical care, education, and counseling [12, 17, 19]. Patient involvement in improving medication adherence is needed, one of which is through digital-based adherence enhancement services [20].

This study has limitations in terms of the factors affecting non-compliance and relatively short observation time. Future studies are expected to research by correlating factors associated with patient non-compliance over a longer period of time.

IV. CONCLUSION

The results of the study concluded that patients taking medication had an effect on improving the lipid profile of patients with dyslipidemia by reducing levels of K-total, LDL, and TG but did not significantly affect the increase in K-HDL levels.

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TABLE
Table 1. Demographic Characteristics of Dyslipidemia Patients

Patient Demographic Characteristics	Amount (N = 45)	Percentage (%)
Gender		
Male	16	35.6
Female	29	64.4
Age		
31-37	3	6.7
38-44	2	4.4
45-51	5	11.1
52-58	8	17.8
59-65	10	22.2
66-72	16	35.6
73-79	1	2.2
Qualification of Education		
SD	2	4.4
SMP	1	2.2
SMA	19	42.2
SARJANA	23	51.1
Type of Work		
Ibu Rumah Tangga	10	22.2
Pensiunan	6	13.3
PNS	12	26.7
Tidak Bekerja	7	15.6
Wiraswasta	10	22.2

Table 2. Overview of Patient Lipid Profiles

	Variable	Jumlah (N=45)	Presentase (%)
1. Total Kolesterol			
	• < 200 (Optimal)	1	2.2
	• 200-239 (Batas tinggi)	29	64.4
	• ≥ 240 (Tinggi)	15	33.3
2. LDL			
	• < 100 (Optimal)	2	4.4
	• 100-129 (Mendekati optimal)	2	4.4
	• 130-159 (Batas tinggi)	25	55.6
	• 160-189 (Tinggi)	14	31.1
	• ≥ 190 (Sangattinggi)	2	4.4
3. HDL			
	• ≥ 60 (Optimal)	1	2.2
	• 41-59 (Batas Rendah)	28	62.2
	• < 40 (Rendah)	16	35.6
4. Trigliserida			
	• < 150 (Optimal)	0	0.0
	• 150-199 (Batas Tinggi)	17	37.8
	• 200-499 (Tinggi)	28	62.2
	• ≥ 500 (Sangattinggi)	0	0.0

Table 3. Tingkat KepatuhanPasiendengan MMAS-8

MMAS-8	Jumlah (N=45)	Persentase (%)
Rendah	28	62.2
Sedang	15	33.3
Tinggi	2	4.4

Table 4. Korelasi Kepatuhanvs Profil Lipid

Profil Lipid	Nilai R	P value
Total kolesterol	-0,717	0,000*
LDL	-0,541	0,000*
HDL	0,121	0,428
TG	-0,327	0,029*

*terdapatkorelasi yang signifikan ($p < 0,05$)