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Medication adherence, clinical outcome and quality of life in dyslipidemia patients: a cross-sectional study

Kepatuhan Minum Obat, Luaran Klinis dan Kualitas Hidup Pasien Dislipidemia: Studi Potong - Lintang

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ABSTRACT

Background: *Dyslipidemia is a disease that requires long - term drug therapy. High in medication adherence is necessary to achieve the good clinical outcome and quality of life.*
Objective: *This study aimed to provide medication adherence, clinical outcome, and quality of life in dyslipidemia patients and assess the influencing factors.*
Methods: *This study used a cross - sectional design conducted at Universitas Indonesia Hospital. Morisky Medication Adherance Scale-8 (MMAS-8) questionnaire and EQ-5D-5L questionnaire were used to assess patient's medication adherence and quality of life. Statistical analysis was carried out using the Chi – Square test with confidence interval of 95%. This study involved 81 dyslipidemia patients in the period from September 15th to October 14th 2025.*
Results: *This study showed that 64.2% of patients had high medication adherence. A total of 88.9% of dyslipidemia patients had controlled total cholesterol levels, and 90.1% had a good quality of life. Gender, age, education, comorbidities, number of medications, and duration of therapy did not affect medication adherence, clinical outcomes, or quality of life among dyslipidemia patients. However, duration of therapy was found to be associated with the quality of life of dyslipidemia patients (p=0.049).*
Conclusion: *Most dyslipidemia patients had high medication adherence, controlled total cholesterol levels, and a good quality of life. Duration of therapy was associated with the quality of life of dyslipidemia patients.*

Keywords: *dyslipidemia, medication adherence, total cholesterol, quality of life*

ABSTRAK

Latar Belakang: Dislipidemia merupakan penyakit yang memerlukan terapi obat jangka panjang. Kepatuhan minum obat yang tinggi diperlukan untuk mencapai luaran klinis dan kualitas hidup yang baik.
Tujuan: Penelitian ini bertujuan untuk memberikan gambaran mengenai kepatuhan minum obat, luaran klinis, dan kualitas hidup pada pasien dislipidemia serta menilai faktor-faktor yang memengaruhinya.
Metode: Penelitian ini menggunakan desain potong - lintang yang dilakukan di Rumah Sakit Universitas Indonesia. Kuesioner Morisky Medication Adherance Scale-8 (MMAS-8) dan kuesioner EQ-5D-5L digunakan untuk menilai kepatuhan minum obat dan kualitas hidup pasien. Analisis statistik dilakukan menggunakan uji Chi - Square dengan interval kepercayaan 95%. Penelitian ini melibatkan 81 pasien dislipidemia pada periode 15 September sampai 14 Oktober 2025.
Hasil: Penelitian ini menunjukkan bahwa 64,2% pasien memiliki kepatuhan minum obat yang tinggi. Sebanyak 88,9% pasien dislipidemia memiliki kadar kolesterol total yang terkendali dan 90,1% memiliki kualitas hidup yang baik. Jenis kelamin, usia, pendidikan,

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komorbiditas, jumlah obat, dan durasi terapi tidak memengaruhi kepatuhan minum obat, luaran klinis, maupun kualitas hidup pasien dislipidemia. Namun, durasi terapi ditemukan berhubungan dengan kualitas hidup pasien dislipidemia (p=0,049).
Kesimpulan: Sebagian besar pasien dislipidemia memiliki kepatuhan minum obat yang tinggi, kadar kolesterol total yang terkendali, dan kualitas hidup yang baik. Durasi terapi menjadi faktor yang berhubungan dengan kualitas hidup pasien dislipidemia.

Kata kunci: dislipidemia, kepatuhan minum obat, kolesterol total, kualitas hidup

INTRODUCTION

Dyslipidemia is the presence of abnormal lipid levels in the body, such as high total cholesterol, high low-density lipoprotein (LDL), high triglycerides, or low high-density lipoprotein (HDL).[1] Dyslipidemia plays an important role in the pathogenesis of atherosclerosis in blood vessels, which causes heart disease and stroke. According to the World Health Organization (WHO), the prevalence of dyslipidemia in the world is around 39% and contributes to the death of 2.6 million people.[2] According to Riset Kesehatan Dasar (Riskesdas) Indonesia data, there are 28.8% of the population with age ≥ 15 years who have a total cholesterol level that exceeds normal values.[3]

Dyslipidemia is a disease that requires long - term drug therapy, so it requires special attention from healthcare professionals, especially pharmacists, regarding medication adherence. The medication adherence of dyslipidemia patients is still very low, at around 36%.[4] A study showed the medication adherence of dyslipidemia patients at a hospital in Jakarta in 2017 were 18.18% with high medication adherence and 81.82% with low medication adherence.[5] High medication adherence is expected to achieve good clinical outcomes and quality of life. Clinical outcomes of dyslipidemia therapy are controlled blood lipid levels, which are very important to avoid the risk of cardiovascular disease.[6] Total cholesterol, as one of the clinical outcomes, is measured to estimate the risk of cardiovascular disease, and the professional healthcare can determine the target to achieve dyslipidemia therapy.[1]

According to the World Health Organization (WHO), quality of life is an individual's perception of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns.[7] Dyslipidemia may have an impact on the quality of life of patients. A study showed a lower quality of life score among dyslipidemia patients compared with patients without dyslipidemia.[8] Dyslipidemia patients have a low quality of life. This may be due to medication adverse effects, long - term medication, and psychological effects.[9]

Medication adherence is necessary to achieve a good clinical outcome and quality of life, especially for dyslipidemia patients who need long - term drug therapy. Data about medication adherence of dyslipidemia patients in Depok, West Java, is still not available. This study aimed to provide medication adherence, clinical outcomes, and quality of life in dyslipidemia patients and assess the influencing factors.

METHODS

Study design

This study used a cross-sectional design, which was conducted in 1 month from September 15th to October 14th 2025, at the Cardiovascular Unit, Universitas Indonesia Hospital, Depok, West Java.

Data source and sampling procedure

Primary data were collected from dyslipidemia patients attending the Cardiovascular Unit. The inclusion criteria were patients aged ≥18 years, currently using dyslipidemia medication, and willing to participate in the study. The minimum required sample size

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was 81 subjects to obtain a 95% confidence interval (CI), assuming a prevalence of high medication adherence among dyslipidemia patients of 0.267.[10]

Variables of the study

The study variables included patient characteristics, medication adherence, clinical outcomes, and quality of life. Confounding factors analyzed in this study included gender, age, education, comorbidity, number of medications, and duration of therapy.

Measurement and instruments

Medication adherence was assessed using the Indonesian-translated Morisky Medication Adherence Scale-8 (MMAS-8) questionnaire. The use of this questionnaire was licensed by the Morisky Scale. MMAS-8 is a self-reporting tool consisting of eight questions with yes/no responses to assess medication-taking behavior.[11]

Quality of life was assessed using the Indonesian-translated EQ-5D-5L questionnaire, licensed by EuroQol. The EQ-5D-5L includes five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each dimension consists of five levels: no problems, slight problems, moderate problems, severe problems, and extreme problems. Utility values were calculated using the Indonesian value set, where a score of 1 represents the best health condition, and 0 represents the worst. A utility value >0.5 indicated a good quality of life.[12]

Data collection

Patients who met the inclusion criteria were invited to participate in the study. Those who provided consent were asked to complete questionnaires related to sociodemographic characteristics, clinical status, medication adherence, and quality of life assessment.

Ethical considerations

This study was approved by the Ethics Committee of Universitas Indonesia Hospital with ethical approval number S-203/KETLIT/RSUI/VIII/2025.

Data analysis

Data analysis included univariate and bivariate analyses. Univariate analysis was used to describe patient characteristics, medication adherence, clinical outcomes, and quality of life. Bivariate analysis using the Chi-square test was conducted to determine the association between confounding factors (gender, age, education, comorbidity, number of medications, and duration of therapy) and medication adherence, clinical outcomes, and quality of life. Statistical significance was determined at $p<0.05$.

RESULTS

This study involved 81 dyslipidemia patients with an average of 60.28 ± 9.71 years consisting of 61.7% male and 38.3% female. Patients with higher education have a greater proportion are 48.1%. Patients with 3 comorbidities have proportion are 51.9%. Patients used ≥ 5 drugs had a proportion were 81.5%. Mostly, new patients used dyslipidemia drugs with a duration of therapy < 1 year, namely 46.9%. The number of patients with low levels of medication adherence are 35.8%, and the number of patients with high levels of medication adherence are 64.2%. There are 88.9% patients have controlled total cholesterol, with a level of total cholesterol < 200 mg/dL. Meanwhile, there are 11.1% patients have uncontrolled total cholesterol, which level of total cholesterol ≥ 200 mg/dL. There are 90.1% patients with good quality of life and 9.9% patients with bad quality of life. Data related to the characteristics of patients were presented in Table 1.

Female patients have higher medication adherence than male patients, namely 71%. Patients aged 18-44 years have higher medication adherence, are 80%. Patients who have high education (university graduates) have slightly higher medication adherence than middle level of education, namely 61.5%. Patients with > 3 comorbidities have

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higher medication adherence are 71.8%. Patients used ≥ 5 drugs have higher medication adherence, were 68.2%. Patients who have been taking a dyslipidemia drug for more than 5 years have higher medication adherence, are 66.7%. However, the difference between each group for the medication adherence score is not significant (p>0.05). Data related to patients' medication adherence were presented in Table 2.

Table 1. Characteristics of Study Participants

Variable	Category	N	%
Gender	Male	50	61.7
	Female	31	38.3
Age	Mean (SD)	60.28 (9.71)	
	18-44 years	5	6.2
	45-59 years	32	39.5
	≥ 60 years	44	54.3
Education	Low (SD-SMP)	7	8.6
	Middle (SMA)	35	43.2
	High (University)	39	48.1
Comorbidity	≤ 3 comorbidities	42	51.9
	> 3 comorbidities	39	48.1
Number of Drugs	< 5 drugs	15	18.5
	≥ 5 drugs	66	81.5
Duration of Therapy	< 1 year	38	46.9
	1-5 years	37	45.7
	≥ 5 years	6	7.4
Medication Adherence	Low	29	35.8
	High	52	64.2
Level of Total Cholesterol	Mean (SD)	169.4 (128.45)	
	Normal (< 200 mg/dL)	72	88.9
	Above normal (≥ 200 mg/dL)	9	11.1
Quality of Life	Bad	8	9.9
	Good	73	90.1

Table 2. Factors Associated with Medication Adherence

Variable	Medication Adherence				Total (n)	*p-value*	OR (CI 95%)
	High		Low				
	n	%	n	%			
Gender							
Male	30	60	20	40	50	0.317	Ref.
Female	22	71	9	29	31		1.63 (0.62 – 4.26)
Age							
18-44 years	4	80	1	20	5		Ref.
45-59 years	20	62.5	12	37.5	32	0.457	2.40 (0.24–24.07)
≥ 60 years	28	63.6	16	36.4	44	0.476	2.29 (0.24–22.25)
Education							
Low (SD-SMP)	7	100	0	0	7		Ref.
Middle (SMA)	21	60	14	40	35	0.984	0.99 (0.39 – 2.55)
High (University)	24	61.5	15	38.5	39	0.187	0.23 (0.03 – 2.05)
Comorbidity							
≤ 3 comorbidities	24	57.1	18	42.9	42	0.169	Ref.
> 3 comorbidities	28	71.8	11	28.2	39		0.52 (0.21 – 1.32)
Number of Drugs							
< 5 drugs	7	46.7	8	53.3	15	0.117	Ref.
≥ 5 drugs	45	68.2	21	31.8	66		0.41 (0.13 – 1.28)

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Duration of Therapy							
< 1 year	24	63.2	14	36.8	38		Ref.
1-5 years	24	64.9	13	35.1	37	0.878	0.93 (0.36 – 2.39)
> 5 years	4	66.7	2	33.3	6	0.868	0.86 (0.14 – 5.30)

More male patients have a normal total cholesterol level than female patients, namely 94%. More patients aged 45-59 years have a normal total cholesterol level, are 90.6%. Patients with higher education have better controlled total cholesterol than those with middle and low education, namely 89.7%. More patients with ≤ 3 comorbidities have a normal total cholesterol level, are 90.5%. Patients who used < 5 drugs had a normal total cholesterol level were 93.3%. Patients who have been taking a dyslipidemia drug for less than 1 year have a normal total cholesterol level are 94.7%. Although there are differences in the proportion of each group, this study found no statistically significant difference (p>0.05) between each group. Data related to the patient's total cholesterol level were presented in Table 3.

Table 3. Factors Associated with the Level of Total Cholesterol

Variable	Level of Total Cholesterol				Total (n)	*p-value*	OR (CI 95%)
	Normal		Above Normal				
	n	%	n	%			
Gender							
Male	47	94	3	6	50	0.063	Ref.
Female	25	80.6	6	19.4	31		0.27 (0.06 – 1.16)
Age							
18-44 years	4	80	1	20	5		Ref.
45-59 years	29	90.6	3	9.4	32	0.488	0.41 (0.03 – 5.01)
≥ 60 years	39	88.6	5	11.4	44	0.582	0.51 (0.05 – 5.55)
Education							
Low (SD-SMP)	6	85.7	1	14.3	7		Ref.
Middle (SMA)	31	88.6	4	11.4	35	0.871	1.13 (0.26 – 4.90)
High (University)	35	89.7	4	10.3	39	0.754	1.46 (0.14–15.39)
Comorbidity							
≤ 3 comorbidities	38	90.5	4	9.5	42	0.637	Ref.
> 3 comorbidities	34	87.2	5	12.8	39		1.40 (0.35 – 5.63)
Number of Drugs							
< 5 drugs	14	93.3	1	6.7	15	0.544	Ref.
≥ 5 drugs	58	87.9	8	12.1	66		1.93 (0.22–16.73)
Duration of Therapy							
< 1 year	36	94.7	2	5.3	38		Ref.
1-5 years	31	83.8	6	16.2	37	0.143	3.48 (0.66–18.52)
> 5 years	5	83.3	1	16.7	6	0.330	3.60 (0.27–47.33)

Female patients have a better quality of life than male patients, namely 94%. Patients aged 45-59 years have better quality of life, are 93.8%. Patients with high education have better quality of life than middle and low education, namely 94.9%. More patients with ≤ 3 comorbidities have a good quality of life, are 92.9%. Patients used < 5 drugs had a better quality of life were 93.3%. New patients used dyslipidemia drug with a duration of therapy < 1 year had better quality of life were 97.4%. Although there is no significant difference statistically within each other in those variables, this study found that duration of therapy is only factor that associates with quality of life (p-value = 0.049). Data related to the patient's quality of life were presented in Table 4.

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Table 4. Factors Associated with Quality of Life

Variable	Quality of Life				Total (n)	*p-value*	OR (CI 95%)
	Good		Bad				
	n	%	n	%			
Gender							
Male	47	83.9	3	16.1	50	0.138	Ref.
Female	26	94	5	6	31		0.33 (0.07– 1.50)
Age							
18-44 years	4	80	1	20	5		Ref.
45-59 years	30	93.8	2	6.3	32	0.322	0.27 (0.02 – 3.65)
≥ 60 years	39	88.6	5	11.4	44	0.582	0.51 (0.05 – 5.55)
Education							
Low (SD-SMP)	6	85.7	1	14.3	7		Ref.
Middle (SMA)	30	85.7	5	14.3	35	0.197	3.08 (0.56–17.03)
High (University)	37	94.9	2	5.1	39	0.387	3.08 (0.24–39.52)
Comorbidity							
≤ 3 comorbidities	39	92.9	3	7.1	42	0.392	Ref.
> 3 comorbidities	34	87.2	5	12.8	39		1.91 (0.43 – 8.60)
Number of Drugs							
< 5 drugs	14	93.3	1	6.7	15	0.644	Ref.
≥ 5 drugs	59	89.4	7	10.6	66		1.66 (0.19–14.62)
Duration of Therapy							
< 1 year	37	97.4	1	2.6	38		Ref.
1-5 years	30	81.1	7	18.9	37	0.049	8.63 (1.01–74.11)
> 5 years	6	100	0	0	6	0.999	7.19 (0.89–58.43)

DISCUSSION

A total of 81 dyslipidemia patients participated in this study during data collection. This study shows that the prevalence of dyslipidemia tends to be higher in males than in females. This result was consistent with another study by Zulfa (2025) that the proportion of dyslipidemia incidence was higher in male patients. These gender differences are associated with hormonal variations, body composition, physical activity, and diet.[13] Elderly patients were more likely to have dyslipidemia in this study. This result is linked to the age factor that slows down metabolism, less physical activity, and an unhealthy diet in elderly patients. [14] Patients with high education have a great proportion of dyslipidemia in this study. Patients with higher education are more likely to have a modern lifestyle, such as often consuming fast food and fatty food.[15] Patients with few comorbidities have a higher proportion of dyslipidemia than patients with multiple comorbidities in this study. This result does not agree with another study by Apriliany (2021), which found that patients with multiple comorbidities are more likely to have dyslipidemia related to body lipid metabolism in various chronic conditions.[16] Patients used ≥ 5 drugs (polypharmacy) have a great proportion of dyslipidemia in this study. Patients with polypharmacy have comorbidities, so they receive many prescription drugs from doctors.[17] New patients used dyslipidemia drug with a duration of therapy < 1 year more frequently in this study. This result is associated with the fact that dyslipidemia is a silent condition, in which these patients do not have symptoms, and when they visit a hospital for a check on their health conditions (heart disease or stroke), they are diagnosed with dyslipidemia.[16]

The level of medication adherence was obtained from the MMAS-8 questionnaire, which a score 6-8 indicates high of medication adherence. It is found that only 64.2% patients have high medication adherence. From this study, patients with high levels of medication adherence have good knowledge about their illness, so they take their

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medicines regularly. There are several factors associated with medication adherence, such as gender, age, education, comorbidity, number of drugs, and duration of therapy. This study is in line with other studies by Anwar (2025) that gender is related to medication adherence. Female patients tend to be more aware of their health, visit a healthcare facility more frequently, and are more open to receiving medical education, which makes them more likely to have high levels of medication adherence.[18] Elderly patients have high levels of medication adherence linked to increased awareness of disease risk, prior experience with complications, and social support.[19] Patients who have a higher education (university graduates) have high levels of medication adherence related to their understanding of information about their illness and its therapy, and also have a better mindset about their therapy.[18] Comorbidities associated with medication adherence, which patients with comorbidities have to take more types of drugs that can increase the complexity of the medication regimen, confuse, and decrease medication adherence.[20] Patients used ≥ 5 drugs (polypharmacy) linked to the complexity of the medication regimen, so medication adherence decreased.[10] Too long a duration of therapy is associated with decreased medication adherence. Patients with long - term therapy may become fatigued with their therapy and reduce their beliefs about the effectiveness of the drug.[10] In this study, the result obtained was a non-significant association between these factors (gender, age, education, comorbidity, number of drugs, duration of therapy) and medication adherence. This result is shown by all p-values>0.05 in Table 2.

This study shows that most dyslipidemia patients have a normal total cholesterol level or controlled total cholesterol, namely 88.9%. Normal value of total cholesterol is < 200 mg/dL. Total cholesterol, as one of the clinical outcomes, is measured to estimate the risk of cardiovascular disease, so a doctor can determine the target for achieving dyslipidemia therapy. Controlled total cholesterol is highly desirable to prevent complications like heart disease or stroke.[6] Some factors associated with total cholesterol level are gender, age, education, comorbidity, number of drugs, and duration of therapy. Female patients generally have a normal total cholesterol level related to higher amounts of estrogen hormone than male patients. [14] Elderly patients have declined physiological function, which can reduce the activity of the receptors that control cholesterol in the body.[14] Patients with higher education have controlled total cholesterol levels related to their understanding of information about risk factors for high cholesterol and how to prevent it.[21] Comorbidities, such as hypertension and diabetes mellitus associated with total cholesterol levels that can accelerate the buildup of cholesterol in blood vessels.[16] Uncontrolled total cholesterol level can be associated with the use of ≥ 5 drugs (polypharmacy), which have some potential drug interactions and side effects of drugs.[17] Regarding the duration of therapy, dyslipidemia therapy is a long - term therapy, where patients must take a dyslipidemia drug every day for years to keep their total cholesterol.[16] However, in this study, not find any significantly association was found between these factors (gender, age, education, comorbidity, number of drugs, duration of therapy) and total cholesterol level. This result is shown by all p-values>0.05 in Table 3.

This study shows that most dyslipidemia patients have a good quality of life, namely 90.1%. Patients with high levels of medication adherence will have controlled total cholesterol levels and thus have a good quality of life. In this study, the duration of therapy was associated with patients' quality of life ($p<0.05$). Long - term therapy, such as dyslipidemia therapy, can make some patients feel bored with taking their medicine every day. This study, in line with another study by Eliza (2023), suggests that some patients with long - term therapy can feel stressed when their illness does not improve

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significantly and may reduce their quality of life.[20] Although our study reveals the only significant factor associated with quality of life is duration of therapy, based on some theories, there are other factors associated with quality of life, such as gender, age, education, comorbidity, and number of drugs. Gender is associated with a patient's quality of life. Female patients tend to have more emotional distress than male patients.[9.] Elderly patients are more likely to have more comorbidities, decreased physical activity, and greater dependence on daily activities, which can be associated with reduced quality of life.[9] Patients with higher education tend to better understand health information and manage their illness, which is related to a good quality of life.[20] Multiple comorbidities related to patient's quality of life, which it has negative impact on the physical and psychological health of patients. [22] Polypharmacy (used ≥ 5 drugs) linked to quality of life that increases the risk of adverse drug reaction, drug interaction, and hospitalization.[20]

This study has the advantage of addressing medication adherence, total cholesterol, and quality of life in dyslipidemia patients. But, this study also has several limitations because it used a relatively small sample size, thus it does not represent the population of dyslipidemia patients. Another clinical outcome of dyslipidemia therapy, such as LDL, HDL, triglyseride level were not measured in this study, so it does not fully describe the clinical outcome of dyslipidemia therapy. From this study, high levels of medication adherence are required to achieve controlled clinical outcomes and a good quality of life.

CONCLUSION

Most dyslipidemia patients in Universitas Indonesia Hospital, Depok have high levels of medication adherence, controlled clinical outcomes, and good quality of life. Several factors, including gender, age, education, comorbidity, number of drugs, and duration of therapy, were not associated with medication adherence, clinical outcome, and quality of life in dyslipidemia patients. Furthermore, the duration of therapy may be associated with quality of life in dyslipidemia patients.

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