

## RESEARCH ARTICLE

## OPEN ACCESS

**THE RELATIONSHIP BETWEEN MEDICATION COMPLIANCE  
AND CLINICAL OUTCOMES OF DYSLIPIDEMIA PATIENTS AT  
THE ARJASA COMMUNITY HEALTH CENTER****Eri Suyoko<sup>1</sup>, Ayu Angger Putri M. Soleh<sup>2\*</sup>**<sup>1,2</sup> Program of Pharmacy, Faculty of Health Sciences, Universitas dr. Soebandi. Jl. dr. Soebandi No. 99,  
Jember 68111, East Java, Indonesia.Email: [ayuanggerputri@gmail.com](mailto:ayuanggerputri@gmail.com)**ABSTRACT**

Dyslipidemia is a lipid metabolism disorder characterized by elevated total cholesterol, LDL. Dyslipidemia is a condition related to lipid metabolism that is defined by increased levels of total cholesterol and LDL cholesterol, and triglyceride levels, and/or decreased HDL cholesterol. In Indonesia, the occurrence of dyslipidemia in middle-aged individuals (40–60 years) reaches 50.3% (Permatasari & Syauqy, 2022). Patient adherence to lipid-lowering medication is crucial in managing blood lipid levels and avoiding heart-related issues. The goal of this research was to examine the connection between compliance with antidyslipidemic medication and clinical outcomes among outpatient dyslipidemia patients at Arjasa Community Wellness Center. This research utilized a quantitative approach utilizing a cross-sectional observational framework. The study was conducted in June 2026 at Arjasa Community Health Center, Jember Regency, using a total sampling technique involving 41 dyslipidemia individuals who fulfilled the criteria for inclusion and criteria for exclusion. Adherence was assessed using the MMAS-8 questionnaire, while clinical outcomes were evaluated based on total cholesterol levels obtained from medical records. The Chi-Square test was utilized for data analysis. The majority of respondents (61.0%) were categorized as adherent, and 58.5% possessed regular total cholesterol concentrations (<200 mg/dL). The Chi-Square test revealed a Pearson Chi-Square value of 22.913 with a p-value of 0.000 (<0.05), suggesting a significant relationship between medication adherence and clinical outcomes. The contingency coefficient (C) of 0.599 indicated a moderately strong association. There is a significant connection amid compliance with antidyslipidemic medication and clinical results among dyslipidemia patients at Arjasa Community Health Center. Higher levels of medication adherence are associated with a greater likelihood of achieving normal total cholesterol levels.

**Key words:** Dyslipidemia, medication adherence, clinical outcomes, total cholesterol, Arjasa Community Health Center



## RESEARCH ARTICLE

## OPEN ACCESS

**INTRODUCTION**

Dyslipidemia is a disorder of lipid metabolism marked by increased levels of overall cholesterol, low-density lipoprotein (LDL) levels, triglyceride levels, and/or reduced amounts of high-density lipoprotein (HDL) cholesterol in the blood (PERKI, 2022). This condition results from abnormalities in the production, transport, or metabolism of lipids, resulting in an uneven blood lipid composition. Dyslipidemia refers to an abnormal amount of lipids in the blood generally asymptomatic; however, if left untreated or poorly controlled, it considerably elevates the likelihood of cardiovascular illnesses, such as coronary artery disease, stroke, and peripheral vascular disease. Numerous risk factors play a role in the emergence of dyslipidemia, comprising diets high in saturated fat, physical inactivity, obesity, smoking, alcohol consumption, genetic predisposition, and certain comorbid conditions (Karr, 2017).

The World Health Organization (WHO) estimates that nearly 39% of the worldwide adult populace has elevated total cholesterol levels, contributing to approximately 2.6 million fatalities annually (WHO, 2023). In Indonesia, a national study conducted by Permatasari and Syauqy (2022) reported that the frequency of lipid disorders in middle-aged individuals (40–60 years) reached 50.3%. Considering Indonesia's population of approximately 278.7 million in 2023, it is estimated that more than 39 million adults are affected by dyslipidemia. Furthermore, the Indonesian Health Survey (SKI, 2023) indicated that risk factors for non-communicable diseases and metabolic disorders remain major public health concerns. In East Java Province, featuring a population of around 41.6 million, dyslipidemia and other metabolic factors of risk exist expected to add substantially to the burden of cardiovascular diseases, highlighting the need for continuous preventive and control strategies (JATIM, 2025; Ministry of Health of the Republic of Indonesia, 2023).

Medication adherence is one of the most critical factors in the management of dyslipidemia. Consistent use of lipid-lowering medications plays an essential role in controlling blood lipid profiles, thereby reducing the risk of cardiovascular complications and improving patients' standard of living. In contrast, inadequate medication compliance may result in defeat to achieve therapeutic targets, as reflected by persistently raised amounts of overall cholesterol, LDL cholesterol, and triglycerides, ultimately increasing the risk of cardiovascular events. In addition to adopting healthy changes in lifestyle, encompassing nutrition management, regular exercise, and weight management, most patients with dyslipidemia require long-term pharmacological treatment with lipid-lowering agents. Medication adherence indicates the degree to which patients comply with healthcare professionals'



## RESEARCH ARTICLE

## OPEN ACCESS

recommendations regarding the prescribed dosage, timing, and frequency of medication use. Patient adherence is affected by various factors, comprising age, gender, level of education, motivation, availability of healthcare facilities, access to healthcare information, and assistance from medical services professionals and relatives members (Della et al., 2023). Greater patient comprehension of the illness and the advantages of therapy has been shown to improve adherence to prescribed therapy (Siregar et al., 2022).

Primary health care centers act as accountable for providing both community health services and personal healthcare services at the level of primary care (Ministry of Health of the Republic of Indonesia, 2024). One of their important roles is monitoring patients' adherence to prescribed medications. However, in clinical practice, many patients experience difficulties maintaining medication adherence due to various factors, including limited knowledge about the disease, concerns regarding adverse drug effects, and socioeconomic constraints. Arjasa Community Health Center, situated in the Arjasa District of Jember Regency, is one of the primary healthcare centers actively implementing non-communicable disease control programs, including dyslipidemia management. Preliminary study data indicated that 414 patients with dyslipidemia received treatment at Arjasa Community Health Center between January and December 2025. This high number of cases reflects the considerable burden of dyslipidemia and underscores the importance of evaluating patients' medication adherence during long-term therapy to optimize clinical outcomes.

Healthcare professionals, particularly pharmacists, serve an essential function in enhancing medication compliance in individuals undergoing prolonged therapy for long-term health issues such as dyslipidemia. Pharmacists contribute to patient care by providing health education, implementing adherence-support tools such as medication calendars and reminder cards, and ensuring that medication labels contain clear and comprehensive instructions to facilitate appropriate medication use. Furthermore, pharmacists provide patient counseling, drug information services, ongoing support, and motivation, all of which have been shown to improve medication compliance and enhance treatment results (Apriliany et al., 2021).

**METHOD**

This research utilized a quantitative observational approach with a cross-sectional design. Data were gathered utilizing the 8-item Morisky Medication Adherence Scale (MMAS-8) questionnaire to evaluate adherence to medication and patients' medical records to obtain clinical outcome data. The study was conducted in June 2026



## RESEARCH ARTICLE

## OPEN ACCESS

Community Health Center Arjasa, located in Jember Regency, Community Health Center, Indonesia. The study sample consisted of outpatients diagnosed with dyslipidemia who encountered these criteria for inclusion and exclusion in advance. Ethical clearance was secured from the Committee for Health Research Ethics of Universitas dr. Soebandi (Approval No. 767/KEPK/UDS/VII/2026).

The study population included all outpatients with dyslipidemia receiving treatment at Arjasa Public Health Clinic. According to the patient visit records in June 2026, the total population comprised 41 patients. A total sampling technique was employed, in which all eligible individuals who satisfied the inclusion and exclusion requirements were enlisted as study participants.

The criteria for inclusion were: (1) patients diagnosed with dyslipidemia during the June 2026 study period; and (2) patients who were able to read and complete the questionnaire independently or respond verbally to the MMAS-8 questionnaire, and who were fully conscious and cooperative. The exclusion criterion was patients who declined to take part in the research or declined to sign the informed consent document. Data were gathered utilizing the 8-item Morisky Medication Adherence Scale (MMAS-8), which consists of eight questions with dichotomous (Yes/No) responses based on the Guttman scale. Medication adherence was categorized into two groups: high adherence (adherent), defined as an MMAS-8 score of 6–8, and low adherence (non-adherent), defined as a score of <6 (Fauziah et al., 2026). Clinical outcomes were assessed using patients' total cholesterol levels obtained from medical records. Total Cholesterol levels were categorized as normal (<200 mg/dL) or abnormal ( $\geq 200$  mg/dL) according to the criteria reported by Fauziah et al. (2026).

The Chi-square ( $\chi^2$ ) test was utilized for analysis to establish the relationship between determine the association between medication adherence and clinical outcomes. Statistical significance was determined at a p-value of <0.05. Questionnaire data were reviewed for completeness and accuracy, coded numerically, and examined employing the Statistical Package for the Social Sciences (SPSS). The results were subsequently presented in tabular form for systematic interpretation. Univariate evaluation was performed to describe respondents' population traits, including age and sex, as well as medication adherence and total cholesterol levels. Bivariate analysis was then performed to assess the relationship between medication compliance and clinical results among individuals with dyslipidemia.

Before data collection, the researcher introduced the study to potential participants and explained its objectives and procedures. People who consented to participants were requested to give written informed consent before completing the MMAS-8 questionnaire. Participants who experienced difficulty understanding the questionnaire items received assistance from the researcher. Upon completion of data collection, all responses and clinical data were compiled and analyzed to address the study objectives.



### Instruments And Supplies

The 8-question Morisky Medication Adherence Scale (MMAS-8) survey evaluate medication compliance and patients' medical records to obtain clinical outcome data.

## RESULT AND DISCUSSION

This research, entitled "The Link Between Following Medication Guidelines and Clinical Outcomes Among Individuals with Dyslipidemia at Arjasa Community Health Center," intended to analyze the connection between patients' compliance with evaluate medication compliance lipid-lowering medication and their clinical outcomes.

### Respondent Characteristics

Respondent characteristics were described according to age and sex. Based on age, most respondents were in the 46–55 age range (36.6%), succeeded by individuals aged 56–65 years (26.8%), over 65 years (22.0%), and 36–45 years (14.6%). No respondents were aged 26–35 years. These findings indicate that patients with dyslipidemia at Arjasa Community Health Center were predominantly older adults. Age classification was based on the criteria proposed by Paulina et al. (2023). Regarding sex, the vast majority of participants were women (70.7%), while men made up 29.3% of the study population.

### Medication Compliance in Patients with Dyslipidemia at Arjasa Community Health Center

Medication compliance was evaluated using the 8-item Morisky Medication Adherence Assessment (MMAS-8) and classified into two categories: adherent and non-adherent. The results showed that 25 respondents (61.0%) were classified as adherent to lipid-lowering medication, whereas 16 respondents (39.0%) were categorized as non-adherent according to the MMAS-8 questionnaire.

### Clinical Outcomes Among Patients with Dyslipidemia at Arjasa Community Health Center

Overall, 24 respondents (58.5%) achieved cholesterol levels that are considered normal ( $<200\text{mg/dL}$ ), whereas 17 respondents (41.5%) had abnormal total cholesterol concentrations ( $\geq 200\text{mg/dL}$ ).

### Analysis of the Relationship Between Medication Compliance and Clinical Results in Patients with Dyslipidemia at Arjasa Community Health Center

Examination of the relationship between adherence to medication and clinical results was analyzed using the Chi-square test. Clinical outcomes were evaluated based on total cholesterol levels. One of the main goals of dyslipidemia management is to maintain



## RESEARCH ARTICLE

## OPEN ACCESS

normal total cholesterol levels through long-term therapy, thereby reducing the risk of cardiovascular complications. Medication adherence, particularly the regular use of lipid-lowering agents, plays a crucial role in achieving optimal clinical outcomes. In this study, The chi-square analysis revealed a notable connection between medication adherence and total cholesterol levels ( $p < 0.001$ ; contingency coefficient = 0.599), indicating a moderately strong relationship. Patients with effective medication compliance were more inclined to achieve normal total cholesterol levels, whereas poor adherence was associated with hypercholesterolemia.

The contingency coefficient was 0.599, indicating a moderately robust relationship between adherence to medication and clinical result. These findings suggest that better adherence to lipid-lowering medication is associated with a greater likelihood of achieving normal total cholesterol levels.

The World Health Organization (WHO, 2025) recognizes compliance with medication as a crucial factor in effectively managing dyslipidemia. Previous studies by Anwar and Hasan (2019) and Fauziah et al. (2026) similarly indicated that individuals with greater compliance resulted in improved lipid management. Furthermore, Rahmadha et al. (2022) demonstrated that pharmacist-led counseling improved medication adherence and reduced the mean total cholesterol level from 225 mg/dL to 191 mg/dL. Although some studies have reported less pronounced statistical significance (Raising et al., 2024), adherent patients consistently showed more favorable clinical outcomes. These results emphasize the significance of enhancing medication compliance, particularly in primary healthcare settings.

Nevertheless, clinical results are affected not just by medication compliance but also by additional elements, including dietary habits, regular physical activity, and the use of complementary therapies. In this study, a small proportion of non-adherent patients still achieved normal total cholesterol levels, suggesting that non-pharmacological factors may also contribute to lipid control. In addition, adherence behavior is affected by predisposing elements (e.g., age, sex, learning, and motivation), facilitating aspects (e.g., availability to healthcare services and medications), and reinforcing elements (e.g., support from family and healthcare professionals). Therefore, continuous patient education and counseling provided by healthcare professionals, particularly pharmacists and nurses, are essential to enhance medication compliance and enhance clinical results.

## CONCLUSION

The assessment of medication adherence among patients with dyslipidemia at Arjasa Community Health Center indicated that the majority of patients adhered to their lipid-lowering medication (61.0%), while 39.0% were classified as non-adherent. The assessment of clinical outcomes demonstrated that most patients achieved normal total cholesterol levels (58.5%), whereas 41.5% had abnormal total cholesterol levels. Chi-square analysis revealed a notable correlation between compliance with medication and health results in patients with

95



IPJ is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](#)

## RESEARCH ARTICLE

## OPEN ACCESS

dyslipidemia at Arjasa Community Health Center ( $p < 0.001$ ; contingency coefficient = 0.599). These results suggest that better medication compliance is linked to enhanced clinical outcomes, as reflected by normal total cholesterol levels.

**ACKNOWLEDGEMENT**

The authors wish to convey their heartfelt appreciation to Universitas dr. Soebandi for its academic support throughout this study. The authors also thank the management and healthcare staff of Arjasa Community Health Center, Jember Regency, for their permission, assistance, and cooperation during the data collection process. Special appreciation is extended to all patients who voluntarily participated in this study. Finally, the authors are grateful to all who participated, directly or indirectly, for the successful achievement of this research.

**REFERENCES**

- Aman, A. M., Soewondo, P., Soelistijo, S. A., Arsana, P. M., Wisnu, W., & Z. H. (2021). *Pengelolaan Dislipidemia di Indonesia 2021*. PB PERKENI.
- Anwar, V. A., & Hasan, D. (2019). Profil kepatuhan penggunaan obat antihiperlipidemia di salah satu rumah sakit swasta Jakarta.
- Apriliany, F., Ikawati, Z., & Pramantara, I. D. P. (2021). Pengaruh komorbid dan jenis terapi terhadap outcome kolesterol total pasien dislipidemia.
- Della, A., Subiyanto, P., & Maria, A. (2023). Faktor-faktor yang berhubungan dengan kepatuhan pengobatan pasien diabetes melitus tipe 2. *Jurnal Kebijakan Kesehatan Indonesia*, 7(2), 124–136.
- Dunbar-Jacob, J., & Zhao, J. (2025). Medication adherence measurement in chronic diseases: A state-of-the-art review of the literature. *Nursing Reports*, 15(10), 1–18.
- Fauziah, S., Syafhan, N. F., Puspitasari, A. W., & Kusumawardan, L. A. (2026). Kepatuhan minum obat, luaran klinis dan kualitas hidup pasien dislipidemia: Studi potong lintang.
- JATIM. (2025). *Profil Kesehatan Jawa Timur 2024*.
- Karr, S. (2017). Epidemiology and management of hyperlipidemia. *American Journal of Managed Care*, 23(Suppl. 9), S139–S148.
- Kementerian Kesehatan Republik Indonesia. (2023). *Dislipidemia*.
- Kementerian Kesehatan Republik Indonesia. (2024). *Profil Kesehatan Indonesia*.
- Mach, F., Baigent, C., Catapano, A. L., et al. (2020). 2019 ESC/EAS Guidelines for the management of dyslipidaemias: Lipid modification to reduce



## RESEARCH ARTICLE

## OPEN ACCESS

cardiovascular risk. *European Heart Journal*, 41(1), 111–188.

Paulina, A., Angin, M. P., & Hidayaturahmah, R. (2023). Evaluasi penggunaan obat kolesterol pada pasien hiperlipidemia di instalasi rawat jalan Rumah Sakit Mutiara Bunda.

PERKENI. (2021). *Panduan Pengelolaan Dislipidemia di Indonesia*.

PERKI. (2022). *Panduan Tata Laksana Dislipidemia*.

Permatasari, Z., & Syauqy, A. (2022). Food consumption and dyslipidemia in middle-aged adults in Indonesia: A cross-sectional national study. *Nutrition and Health*.

Rahmadha, S., Muthoharoh, A., Ningrum, W. A., & Rahmatullah, S. (2022). Konseling apoteker meningkatkan kepatuhan pengobatan dan menurunkan kadar gula darah pasien DM tipe 2.

Raising, R., Hermawatiningsih, O. D., & Rumaolat, W. (2024). Efektivitas penggunaan obat dislipidemia terhadap kadar LDL pada pasien kardiovaskular penyebab stroke.

Siregar, M. S. R., & Boy, E. (2022). Faktor risiko pada pasien dislipidemia.

SKI. (2023). *Survei Kesehatan Indonesia dalam Angka 2023*.

World Health Organization. (2023). Raised Cholesterol. World Health Organization. (2025). Progress Report: Accelerating Prevention and Control of Cardiovascular Diseases in the South-East Asia Region.

RESEARCH ARTICLE

OPEN ACCESS

TABLE

Table 1. Respondent Characteristics

| Variable   | Category | Frequency | Percentage |
|------------|----------|-----------|------------|
| Age (Year) | 26 – 35  | 0         | 0%         |
|            | 36 – 45  | 6         | 14,6%      |
|            | 46 – 55  | 15        | 36,6%      |
|            | 56 – 65  | 11        | 26,8%      |
|            | > 65     | 9         | 22,0%      |
|            | Total    | 41        | 100%       |
| Sex        | Male     | 12        | 29,3%      |
|            | Female   | 29        | 70,7%      |
|            | Total    | X         | 100%       |

Table 2. Medication Adherence Among Patients with Dyslipidemia

| Variable             | Category      | Frequency | Percentage |
|----------------------|---------------|-----------|------------|
| Medication adherence | Adherence     | 25        | 61,0%      |
|                      | Non-Adherence | 16        | 39,0%      |
|                      | Total         | 41        | 100%       |

Table 3. Clinical Outcomes Among Patients with Dyslipidemia

| Variable          | Category             | Frequency | Percentage |
|-------------------|----------------------|-----------|------------|
| Total cholesterol | Normal < 200 mg/dL   | 24        | 58,5%      |
|                   | Abnormal ≥ 200 mg/dL | 17        | 41,5%      |
|                   | Total                | 41        | 100%       |

Table 4. Analysis of the Association Between Medication Adherence and Clinical Outcomes Among Patients with Dyslipidemia

| Medication Adherence | Clinical Outcome Variables |       |          |      | Total | P value | Contingency Coefficient |
|----------------------|----------------------------|-------|----------|------|-------|---------|-------------------------|
|                      | Normal                     |       | Abnormal |      |       |         |                         |
|                      | F                          | %     | F        | %    | F     | %       |                         |
| Adherence            | 22                         | 53,7% | 3        | 7,3% | 25    | 61,0%   | 0,000                   |
|                      |                            |       |          |      |       |         | 0,599                   |



| RESEARCH ARTICLE |    |       |    |       | OPEN ACCESS |       |
|------------------|----|-------|----|-------|-------------|-------|
| Non-Adherence    | 2  | 4,9%  | 14 | 34,1% | 16          | 39,0% |
| Total            | 24 | 58,5% | 17 | 41,5% | 41          | 100%  |

