

The Relationship Between Patient Knowledge and Medication Adherence in Osteoarthritis Patients at the Citra Medika Lubuklinggau Community Health Center, Indonesia

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ABSTRACT

Osteoarthritis is a degenerative joint disease that requires long-term therapy and patient adherence to medication to control symptoms and prevent joint function decline. Patient knowledge is known to play a role in improving treatment adherence, but evidence from primary care settings remains limited. This study aims to analyze the relationship between knowledge levels and medication adherence among osteoarthritis patients at the Citra Medika Lubuklinggau Community Health Center and to assess its implications for strengthening patient education in osteoarthritis management. This analytical observational study with a cross-sectional design involved 63 respondents. Data were collected using a validated questionnaire and analyzed univariately and bivariate using SPSS version 25. The results showed that patients' knowledge levels were good in 25 respondents (40%), adequate in 27 respondents (43%), and poor in 11 respondents (17%). Medication adherence was high in 18 respondents (29%), moderate in 26 respondents (41%), and low in 18 respondents (29%). Statistical analysis revealed a significant association between knowledge level and medication adherence ($p = 0.008$; $p < 0.05$). This study indicates that improving patients' knowledge has the potential to increase treatment adherence; therefore, patient education needs to be integrated into the management of osteoarthritis in primary health care.

Keywords: Adherence; Questionnaire; Medication; Osteoarthritis; Knowledge.

INTRODUCTION

Osteoarthritis (OA) is the most common degenerative joint disease and a leading cause of chronic pain and disability in older adults, characterized by cartilage damage, narrowing of the joint space, osteophyte formation, and changes in the subchondral bone. In primary OA, the main risk factors include age, gender, ethnicity, and genetic factors. The disease generally begins to develop in the late 40s to mid-50s, making age a significant risk factor for the onset of osteoarthritis (1). Globally, more than 528 million people were affected by OA in 2019, and this number continues to increase with the growing elderly population, obesity, and sedentary lifestyles (2). The highest prevalence is found in weight-bearing joints such as the knees and hips, with women having a higher risk than men (3).

The latest report also confirms that OA is one of the largest contributors to the global burden of disability, especially in low- and middle-income countries (4). In Indonesia, approximately 34.3% of older adults experience joint disorders, with OA as the primary cause. The prevalence of OA is higher in women (41.3%) than in men (28.6%), especially postmenopausal women due to hormonal changes that affect cartilage and bone metabolism (5,6).

In addition to impacting quality of life, osteoarthritis (OA) also poses a significant economic burden. Studies show that the average OA patient spends between USD 570 and 2,600 per year on therapy and rehabilitation (7). This condition poses a particular challenge for developing countries such as Indonesia, as most OA patients

are of non-productive age, which has an impact on the social and economic aspects of their families. OA management itself involves two main approaches, namely non-pharmacological and pharmacological therapy. The non-pharmacological approach includes patient education, physical exercise, physiotherapy, weight control, and the use of assistive devices (8). Meanwhile, pharmacological therapy involves the administration of analgesics such as paracetamol, nonsteroidal anti-inflammatory drugs (NSAIDs), and supplements such as glucosamine and chondroitin (9). Research also reports that around 72% of OA patients use NSAIDs as their primary therapy, while a small proportion use intra-articular corticosteroids to treat acute inflammation (8).

The success of osteoarthritis (OA) therapy is greatly influenced by patient compliance in taking medication regularly and as recommended, because noncompliance can lead to treatment failure, worsening symptoms, and disease progression. Khonita *et al.* (10) reported that only about 56.7% of OA patients adhered to treatment, while the rest discontinued therapy due to lack of understanding, side effects, or the belief that the medication was ineffective. Patient knowledge plays an important role in shaping compliance behavior, where understanding the function of the medication, its mechanism of action, and the risks of discontinuing therapy increases awareness to remain compliant. Patients with good knowledge will have high compliance levels, while those with less knowledge will tend to have low compliance, making education by health workers, especially pharmacists, key to improving the success of OA therapy (11,12).

Based on this description, the high incidence of osteoarthritis, which impacts quality of life and economic burden, as well as the importance of patient knowledge in improving medication adherence, indicates the need for research to examine the relationship between patient knowledge and treatment adherence in osteoarthritis patients in healthcare facilities.

METHODS

This study is a non-experimental study with an analytical observational approach using a descriptive cross-sectional design. The cross-sectional design was chosen to assess patients' knowledge levels and medication adherence simultaneously at a single point in time, as well as to efficiently determine the relationship between the two variables in a primary healthcare facility. The study was conducted from May to July 2025 at the Citra Medika Lubuklinggau Community Health Center, Lubuklinggau City, South Sumatra Province, Indonesia, which was selected because it has a relatively high number of osteoarthritis cases.

The sample was selected using purposive sampling to ensure that respondents possessed specific characteristics aligned with the study's objectives, namely a confirmed diagnosis of osteoarthritis and currently undergoing treatment. Inclusion criteria included patients diagnosed with osteoarthritis by a healthcare professional, aged ≥ 40 years, willing to participate by signing an informed consent form, and able to read and understand the questionnaire. The age criterion of ≥ 40 years was established based on epidemiological evidence in the background section indicating an increased risk of osteoarthritis in middle adulthood. Exclusion criteria included patients with cognitive or mental impairments affecting their ability to answer questions, as well as patients who were absent during the data collection period. The sample size was determined using the Slovin formula, resulting in 63 respondents considered representative of the available population of osteoarthritis patients.

Data were collected using a structured closed-ended questionnaire designed based on the study variables, namely patient knowledge and medication adherence. The knowledge questionnaire consisted of several questions assessing understanding of osteoarthritis, including the definition of the disease, risk factors,

symptoms, treatment, and medication use. Responses were scored and categorized into good, adequate, and poor levels of knowledge based on established assessment criteria. Medication adherence was measured using the validated MMAS-8 (Morisky Medication Adherence Scale, 8 items), which evaluates medication-taking behaviors such as forgetting to take medication, discontinuation of therapy, and consistency of adherence. The questionnaires used underwent validity and reliability testing prior to data collection to ensure measurement accuracy.

Data processing was conducted through the stages of editing, coding, data entry, and cleaning. Statistical analysis was performed using SPSS version 25. Univariate analysis was used to describe the characteristics of the respondents and the distribution of variables. Bivariate analysis using the Chi-square test was performed to assess the relationship between knowledge level and medication adherence, as both variables were categorical. The level of significance was set at $p < 0.05$.

RESULT AND DISCUSSION

Validity and Reliability Testing of the Knowledge and Compliance Instrument (MMAS-8)

This study analyzed the relationship between knowledge level and medication adherence among 63 osteoarthritis patients at the Citra Medika Lubuklinggau Community Health Center. The knowledge instrument used a questionnaire consisting of 10 questions, while the level of adherence was measured using the Morisky Medication Adherence Scale-8 (MMAS-8), which has been proven to be valid and reliable for assessing adherence in patients with chronic diseases (13). The MMAS-8 is a self-report instrument consisting of eight items, designed to identify various non-adherence behaviors, such as forgetting to take medication, intentionally skipping doses, and general patterns of adherence to the treatment regimen. This instrument has been widely used in chronic disease research and has been shown to have good validity and reliability in measuring medication adherence. The MMAS-8 scoring system allows for the grouping of patient compliance levels into low, moderate, and high categories, thereby facilitating the interpretation of compliance behavior in research analysis (14).

The validity of the knowledge and compliance instruments was tested using Pearson Product Moment correlation by correlating the score of each question item with the total score. This validity test aimed to ensure that each questionnaire item truly measured the intended research construct (15). The validity test analysis was conducted on 30 respondents, with the criterion that an item was considered valid if the calculated r value was greater than the table r at a significance level of 0.05, namely 0.361 ($N = 30$; $\alpha = 0.05$) (16). Based on the validity test results presented in Table 1 and Table 2, all items in the knowledge and compliance instruments showed a calculated r value greater than the table r value, so it can be concluded that all questionnaire items are valid and suitable for use in this study.

The instruments were also tested for reliability to assess the consistency of measurement results (15). Reliability testing was conducted on 30 respondents using Cronbach's Alpha method with the help of SPSS software. The instruments were declared reliable if the α value was ≥ 0.70 (16). The test results showed that the knowledge and compliance questionnaires each had an α value > 0.70 , so they were declared reliable and suitable for use in this study. These reliability coefficient values indicate that each item in the instrument has a good level of internal consistency. Thus, the instrument used is capable of providing stable and reliable measurement results to describe the level of knowledge and medication adherence among respondents.

Table 1. Questionnaire Knowledge Validity Test Results

Knowledge item	Calculated r	Table r	Description
P1	0.543	0.361	Valid
P2	0.612	0.361	Valid
P3	0,497	0.361	Valid
P4	0,675	0.361	Valid
P5	0,482	0.361	Valid
P6	0,591	0.361	Valid
P7	0,559	0.361	Valid
P8	0,634	0.361	Valid
P9	0,471	0.361	Valid
P10	0,688	0.361	Valid

Table 2. Questionnaire Compliance Validity Test Results

Compliance item	Calculated r	Table r	Description
K1	0.542	0.361	Valid
K2	0.601	0.361	Valid
K3	0.497	0.361	Valid
K4	0.655	0.361	Valid
K5	0.588	0.361	Valid
K6	0.621	0.361	Valid
K7	0.473	0.361	Valid
K8	0.669	0.361	Valid

Table 3. Questionnaire Knowledge Reliability Test Results

Instrument	Number of Items	<i>Cronbach's Alpha</i>	Description
Knowledge	10	0.812	Reliable

Table 4. Questionnaire Compliance Reliability Test Results

Instrument	Number of Items	<i>Cronbach's Alpha</i>	Description
Compliance	8	0.785	Reliable

Respondent Characteristics Data

The analysis was performed univariately and bivariately using the chi-square test. Univariate analysis was performed to describe the distribution of respondents based on the research variables (15). The distribution of respondents can be seen in Table 5, where respondents are characterized based on age, gender, education, and type of work. The incidence of osteoarthritis increases with age, especially after the age range of 40-45 years, due to the degenerative process in the joint cartilage (17,18). Thus, age can be considered one of the main determinants in the prevalence of osteoarthritis.

In terms of gender, female respondents dominated with 45 people, while male respondents numbered only 18 (28.6%). This finding is in line with a report by the Indonesian Ministry of Health (19), which states that osteoarthritis is more common in women, especially in the postmenopausal phase, due to hormonal changes that affect bone and cartilage metabolism. This condition also has implications for treatment compliance, as women tend to pay more attention to their health than men.

Table 5. Respondent Characteristics Data Result

Characteristics	Category	Frequency	Percentage
Age (years)	36–45	15	23.8
	46–55	28	44.4
	>55	20	31.8
Gender	Male	18	28.6
	Female	45	71.4
Education	Elementary/Junior High School	21	33.33
	High School	38	60.31
	College/University	4	6.34
Occupation	Housewife	20	31.74
	Entrepreneur	24	38.09
	Civil Servant/Employee	7	11.11
	Other	12	19.04

Based on educational level, the majority of respondents were high school graduates (60.31%), followed by 4 college graduates (6.34%) and 21 elementary/junior high school graduates (33.33%). Education plays an important role in the ability to understand health information, including knowledge about chronic diseases and drug therapy (20). In terms of occupation, the largest number of respondents were housewives (24 people, 31.74%), followed by entrepreneurs (38.09%), civil servants/employees (7 people, 11.11%), and other occupations (12 people, 19.04%). Occupation type influences physical activity and lifestyle, both of which can affect the risk of osteoarthritis and medication adherence patterns (21).

Level of Knowledge

The success of osteoarthritis treatment and other chronic diseases depends heavily on the patient's level of knowledge. The majority of respondents have a good understanding of osteoarthritis and its treatment, as shown by the data in Table 6. However, there are some groups that lack this understanding. This is in line with the idea of health literacy, where better knowledge of diseases and therapies helps to manage diseases more effectively. This includes understanding the purpose of treatment, the benefits of medication, and the effects of not adhering to the prescribed regimen. Adequate knowledge encourages patients to follow their doctor's advice, understand the importance of taking medication regularly, and recognize the symptoms or risks that may arise if therapy is neglected (22).

In addition, recent research also shows a significant relationship between patient knowledge and treatment adherence in chronic diseases. A cross-sectional study conducted in Ethiopia in 2024 reported that patients with low knowledge about their disease and treatment had a much higher risk of non-adherence to medication. Patients with insufficient knowledge were more than three times more likely to be non-compliant with their treatment regimen compared to patients with good knowledge (AOR = 3.1; $p < 0.001$). These findings confirm that patient understanding of the goals of therapy, the benefits of medication, and the consequences of non-compliance are key factors in supporting long-term treatment behavior. Although the study was not specifically conducted on osteoarthritis patients, the results are relevant and support the findings in this study that an adequate level of knowledge plays an important role in improving patient adherence to chronic treatment (23).

Table 6. Respondent Knowledge Level

Score Range	n	Percentage	Category
76-100	25	40%	Good
56-75	27	43%	Fair
<56	11	17%	Poor

In another study focusing on related arthritis conditions, a literature review showed that a lack of understanding of therapy programs, including the reasons for and methods of treatment, was one of the main factors causing low compliance among osteoarthritis patients with physical therapy recommendations or treatment regimens (24). Although other factors (e.g., family support, motivation, and access to health services) also play a role, the consistency of these findings with the data in Table 6 reinforces the argument that knowledge is an important component that needs to be considered in patient education strategies.

Level of Compliance

The results of respondent compliance in Table 7 show that most patients have made an effort to follow treatment recommendations, although compliance levels are not yet optimal. The phenomenon of a group of patients with low compliance indicates that barriers to following the treatment regimen still exist, including limited understanding, motivation, or long-term support. In this context, structured and continuous health education is an important strategy to increase patient awareness and adherence behavior. A pre-experimental study in primary health care facilities showed that health education interventions, such as the use of leaflets and therapy control cards, significantly increased medication adherence in hypertensive patients ($p = 0.000$), reflecting the potential of educational approaches to improve the treatment behavior of chronic patients in general (25).

These findings are consistent with broader scientific evidence that health education interventions significantly improve treatment adherence. A recent meta-analysis showed that health education programs significantly improve treatment adherence compared to standard care in patients with chronic infectious diseases, with an odds ratio (OR) of 2.42 (95% CI: 1.58–3.72; $p < 0.0001$) in a comprehensive study covering various controlled randomized trials (26). In addition, a systematic review also found that various educational methods, including two-way communication and interactive demonstrations, can help improve medication adherence in elderly patients with hypertension. Thus, interventions such as intensive counseling, ongoing patient education, and supervision and assistance by health workers are essential to help patients achieve optimal adherence and support the success of long-term therapy (27).

Table 7. Respondent Compliance Level

Score Range	n	Percentage	Category
>8	18	29%	High
6-7	26	41%	Medium
<5	19	30%	Low

The Relationship Between Knowledge Level and Medication Adherence Level

The results of the analysis of the relationship between knowledge level and medication adherence using the Chi-Square test showed a significant relationship between patient knowledge level and medication adherence in osteoarthritis patients at the Citra Medika Lubuklinggau Community Health Center ($\chi^2 = 10.801$; $df = 4$; $p = 0.028$). This finding indicates that the better patients' knowledge of their disease, the higher their tendency to comply with the recommended treatment.

The results of this study are in line with previous findings that show a positive correlation between knowledge levels and medication adherence in patients with chronic diseases. A study of hypertensive patients at a community health center showed that a good level of knowledge was closely related to higher adherence to antihypertensive medication (28). A similar study in Greece also reported that patients with better knowledge about hypertension showed higher levels of adherence to pharmacological therapy (29). In addition, a study in Saudi Arabia on patients with type 2 diabetes mellitus found a significant relationship between disease knowledge and adherence to antidiabetic medication, although the strength of the correlation tended to be

moderate (30). Research in Indonesia on tuberculosis patients also showed consistent results, where patients with high knowledge of OAT (anti-tuberculosis drug) therapy were more compliant in completing their treatment regimen than those with low knowledge (31).

Table 8. Correlation between Knowledge Level and Medication Adherence Level

Knowledge	Compliance						Total	P Value
	Low		Medium		High			
	N	%	N	%	N	%	N	
Poor	8	72.7	3	27.7	0	0	11	0.028
Fair	3	21.4	7	50	4	28.5	14	
Good	0	0	18	47.3	20	52.6	38	

Looking at the cross-tabulation table, it can be seen that the group of patients with good knowledge mostly fall into the high compliance category, while patients with poor knowledge tend to have moderate to low compliance. This pattern shows a fairly consistent relationship. Better understanding is often followed by more compliant behavior towards the therapeutic regimen. However, there are still some well-informed patients whose compliance is not optimal. This indicates that compliance is not only determined by knowledge alone, but also by other factors such as family support, motivation, belief in the benefits of medication, and ease of access to health services.

These results are in line with the findings of Pharamita *et al.* (32), who stated that knowledge is one of the factors that plays an important role in shaping compliance behavior, especially in chronic diseases. Research by Morisky *et al.* (13), who developed the MMAS-8 instrument, also showed that patients with a good understanding of therapy had higher compliance scores. In the context of osteoarthritis, adequate education can help patients understand the importance of regular medication use to control pain and maintain joint function, thereby preserving quality of life (33).

Knowledge has been proven to influence compliance, but other factors still need to be considered. An approach that focuses solely on increasing knowledge without addressing other barriers may not be sufficient to ensure optimal compliance. The implication of these results is the need for structured and continuous educational interventions in primary care facilities. Education should not only convey medical information, but also be tailored to the social, cultural, and psychological conditions of patients. In addition, family involvement and support from health workers, especially pharmacists, are very important in helping patients overcome barriers to therapy.

This study has several limitations that should be considered when interpreting the results. First, the cross-sectional design limits the study's ability to determine a causal relationship between patients' knowledge levels and medication adherence. Second, data were collected using a self-report questionnaire, which may introduce recall bias and social desirability bias. Third, the study was conducted at only one primary healthcare facility with a relatively small sample size, which may limit the generalizability of the findings to a broader population. Future research is recommended to use a longitudinal or experimental design to evaluate causal relationships

more robustly, involve a larger and more diverse population, and explore other factors influencing medication adherence, such as family support, health literacy, and healthcare system factors.

CONCLUSION

This study shows that patients' level of knowledge is associated with medication adherence among those with osteoarthritis. Improving patients' understanding of the disease and its treatment has the potential to increase adherence to long-term medication. Therefore, healthcare professionals, particularly in primary care settings, are advised to strengthen patient education programs, provide clear counseling on medication use, and conduct ongoing monitoring to support optimal osteoarthritis management and improve patient clinical outcomes.

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