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The relationship between pain intensity and fulfillment of activities of daily living in older adults at risk of rheumatoid arthritis based on dorothea orem's theory at the elderly posyandu

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Abstract

Background: Rheumatoid arthritis is a chronic autoimmune disease that primarily affects the joints and surrounding structures. Pain and joint stiffness may limit mobility and interfere with activities of daily living.

Purpose: To determine the relationship between pain intensity and fulfillment of activities of daily living in older adults at risk of rheumatoid arthritis based on Dorothea Orem's theory.

Methods: This quantitative study used a cross-sectional design. The study involved 28 respondents. The independent variable was pain intensity, and the dependent variable was fulfillment of activities of daily living. Data were analyzed using the contingency coefficient test.

Results: The contingency coefficient test showed $p = .003$ and $C = .545$, indicating a relationship between pain intensity and fulfillment of activities of daily living among older adults at risk of rheumatoid arthritis.

Conclusion: Pain intensity was significantly related to fulfillment of activities of daily living among older adults at risk of rheumatoid arthritis.

Keywords: Activities of Daily Living; Pain Intensity; Rheumatoid Arthritis.

BACKGROUND

Rheumatoid arthritis is an autoimmune disease characterized by chronic inflammation of the synovium that can lead to progressive joint damage, functional limitations, and disability. Joint pain may cause individuals to reduce movement and interfere with daily activities such as eating, drinking, walking, bathing, dressing, and toileting (McInnes & Schett, 2011; World Health Organization, 2023).

Independence in activities of daily living is an important indicator of functional status in older adults. The ability to perform basic self-care activities independently reflects functional capacity, whereas dependence indicates the need for assistance (Katz et al., 1963). Pain in rheumatoid arthritis may become a barrier to daily activities and may affect participation and independence (Ahlstrand et al., 2012).

According to the Indonesia Health Profile 2024, published by the Ministry of Health of the Republic of Indonesia, health indicators related to joint and musculoskeletal conditions remain an important concern. In Bojonegoro Regency, the study site reported 30 older adults with rheumatoid arthritis at the Elderly Posyandu in Petak Village as of April 2026. These local data provided the basis for conducting this study.

Rheumatoid arthritis commonly affects the hands, wrists, feet, ankles, knees, shoulders, and elbows. Pain, stiffness, and limited mobility can interfere with physical activity and activities of daily living (World Health Organization, 2023). Previous research also found that pain in people with rheumatoid arthritis may be associated with limitations in everyday activities and independence (Ahlstrand et al., 2012).

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Activities of daily living include basic self-care activities such as eating, bathing, dressing, toileting, transferring, and mobility. Assessment of these activities can help determine whether an older adult is independent or requires assistance (Katz et al., 1963). Exercise and physical activity programs have also been reported to improve functional fitness and perceived ability to perform activities of daily living in older adults with arthritis (Suomi & Collier, 2003).

Self-care management is consistent with Dorothea Orem's Self-Care Deficit Nursing Theory, which emphasizes an individual's ability to perform self-care and the role of nursing in supporting self-care when an individual's ability is insufficient (Biggs, 2008; Tanaka, 2022). In older adults with rheumatoid arthritis, nursing care based on Orem's model has been associated with improvements in hand symptoms, pain, and life activities (Tuna & Alparslan, 2021). Pain management may include pharmacological and non-pharmacological approaches according to the individual's condition and clinical needs (Fraenkel et al., 2021; Smolen et al., 2026).

Based on these considerations, this study examined the relationship between pain intensity and fulfillment of activities of daily living in older adults at

risk of rheumatoid arthritis at the Elderly Posyandu in Petak Village, Malo District, Bojonegoro Regency.

RESEARCH METHODS

This study used a quantitative research design with a cross-sectional approach. Data on the independent and dependent variables were measured at one point in time.

The study was conducted at the Elderly Posyandu in Petak Village, Malo District, Bojonegoro Regency, in April 2026. The population consisted of 30 older adults at risk of rheumatoid arthritis. Non-probability sampling with accidental sampling was used, resulting in 28 respondents who met the inclusion criteria. The independent variable, Pain Intensity, was measured using observation and a checklist, while the dependent variable, Fulfillment of Activities of Daily Living, was measured using a questionnaire.

Data processing included editing, coding, scoring, tabulation, and statistical analysis using the contingency coefficient test. A significance level of $p < .05$ was used. A p value $< .05$ indicated a statistically significant relationship between the variables.

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RESEARCH RESULTS

Table 1. Distribution of Respondent Characteristics (N = 28)

Variables	Results
Gender (n/%)	
Men	3/10.7
Women	25/89.3
Age (n/%)	
60	12/42.9
61	1/3.6
62	2/7.1
63	2/7.1
64	3/10.7
>64	8/28.6
Duration of Rheumatoid Arthritis (n/%)	
<1	15/53.6
15	9/32.1
>15	4/14.3
Last Education (n/%)	
Elementary School	28/100.0
Junior High School	0/0.0
Senior High School	0/0.0
D3/S1	0/0.0
Occupation (n/%)	
Unemployed	14/50.0
Laborer	3/10.7
Farmer	11/39.3
Pain Intensity in Older Adults at Risk of Rheumatoid Arthritis (n/%)	
No Pain	0/0.0
Mild Pain	16/57.1
Moderate Pain	11/39.3
Severe Pain	1/3.6
Fulfillment of Activities of Daily Living in Older Adults at Risk of Rheumatoid Arthritis (n/%)	
Dependent	6/21.4
Independent	22/78.6

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Table 1 shows that 25 respondents (89.3%) were women. The largest age group consisted of respondents aged 60 years, with 12 respondents (42.9%). Fifteen respondents (53.6%) had experienced rheumatoid arthritis for less than one year. All respondents (100.0%) had an elementary school education. Fourteen respondents (50.0%) were not working. Regarding pain intensity, 16 respondents (57.1%) experienced mild pain, 11 respondents (39.3%) experienced moderate pain, and 1 respondent (3.6%) experienced severe pain. In terms of activities of daily living, 22 respondents (78.6%) were independent and 6 respondents (21.4%) were dependent.

Table 2. Cross-Tabulation of the Relationship Between Pain Intensity and Fulfillment of Activities of Daily Living in Older Adults at Risk of Rheumatoid Arthritis (N = 28)

Pain Intensity	Fulfillment of Activities of Daily Living	Fulfillment of Activities of Daily Living	Fulfillment of Activities of Daily Living	Fulfillment of Activities of Daily Living	P Value and Contingency Coefficient
	Dependent	Dependent	Independent	Independent	P Value and Contingency Coefficient
Pain Intensity	f	%	f	%	P Value and Contingency Coefficient
No Pain	0	0.0	0	0.0	p = .003; C = .545
Mild Pain	0	0.0	16	100.0	
Moderate Pain	5	45.5	6	54.5	
Severe Pain	1	100.0	0	0.0	

Table 2 shows that all 16 respondents (100.0%) with mild pain were independent in fulfilling their activities of daily living. Among 11 respondents with moderate pain, 5 (45.5%) were dependent and 6 (54.5%) were independent. The single respondent with severe pain (100.0%) was dependent.

Table 3. Results of the Contingency Coefficient Test for the Relationship Between Pain Intensity and Fulfillment of Activities of Daily Living in Older Adults at Risk of Rheumatoid Arthritis (N = 28)

Symmetric Measures	Symmetric Measures	Symmetric Measures Value	Symmetric Measures Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.545	.003
N of Valid Cases	N of Valid Cases	28	

The contingency coefficient test showed $p = .003$ ($p < .05$) and $C = .545$. Therefore, the null hypothesis was rejected, indicating a statistically significant relationship between pain intensity and fulfillment of activities of daily living among older adults at risk of rheumatoid arthritis at the Elderly Posyandu in Petak Village, Malo District, Bojonegoro Regency, in 2026.

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DISCUSSION

Pain Intensity in Older Adults at Risk of Rheumatoid Arthritis. More than half of the respondents, 16 people (57.1%), experienced mild pain; 11 people (39.3%) experienced moderate pain; and 1 person (3.6%) experienced severe pain.

Rheumatoid arthritis is a chronic autoimmune disease that causes inflammation and pain in the joints. It most commonly affects the hands, wrists, feet, ankles, knees, shoulders, and elbows. Persistent pain and stiffness may reduce mobility and make daily activities more difficult (McInnes & Schett, 2011; World Health Organization, 2023). The findings of this study, in which most respondents experienced mild pain, indicate that the majority of respondents had pain that had not yet resulted in complete dependence in daily activities.

Pain can affect participation in daily activities and independence. Ahlstrand et al. (2012) reported that pain in people with rheumatoid arthritis may act as a barrier to valued activities and may be associated with activity limitations and participation restrictions. This is consistent with the present findings, in which respondents with mild pain were independent in activities of daily living, whereas the respondent with severe pain was dependent.

Pain management is an important component of rheumatoid arthritis care. Pharmacological treatment is determined according to the patient's clinical condition, while non-pharmacological strategies may support symptom management and functional ability. Current treatment recommendations emphasize individualized management and shared decision-making (Fraenkel et al., 2021; Smolen et al., 2026).

Fulfillment of Activities of Daily Living in Older Adults at Risk of Rheumatoid Arthritis. Most respondents, 22 people (78.6%), were independent in fulfilling activities of daily living, while 6 people (21.4%) were dependent.

Activities of daily living are basic self-care activities used to assess an individual's functional capacity. The Katz Index of Independence in Activities of Daily Living is one of the established approaches for assessing basic functional independence in older adults (Katz et al., 1963). The

high proportion of independent respondents in this study suggests that most respondents were still able to perform basic self-care activities without assistance.

Ageing may be accompanied by physiological changes that affect mobility and functional capacity. However, functional independence is not determined by age alone. Health status, pain, physical activity, and the individual's ability to perform self-care may also contribute to functional independence.

From the perspective of Orem's Self-Care Deficit Nursing Theory, individuals have self-care needs and may require nursing support when their self-care agency is insufficient (Biggs, 2008; Tanaka, 2022). The theory is relevant to older adults with rheumatoid arthritis because maintaining self-care ability can support independence. Tuna and Alparslan (2021) found that nursing care based on Orem's self-care model was associated with improvements in pain, hand symptoms, and life activities among older adults with rheumatoid arthritis.

Relationship Between Pain Intensity and Fulfillment of Activities of Daily Living. The results showed that all respondents with mild pain were independent, whereas dependence was more common among respondents with moderate and severe pain. The contingency coefficient test produced $p = .003$ and $C = .545$, indicating a statistically significant relationship between pain intensity and fulfillment of activities of daily living.

The findings are consistent with previous evidence that pain may interfere with daily activities and independence in people with rheumatoid arthritis (Ahlstrand et al., 2012). Research involving older adults with arthritis has also shown that interventions that improve physical fitness may improve perceived ability to perform activities of daily living (Suomi & Collier, 2003). In the context of Orem's theory, maintaining and strengthening self-care ability is an important part of nursing support for older adults with chronic conditions (Taylor et al., 2000; Tanaka, 2022).

The results should be interpreted in the context of the study design. Because this study used a cross-sectional approach, the findings demonstrate an association between pain intensity and fulfillment of activities of daily living but do not establish a causal

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relationship. Nevertheless, the findings support the importance of assessing pain and functional independence together when providing nursing care for older adults at risk of rheumatoid arthritis.

CONCLUSION

Most respondents experienced mild pain, and most were independent in performing activities of daily living. A statistically significant relationship was found between pain intensity and fulfillment of activities of daily living among older adults at risk of rheumatoid arthritis.

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