

Research Article

## Relationship between Pain Levels and the Independence of Elderly People with Rheumatoid Arthritis in UPTD Puskesmas Mengwi II

Dewa Ayu Rai Utami Dewi<sup>1\*</sup>, Ni Made Dwi Ayu Martini<sup>1</sup>, Ni Komang Purwaningsih<sup>1</sup>, I Nyoman Sutresna<sup>1</sup>

<sup>1</sup>STIKES Bina Usada Bali, Bali, Indonesia

\*Corresponding author: pucukbaliflora@gmail.com

### ABSTRACT

**Background:** The elderly are individuals aged  $\geq 60$  years who will experience functional changes in their body systems, including the musculoskeletal system, and put them at high risk of suffering rheumatoid arthritis. This disease causes joint pain and often affects the elderly's ability to carry out daily activities, thus having an impact on the elderly's level of independence.

**Purposes:** This study aimed to determine the relationship between pain levels and the independence of elderly people with rheumatoid arthritis in UPTD Puskesmas Mengwi II.

**Methods:** This research is a quantitative study that used a correlational design and a cross-sectional approach. The sample was 67 elderly people with rheumatoid arthritis who were selected by the Purposive Sampling technique. Data were collected using the Numerical Rating Scale and Barthel Index, which were analyzed using the Spearman Rank test. **Result:** The results showed that the average score of pain level in elderly people with rheumatoid arthritis was on a scale of 4 (moderate pain), with an average independence score of 75.37 (mild dependence). The results of bivariate analysis showed that there was a relationship between pain level and the independence of elderly people with rheumatoid arthritis ( $p=0.000$ ;  $r = -0.591$ ). **Conclusion:** the pain level of rheumatoid arthritis impacts the elderly's activities, so the nursing services can optimize pain management so that elderly people will not experience problems in carrying out their daily activities independently.

**Keywords:** arthritis rheumatoid, elderly, independence, pain level

### INTRODUCTION

Elderly people are a group of people who are over 60 years old (1). At this age, the elderly experience several physiological declines in the body, including the musculoskeletal system, with one of the disorders often experienced being rheumatoid arthritis (2). Rheumatoid arthritis is a progressive, chronic, and degenerative disease affecting the synovial lining of joints and is associated with progressive disability, premature death,

socioeconomic burden, and a negative impact on quality of life (3,4).

The World Health Organization (WHO) revealed that 18 million people are suffering from rheumatoid arthritis, and as many as 2.4 million people live with disabilities (5). The number of AR sufferers in Indonesia is not yet known for certain, but it is currently estimated that no less than 1.3 million people suffer from AR in Indonesia, with calculations based on the prevalence rate of AR in the world between 0.5-1%, from the total population of

Indonesia of 268 million people in 2020 (6). The latest data from the Bali Provincial Health Service (Dinkes) revealed that rheumatoid arthritis is one of the diseases that is included in the top ten diseases in health center visits in Bali Province, with a total of 29,889 people (7).

Rheumatoid arthritis is an autoimmune disease in the form of inflammation or swelling of the joints (arthritis) (8). Rheumatoid arthritis is a degenerative disease that can reduce the productivity of the elderly because at that age there is a decrease in organ function which can cause the elderly group to experience a decrease in musculoskeletal abilities which can reduce the ability of physical activity so that it affects the elderly in carrying out daily activities such as eating, drinking, bathing, dressing and others in activity daily living (ADL) (9). Other researchers also revealed similar things that rheumatoid arthritis can cause various impacts, such as movement disorders and obstacles to daily activities (10). This condition also makes the elderly reduce their activities; the elderly will decide to rest more and minimize movement, so that independence in carrying out daily activities will decrease (11).

Previous research studies show that 66.9% of elderly people depend on ADL (activity of daily living), and 85.1% use assistive devices in their daily activities (12). The national health survey (Susenas) shows that the elderly dependency ratio has reached 16.09% and tends to increase every year (13). Basic Health Research Data (Riskesdas) found that 32.55% of the population >60 years old experience dependency due to joint disease (14). Previous research in Indonesia shows that the level of independence of the elderly is

57.9%; the elderly are not independent, but dependent. In carrying out the ADL (15). Data on the level of independence in Bali. The data from a survey. Riskedass shows that as many as 21.1% of elderly people are experiencing mild to total dependence (14). A previous study in one of the Bali Provincial Social Institutions found that 50% of the elderly experienced dependency in their activities (16).

The level of independence of elderly people with rheumatoid arthritis can be affected by the restriction of movement due to the joint pain they experience (17). Pain can make sufferers often afraid to move and cause a decrease in musculoskeletal abilities, so that physical activity and exercise will decrease and affect the elderly in carrying out ADL, which is an assessment of independence (18). Other researchers also stated something similar that Rheumatoid Arthritis pain will make the elderly feel uncomfortable, inhibiting the body from being active because of the fear of moving, so that it interferes with the physical activity of the elderly (19).

The results of a preliminary study conducted by researchers at the UPTD Puskesmas Mengwi II found that in 2022, there were 2,156 visits by rheumatoid arthritis patients, and in the last three months (January-March 2023), there were 616 visits by rheumatoid arthritis with an average of 205 visits per month. The results of interviews with ten elderly people with rheumatoid arthritis, with an average age of 67 years, who visited UPTD Puskesmas Mengwi II, found that all elderly people with rheumatoid arthritis experienced pain in their leg joints. The results of the preliminary study that had been conducted also found that seven out of ten elderly people had difficulty in carrying out activities and needed help from others to

carry out ADL activities, such as moving, dressing, and toileting, while three people said they needed assistive devices to carry out activities. Based on the explanation above, researchers are interested in conducting further research on the relationship between pain levels and the independence of elderly people with rheumatoid arthritis at the UPTD Puskesmas Mengwi II. The purpose of this study was to determine the relationship between pain levels and the independence of elderly people with rheumatoid arthritis at the UPTD Puskesmas Mengwi II.

## METHODS

The research design used a correlational design with a cross-sectional approach. This study was conducted at the UPTD Puskesmas Mengwi II in October-November 2023. The population in this study was all elderly people with rheumatoid arthritis at the UPTD Puskesmas Mengwi II, totaling 205 people. The research sample of 67 respondents was determined using a nonprobability sampling technique, namely purposive sampling. The sample calculation has met the minimum sample size calculated based on the Slovin formula. There are several criteria in determining the sample, which were inclusion criteria (age  $\geq 60$  years, having rheumatoid arthritis, willing to be a respondent by signing an informed consent, able to fill out the questionnaire independently) and exclusion criteria (elderly people who cannot read, elderly people with hearing and vision disorders, elderly people with lower extremity fractures). The rheumatoid arthritis diagnosis was determined based on the examinations by general practitioners at UPTD Puskesmas Mengwi II, which were obtained directly from respondents and a

previous history of laboratory tests in a certain hospital. The data source is primary data from data collection using the Numerical Rating Scale sheet to assess pain scale and the Barthel Index sheet to assess the independence level. The research data were analyzed univariately and bivariately using the Spearman Rank test. The research has been declared ethically feasible by the Health Research Ethics Commission of the STIKES Bina Usada Bali College with letter number 376/EA/KEPK-BUB-2023.

## RESULTS

Table 1 shows that the average respondent age was 65.18 years, with the majority being female (56.7%).

**Table 1.** Respondent Characteristics in UPTD Puskesmas Mengwi II

Respondent Characteristics	n	%
<b>Age</b>		
Mean	65.18	-
Min-max	60-73	-
<b>Gender</b>		
Man	29	43.3
Woman	38	56.7

Table 2 showed that the average research respondents experienced pain on a scale of 4 (moderate pain), with the highest level of pain on a scale of 6 and the lowest pain on a scale of 2.

**Table 2.** Distribution of Pain Levels Based on Numerical Rating Scale in the Elderly with Rheumatoid Arthritis at the UPTD Puskesmas Mengwi II (n=67)

Pain Level	Min-Max	Mean $\pm$ SD
	2-6	4.04 $\pm$ 1.306

Table 3 shows that the average value of elderly independence is 75.37, or can be categorized as mildly dependent, with the highest independence value being 100 and the lowest independence value being 45.

**Table 3.** The Independence Level of Elderly Based on Barthel Index with Rheumatoid Arthritis at UPTD Mengwi II (n=67)

Independence	Min- max	Mean±SD
	45-100	75.37±15.184

Table 4. Based on the results of the bivariate analysis test using the Spearman Rank test analysis, the p value was obtained = 0.000 (<0.05), so that the Ho of the study was rejected, which means that there is a relationship between the level of pain and the independence of elderly rheumatoid arthritis at the UPTD Puskesmas Mengwi II. The correlation coefficient value in this study obtained a result of -0.591, which indicates a moderate correlation strength between the two variables with a negative direction, which means that the lower the level of pain, the higher the independence value; conversely, the higher the level of pain, the lower the respondent's independence.

**Table 4.** Results of the Analysis of the Relationship between Pain Levels and the Independence of Elderly People with Rheumatoid Arthritis (n=67)

	Mean	p	r
Pain Level	4.04	0.000	-
Independence	75.37		0.591

## DISCUSSION

The results of the study showed that the average research respondents experienced pain on a scale of 4, which can be categorized as moderate pain. This is because rheumatoid arthritis causes chronic systemic inflammation of unknown cause or due to damage and proliferation of the synovial membrane, which causes damage to the joint bones, ankylosis, and deformity (20). The moderate pain experienced by the

Respondents in this study are closely related to increasing age, decreased work, and changes in the musculoskeletal system, especially in synovial fluid, whose function is. As a shock absorber and lubricant that allows joints to move freely will decrease with increasing age, causing joints to rub easily and cause inflammation (21). The results of this study are in line with previous studies which state that most elderly people will experience degenerative changes in the human body which triggers the risk of disease in the elderly, one of which is rheumatoid arthritis and this makes the elderly often complain of joint pain due to reduced synovial fluid in the joints and muscle tone and occurs due to lack of movement in the joints (22). Researchers assume that the average respondent experiences moderate pain due to the influence of the age of the respondents in this study, who are on average 65 years old. As age increases, the condition of the muscles and joints and the fluid that coats the movement of these muscles will continue to decline, so that the pain of rheumatoid arthritis will tend to increase.

The average value of elderly independence in this study was 75.37, which can be categorized as mildly dependent. The research findings show that respondents need help in several activities, such as mobility, moving, and going up and down stairs. This is indicated by the results of the research questionnaire, namely, the lowest value is in the respondent's ability in mobility, moving, and going up and down stairs. The level of independence of respondents is at a moderately dependent level, which can be influenced by several factors, such as age and physical health status experienced by respondents. The higher a person's age, the lower their physical ability to meet their needs, so that

the elderly will experience dependence and need help from others in meeting their daily needs(23). Physical changes that occur in the elderly can also affect their independence, of the elderly having to depend on others, and resulting in changes in the functional status of carrying out daily activities (24). Physical health status, such as rheumatoid arthritis, can cause body parts to function abnormally, starting from lumps, stiff joints, difficulty walking, and even lifelong disability, and the pain that arises can be very disruptive and limit daily activities (19). The results of this study are in line with and supported by previous research, which found that the majority of elderly respondents had a light level of independence and dependency (50.7%) (25). The findings of this study are in line with and supported by other previous studies, which found that the majority of elderly people (34.4%) experience mild dependence in daily living activities (26). Researchers assume that the mild dependence experienced by respondents could be due to the impact of rheumatoid arthritis experienced by the elderly, such as pain conditions, changes in the structure of the musculoskeletal system that decrease with increasing age of the respondents. The impact of rheumatoid arthritis can cause discomfort for respondents, so that respondents tend to minimize activities in carrying out their daily activities. This makes the elderly ask for help from others in helping to carry out activities.

The results of this study indicate that there is a relationship between pain levels and the independence of elderly rheumatoid arthritis patients at the UPTD Puskesmas Mengwi II ( $p = 0.000$ ). Elderly rheumatoid arthritis patients in this study more on average experienced moderate pain on average and had independence in

the mild dependent category. This study also shows that the lower the level of pain experienced by respondents, the higher the independence value; conversely, the higher the level of pain, the lower the independence of respondents.

Darmojo in Latuamury (2022) explains that pain will interfere with daily activities and even the quality of life of the elderly, and this condition is one of the causes of decreased physical activity in the elderly because the elderly will tend to choose activities that require little physical activity so that to do some activities the elderly will need help from other people (27). Rheumatoid arthritis pain can make the elderly feel uncomfortable and cause a disturbing feeling and can inhibit the body from being active because the pain in rheumatoid arthritis makes sufferers often afraid to move so that it interferes with their daily activities and can reduce physical activity so that it will affect the elderly in carrying out daily life activities and more dependence on the help of others (28). Rheumatoid arthritis can cause discomfort and inhibit the activities of sufferers who feel pain, so that they will decide to rest more and minimize movement, so that their independence in carrying out daily activities will decrease (11). The findings of this study are in line with previous studies which revealed that there is a relationship between rheumatoid arthritis pain and the level of independence in carrying out daily life activities in the elderly in the work area of the Klasaman Health Center, Sorong City ( $p = 0.047$ ), this is because rheumatoid arthritis joint pain often makes sufferers afraid to move so that it interferes with their daily activities such as eating, drinking, walking, sleeping, bathing, dressing, and defecating or urinating. The results of this study are in line with and supported by

previous studies, which found that there is a relationship between rheumatoid pain and the level of independence in the elderly ( $p$ -value = 0.000(29). Researchers assume that the condition of rheumatoid arthritis pain experienced by the elderly can affect the patient's muscle strength and affect the patient's psyche in carrying out activities. The pain condition experienced makes respondents afraid to do too much and excessive activities, so the elderly choose to do some light activities. This will not directly affect the level of independence of respondents who tend to ask for help from others more often.

## CONCLUSION

The level of pain has a moderate relationship with the independence of elderly people with rheumatoid arthritis at the UPTD Puskesmas Mengwi II ( $p=0.000$ ;  $r=-0.591$ ), and the direction of the negative relationship indicates that the lower the level of pain, the higher the independence of the elderly and vice versa, the higher the pain, the lower the level of independence of the elderly.

## ACKNOWLEDGMENTS

Thanks to UPTD Puskesmas Mengwi II, STIKES Bina Usada Bali, supervising lecturers, and families who provided support and input in the preparation of this research.

## CONFLICT OF INTEREST

There are no conflicts of interest, and no affiliations or connections with any entity or organization that might give rise to questions of bias in the discussion and conclusions of the manuscript.

## REFERENCES

1. Ramadhani A, Sapulete IM,

- Pangemanan DHC. Pengaruh senam lansia terhadap kadar gula darah pada lansia di BPLU Senja Cerah Manado. *J e-Biomedik*. 2016;4(1).
2. Kurniasih E, Ekayamti E, Pariyem. Terapi Non Farmakologi Sebagai Bentuk Swamedikasi Lansia Dalam Manajemen Nyeri Osteoarthritis. *J Pengabdian Masyarakat Kesehatan*. 2021;7(2):119–26.
3. Ağce ZB, Özkan E, Köse B. Arthritis/Rheumatoid Arthritis. In: *Occupational Therapy - Occupation Focused Holistic Practice in Rehabilitation*. InTech; 2017. p. 121–47.
4. Guo Q, Wang Y, Xu D, Nossent J, Pavlos NJ, Xu J. Rheumatoid arthritis: pathological mechanisms and modern pharmacologic therapies. *Bone Res*. 2018 Dec;6(1):15.
5. WHO. Musculoskeletal health. World Health Organization; 2022.
6. Perhimpunan Reumatologi Indonesia. Diagnosis dan Pengelolaan Arthritis Reumatoid (Rheumatoid Arthritis Diagnosis and Management). Perhimpunan Reumatologi Indonesia. 2021. 1–80 p.
7. Dinkes Bali. Profil Kesehatan Provinsi Bali 2017. Denpasar; 2018.
8. Wakhidah SUN, Purwati LE, Nurhidayat S. Studi Kasus : Upaya Pencegahan Hambatan Mobilitas Fisik Pada Lansiapenderita Rheumatoid Arthritis Di Puskesmas Siman Ponorogo. *Heal Sci J*. 2019;3(2):90.
9. Rohaedi S, Putri ST, Kharimah AD. Tingkat Kemandirian Lansia Dalam Activities Daily Living di Panti Sosial Tresna Werdha Senja Rawi. *J*

- Pendidik Keperawatan Indones. 2016;2(1):16–21.
10. Dida D, Batubara SO, Djogo HMA. Hubungan Antar Nyeri Reumatoid Arthritis Dengan Tingkat Kemandirian Dalam Aktivitas Kehidupan Sehari-hari Pada Pra Lanjut Usia Di Wilayah Kerja Puskesmas Oesao Kabupaten Kupang. Vol. 2. 2018.
  11. Savitri NA, Sukmaningtyas W, Wibowo TH. Gambaran Tingkat Kemandirian Lansia dengan Rheumatoid Arthritis dalam Pemenuhan Activity Daily Living (ADL). J Ilm Indones. 2022;2(7):688–96.
  12. Boyer S, Trimouillas J, Cardinaud N, Gayot C, Laubarie-Mouret C, Dumoitier N, et al. Frailty and functional dependence in older population: lessons from the FREEDOM Limousin – Nouvelle Aquitaine Cohort Study. BMC Geriatr. 2022 Feb;22(1):128.
  13. Badan Pusat Statistik (BPS). Statistik Penduduk Lanjut Usia 2022 [Internet]. 2022 [cited 2023 Dec 25]. Available from: <https://www.bps.go.id/id/publication/2022/12/27/3752f1d1d9b41aa69be4c65c/statistik-penduduk-lanjut-usia-2022.html>
  14. Kementerian Kesehatan RI. Hasil Riset Kesehatan Dasar Indonesia Tahun 2018. Jakarta; 2018.
  15. Yuliana, Sulfian W, Rahmayanti EI. Hubungan Antara Arthritis Dengan Kemandirian Activities Of Daily Living (ADL) Pada Lanjut Usia. J Sci Heal. 2022;2(2):106–10.
  16. Aprianta IGA, Kuswardhani RAT, Aryana IGPS. Hubungan gangguan pendengaran dan frailty pada lansia di Panti Sosial Tresna Werdha Wana Seraya Denpasar. J Penyakit Dalam Udayana. 2020;4(2):31–5.
  17. Pramono WH, Suci YW. Penerapan Terapi Back Massage Terhadap Intensitas Nyeri Rematik Pada Lansia. Jkep. 2019;4(2):137–45.
  18. Kartini K, Samaran E, Marcus A. Hubungan Antara Nyeri Reumatoid Arthritis Dengan Kemandirian Adl Pada Lansia. Nurs Arts. 2019;12(1):13–9.
  19. Yusefa M, Wijayanto WP, Sutrisno S. Hubungan Nyeri Rheumatoid Arthritis dengan Kemandirian ADL pada Lansia. J Ilmu Medis Indones. 2023;2(2):61–7.
  20. Fahrizal I, Alfikrie F. Studi Kasus Penerapan Terapi Relaksasi Otot Progresif Terhadap Nyeri Arthritis Rheumatoid Pada Lansia. J Mhs Keperawatan. 2021;1(10):25–9.
  21. Yolanda Y, Febriyanti. Pengaruh Pemberian Kolang Kaling Terhadap Penurunan Skala Nyeri Rematik pada Lansia. J Menara Med. 2021;3(2):135–42.
  22. Huda DN, Aulia L, Shafiyah S, Lestari SI, Aini SN, Dewi SK, et al. Efektivitas Senam Pada Lansia untuk Mengurangi Nyeri Sendi: Telaah Literatur. Muhammadiyah J Geriatr. 2022;3(1):31.
  23. Purnanto NT, Khosiah S. Hubungan antara usia, jenis kelamin, pendidikan dan pekerjaan dengan Activity Daily Living (ADL) pada lansia di Puskesmas Gribig Kabupaten Kudus. The Shine Cahaya Dunia D-III Keperawatan. 2018;3(1).
  24. Rasyid D. Faktor-faktor yang berhubungan dengan Kemandirian Lansia di Kecamatan Wara Timur

- Kota Palopo. Fak Ilmu Keperawatan Univ Muhammadiyah Jakarta. 2016;400–3.
25. Putra DD, Masnina R. Hubungan Tingkat Kecemasan Terhadap Tingkat Kemandirian Lansia di Panti Sosial Tresna Werdha Nirwana Puri Samarinda 2019. *Borneo Student Res.* 2021;2(3):852–8.
26. Siahaan JM, Manurung K, Turisna YO. Hubungan Karakteristik Lanjut Usia Dengan Activity of Daily Living Di Desa Silantomjulu. *J Online Keperawatan Indones.* 2023;6(1):53–65.
27. Latuamury SR. Korelasi Nyeri Rheumatoid Artritis dan Kemandirian Aktivitas Pada Lansia. *Pasapua Heal J.* 2022;4(2):112–9.
28. Nuzul A, Alini, Sudiarti EP. Hubungan Nyeri Artritis Rheumatoid Dengan Tingkat Kemandirian Pada Lansia Di Wilayah Kerja Puskesmas Kampar Tahun 2020. *J Ners.* 2020;4(2):90–5.
29. Novitasari D, Akbar H, Santoso EB. Analisis Nyeri Rhematoid Arthritis Dengan Kemandirian ADL pada Lansia di Wilayah Kerja Puskesmas Tungoi. *Bali Heal Publ J.* 2023;5(1):1–7.