

ASSOCIATED FACTORS RHEUMATOID ARTHRITIS IN THE ELDERLY IN THE SERVICE AREA OF TELAGA DEWA PUBLIC HEALTH CENTRE, BENGKULU CITY

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ABSTRACT

Background: Rheumatoid Arthritis (RA) is a chronic inflammatory disease that primarily affects the joints and is common among the elderly population. The condition can significantly impact the quality of life, leading to pain, disability, and functional limitations. In the service area of Telaga Dewa Public Health Centre in Bengkulu City, the prevalence of RA among the elderly is rising, highlighting the need to identify associated factors that contribute to the onset and progression of the disease. Understanding these factors can help in the early detection, management, and prevention of RA in this age group.

Purpose: This study aims to determine the associated factors of Rheumatoid Arthritis in the elderly within the service area of Telaga Dewa Public Health Centre, Bengkulu City.

Method: Descriptive analytics are utilized in conjunction with a cross-sectional strategy in this research method. Primary data were the ones that were utilized. A questionnaire was utilized to collect data on a variety of topics, including knowledge, genetics, nutritional state, and gender preferences. Using the chi-square test, we conducted the analysis of the data.

Result: The findings revealed that the majority of the forty respondents who had experienced rheumatoid arthritis were female, that more than half of the thirty-six respondents (59%) had a genetic background, that eleven respondents (18%) had a poor nutritional status, and that twenty-three respondents (37.7%) had a lack of understanding. The findings of the statistical test indicated that there was a connection between the occurrence of rheumatoid arthritis and factors such as gender, heredity, dietary status, and level of knowledge.

Conclusion: The findings of this study indicate that rheumatoid arthritis is caused by a number of different factors, including heredity, gender, nutritional state, and education on the subject. We have high hopes that the individuals who responded would be able to stop the recurrence of rheumatoid arthritis.

Keywords: *Rheumatoid Arthritis, Genetics, Gender, Knowledge, Nutritional Status*

INTRODUCTION

The elderly will experience a decline in their quality of life as a result of their deteriorating health

status as they age. According to Khalifa (2016), one of the most prominent characteristics of elderly people is a decline in both their physical and

psychological health. According to Kiik et al. (2018), rising age is related with a number of negative outcomes, including the start of a variety of diseases, a decline in body function, a loss of body balance, and an increased chance of falling. People who are elderly are more likely to suffer from degenerative disorders, which weaken their immune systems and make them more prone to contracts of infections. The old are more likely to suffer from non-communicable diseases such as hypertension, stroke, diabetes mellitus, oral issues, and rheumatoid arthritis joint disease (Heni Risprawati et al., 2021). These diseases are considered to be among the most common in the elderly population.

According to Soryatmodjo et al. (2021), rheumatoid arthritis (RA) is an autoimmune rheumatic illness that is characterized by increasing joint deterioration, functional restrictions, and systemic symptoms. There are some people who suffer from Rheumatoid Arthritis (RA) who encounter more progressive symptoms, which results in a poor prognosis in terms of their functional and life expectancy (Kalim H, et al. 2019). The joints, muscles, tendons, ligaments, and bones are all affected by this condition, which also causes inflammation, stiffness, swelling, and discomfort (Meliny et al., 2018).

Rheumatoid arthritis affects around 335 million individuals around the world,

according to figures provided by the World Health Organization (WHO) in 2016. According to information which was obtained from the National Basic Health Research (RisKesDas Nasional) in the year 2018, the percentage of senior individuals in Indonesia who were sixty years old or older and suffered from rheumatoid arthritis was as follows: According to Kemenkes RI (2018), 67.4% of the population was classified as independent, 28.4% as having mild dependency, 1.5% as having moderate dependence, 1.1% as having severe dependence, and 1.5% as having entire dependence.

In 2023, there were a total of 2,091 instances of rheumatoid arthritis reported throughout all of the health centers in Bengkulu City, according to the statistics provided by the Bengkulu City Health Office. According to the data provided by the Bengkulu City Health Office in 2023, the Telaga Dewa Health Center was the health center that had the largest number of patients suffering from rheumatoid arthritis among the aged population in Bengkulu City. That center had 361 cases.

Pain in the joints, specifically rheumatoid arthritis, is a common issue that affects the aged population (Sari and Rezkeki, 2020). This type of pain is caused by inflammation in the joints. According to Pujastuti et al. (2018), the joints of the hands, elbows, feet, ankles, and knees are the most common locations where

rheumatoid arthritis manifests itself in senior people. The pain and swelling in the joints might last for an indeterminate amount of time, and the longer the symptoms continue to be present, the more weighty they seem and the more they restrict the individual's ability to move around physically (Aspiani, 2014).

Genetics, infections, age, gender, nutritional status, work/activity factors, diet, environment, and lifestyle are some of the risk factors that are related with the incidence of rheumatoid arthritis (Langow, 2018). Other risk factors include environmental variables, lifestyle, and environment. In addition to these risk factors, the level of information regarding the disease known as rheumatoid arthritis continues to be extremely poor, both among the general public and in the circles of medical professionals (Aprilyadi & Soewito, 2020). In addition to knowledge, a supportive attitude is necessary in order to enhance the health status of persons who have rheumatoid arthritis (Rasiman & Reskiani, 2022).

Women are three times more likely to suffer from this disease than males, and hereditary or genetic factors can also cause it in children (Rasiman & Reskiani, 2022). The chance of getting rheumatoid arthritis (RA) increases with age. According to Pricillia et al. (2015), obesity is a risk factor for rheumatoid arthritis that has

been the subject of debate. Rheumatoid arthritis can be caused by a number of factors, one of which is an unhealthy diet. According to Aprilyadi and Soewito (2020), a good diet can begin with making little adjustments to the items that we choose to consume.

The research conducted by Rasiman and Reskiani (2022) discovered that 12 individuals (27.9%) possessed adequate knowledge, 5 individuals (11.6%) possessed sufficient information, and fewer than 26 individuals (60.5%) lacked any knowledge whatsoever. In addition, ten individuals, or 23.3%, have a positive attitude, whereas eleven individuals, or 25.6%, possessed an adequate attitude. The percentage of people who have a healthy diet is just 22 (51.2%), whereas the percentage of people who have a diet that is unhealthy is 19 (44.2%) and 24 (55.8%). Twenty-seven individuals, or 62.8% of the total respondents, were diagnosed with rheumatism, while sixteen individuals, or 37.2% of the total, were not diagnosed with rheumatism. A substantial association between knowledge, attitude, and nutrition and rheumatism was found to exist among the older population in the working area of the Kamonji Health Centre, which is located in the West Palu sub-district, according to the findings of the study. There was a significant correlation between gender ($P = 0.002$), knowledge ($P = 0.001$), lifestyle ($P = 0.017$), and obesity ($P = 0.036$) and the

occurrence of rheumatoid arthritis disease among the elderly in Gampong Piyeung Manee, Montasik District, Aceh Besar Regency in 2021,

METHOD

For the purpose of this investigation, a quantitative descriptive method and a cross-sectional methodology were utilized. For the purpose of this study, 61 respondents were recruited via a method of sample collecting known as purposive sampling methods. Beginning on the 20st of Juny and continuing until the 08th of July 2024, we carried out the research at the Telaga Dewa PHC.

For the purpose of this investigation, a questionnaire instrument was applied, which had inquiries concerning the gender, nutritional status, knowledge, and genetic factors. The questionnaire for knowledge consists of fifteen different question items, each of which has multiple-choice answers. Due to the fact that it is a questionnaire that has been adopted, it does not

according to the findings of an investigation that was carried out by Arfianda and colleagues in 2022.

rely on validity and reliability studies to evaluate whether or not it is feasible.

Both the univariate test and the chi-square test were utilized in this investigation. The univariate test was utilized to ascertain the frequency distribution of each variable, while the chi-square test was utilized to ascertain the association between the independent variables and the dependent variables. In order to evaluate the nature of the association, the data analysis was carried out by the SPSS 24 application, which utilized an alpha value of 0.05.

This research has been approved by the ethical committee of Faculty of Health Sciences at Dehasen University Bengkulu, which assigned it the number 0047/D-KEPK/FD/V1/2024.

RESULT

Table 1. Frequency distribution of respondents (n:61)

Variables	Percentage	
	Frequency (n)	(%)
Rheumatoid Arthritis		
RA	40	65.6
No RA	21	34.4
Gender		
Female	39	63.9
Male	22	36.1
Genetic		
Genetic history	36	59
No genetic history	25	41
Nutritional Status		
Skinny	11	18
Normal	26	42.6
Fat	24	39.4
Total	61	100

Among the 61 individuals who participated in the survey, Table 1 demonstrates that most of the respondents had rheumatoid arthritis, most of the 39 (63.9%) respondents

were female, more than half of 36 (59%) respondents had a genetic history, 24 (39.4%) respondents were found to have obese nutritional status, and 23 (37.7%) respondents had poor knowledge.

Table 2. Associated Gender Factors and the Incidence of Rheumatoid Arthritis in the Service Area of Telaga Dewa Public Health Centre, Bengkulu City

Gender	Rheumatoid Arthritis				Total		P Value
	RA		No RA		F	%	
	F	%	F	%			
Female	33	84,6	6	15,4	39	100	0,000
Male	7	31,8	15	68,2	22	100	
Total	40	65,6	21	34,4	61	100	

Based on table 2 above shows the results 39 respondents with female gender obtained as many as 33 respondents who experienced rheumatoid arthritis and as many as 6 respondents who did not experience rheumatoid arthritis. Of the 22

respondents with male gender. obtained as many as 7 respondents who experienced rheumatoid arthritis and as many as 15 respondents who did not experience rheumatoid arthritis. The statistical test results of the *fisher's exact test* obtained a value of

ρ value = 0.000 < α = 0.05, then H0 is rejected and Ha is accepted, meaning that there is a relationship between gender factors and the

incidence of rheumatoid arthritis at the Telaga Dewa Public Health Centre, Bengkulu City.

Table 3. Associated Genetic Factors and the Incidence of Rheumatoid Arthritis in the Service Area of Telaga Dewa Public Health Centre, Bengkulu City

Genetic	Rheumatoid Arthritis				Total	P Value	
	RA		No RA				
	F	%	F	%	F	%	
Genetic	29	80,6	7	19,4	36	100	0,006
None	11	44	14	56	25	100	
Total	40	65,6	21	34,4	61	100	

Based on table 3 above shows the results of 36 respondents with a genetic history obtained as many as 29 respondents who experienced rheumatoid arthritis and as many as 7 respondents who did not experience rheumatoid arthritis. Of the 25 respondents who did not have a genetic history. obtained as many as 11 respondents who had rheumatoid arthritis and as many as 15 respondents who did

not experience rheumatoid arthritis. The statistical test results of the *fisher's exact test* obtained a value of ρ value = 0.006 < α = 0.05, then H0 is rejected and Ha is accepted, meaning that there is a relationship between Genetic Factors and the Incidence of Rheumatoid Arthritis at Telaga Dewa Public Health Centre, Bengkulu City.

Table 4. Associated Nutritional Status Factors and the Incidence of Rheumatoid Arthritis in the Service Area of Telaga Dewa Public Health Centre, Bengkulu City.

Nutritional Status	Rheumatoid Arthritis				Total	P Value	
	RA		No RA				
	F	%	F	%	F	%	
Skinny	3	27,3	8	72,7	11	100	0,010
Normal	18	69,2	8	30,8	26	100	
Fat	19	79,2	5	20,8	24	100	
Total	40	65,6	21	34,4	61	100	

Based on table 3 above shows the results of 11 respondents with thin nutritional status obtained only 3 respondents who experienced rheumatoid arthritis and as many as 8 respondents who did not

experience rheumatoid arthritis. Of the 26 respondents with normal nutritional status. 18 respondents had rheumatoid arthritis and 8 respondents did not have rheumatoid arthritis. Of the 24

respondents with obese nutritional status, 19 respondents had rheumatoid arthritis and 5 respondents did not have rheumatoid arthritis. The statistical test results of the *pearson che square test* obtained a value of $\rho \text{ value} = 0.010 < \alpha =$

0.05, then H_0 is rejected and H_a is accepted, meaning that there is a relationship between nutritional status and the incidence of rheumatoid arthritis at the Telaga Dewa Public Health Centre, Bengkulu City.

Table 5. Associated Knowledge Factors and the Incidence of Rheumatoid Arthritis in the Service Area of Telaga Dewa Public Health Centre, Bengkulu City, 2024

Knowledge	Rheumatoid Arthritis				Total		P Value
	RA		No RA		F	%	
	F	%	F	%			
Less	20	87	3	13	23	100	0,004
Simply	18	60	12	40	30	100	
Good	2	25	6	75	8	100	
Total	40	65,6	21	34,4	61	100	

Based on table 5 above shows the results of 23 respondents with poor knowledge obtained only 20 respondents who experienced rheumatoid arthritis and as many as 3 respondents who did not experience rheumatoid arthritis. Of the 30 respondents with sufficient knowledge, 18 respondents experienced rheumatoid arthritis and as many as 12 respondents did not experience rheumatoid arthritis. Of the 8 respondents with good

knowledge obtained as many as 2 respondents who experienced rheumatoid arthritis and as many as 6 respondents did not experience rheumatoid arthritis. The statistical test results of the *pearson che square test* obtained a value of $\rho \text{ value} = 0.004 < \alpha = 0.05$, then H_0 is rejected and H_a is accepted, meaning that there is a relationship between the Knowledge Factor and the Incidence of Rheumatoid Arthritis at Telaga Dewa PHC, Bengkulu City.

DISCUSSION

The Associated Gender Factors with the Incidence of Rheumatoid Arthritis in the Elderly

There is a relationship between gender factors and the incidence of rheumatoid arthritis at the Telaga Dewa Community Health Centre in Bengkulu City in 2024, as indicated by the statistical test results of Fisher's exact

test, which obtained a value of $\rho = 0.000$, which is less than the significance level of $\alpha = 0.05$. Therefore, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted. The findings of this study are consistent with those of Arfianda et al. (2022), who discovered a substantial association between gender and the incidence of rheumatoid

arthritis. This is consistent with the hypothesis that the signs and symptoms of rheumatoid arthritis are principally characterized by persistent inflammation in the joints. There is a ratio of 2:1 between the number of women who experience the peak incidence of rheumatoid arthritis and the number of males who experience it. According to Siregar's (2016) research, which reveals that women are more likely to have rheumatoid arthritis, the outcomes of this study are consistent with that research.

Rheumatoid arthritis affects women at a rate that is two to three times higher than that of men, with the ratio being two to three. Despite the fact that the data is still being investigated, researchers believe that hormones play a role in influencing this discrepancy. Estrogen is a hormone that is found in women, and it is responsible for stimulating the immune system. More women than men are affected by rheumatoid arthritis (RA). The fact that women contain the hormone estrogen makes it impossible to avoid developing this illness. As people get older, rheumatoid arthritis affects more women. Generally speaking, estrogen is a crucial factor that plays a part in the influence of autoimmune disorders. This hormone can cause a damaged immune system, which is a condition known as autoimmunity. Autoimmunity is a condition in which the immune system incorrectly identifies and attacks the

tissues that are found within the body. According to Syamsuddin and Zulkifli (2021), the immune system, which is responsible for protecting the body, retaliates by focusing its attention on the joints at this point.

Rheumatism is more likely to affect women than it does men, with a risk factor of sixty percent. Rheumatism of the knees and joints is more common in women, while rheumatism of the thighs, wrists, and neck is more common in males. Rheumatism that affects the knees and joints is more common in women. Women have a higher risk of developing rheumatism than males do when they reach the age of fifty. Overall, men and women experience rheumatism at a frequency that is roughly equivalent under the age of 45. However, after the age of 50, women experience rheumatism at a higher frequency than men, which suggests that hormones play a significant role in the pathogenesis that contributes to the development of rheumatism (Arfianda et al., 2022).

The Associated Genetic Factors with the Incidence of Rheumatoid Arthritis in the Elderly

There is a significant association between genetic factors and the incidence of rheumatoid arthritis at the Telaga Dewa Community Health Centre in Bengkulu City in 2024, as indicated by the statistical test results obtained from Fisher's exact

test. The value of $\rho = 0.006$ is less than the significance level of $\alpha = 0.05$, which means that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted.

In accordance with the hypothesis that hereditary variables, such as high human lymphocyte antigens (HLA), play a role in genetics, this is consistent with the findings. (HLA) Rheumatism is linked to an allogeneic association between B lymphocytes, which are sometimes referred to as monoclonal antibodies, and rheumatic status or susceptibility to rheumatism. This susceptibility can be impacted by hereditary or genetic factors. Factors related to genetics are relevant. Rheumatoid arthritis is inherited in a dominant manner by females, while masculines inherit it in a recessive manner. In the process of the development of rheumatic disease, genetic factors play a significant role from the beginning. Studies have shown that a person who comes from a family with a history of rheumatism is at a risk that is three times higher than that of a person who does not come from a family that has a history of rheumatic disorders. A higher risk of developing rheumatoid arthritis (RA) is associated with individuals who have positive results from genetic HLA tissue type testing. In addition, there is a connection between the history of a family and the occurrence of rheumatoid arthritis in

succeeding generations of children. Additionally, genetics has a substantial role in the development of rheumatoid arthritis (RA) in the hands. In fact, genetics is responsible for as much as forty-five percent and seventy percent of RA in the cervical and lumbar spines, respectively. A significant amount of influence is exerted by hereditary variables in rheumatoid arthritis. Researchers have shown that specific genes in the major histocompatibility complex (MHC) on chromosome 6 are responsible for the predisposition to rheumatoid arthritis as well as increased severity of the condition. Native Americans who carry the polymorphism HLA-DR9 gene have a risk of having congenital rheumatoid arthritis that is three and a half times higher than the general population.

The Associated Nutritional Status Factors with the Incidence of Rheumatoid Arthritis in the Elderly

There is a relationship between nutritional status factors and the incidence of rheumatoid arthritis at the Telaga Dewa Community Health Centre in Bengkulu City, 2024, as indicated by the statistical results of the Pearson chi-square test, which obtained a value of $\rho = 0.010$, which is less than the significance level of $\alpha = 0.05$. Therefore, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted.

Arfianda et al. (2022) conducted research that

reveals an association between obesity and the occurrence of rheumatoid arthritis. The findings of this study are consistent with the conclusion of that research. It is hypothesized under this idea that obesity is the one that causes osteoarthritis, rather than the other way around, where the discomfort caused by osteoarthritis causes one to become immobile. The loading of the knee and hip can result in injury to the cartilage, failure of the ligaments, and other structural support issues. In the present scenario, there is a significant correlation between obesity and the occurrence of rheumatism in the older population, in comparison to those who are not obese. Because of this, we are able to draw the conclusion that obesity has a significant relationship with the prevalence of rheumatic diseases in the senior population. Both "obesity" and "overweight" are terms that are used to describe an accumulation of body fat that is greater than the permissible limits. When there is an excessive accumulation of body fat, it is frequently easy to see. The level of obesity is determined by the quantity of fat that is stored in excess within the body.

An increased chance of developing rheumatoid arthritis is linked to having an excessive body weight, and this risk is related with both women and men. Those who are overweight are more likely to suffer from rheumatoid arthritis of other joints,

such as the hand or the sternoclavicular joint, in addition to osteoarthritis of the joints that bear the weight of the body. Asian women have a body mass index (BMI) that is higher than the average, with their BMI category lying between 24 and 26.9 kg/m², as indicated by the statistics. Having a body mass index (BMI) that is higher than the average causes fat to accumulate in the joints, which in turn causes the weight-bearing joints of the body, particularly the knees, to experience increased mechanical stress.

The associated knowledge factors and the incidence of rheumatoid arthritis in the elderly

The results of the Pearson chi-square test obtained a value of $p = 0.004$ which is less than the significance level of $\alpha = 0.05$. As a result, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_a) is accepted. This implies that there exists a correlation between the knowledge factor and the occurrence of rheumatoid arthritis at Puskesmas Telaga Dewa, which is located in Bengkulu City, in the year 2024.

According to the findings of the study, the hypothesis that knowledge will continue to expand and develop as a result of human experiences is consistent with the findings of the study. A person's health status improves in direct proportion to the quantity of information that they possess, and vice versa.

On the other hand, this scenario contains a contradiction, as the knowledge that was obtained does not have a direct correlation with the activities that were carried out. The patient's level of understanding has an effect on the eating choices that can contribute to rheumatic problems. According to Maleno et al. (2023), this brings us back to the information that the old possess and how they can apply that knowledge in their day-to-day lives. Not only are the elderly expected to possess this knowledge, but they are also expected to be able to exercise it.

One can acquire information by either learning on their own or by learning from others. The level of knowledge possessed by an individual is a significant factor in the maintenance of their health status. It is possible for individuals to apply their knowledge in their day-to-day lives in order to preserve their health status. This makes it possible for those who are healthy to

Conclusion

The findings underscore the significance of gender, nutritional status, knowledge, and genetics as key determinants in the prevalence and management of RA among the elderly. The study emphasizes the multifaceted nature of rheumatoid arthritis in the elderly, where gender, nutritional status, knowledge,

remain healthy and for those who are sick to get well, particularly in the management of rheumatoid arthritis disease (Maleno et al., 2023).

A major lack of awareness about the disease is one of the factors that contribute to the development of rheumatoid arthritis (Aprilyadi & Soewito, 2020). This lack of knowledge is present not only among the general public but also in the medical community. In addition to knowledge, a supportive attitude is necessary in order to enhance the health status of persons who have rheumatoid arthritis (Rasiman & Reskiani, 2022).

In addition, Aprilyadi and Soewito's (2020) investigation discovered that the outcomes of Chi Square analysis were $p = 0.026$ ($p < \pm 0.05$). All of these findings are significant. This indicates that there is a connection between the amount of information that people have regarding rheumatoid arthritis and the frequency with which it occurs in people who are older.

and genetic factors are interrelated and contribute to the disease's prevalence and severity. Public health strategies should therefore focus on comprehensive educational programs, early detection, and tailored interventions that address these risk factors to improve the management and outcomes of RA in the elderly population.

Research Issues

According to the information provided by the researcher, there are no issues or disagreements to be discovered.

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Author Contribution

RL was in charge of everything, including the preparation and the collection of data. SY participated in the

analysis of the data that was collected. EP is the one who created the writing.

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