



## Relation Between Fast Food and Preservative Consumption with Rheumatoid Arthritis Pain in A Gymnastics Group in Bandung City

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### ABSTRACT

**Background:** Rheumatoid arthritis is an autoimmune disease in the form of joint inflammation in adults. Based on the 2018 WHO report, it shows that there are 335 million people in the world who have rheumatism, of which 5-10% are aged 5-20 years and 20% are aged 55 years. Factors that can cause pain in rheumatoid arthritis are dietary factors, one of which is frequent consumption of fast food and preserved foods. The aim of this study was to determine the relationship of consumption of fast food and preserved foods to rheumatoid arthritis complaints in two gymnastics groups in Bandung City.

**Methods:** This study used a cross-sectional design with a sample of 30 gymnastic ladies taken by purposive sampling. Data were analyzed using the Chi-Square test with IBM SPSS Statistic 21 software.

**Results:** Based on the results of the analysis that has been done, there is no relationship between age, educational history, consumption of fast food and preserved food with rheumatoid arthritis complaints in the group of gymnastics ladies in Bandung City ( $p > 0,05$ ).

**Conclusions:** The absence of an association among age, educational history, consumption of fast food and preserved foods with rheumatoid arthritis complaints can be due to other factors outside of these factors such as genetics, gender, obesity, infectious diseases, and lack of knowledge about rheumatoid arthritis. maintain and regulate lifestyle and food intake can make rheumatoid arthritis complaints can be minimized and do not have recurrences.

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## 1. INTRODUCTION

Rheumatoid arthritis is an autoimmune disease in the form of joint inflammation in adults (Singh JA et al, 2016) Patients with rheumatoid arthritis have pain due to thickening that occurs in synovial joints, tendon sheaths, and bursa as well as bone erosion and bone damage around the joints, which can cause disability. However, most rheumatic diseases are chronic, meaning that the disease can heal and recur repeatedly, causing permanent joint damage in people with rheumatoid arthritis (Chabib L et al, 2016).

Most Indonesians consider rheumatic diseases as normal because they do not appear to cause death. In fact, the pain caused will hinder a person's daily activities, such as exercising and working (Zega BIM, 2021). Based on the World Health Organization (WHO) report, (2018) shows that there are 335 million people in the world who have rheumatism, of which 5-10% are aged 5-20 years and 20% are aged 55 years (Bawarodi F et al, 2017). Reports on the incidence of rheumatism in Indonesia range from 0,1% to 0,3% of the Indonesian population, with prevalence of rheumatoid arthritis pain of 23,3% to 31,6%. This number is expected to continue to increase until 2025 with the possibility that 25% will experience paralysis (Nurkholik D et al, 2022).

The onset of rheumatoid arthritis can be caused by several factors, including increasing age, advanced age, especially at the age of over 60 years, female gender, family history or genetic factors, obesity, smoking habits, exposure to cigarette smoke or chemicals, and knowledge (Sartika Y et al, 2022). What's more. Additionally, there are several foods that are thought to contribute to rheumatoid arthritis. This has led to the emergence of myths in the community that these foods should not be consumed by rheumatoid arthritis patients. These foods include legume products such as bean milk, chickpeas; animal internal organs such as liver, intestines, spleen, lung, brain, and heart; canned foods such as sardines, corned beef; foods cooked using coconut milk; some types of fruits such as durian; processed Melinjo products; alcohol; fast food; and vegetables such as kale and spinach (Murtiningsih I et al, 2021).

For people at risk of developing rheumatoid arthritis, improving physical fitness through physical exercise is a preventative and promotive measure that can help elderly patients with rheumatic diseases maintain and improve their functional status. Elderly people with rheumatism can improve their functional status by reducing pain through body movement methods also known as rheumatic exercises. According to Sejati in 2019, there are several benefits to exercising for rheumatism, namely that bones become more flexible, blood circulation improves, muscles stay firm, blood fat levels are maintained normally, and injuries are less likely (Sejati S, 2019). However, if you don't follow a good diet and don't get enough physical exercise, you may continue to experience symptoms of rheumatoid arthritis. Therefore, we selected the gymnastics group as respondents for the study on the relationship between fast food consumption and preserved foods and rheumatoid arthritis.

## 2. METHODS

This study used a quantitative descriptive method, with a cross-sectional approach because all data related to the research variables were obtained at the same time (Setiadi, 2013). This research was conducted on 2 gymnastics groups, namely KSR Isola that is located at Jl. Geger Arum No. 11B, Isola, Kec. Segar Bugar Gymnastics Group in Sukasari, Bandung and Karang Pamulang, Caicos. Mandalajat, Cikadut, Bandung City. The research was conducted in October 2023. The subjects of this study were the elderly gymnastics groups in Bandung City. Purposive sampling technique was used for sampling and a total of 30 respondents were

included. The inclusion criteria for the sample in this study were members of the gymnastics group aged  $\geq 40$  years, female, not working or as a housewife, participating in gymnastics activities, domiciled in Bandung City, and willing to become research respondents. Exclusion criteria in this study include members of the gymnastics group who are under 40 years old, male, working, not participating in gymnastics activities, not domiciled in Bandung City, and who are not present at the time of the study.

The instrument used in this study was a food frequency questionnaire. The instrument was distributed to each respondent with the aim of collecting data relevant to the study. Food consumption can be judged by the frequency of consumption of fast food and preserved foods, such as pizza, hamburgers, fried chicken, and French fries (consisting of sardines, corned beef, chicken nuggets, sausages, and canned fruit). In addition, the instrument used was a characteristic sheet containing identity and rheumatoid arthritis complaint data.

Data processing was carried out using the Chi Square method using IBM SPSS Statistics 21 software. The chi-square test is one of the non-parametric statistical tests. The chi-square test was used to test whether there was a relationship between the variables under study. The chi-square test is used to perform hypothesis testing on the difference between two or more proportions. The test results will prove the research hypothesis whether all proportions are the same or different among the variables studied.

### 3. RESULTS AND DISCUSSION

This study involved 30 people from two groups of gymnastic ladies in Bandung City. Table 1 shows the characteristics of the research respondents, which include age, education history, frequency of fastfood consumption, frequency of preserved food consumption, and rheumatic complaints. In Table 1, the dominant respondents were in the pre-elderly age with an age range of 40-65 years (93,9%). The average education of respondents was at the high school level (56,7%) so that the education level of most respondents was at the middle level. What's more, 90% of respondents' food consumption of fast food was identified as rarely consuming and 83,3% of respondents rarely consumed this type of food. On rheumatoid arthritis complaints, the average respondent did not have significant complaints about the incidence of rheumatoid arthritis.

Table 1. Characteristics of Gymnastic Ladies in Bandung City

Variable	n	%
Age		
40-65 years	28	93,9
40-65 years	2	6,7
Education Level		
Elementary School	5	16,7
Junior High School	4	13,3
Senior High School	17	56,7
Bachelor	4	13,3
Fast Food Consumption		
Often	3	10,0
Rarely	27	90,0

Variable	n	%
Preservative Foods Consumption		
Often	5	16,7
Rarely	25	83,3
Rheumatic Pain		
Yes	10	33,3
No	20	66,7

Table 2 shows 10 respondents who experienced rheumatoid arthritis complaints were aged 40-65 years, while no respondents over 65 years old experienced rheumatoid arthritis complaints. The analysis results show a p-value of 0,540 (p-value > 0,05). These results show there is no relationship between age and rheumatoid arthritis complaints. Based on educational history, the majority of respondents who experienced rheumatoid arthritis complaints were high school graduates. The analysis results showed a p-value of 0,398 (p-value > 0,05). These results show there is no relationship between educational history and rheumatoid arthritis complaints. Table 2 also shows that there are 10 respondents who rarely consume fast food experiencing rheumatoid arthritis complaints, while 17 other respondents do not have rheumatoid arthritis complaints. The analysis results showed a p-value of 0,532 (p value > 0,05). These results show there is no relationship between fast food consumption and rheumatoid arthritis complaints. What's more, the majority of respondents rarely consume preserved foods. A total of 8 respondents experienced rheumatoid arthritis complaints, while 17 others did not have rheumatoid arthritis complaints. The results of the analysis showed a p-value of 1,000 (p-value > 0,05). These results show there is no relationship between consumption of preserved foods and rheumatoid arthritis complaints.

Table 2. Relation Between Fast Food and Preservative Consumption with Rheumatoid Arthritis Pain in A Gymnastics Group in Bandung City

Variable	Rheumatic Pain				Total	p Value
	Yes		No			
	f	%	f	%		
<b>Age</b>						
40-65 years	10	35,7	18	64,3	28	0,540
40-65 years	0	0	2	100	2	
<b>Education Level</b>						
Elementary School	3	60	2	40,0	5	0,398
Junior High School	2	50	2	50,0	4	
Senior High School	4	23,5	13	76,5	17	
Bachelor	1	25	3	75,0	4	
<b>Fast Food Consumption</b>						
Often						0,532
Rarely	0	0	3	100	3	

Variable	Rheumatic Pain				Total	p Value
	Yes		No			
	f	%	f	%		
	10	37	17	63,0	27	
Preservative Foods Consumption						
Often	2	40	2	60,0	5	1,000
Rarely	8	32	17	68,0	25	

### 3.1. The Relationship Between Rheumatoid Pain and Age

Old age is a period or stage in human life that is a continuation of adulthood and a normal stage of development that all people go through when they reach this age (Anam S et al, 2023; Siregar Y, 2016). In people over 50 years of age, the protective layer in the joints begins to thin and bone fluid begins to thicken, making the body stiff and painful when moved (Wuan AO, 2023). The prevalence and severity of rheumatoid arthritis in people who already have symptoms increases at the age of 50 years and continues to increase with age (Mayeni KAM, 2018). The results of the conducted study showed that the age of the women's gymnastics team in Bandung City was not associated with the prevalence of rheumatoid arthritis. The results of this study are in line with research conducted by Afrinda, which found that there was no effect of factors on the occurrence of rheumatoid arthritis disease seen from the age of the elderly in Gampong Piyeung Manee, Montasik District, Aceh Besar Regency in 2021 (Arfianda A et al, 2022).

However, there are research results that are not in line with this study, namely research conducted by Afridon in 2020 with the title "Factors Associated with Rheumatic Events in Rheumatism Patients in Kelurahan VI Suku, Tanah Garam Health Center Working Area, Solok City" which found that there was a significant relationship between the age factor and the incidence of rheumatism in patients. According to theory, the aging process affects rheumatoid arthritis in elderly people because changes occur in the human body as we age, and the risk factors for rheumatoid arthritis increase (Orisinal, 2016). However, the disease can also occur in older people or children (Juvenile Rheumatoid Arthritis) (Afridon A, 2021). Several factors may have influenced the discrepancy between the study results and existing theory. We hypothesize that one of these factors is because age is not the only risk factor for rheumatoid arthritis

### 3.2. The Relationship Between Rheumatoid Arthritis Pain with Education Level

Based on the results of the study, it was found that there was no relationship between educational history and rheumatoid arthritis complaints in respondents. Educational history can be used as an indicator of respondents' knowledge. This is because in theory, the higher a person's level of education, the higher his access and ability to receive information (Jamaluddin M & Nugroho AH, 2016). What's more, according to Sriyono, a person's level of education and knowledge can also affect a person's attitude and behavior. Thus, a person's level of education will indirectly affect the practice or eating habits of the respondent (Angela N & Kurniasari R, 2021). Referring to this hypothesis, respondents with higher levels of education should have more knowledge about rheumatoid arthritis and apply it in the

form of healthy eating habits so that they have a lower risk of experiencing rheumatoid arthritis complaints. In fact, through this study no relationship was found between education level and rheumatoid arthritis complaints. In a study conducted by Lopez in 2014, there was also no relationship between respondents' educational history and their level of knowledge about rheumatoid arthritis (Lopez MYDA, 2015).

The results obtained are less in line with several studies such as those conducted by Soniati in 2022, who found that the last educative history a person goes through affects his level of knowledge about rheumatoid arthritis. In the study, it was found that people with low educational backgrounds mostly got unfavorable results. In addition, this study also found that the level of knowledge has a significant relationship with the recurrence or complaints of rheumatoid arthritis (Soniati, 2022). The absence of a relationship in this study could be due to the influence of other factors. Such as the acquisition of information about rheumatoid arthritis, which can be obtained from various other sources besides the formal education environment such as social media, print media, and others. In addition, a person's knowledge and attitude that can end in the occurrence of rheumatoid arthritis complaints can also be influenced by other factors such as interest or interest in exploring related information, experience, and other external factors such as economic, social, and cultural or beliefs (Tarus T, 2021).

### 3.3. The Relationship Between Rheumatoid Arthritis Complaints with Fast Food Consumption

From the results of the analysis that has been done, there is no relationship between fast food consumption and rheumatoid arthritis complaints in the group of gymnastics ladies in Bandung City ( $P > 0,05$ ). This result concurs with before research, which also states that there is no significant relationship between diet or diet with a maximized risk of rheumatoid arthritis. The study also mentioned that before publications that shown a relationship between diet and the incidence of rheumatoid arthritis were likely owing to salt intake (Sundström B et al, 2015). Another study that was also in line with the results of this study is a case-control study conducted to see differences in food consumption in groups with rheumatoid arthritis and those without. It was found that there was no significant difference in fast food consumption. More than that, this study also looked at differences in the consuming mayonnaise, butter, and spicy food condiments in several fastfood groups, which were also not significantly different (Rambod M et al, 2018).

As for research that is not in line with this study which has a positive relationship with fast food consumption on the occurrence of rheumatoid arthritis complaints, it is said that types of food such as fastfood include types of food that can cause excessive inflammation in rheumatoid arthritis sufferers, this is evidenced by the provision of dietary experiments on respondents given the Anti-inflammatory Diet Rheumatoid Arthritis (ADIRA) Diet. As a result of implementing this dietary therapy, the respondents experienced a reduction in pain symptoms. This trial indicated a positive impact of implementing an anti-inflammatory diet on disease activity in people with rheumatoid arthritis. More research is needed to determine whether this diet can produce improvements that have clinical significance (Vadell AKE et al, 2020). Another study also examined fast food, which has a relationship in increasing risk factors for rheumatoid arthritis. Fast food products made from meat such as sausages are high in fat (more than 50%) and high in cholesterol. This is a risk factor for obesity, where obesity is a multifactorial of rheumatoid arthritis (Hatami E et al, 2022).

### 3.4. The Relationship Between Rheumatoid Arthritis Pain with Preservative Food Consumption

The results of the study showed no relationship between eating pickled foods and symptoms of rheumatoid arthritis in a group of gymnasts in Bandung. The results of this study are in line with research conducted by [Hatami et al \(2022\)](#), which states that the addition of preservatives to food products such as sausages, nuggets, and canned foods is believed to increase the risk of rheumatoid arthritis because it can increase oxidative stress which causes inflammation and excess immune response. However, the study found that eating sausages (a type of cured processed meat) had no effect on the incidence of rheumatoid arthritis. These results were supported by a cohort study that found that consumption of sausages and other processed meats containing preservatives was not associated with the incidence of rheumatoid arthritis ([Sundström B et al, 2019](#)). However, according to a study by Smaira et al. in 2020, the consumption of ultra-processed foods such as canned and pickled foods increases the risk of cardiovascular disease, especially in patients with rheumatoid arthritis, and it is recommended to reduce their consumption ([Smaira FI, 2020](#)).

The research that is not in line with this research is research conducted by Oktarini in 2019 with the title “The Relationship between Food Type History, Environment and Exercise with Rheumatic Events in the Elderly” explaining that there is a relationship between a history of unfavorable food types and the incidence of rheumatoid arthritis. The incidence of rheumatoid arthritis tends to be influenced by the consumption of unhealthy types of food due to the habit of often consuming poor foods, such as canned food products, preserved foods, fast food, and foods that use flavoring ingredients, as well as other foods such as offal (liver, spleen, kidneys, intestines) ([Oktarini S, 2019](#)).

The absence of an association between consumption of preserved foods and rheumatoid arthritis complaints may be due to other factors outside of food consumption. Risk factors for rheumatoid arthritis include gender, excess weight (obesity), and lack of knowledge about rheumatism ([Rasiman NB & Reskiani, 2021](#)). In this gender factor, women usually have a risk of rheumatoid arthritis two to three times higher than men, this is influenced by menstruation. Because when women menstruate, they will go through hormonal changes, these hormones affect the immune system.<sup>16</sup> The next factor is obesity, people with obesity are at high risk of developing rheumatic diseases, especially people who have a fat body when they are 50 years old ([Syamsuddin S & Zulkifli A, 2021](#)). Obesity that affects the elderly is an early cause of rheumatoid arthritis due to the loading that occurs on the knees, joints, and pelvis, which can cause ([Rehena Z, 2019](#)). Another factor that affects rheumatoid arthritis is obesity, Another factor that affects rheumatoid arthritis disease is knowledge because when you have good knowledge, you will have a good attitude too, so you can learn the efforts or actions taken to prevent the onset of rheumatoid arthritis and vice versa ([Wibowo D, 2018](#)).

It is necessary to limit the number to reasonable limits. Nowadays, preserved foods are widespread, making it difficult to avoid. The level of risk from the use of these preservatives depends on the amount of consumption, so it is advisable to prefer fresh foods in purchases. In principle, everything when consumed in balance and moderation is safe for the body's health, so it can be applied in the diet of each individual. Adopting a healthy diet is a measure to reduce the frequency and severity of symptoms that can arise from rheumatoid arthritis, as well as prevent the spread of the disease and possible complications ([Rahmawati IN, 2015](#)). In addition, it is also important to choose food effectively and combine it with a healthy lifestyle, such as exercising regularly for optimal results on body health ([Priwahyuni Y, 2016](#)).

#### 4. CONCLUSION

Based on the results of the research that has been conducted, it can be concluded that there is no significant relationship between age, educational history, consumption of fast food, or preserved food with rheumatoid arthritis complaints in the group of gymnastics ladies in Bandung City. The lack of relationship between the variables in this study can be caused by rheumatoid arthritis which is a multifactorial disease that can be influenced by various other factors. Therefore, it is important for us to wisely maintain and manage a healthy lifestyle so as to reduce the risk and recurrence of rheumatoid arthritis. The researcher considers that the consumption of fast and preserved foods in rheumatoid arthritis patients is still allowed as long as it is within reasonable limits of quantity and frequency. It is recommended for future research to conduct biochemical examinations of respondents as an additional variable to ensure complaints that occur are rheumatoid arthritis or complaints of other similar diseases such as gout. The number of respondents also needs to be considered in utilizing quantitative data for qualitative research.

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