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THE IMPACT OF DIETARY REGULATION ON THE MANAGEMENT OF RHEUMATOID ARTHRITIS IN ADULTS: A LITERATURE REVIEW

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ABSTRACT

Background: *Rheumatoid arthritis (RA) is a chronic autoimmune disease that causes pain, stiffness, and joint damage, as well as other systemic symptoms. The prevalence of RA worldwide is around 1-2%. The disease is influenced by genetic and environmental factors such as infection, pollution, and diet. Diet can affect RA symptoms; foods such as red meat, alcohol, and sodas can aggravate, while fish and berries can alleviate symptoms. The Mediterranean diet, which is rich in herbs and olive oil, as well as gluten-free vegetarian and vegan diets, show positive effects on RA. Research suggests that this diet may contribute to the lower prevalence of RA in Southern Europe compared to other regions.* ***Methods:*** *This study used PubMed and Google Scholar as the main databases. Key words were used, such as "Rheumatoid Atritis", "Diet". Considering the relevance of the topic under study, the literature selected for inclusion in this paper covered publications from 2019 to 2024.* ***Discussion:*** *The results of this systematic review suggest that anti-inflammatory, Mediterranean, and gluten-free diets may provide benefits in reducing pain and inflammation in adults with RA. The Mediterranean diet in particular has been shown to be effective in improving quality of life and reducing RA disease activity.* ***Conclusion:*** *Dietary management, especially anti-inflammatory, Mediterranean, and gluten-free diets may play an important role in the control of RA symptoms in adults. Recommendations to adopt a healthy and anti-inflammatory diet may be an effective strategy in RA management.*

Keywords: *Rheumatoid Arthritis, Diet*

INTRODUCTION

Rheumatoid arthritis (RA) is a long-term inflammatory and autoimmune disease with systemic symptoms in addition to joint involvement. Joint pain, stiffness, swelling, joint destruction, and systemic symptoms are among the clinical signs of RA. Disability and progressive joint damage are possible side effects of RA. [1]

There is significant variation in the disease's prevalence across different populations, with estimates ranging from 1% to 2% worldwide. The multistep process of RA pathogenesis, which starts years before the disease manifests clinically, involves interactions between genetic and environmental factors. Systemic autoimmunity and autoantibodies can develop years before symptoms appear due to a variety of environmental factors, including infections, dust, air pollution, cigarette smoking, and diet. A lot of research has been done on diet and nutrients as possible environmental factors that affect the onset and progression of the disease. [2]

Individuals suffering from RA frequently ask the doctor for dietary recommendations, and many of them also report that different foods either make their disease symptoms better or worse. Foods that have been shown to exacerbate symptoms include red meat, alcohol, and soft drinks; on the other hand, foods like fish and berries have been shown to alleviate symptoms. Although whole diets have not been extensively studied, studies on the use of a Mediterranean diet, fasting followed by a vegetarian diet, and a gluten-free vegan diet have demonstrated beneficial effects on disease activity. [3]

The MD is primarily a plant-based diet that consists of whole grains, legumes, seeds, fruits, vegetables, olive oils, and fish. It is distinguished by a moderate intake of dairy products and a minimal intake of animal fats. Following the MD and each of its component parts has a number of anti-inflammatory effects that reduce the symptoms of RA.[4] The lower prevalence of RA in Southern Europe compared to Northern Europe and North America can be attributed to the Mediterranean diet, along with other lifestyle factors and genetics.[5]

The objective of this literature review is to provide a comprehensive analysis of the relationship between dietary management and the control of rheumatoid arthritis (RA). This review aims to accomplish several important goals. First, it intends to systematically evaluate the impact of different dietary patterns, such as anti-inflammatory diets, the Mediterranean diet, or diets rich in specific nutrients, on the symptoms and progression of RA. By assessing various dietary approaches, the review seeks to identify which patterns may offer the most benefit in terms of managing RA effectively. Secondly, the review will focus on analyzing the effects of individual dietary components such as omega-3 fatty acids, antioxidants, vitamins, and minerals on RA management. It will explore whether modifying the intake of these nutrients can lead to significant improvements in reducing inflammation and enhancing joint function. Additionally, the review aims to identify any gaps or inconsistencies in the current body of evidence regarding dietary management of RA. This includes

evaluating the methodological quality of existing studies and highlighting areas where further research is necessary. Furthermore, the review will provide evidence-based recommendations for dietary practices that could be beneficial for RA patients. These recommendations will help guideing healthcare professionals in advising patients on effective dietary strategies. Lastly, the review will examine the underlying mechanisms by which diet may influence RA, including how specific foods or nutrients impact inflammatory pathways and immune system responses. Overall, this literature review aims to synthesize and integrate existing research to offer a clearer understanding of how dietary management can contribute to the effective control of RA and improve patient outcomes.

RESEARCH METHODS

The methodology employed in composing this scientific article includes a comprehensive literature review across various databases. This study utilizes PubMed and Google Scholar as the primary databases. Keywords used include 'Rheumatoid Arthritis' and 'Diet Patterns.' Considering the relevance of the research topic, the literature selected for inclusion in this paper spans publications from 2019 to 2024.

RESULTS AND DISCUSSION

Nutrition and gut microbiota play a significant role as triggering factors for systemic inflammation and several rheumatic diseases such as rheumatoid arthritis (RA).[6] Higher levels of anti-gliadin antibodies have been detected in the intestinal fluid of RA patients compared to healthy controls, supporting the potential antigenic effect of gluten. Anti-gliadin and anti-tissue transglutaminase antibodies have also been demonstrated in other autoimmune inflammatory diseases such as multiple sclerosis. The inflammatory effects of gluten also occur through various other mechanisms. Gluten activates toll-like receptor 4, which stimulates the production of various proinflammatory cytokines such as IL-6, IL-1, and especially IL-17. It also determines gut microbiota dysbiosis by modifying the microbiota in a pro-inflammatory manner and alters epigenetic programming resulting in reduced gene methylation, potentially increasing disease incidence.[7]

Table 1. Evaluation of the Effectiveness of Dietary Regulation on Rheumatoid Arthritis

NO	AUTHOR (YEAR)	DIET TYPE	RESEARCH METHOD	RESULT
1.	[1]	Anti-Inflamasi	Meta-Analysist	Effective
2.	[3]	Anti-Inflamasi	Randomized Crossover Trial	Effective
3.	[8]	Anti-Inflamasi	Quantitative And Qualitative Research Methods	Effective
4.	[9]	Anti-Inflamasi	Prospective Cohort	Effective
5.	[4]	Mediterania	Randomized Controlled Trial	Effective
6.	[10]	Mediterania	Observational Study	Effective

Anti-Inflammatory Diet

An anti-inflammatory diet is a dietary approach that focuses on consuming foods known to reduce inflammation in the body. This type of diet typically includes foods rich in omega-3 fatty acids, probiotics, dietary fiber, and antioxidants, while avoiding foods that may promote inflammation such as processed foods, refined sugars, and saturated fats. Research suggests that an anti-inflammatory diet may have positive effects on disease activity in conditions like rheumatoid arthritis. [8,9]

Mediterranean Diet

In rheumatoid arthritis (RA), the Mediterranean diet can influence disease activity and reduce the risk of cardiovascular disease [4]. A study was conducted on 40 adult women with a confirmed diagnosis of RA based on the 2010 American College of Rheumatology (ACR)/EULAR classification criteria, recruited from the outpatient clinic of Iaso Hospital (Athens, Greece) during 2021. The study involved observing a personalized diet plan based on MD principles, combined with lifestyle consultations to promote physical activity over a total of 12 weeks, enhancing MD adherence in female RA patients. Greater adherence to MD was associated with increased fat intake, body weight, body composition, and lower disease activity status. Therefore, the adoption of MD by RA patients appears to be an appropriate anti-inflammatory treatment. [10]

Gluten-Free Diet

A gluten-free diet is a nutritional regimen that excludes gluten, a group of proteins found in wheat, barley, rye, and triticale (a cross between wheat and rye).[11] This diet is crucial for individuals with specific health conditions such as celiac disease, non-celiac gluten sensitivity, and wheat allergies. Understanding the intricacies of a gluten-free diet involves exploring the reasons for its necessity, the foods to avoid and include, and the benefits and challenges associated with this dietary approach.[7,11]

CONCLUSION

This study concludes that dietary regulation has a significant impact on the control of rheumatoid arthritis (RA) in adults. An anti-inflammatory diet rich in fruits, vegetables, fatty fish, and whole grains can reduce inflammation levels, which are a primary symptom of RA. Nutrients such as omega-3 fatty acids, antioxidants, and dietary fiber play a crucial role in reducing systemic inflammation. Additionally, weight management through a balanced and nutrient-rich diet helps reduce the load on joints, thereby improving mobility and reducing pain. A diet low in sugar, saturated fats, and processed foods has also been shown to support the control of RA symptoms. Therefore, appropriate dietary interventions can be an effective strategy in the management of RA, improving the quality of life and reducing dependence on nonsteroidal anti-inflammatory drugs and immunosuppressive medications.

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