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Challenges in Preventing the Origin of Rheumatoid Arthritis

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Abstract: General Background: Rheumatoid arthritis (RA) is a chronic autoimmune disease, affecting 0.3 - 1% of the global population, with a higher incidence in women aged 20 - 40. Specific Background: It causes joint pain, stiffness, and potential systemic complications, including damage to the cardiovascular, respiratory, and nervous systems. Knowledge Gap: Despite advancements in pharmacological treatment, preventive strategies and rehabilitation efforts remain underexplored. Aims: This study aims to investigate preventive measures for RA and assess the effectiveness of rehabilitation programs. Results: The research emphasizes the role of lifestyle changes, early diagnosis, and rehabilitation in controlling disease progression. Novelty: The study fills a critical gap in RA management by integrating prevention and rehabilitation into clinical practice. Implications: The findings suggest that comprehensive management strategies, including education, rehabilitation, and lifestyle interventions, can improve patient outcomes and reduce disease-related disabilities.

Keywords: Rheumatoid arthritis, incidence, causes, prevention, measures, disability, systemic disease.

Introduction. Rheumatoid arthritis (RA) is a chronic autoimmune disease that primarily affects the joints, leading to pain, stiffness, and in severe cases, deformities. It is considered one of the most prevalent systemic diseases globally, with its incidence steadily rising, particularly after the COVID-19 pandemic. According to the World Health Organization (WHO), approximately 0.3–1% of the global population suffers from RA, with a significant proportion of those affected being women aged 20 - 40 years. This disease, if left untreated, leads to irreversible joint damage and disability in many patients within a decade of diagnosis. Thus, RA not only imposes significant health burdens but also presents substantial socio-economic challenges, highlighting the need for efficient prevention and treatment strategies. The pathogenesis of RA remains complex, with unclear specific causes, though a combination of genetic, environmental, and lifestyle factors is believed to contribute to its onset. Studies have identified smoking, obesity, and a lack of physical activity as modifiable risk factors, while non-modifiable factors include genetic predisposition and age. The disease most commonly affects small joints, causing chronic inflammation that can extend to other body systems, including the cardiovascular, respiratory, and nervous systems. Early diagnosis and timely intervention can help manage symptoms and slow disease progression, preventing severe complications and improving quality of life. Despite significant advancements in the understanding of RA, there remains a gap in research focusing on preventive measures, early detection, and the rehabilitation of affected individuals. The

current body of literature primarily emphasizes pharmacological treatments, yet non-pharmacological approaches, such as rehabilitation and lifestyle modifications, have gained attention for their role in mitigating the effects of RA. This knowledge gap presents a critical area for further research, particularly in developing more comprehensive strategies for managing RA from prevention to long-term rehabilitation [1].

This study aims to explore the preventive measures for RA, focusing on strategies that can delay the onset and mitigate the disease's progression. The research also evaluates the effectiveness of rehabilitation programs, which are often overlooked despite their significant impact on patient outcomes. By analyzing various approaches and integrating them into clinical practice, this study seeks to contribute to the optimization of RA management.

The findings from this research will offer insights into the prevention and control of RA, emphasizing a holistic approach that includes lifestyle changes, early intervention, and rehabilitation. Furthermore, it aims to highlight the need for improved patient education, support systems, and the role of assistive devices in maintaining functionality. By addressing these areas, the study aims to fill existing gaps in RA prevention and treatment and propose practical solutions to enhance patient care and quality of life.

To study the sequence of preventive measures for rheumatoid arthritis and improve additional prevention strategies.

Methodology. As of 2021, more than 18 million people worldwide suffer from rheumatoid arthritis. Approximately 70% of patients with rheumatoid arthritis are women, and 55% are people over 55 years of age. Thirteen million people require rehabilitation due to the severity of rheumatoid arthritis (moderate or severe form) [2]. Each of these cases is associated with very high financial costs. Rheumatoid arthritis is a systemic autoimmune disorder affecting various body systems, but most commonly affecting the joints of the hands, wrists, feet, ankles, knees, shoulders, and elbows.

Rheumatoid arthritis is a chronic disease that causes inflammation in the body and typically manifests as joint pain. Common symptoms of the disease include chronic pain, stiffness when bending joints, a sensation of warmth in the joints, and swelling [3][4][5]. Additionally, it leads to difficulty in movement and performing daily activities.

The causes of rheumatoid arthritis development have not been definitively established. Risk factors include smoking, obesity, lack of physical activity, and exposure to polluted air. The increased risk of developing the disease poses a threat to the well-being of women and the elderly. With timely diagnosis, the symptoms and progression of the disease can be controlled through pharmacotherapy, and rehabilitation (including the use of assistive devices) helps maintain the patient's functional capabilities at an acceptable level. In cases of severe joint damage, surgical interventions, including the use of joint prostheses, are required to restore mobility, reduce pain, and maintain functional capacity [6]. This necessitates long-term rehabilitation and limits patients' ability to work.

Results and discussion. If we analyze the scope of the problem's results, complications of the disease develop rapidly, as a rule, within a few years, when treatment is not carried out. Rheumatoid arthritis occurs two to three times more often in women than in men. Observations and analyses revealed that the prevalence of rheumatoid arthritis is high in industrially developed countries, which is associated with their demographic characteristics (high average age), the influence of exogenous toxins and lifestyle-related risk factors, and insufficient diagnosis of the disease in low- and middle-income countries.

Considering the symptoms of rheumatoid arthritis and the symptoms observed, the disease causes inflammation and pain in one or more joints. It can affect most joints, but most commonly affects small joints of the hands, wrists, and feet. This disease is characterized by a chronic course and, if left untreated, gradually worsens the patient's condition [7][8]. This can cause

serious damage to the joints and surrounding tissues. In addition, damage to the organs of the cardiovascular, respiratory, and nervous systems leads to serious consequences.

In addition to this, swelling or redness of one or more joints, usually with an asymmetrical distribution (for example, observed in both arms or both legs), may occur. These symptoms may worsen over time and involve other joints, including the knee, elbow, and shoulder joints. This pain can limit the ability to perform daily tasks, as well as make it difficult for the patient to write, hold objects with their hands, walk, and climb stairs. Often accompanied by fatigue and general anxiety (in particular, fever, sleep deterioration, loss of appetite), as well as symptoms of depression. Pain and decreased mobility can lead to deterioration of sexual function and a decrease in the quality of intimate relationships [9][10][11]. It is observed that difficult physical activity leads to a loss of physical fitness and the ability to self-care, disability, a decrease in the quality of life, and a disruption of mental health.

When analyzing the causes and risk factors of the disease, specific causes for its development have not yet been identified. However, a number of modifiable risk factors associated with lifestyle (such as smoking and obesity) have been identified, as well as several non-modifiable risk factors (genetic predisposition, female sex, and age) [12][13].

For the prevention and control of rheumatoid arthritis, several key preventive strategies have been developed, primarily aimed at controlling disease progression. Important measures include reducing exposure to silicate and other types of dust, as well as reducing occupational hazards and modifying certain habits (e.g., prevention or cessation of smoking, healthy eating, physical activity, maintaining a normal body weight, and regular personal hygiene). Additionally, some evidence suggests that breastfeeding has a protective effect on the mother's body (significantly increasing the number of immune cells) [14]. Rheumatoid arthritis cannot be completely cured. It often requires comprehensive support from various specialists to ensure patient rehabilitation in accordance with their needs and preferences. Early diagnosis and treatment help reduce symptoms, slow down the pathological process, and prevent disability. In some cases, achieving disease remission is considered a success of modern medicine. Treatment measures are designed to improve and maintain joint mobility and muscle strength, reduce and eliminate pain, as well as increase tolerance to physical activity and the ability to perform daily activities. Assistive technologies (such as prostheses and self-help devices) help protect joints and enable independent performance of basic daily tasks. To reduce inflammation, pain, and swelling, the following medications can be used: nonsteroidal anti-inflammatory drugs, glucocorticoids, disease-modifying antirheumatic drugs, and biological agents [15]. In severe cases, orthopedic surgery relieves pain and restores mobility. To achieve optimal results after surgery, patient rehabilitation is necessary [16]. Maintaining a healthy lifestyle is crucial. It is also essential to inform and advise patients on how to alleviate symptoms and perform work duties.

An important aspect of self-help is recognizing that rheumatoid arthritis is a chronic disease that negatively affects various aspects of a person's life, often requiring lifestyle changes for both the patient and their family members. Education and support help patients with rheumatoid arthritis find ways to adapt to the disease. Maintaining a healthy lifestyle, engaging in regular physical activity, and adhering to a healthy diet are considered important aspects [17].

Conclusions. A number of measures are being implemented to enhance the ability to assist people suffering from this disease. Particularly in supporting the WHO "Rehabilitation 2030" initiative, it is crucial to utilize information from the "Rehabilitation Package of Interventions" (in English) about the main types of rehabilitation assistance (including assistive devices), as well as the personnel and material resources necessary for treating the disease. In the United Nations Decade of Healthy Ageing program, WHO recommends reorienting health and care systems to promote healthy ageing and meet the diverse needs of older people. The concept of comprehensive care, not only for the elderly but also for young people experiencing illness (ICOPE) (in English), provides an individual assessment of the condition of older people and youth to develop personalized programs for medical and social care, including long-term care

services. It should include specific recommendations for preventing the decline in motor and psychological abilities resulting from pain syndrome.

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