

# Overview of Arthritis

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## ABSTRACT

Arthritis is a widespread disease that affects millions of people worldwide. Symptoms include joint discomfort, stiffness, edema, and a restricted range of motion. Age, gender, heredity, obesity, joint injury, and infection are all risk factors for arthritis. There are several therapy options available to assist reduce symptoms and enhance the quality of life. Those people suffering from arthritis must seek proper treatment and take an active role in managing their illness.

### Introduction

#### Definition of arthritis

The term "arthritis" refers generally to the swelling and stiffness of one or more joints. It can cause discomfort, swelling and difficulty moving afflicted joints in persons of all ages and genders. Age, genetics, trauma, infections and autoimmune illnesses are only a few of the causes of arthritis [1].

#### Prevalence and impact of arthritis

Millions of people worldwide suffer from arthritis which is a highly prevalent condition. The World Health Organization (WHO) estimates that there are more than 350 million arthritis sufferers globally. More than 54 million adults in the United States alone are thought to have arthritis according to estimates. As people age, the prevalence of arthritis increases in women more than men [2].

Arthritis significant impact on a person's feature of life. In some cases, arthritis can also lead to disability and reduced independence. Arthritis can also impact a person mental health causing anxiety, depression and social isolation. The economic impact of arthritis is also significant, with costs related to medical treatment, lost productivity and disability [3].

#### Purpose of the article

The purpose of an article on arthritis may vary depending on the target audience and context, but provide an overview of arthritis, including its causes, symptoms, and treatments. They raised awareness about the prevalence and impact of arthritis, and the importance of seeking proper medical care. They educate people on the different types of arthritis and their unique characteristics that share information on risk factors for arthritis and prevention strategies [4]. Figure 1: shows the type of arthritis.

### II. Types of Arthritis

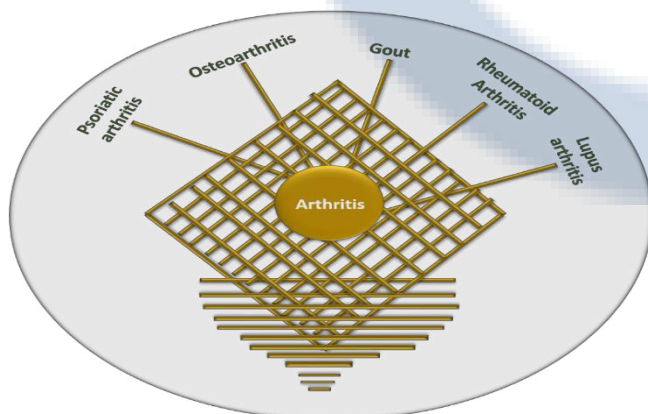


Figure 1: Types of Arthritis

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### Osteoarthritis

Osteoarthritis is a degenerative joint disease that occurs when the cartilage that cushions the ends of the bones wears away over time, causing pain, stiffness, and reduced mobility in the affected joint [4].

**Causes:** The caused by a combination of factors such as age, genetics, joint injuries and overuse of joints. Other factors that may give to the development of OA include obesity, poor posture and certain metabolic disorders [5].

**Symptoms:** The symptoms of OA typically develop gradually over time include swelling or tenderness in the affected joint. The development of bone spurs or other bony growths around the affected joint [6].

**Treatment:** Medications such as pain relievers agents are used anti-inflammatory and corticosteroids. Lifestyle changes such as weight loss, exercise, and ergonomic modifications to reduce stress on affected joints [7].

**Prevention:** Maintaining a healthy weight and avoiding obesity. Practicing good posture [6].

### Rheumatoid Arthritis

RA is a chronic autoimmune disease that affects the joints causing inflammation and damage the joint tissue. It is a progressive disease that lead to joint deformity [8].

**Causes:** Immune system mistakenly attacks at synovial tissue of the joints that leading to inflammation and damage joint cartilage bone [9].

**Symptoms:** The main symptom is pain, swelling and stiffness in joints. Loss of joint function and mobility. Low-grade fever and weight loss [10].

**Treatment options:** Medications such as nonsteroidal anti-inflammatory drugs. Physical therapy improve joint function and mobility. Joint injections with corticosteroids or other medications to reduce inflammation and pain. Lifestyle changes such as stress reduction, smoking cessation, and a healthy diet help manage symptoms [11].

### Other types of arthritis

**Psoriatic arthritis:** is a chronic inflammatory disorder that occurs in people skin on red scaly patches. It affect joint of body and cause inflammation of tendons and ligaments. Symptoms of include joint pain, swelling and nail abnormalities. Treatment options may include (NSAIDs), DMARDs and biologic agents [12].

**Gout:** It caused by a buildup of uric acid crystals in the joints leading to inflammation and pain. It affects the ankle, knee, or wrist. Symptoms include sudden, intense pain, redness and swelling in joint. Treatment include medications such as NSAIDs and lower uric acid levels that prevent future flare-ups [13].

**Lupus arthritis:** It occurs in people which have autoimmune disease that can affect multiple organs and tissues of body. It affect any joint in the body. Treatment options may include medications such as NSAIDs, corticosteroids, and DMARDs, as well as lifestyle changes and regular monitoring by a healthcare provider [14].

### III. Risk Factors for Arthritis

**Age:** The risk developed in old age people cartilage in their joints naturally begins to break down, making them more susceptible to arthritis [15].

**Gender:** Some types of arthritis, such as RA are more common in women than men. However, men are more likely to develop gout [16].

**Genetics:** Certain genes have been identified as risk factors for various types of arthritis including RA and PA. If a person has a family history of arthritis more likely to develop the condition [17].

**Obesity:** Being overweight or obese can put extra stress on the joints, particularly the knees and hips, increasing the risk of developing osteoarthritis [18].

**Joint injuries:** The joints injury from sports, accidents, or repetitive motions increase the risk of developing arthritis [19].

**Infections:** Certain infections, such as Lyme disease, can increase the risk of developing reactive arthritis [20].

#### IV. Symptoms of Arthritis

**Joint pain:** The most common sign of arthritis is pain in joints [21].

**Stiffness:** Many people with arthritis experience stiffness in joints [14].

**Swelling:** The swelling in the joints appear larger or feel tender to the touch [15].

**Redness:** Arthritis can cause redness around the affected joint which indicate inflammation [22].

**Limited range of motion:** Arthritis affected joint through its full range of motion [23].

**Fatigue:** Many people with arthritis experience fatigue, which may be related to the body's immune response to the condition [16].

#### V. Diagnosis of Arthritis

**Physical exam:** A healthcare provider will typically begin the diagnosis process for arthritis with a physical exam, which may involve assessing the affected joint or joints for swelling, tenderness, and range of motion [24].

**Medical history:** This may involve asking about family history, previous injuries or illnesses, and any medications or supplements the person is currently taking [25].

**Imaging tests:** The X-rays, MRIs or CT scans used to examine the affected joint. These tests can help healthcare providers identify any structural changes or damage, such as cartilage loss or bone spurs that may be contributing to the symptoms [17].

**Blood tests:** Blood tests may also be used to help diagnose certain types of arthritis, such as rheumatoid arthritis. These tests can help identify markers of inflammation or autoimmune activity in the body [26].

#### VI. Treatment of Arthritis

**Medications:** These include nonsteroidal anti-inflammatory drugs or acetaminophen, as well as disease-modifying anti-rheumatic drugs or biologic agents for more severe forms of arthritis. Corticosteroids used to help reduce inflammation in the affected joint [27].

**Physical therapy:** The exercises to strengthen muscles around affected joint that help maintain flexibility and mobility [28].

**Lifestyle changes:** These may include maintaining a healthy weight to reduce stress on the joints, engaging in regular exercise to improve joint function and overall health, and modifying daily activities to reduce strain on the affected joint or joints [29].

#### VII. Prevention of Arthritis

**Exercise:** Regular exercise can help maintain joint health and flexibility, as well as improve overall fitness and health [30].

**Diet:** A healthy diet that help reduce inflammation and maintain a healthy weight. Some studies have suggested that certain foods, such as those high in omega-3 fatty acids or antioxidants, may be particularly beneficial for people with arthritis [31].

**Avoiding joint injuries:** Avoiding joint injuries, such as those that can occur during sports or other activities, can help reduce the risk of developing arthritis later in life [32].

**Managing health conditions:** The diabetes or high blood pressure can also help reduce the risk of developing arthritis [33].

#### Current research trades for the development of therapeutics agents against RA

RA causes inflammation, pain in the joints. The challenges in developing effective therapies for this disease is delivering drugs directly to the affected joints, while minimizing the systemic side effects [34].

Recent research has focused on using nanoparticles coated with cell membranes as a targeted drug delivery system for rheumatoid arthritis. These nanoparticles can be designed to bind specifically to the inflamed synovial tissue in the joints, where they can release therapeutic agents directly [35].

Many type of cell membranes have been used to coat nanoparticles including red blood cell, platelet and macrophage membranes. These provide a natural camouflage that helps the nanoparticles avoid detection by the immune system and reach their target site more effectively [35].

#### VIII. Conclusion

Arthritis affects millions of people worldwide. It can cause pain, stiffness and swelling as well as limited range of motion and fatigue.

There are several types of arthritis, including osteoarthritis and rheumatoid arthritis, each with their own causes and symptoms. Risk factors for arthritis include age, gender, genetics, obesity, joint injuries, and infections. Treatment options for arthritis may include medications, physical therapy, lifestyle changes, surgery and alternative therapies.

#### References

- [1] S. Senthelal, J. Li, S. Ardehshirzadeh, and M. Thomas, "Arthritis," 2018, Accessed: Mar. 21, 2023. [Online]. Available: <https://europepmc.org/article/nbk/nbk518992>
- [2] J. P.-R. open and undefined 2020, "Management of fatigue in rheumatoid arthritis," *rmdopen.bmj.com*, doi: 10.1136/rmdopen-2019-001084.
- [3] S. Ravalli, F. Roggio, G. Lauretta, M. D. R. - Heliyon, and undefined 2022, "Exploiting real-world data to monitor physical activity in patients with osteoarthritis: the opportunity of digital epidemiology," *Elsevier*, Accessed: Mar. 21, 2023. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S2405844022002791>
- [4] A. Ghouri, P. C.-C. tissue international, and undefined 2021, "Prospects for therapies in osteoarthritis," *Springer*, Accessed: Mar. 21, 2023. [Online]. Available: <https://link.springer.com/article/10.1007/s00223-020-00672-9>
- [5] M. Shadrina, E. A. Bondarenko, and P. A. Slominsky, "Genetics factors in major depression disease," *Front. Psychiatry*, vol. 9, no. JUL, Jul. 2018, doi: 10.3389/fpsyt.2018.00334/FULL.
- [6] M. Klein, H. Mann, J. V.-C. R. Reports, and undefined 2019, "Arthritis in idiopathic inflammatory myopathies," *Springer*, Accessed: Mar. 21, 2023. [Online]. Available: <https://link.springer.com/article/10.1007/s11926-019-0878-x>
- [7] A. Panagioutopoulos, G. F.-C. Therapeutics, and undefined 2023, "Comorbidities in Psoriatic Arthritis: A Narrative Review," *Elsevier*, Accessed: Mar. 21, 2023. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0149291823000267>
- [8] C. Yin *et al.*, "Eucalyptol alleviates inflammation and pain responses in a mouse model of gout arthritis," *Wiley Online Libr.*, vol. 177, no. 9, pp. 2042–2057, May 2019, doi: 10.1111/bph.14967.
- [9] M. Bonelli, C. S.-C. opinion in rheumatology, and undefined 2018, "How does abatacept really work in rheumatoid arthritis?," *ingentaconnect.com*, Accessed: Mar. 21, 2023. [Online]. Available: <https://www.ingentaconnect.com/content/wk/bor/2018/00000030/00000003/art000013>
- [10] K. Deane, V. H.-C. therapeutics, and undefined 2019, "The natural history of rheumatoid arthritis," *Elsevier*, Accessed: Mar. 21, 2023. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0149291819301924>
- [11] E. Santos, C. Duarte, J. da S.- Rheumatology, and undefined 2019, "The impact of fatigue in rheumatoid arthritis and the challenges of its assessment," *academic.oup.com*, Accessed: Mar. 21, 2023. [Online]. Available: [https://academic.oup.com/rheumatology/article-abstract/58/Supplement\\_5/v3/5552803](https://academic.oup.com/rheumatology/article-abstract/58/Supplement_5/v3/5552803)
- [12] Q. Guo, Y. Wang, D. Xu, J. Nossent, N. J. Pavlos, and J. Xu, "Rheumatoid arthritis: pathological mechanisms and modern pharmacologic therapies," *Bone Res.* 2018 61, vol. 6, no. 1, pp. 1–14, Apr. 2018, doi: 10.1038/s41413-018-0016-9.
- [13] J. Park, A. Mendy, and E. R. Vieira, "Various Types of Arthritis in the United States: Prevalence and Age-Related Trends From 1999 to 2014," *Am. J. Public Health*, vol. 108, no. 2, pp. 256–258, Feb. 2018, doi: 10.2105/AJPH.2017.304179.
- [14] D. Sekar, "Implications of microRNA 21 and its involvement in the treatment of different type of arthritis," *Mol. Cell. Biochem.*, vol. 476, no. 2, pp. 941–947, Feb. 2021, doi: 10.1007/s11010-020-03960-Y.
- [15] N. Choudhary, L. K. Bhatt, and K. S. Prabhavalkar, "Experimental animal models for rheumatoid arthritis," *Immunopharmacol. Immunotoxicol.*, vol. 40, no. 3, pp. 193–200, May 2018, doi: 10.1080/08923973.2018.1434793.
- [16] S. E. Gabriel, "THE EPIDEMIOLOGY OF RHEUMATOID ARTHRITIS," *Rheum. Dis. Clin. North Am.*, vol. 27, no. 2, pp. 269–281, May 2001, doi: 10.1016/S0889-857X(05)70201-5.
- [17] A. Basu, J. Schell, R. S.-F. & function, and undefined 2018, "Dietary fruits and arthritis," *pubs.rsc.org*, Accessed: Mar. 22, 2023. [Online]. Available: <https://pubs.rsc.org/en/content/articlehtml/2018/fo/c7fo1435j>
- [18] L. Spel, F. M.-I. reviews, and undefined 2020, "Inflammasomes contributing to inflammation in arthritis," *Wiley Online Libr.*, vol. 294, no. 1, pp. 48–62, Mar. 2020, doi: 10.1111/imr.12839.
- [19] P. Nigrovic, ... S. R.-A. &, and undefined 2018, "Genetics and the classification of arthritis in adults and children," *Wiley Online Libr.*, vol. 70, no. 1, pp. 7–17, Jan. 2017, doi: 10.1002/art.40350.
- [20] J. Park, A. Mendy, E. V.-A. journal of public, and undefined 2018, "Various types of arthritis in the United States: prevalence and age-related trends from 1999 to 2014," *ajph.aphapublications.org*, Accessed: Mar. 21, 2023. [Online]. Available: <https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2017.304179>
- [21] Y. Okada, S. Eyre, A. Suzuki, ... Y. K.-A. of the rheumatic, and undefined 2019, "Genetics of rheumatoid arthritis: 2018 status," *ard.bmj.com*, vol. 78, pp. 446–453, 2019, doi: 10.1136/annrheumdis-2018-213678.
- [22] J. Palman, S. Shoop-Worrall, ... K. H.-B. P. & R., and undefined 2018, "Update on the epidemiology, risk factors and disease outcomes of Juvenile idiopathic arthritis," *Elsevier*, Accessed: Mar. 22, 2023. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S1521694218300676>
- [23] E. M. Badley, M. Shields, S. O'donnell, W. E. Hovdestad, and L. Tonmyr, "Childhood maltreatment as a risk factor for arthritis: Findings from a population-based survey of Canadian adults," *Wiley Online Libr.*, vol. 71, no. 10, pp. 1366–1371, Oct. 2019, doi: 10.1002/acr.23776.
- [24] D. van der Woude, A. van der H.-B. P. & Research, and undefined 2018, "Update on the epidemiology, risk factors, and disease outcomes of rheumatoid arthritis," *Elsevier*, Accessed: Mar. 22, 2023. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S1521694218300688>
- [25] G. S. Schuler *et al.*, "Systemic juvenile idiopathic arthritis-associated lung disease: characterization and risk factors," *Wiley Online Libr.*, vol. 71, no. 11, pp. 1943–1954, Nov. 2019, doi: 10.1002/art.41073.
- [26] A. T. Nurden, "Platelets, inflammation and tissue regeneration," *Thromb. Haemost.*, vol. 105, no. SUPPL. 1, pp. 13–33, 2011, doi: 10.1160/THS10-11-0720.
- [27] J. Lee, R. S.-P. Clinics, and undefined 2018, "Systemic juvenile idiopathic arthritis," *pediatric.theclinics.com*, Accessed: Mar. 22, 2023. [Online]. Available: [https://www.pediatric.theclinics.com/article/S0031-3955\(18\)30044-0/abstract](https://www.pediatric.theclinics.com/article/S0031-3955(18)30044-0/abstract)
- [28] S. Jafarzadeh, D. F.-A. & Rheumatology, and undefined 2018, "Updated estimates suggest a much higher prevalence of arthritis in United States adults than previous ones," *Wiley Online Libr.*, vol. 70, no. 2, pp. 185–192, Feb. 2017, doi: 10.1002/art.40355.
- [29] A. Ogdie, K. Michaud, M. Nowak, R. Bruce, S. C.-R. open, and undefined 2020, "Patient's experience of psoriatic arthritis: a conceptual model based on qualitative interviews," *rmdopen.bmj.com*, Accessed: Mar. 22, 2023. [Online]. Available: <https://rmdopen.bmj.com/content/6/3/e001321.abstract>
- [30] L. Hams, L. Cordingley, J. Galloway, ... S. N.-, and undefined 2018, "Depressive symptoms, pain and disability for adolescent patients with juvenile idiopathic arthritis: results from the Childhood Arthritis Prospective Study," *academic.oup.com*, Accessed: Mar. 22, 2023. [Online]. Available: <https://academic.oup.com/rheumatology/article-abstract/57/8/1381/4985749>

- [31] J. C.-R. D. Clinics and undefined 2022, "Rheumatoid arthritis: early diagnosis and treatment," *rheumatic.theclinics.com*, Accessed: Mar. 22, 2023. [Online]. Available: [https://www.rheumatic.theclinics.com/article/S0889-857X\(22\)00010-2/abstract](https://www.rheumatic.theclinics.com/article/S0889-857X(22)00010-2/abstract)
- [32] H. El-Mashharawi, I. Alshawwa, and M. Elkahlout, "An expert system for arthritis diseases diagnosis using SL5 object," 2019. Accessed: Mar. 22, 2023. [Online]. Available: <http://dstore.alazhar.edu.ps/xmlui/handle/123456789/145>
- [33] S. Pirmardvand Chegini, J. Varshosaz, and S. Taymouri, "Recent approaches for targeted drug delivery in rheumatoid arthritis diagnosis and treatment," *Artif. Cells, Nanomedicine Biotechnol.*, vol. 46, no. sup2, pp. 502–514, Nov. 2018, doi: 10.1080/21691401.2018.1460373.
- [34] E. Littlejohn, S. M.-P. C. C. in, and undefined 2018, "Early diagnosis and treatment of rheumatoid arthritis," *primarycare.theclinics.com*, Accessed: Mar. 22, 2023. [Online]. Available: [https://www.primarycare.theclinics.com/article/S0095-4543\(18\)30015-0/abstract](https://www.primarycare.theclinics.com/article/S0095-4543(18)30015-0/abstract)
- [35] S. Altaf, F. Muhammad, ... B. A.-H. & E., and undefined 2021, "Cell membrane enveloped polymeric nanosponge for detoxification of chlorpyrifos poison: In vitro and in vivo studies," *journals.sagepub.com*, vol. 40, no. 8, pp. 1286–1295, Aug. 2021, doi: 10.1177/0960327121993207.

