THE STATE OF MUSCULOSKELETAL

HEALTH 2023

Arthritis and other musculoskeletal conditions in numbers

A close up of a logo

Description generated with very high confidence

Contents

**Conditions where arthritis is the main symptom**……………………………… 29

Osteoarthritis………………………………………………………………………………………. 30

Gout ………………..…………………………………………………………………………………. 31

Rheumatoid Arthritis…………………………………………………………………………… 32

Psoriatic Arthritis ………………………………………………………………………………… 33

Axial Spondyloarthritis ………………………………………………………………………… 34

Juvenile Idiopathic Arthritis (JIA) ……………………………………………………..…. 35

**Conditions where arthritis is one symptom among many** ………………… 36

Lupus …………………………………………………………………………………………………. 37

**Other musculoskeletal conditions** ………………….………………………………….38

Back pain …………………………………………………………………………………………… 39

Fibromyalgia ……………………………………………………………………………………… 40

Chronic pain ……………………………………………………………………………………… 41

Osteoporosis and fragility fractures …………………………………………………….42

Glossary………………………………………………………………………………………………. 43

References………………………………………………………………………………………….. 44

Introduction & Methods……………………………………………………………. 3

What is Arthritis?........................................................................... 5

**Population health**…………………………………………………………………….. 6

How many people have arthritis?…………………………………………….. 7

What are musculoskeletal conditions?.......................................... 8

How many people have musculoskeletal conditions?....................9

Health inequalities…………………………………………………………………….. 10

**Person**……………………………………………..………………………………………… 14

Impact of arthritis and musculoskeletal conditions……………….…….15

Arthritis, musculoskeletal conditions and multiple long-term

conditions……………………………………………………………………………………18

Arthritis, musculoskeletal conditions, and wider health ……………..20

**Provision** …………………………………………………..……………………………….23

Access to care …………….…………………………………………………………….. 24

**Societal impact**………………………………………………………………………….. 26

Impact on healthcare, social services, and the economy ……………. 27

Introduction & Methods

# 

# What is The State of Musculoskeletal Health?

The State of Musculoskeletal Health is a collection of the most up-to-date, UK-wide statistics on arthritis and other musculoskeletal (MSK) conditions. This includes how many people have these conditions, the number at risk of developing these conditions, the impact of these on a person, on the health system and society, and inequalities that can be found within all the topics above.

# Who is it for?

It is a resource for healthcare professionals, policy makers, public health leads, researchers, people with these conditions, and anyone interested in MSK health. We believe that with the best information you can build awareness, make more informed decisions, feel more confident and ultimately help more people with MSK conditions, such as arthritis.

# About Versus Arthritis

Over 10 million people in the UK have arthritis (1). That’s one in six people living with the pain, fatigue, lack of mobility and dexterity it can cause. The impact is huge as these conditions can intrude on everyday life – affecting the ability to work, care for a family, to move free from pain and live independently. Yet arthritis is often dismissed as an inevitable part of ageing or shrugged off as ‘just a bit of arthritis’. We don’t think this is OK. Versus Arthritis is here to change that.

Find out more about [Versus Arthritis here](https://www.versusarthritis.org/).

# Methods

Data, information, and insights about MSK conditions such as arthritis are available from numerous sources. At Versus Arthritis, we judge all evidence based on individual merit and ‘good evidence’ is evidence that accurately represents the needs, experiences, and perspectives of people with arthritis and musculoskeletal conditions. Different types of evidence can help answer different types of questions. The key is to select evidence based on the question and what is most relevant and useful for answering it. Figure 1 depicts a hierarchy of evidence. It is important to note that while such frameworks have their merits in specific contexts, they are not without their limitations as ranking evidence in this way may indirectly favour certain sources of evidence over others.

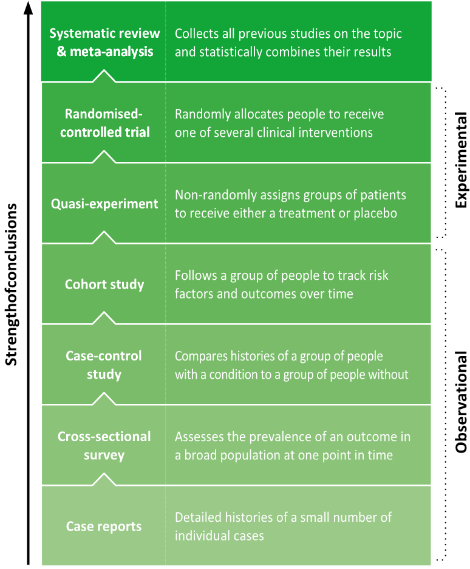


Figure 1. Hierarchy of Evidence2 (134)

The evidence in this report mainly comes from quantitative studies and real-world evidence. However, it also includes evidence that has been generated from other methodological approaches, some of which may not rank highly in such hierarchies. This kind of evidence, drawing on lived experience of MSK conditions such as arthritis, adds increased depth and context to some of the statistics we present in this report.

What is Arthritis?

Over 10 MILLION people in the UK have arthritis (1)

**Arthritis** refers to painful, stiff, or restricted joints. Arthritis symptoms are common in conditions that cause joint damage or inflammation. These include osteoarthritis, autoimmune inflammatory arthritis conditions including axial spondyloarthritis, crystal arthritis (such as gout), or as symptom of inflammatory connective tissue diseases (such as lupus).

Arthritis is also used as an umbrella term for a range of conditions where arthritis is their main symptom.

Most types of arthritis are long-term conditions. People with arthritis often have multiple long-term conditions. The most common type is osteoarthritis, where the body is unable to maintain and repair the joints leading to thinned and damaged cartilage, usually due to rising age or injury to a joint. Osteoarthritis mainly affects older adults and is uncommon below age 45 years.

Less common types of arthritis are autoimmune conditions, such as rheumatoid arthritis, psoriatic arthritis and axial spondyloarthritis. Here the immune system attacks and inflames the joints and surrounding tissues causing swelling, pain, stiffness, and joint damage. Peak onset is usually in middle age, but these can strike at any age including juvenile arthritis (JIA) in childhood. Arthritis is also a common symptom in other, mainly rare autoimmune conditions, including lupus, sarcoid and Behçet's.

Conditions such as gout are types of crystal arthritis, where people have severe but self-limiting arthritis episodes caused by microscopic crystals being deposited in and around the joints.

Population Health

How many people have arthritis?

There is no definitive figure of how many people have arthritis in the UK, however estimates are available of the prevalence of many types of arthritis. Prevalence changes over time with demographic changes including population ageing, rising prevalence of obesity, shifts in health inequalities and deprivation, and changes in ethnic mix.

Because people often have more than one type of arthritis at the same time (such as osteoarthritis alongside a form of inflammatory arthritis), the size of the population with arthritis can’t be estimated by simply adding up the numbers of the most common different types. The best current estimate is that between 10 and 11 million people in the UK have arthritis (1) (87).

|  |
| --- |
| **10 million** people have Osteoarthritis (OA) (1). |
| **5.4 million** people are estimated to have knee OA (3). |
| **3.2 million** people are estimated to have hip OA (3). |

|  |  |
| --- | --- |
| Gout | **1,600,000** people have recorded diagnoses of Gout (77). |
| Rheumatoid Arthritis | **450,000** adults have a recorded diagnosis of RA (87). |
| Psoriatic Arthritis | **190,000** adults are estimated to have psoriatic arthritis (4). |
| Axial Spondyloarthritis | **60,000** adults have a recorded diagnosis of axial spondyloarthritis (87). |
| Juvenile Idiopathic Arthritis | **12,000** children have JIA (100). |

(3)

What are Musculoskeletal conditions?

Musculoskeletal (MSK) conditions are characterised by problems with the muscles, bones, joints, and adjacent connective tissues leading to temporary or lifelong limitations in functioning and the ability to participate in everyday activities. They are typically characterised by pain and limitations in mobility and dexterity, including conditions such as arthritis conditions, back and neck pain, and fibromyalgia. Some musculoskeletal conditions like osteoporosis may be painless.

How many people have MSK Conditions?

Icon

Description automatically generated

Around a **third** of the UK population, **over 20 million** people (20,295,706), live with an MSK condition (5).

|  |  |  |  |
| --- | --- | --- | --- |
| The estimated number of people with a MSK condition in… | | | |
| Icon  Description automatically generated | A close-up of a map  Description automatically generated with low confidence | Icon  Description automatically generated with medium confidence | A picture containing silhouette  Description automatically generated |
| England is **17.1M** people  (32%). (5) | Scotland is  **1.7M** people  (33%). (5) | Wales is **974,000** people (32%). (5) | Northern Ireland is **525,000** people (29%). (5) |

**Children and long-term MSK conditions**

Two in 100 children (2%) aged under 16 years in England and Scotland report having a long-term MSK condition[[1]](#footnote-2). (7) (10)

Estimated number of children (aged under 16 years) reporting a long-term[[2]](#footnote-3) MSK condition

* In England- **216,344** children (2%)
* In Scotland- **18,427** children (2%)

Health Inequalities

**Health inequalities are “unfair and avoidable differences in health across the population, and between different groups within society”** (11)**.**

**Deprivation**

**Arthritis, MSK conditions and chronic pain are more common in areas of greater poverty.**

**Arthritis**

Chart, bar chart, waterfall chart

Description automatically generated (6)

The prevalence of hip osteoarthritis is higher in people living in the most deprived tenth of society than those living in the least deprived tenth (6).

The prevalence of knee osteoarthritis is higher in people living in the most deprived tenth of society than those living in the least deprived tenth (6).

**MSK conditions**

**Chart, bar chart

Description automatically generated[[3]](#footnote-4)**

People who live in the most deprived fifth of society are more likely to report arthritis or a long-term[[4]](#footnote-5) MSK condition compared to those living in the least deprived fifth.

**Chronic pain**

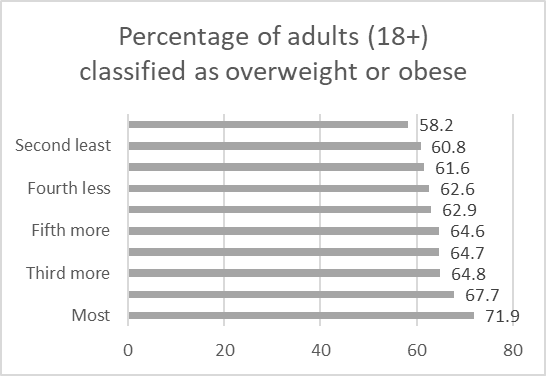
Chronic pain is linked to deprivation. Four in ten people (41%) who live in the most deprived fifth of society in England report chronic pain compared to 3 in 10 (30%) in the least deprived quintile (12).

**Overweight and physical inactivity**

**Arthritis**

The risk of developing osteoarthritis increases by 1% for each 1kg/m2 increase in BMI (Body Mass Index- an estimate of body fat based on weight and height) (13). The risk of developing osteoarthritis increases by 3% for every 5cm increase in waist circumference (13).

People living in more deprived areas are more likely to be overweight or obese than those in less deprived areas (14).



Deprived areas have increased prevalence of osteoarthritis. The increased prevalence of obesity in these areas accounts for 50% of the extra risk for knee osteoarthritis (15).

**Ethnicity**

**MSK conditions and chronic pain disproportionately affect some minority ethnic groups**

**MSK conditions**

The prevalence of MSK conditions differs between people from some different ethnic groups, and there are substantial differences in prevalence between men and women.

Those most likely to report a long-term MSK condition in England are people from a Pakistani ethnic group (20.8%), Black Caribbean ethnic group (18.7%), White British ethnic group (16.8%) and Black African ethnic group (15.4%) (16).

(16)

Women from Pakistani ethnic backgrounds have the highest prevalence of musculoskeletal conditions (16).

**Chronic pain**

The prevalence of chronic pain differs between some ethnic groups (12).

A picture containing diagram

Description automatically generated

One England-based study found, 44% of Black people have chronic pain, compared with 34% of white people, 35% of Asian people, 34% of people of mixed ethnicity and 26% of people from other ethnicities (12). Another study in England found that people from Pakistani and Bangladeshi ethnic backgrounds have the highest rates of chronic pain of all ethnic groups (17).

To find out more on health inequalities and chronic pain you can read our report, [Chronic Pain in England: Unseen, Unequal, Unfair](https://www.versusarthritis.org/about-arthritis/data-and-statistics/chronic-pain-in-england/)

**Age**

**Arthritis**

Osteoarthritis prevalence increases with age.

(18)

Most people are aged between 46 and 70 years old when diagnosed with rheumatoid arthritis (19).

**MSK conditions**

**MSK conditions affect people of all ages but become more common with increasing age.**

**2.8M** people aged under 35 years (11%) live with an MSK condition. (5)

**10.2M** people aged 35-64 years (40%) live with an MSK condition. (5)

**7.4M** people aged 65 and over (61%) live with an MSK condition. (5)

**Differences between Men and Women**

Arthritis and MSK conditions have different prevalence between men and women.

**Arthritis**

Women are **2-3 times** more likely to develop rheumatoid arthritis than men (20).

Axial spondyloarthritis or radiological axial spondyloarthritis is **more frequently diagnosed in men** compared with women (3:1), whereas non-radiographic axial spondyloarthritis has an equal distribution between men and women (21).

Around 6M women have osteoarthritis in the UK compared to around 4M men (18).

**MSK conditions**

|  |  |
| --- | --- |
| 11.6M women of all ages  (35% of women have a MSK condition). (5) | 8.7M men of all ages  (28% of men have a MSK condition). (5) |

**Chronic pain**

**38%** of women have chronic pain in England compared to **30%** of men (12).

**14%** of women have high-impact chronic pain compared to **9%** of men (12).

Person

# impact of arthritis and MSK conditions

# **Quality of life**

Quality of life can be measured using a self-reported Quality of Life score, a score of 1=perfect health. The presence of any long-term condition is associated with a drop in quality of life, (self-reported Quality of Life score of 0.79), but if arthritis or back pain is present as one of the long-term conditions the drop is greater (self-reported Quality of Life score of 0.71) (22).

Having arthritis or another MSK condition is one of the biggest contributors to years lived with disability (YLDs).

YLDs is a measure which combines the prevalence of a disease with a rating of how disabling that disease is (23).

Low back pain is the leading cause of YLDs (5).

**21%** of YLDs in the UK are accounted for by MSK conditions. (5)

|  |  |
| --- | --- |
| Low back pain accounts for | 960,132 YLDs (5) |
| Neck pain accounts for | 370,075 YLDs (5) |
| Osteoarthritis accounts for | 314,504 YLDs (5) |
| Rheumatoid arthritis accounts for | 50,322 YLDs (5) |
| Gout accounts for | 21,760 YLDs (5) |

The top 10 UK causes of YLDs are

1. **Low back pain**
2. Diabetes
3. Depressive disorders
4. Headache disorders
5. Falls
6. **Neck pain**
7. Age-related hearing loss
8. **Osteoarthritis**
9. **Other MSK conditions**
10. Gynaecological

**Impact on daily activities**

Versus Arthritis surveyed people with MSK conditions to understand the factors that impact their lives.

(24)

Half of respondents reported they cannot do anything themselves to lessen the impact of their condition on their lives (24).

**Work**

Arthritis and MSK conditions can also impact a person's ability to work.

People with arthritis are **20%** less likely to be in work than someone without arthritis (25).

Arthritis was associated with an increased chance of job loss during the Covid-19 pandemic. When researchers analysed data on people who had a job in January-February 2020, it was found that by September 2021 people with arthritis were **3.4 percentage points** less likely to still be in employment compared to someone without a health condition (26).

**1 in 3** current UK employees have a long-term health condition. (27)

**1 in 10** current UK employees have a MSK condition. (27)

**1 in 3** employees with a long-term condition have not discussed their MSK condition with their employer. (28)

|  |  |  |
| --- | --- | --- |
|  | Percentage in employment (29) | Percentage economically inactive (29) |
| MSK condition | 62.4 | 34.9 |
| No long-term condition | 82.1 | 15.2 |

**23.3M** working days were lost in 2021 due to MSK conditions (30).

MSK conditions are the 3rd most common reason for working days lost, only behind ‘Other’ (including COVID-19) and ‘Minor Illnesses’. (30).

**12%** of sickness absence within the NHS between September 2021 and August 2022 was due to back problems and other MSK conditions (31) that’s **3,252,147** full time equivalent working days lost (31).

(30)

|  |  |
| --- | --- |
| **OVER HALF** | Of people (53%) we surveyed with MSK conditions say their symptoms have a negative impact on work (24). |
| **1 in 8** | people (4,510) receiving support from the UK’s access to work scheme in 2021-22 had an MSK condition (32). |
| **1 in 8** | Employment and Support Allowance (ESA) claimants (13%) in Great Britain in May 2022 have a disease of the MSK system or connective tissue as their primary condition (33). |
| **MSK conditions remain the second most common diagnosis on fit notes written by GPs in England, after mental health conditions, in 2021 to 2022** (34)**.** | |
| **OVER HALF** | Of fit notes issued (54%) for MSK conditions sited episodes lasting 5 or more weeks (34). |
| **18%** | Of fit notes issued to patients by GPs in England were for MSK conditions from June 2021 to June 2022 (34) |

Arthritis, MSK conditions and multiple long-term conditions

**Multiple long-term conditions, refers to when a single individual is living with two or more long-term conditions (multimorbidity).**

**1 in 4** adults in the UK live with two or more long-term conditions (35) (36).

|  |  |
| --- | --- |
| **54%** | of people over 65 years old in England lived with multiple long-term conditions in 2015 (36). |
| **68%** | of people over 65 years old in England are expected to live with multiple long-term conditions by 2035 (36). |

The prevalence of people with 4 or more chronic conditions in the UK is expected to nearly double from **9.8% in 2018 to 17% in 2035** (37).

**Multiple long-term conditions are common in people with arthritis.**

People with osteoarthritis are **1.2 times** more likely to have an additional long-term condition than people without osteoarthritis (38).

People with osteoarthritis are **2.5 times** more likely to have three or more additional conditions than people without osteoarthritis (38).

People with OA are nearly **3 times** more likely to also have ischaemic heart disease or have heart failure than those without OA, probably because of shared underlying risk factors for these conditions (39).

People with arthritis have a 61% higher risk of having diabetes mellitus than those without arthritis (39).

The prevalence of depression in those with rheumatoid arthritis is **2-3 times** higher than those without the condition (40).

**Around 20%** of people with OA experience symptoms of depression and anxiety (41).

**MSK conditions are very common in people with multiple long-term conditions.**

|  |  |
| --- | --- |
| 4in10 | people with multiple long-term conditions are living with a physical and a mental health condition. (35) (36) |
| 1in5 | adults (21%) aged 46-48 in Britain with multiple long-term conditions have recurrent back issues (42). |
| 1IN8 | people (12.1%) in England report living with at least two long-term conditions, one of which is MSK related. (6) |

**The prevalence of multiple long-term conditions increases with increasing age.**

**1 in 3** adults (34%) who are 46-68 years old live with multiple long-term conditions in Britain (42).

**6 in 10** people aged 65-84 years have multiple long-term conditions (35) (36).

**8 in 10** people aged 85 years or over have multiple long-term conditions (35) (36).

**Multimorbidity is associated with social deprivation**

People living in the most deprived areas are significantly more likely to report two or more conditions (35) and can expect to develop them **10-15 years earlier** than those in the least deprived. (36)

Adults from a more disadvantaged social class are at up to **43%** greater risk of having multiple long-term conditions in midlife (46-48 years) compared to those from a less disadvantaged social class (42).

Arthritis, MSK conditions and wider Health

People with arthritis, an MSK condition, or chronic pain are more likely to have wider health problems such as poor mental health, overweight and physical inactivity. The relationships here are complex. Some are because of shared risk factors such as deprivation. Some risk factors are causative, such as increased body weight contributing directly to knee osteoarthritis, or people struggling to be physically active because of painful arthritis or musculoskeletal conditions. These relationships can also be reciprocal, including where chronic pain worsens mental health, and poor mental health worsens chronic pain.

**Overweight and obesity**

Having overweight body weight or obesity can increase people’s risk of developing arthritis conditions such as osteoarthritis and Gout.

More than **6 in 10** adults in the UK have overweight body weight or obesity (43) (44) (45).

The risk of developing osteoarthritis increases by 1% for each 1kg/m2 increase in BMI (Body Mass Index- a measure of body fat based on weight and height) (13).

The risk of developing osteoarthritis increases by 3% for every 5cm increase in waist circumference (13).

**1 in 4** people with psoriatic arthritis have obesity (46).

(10) (44) (45)

**Around 7 in 10 adults** (16+) with a long-term MSK condition have overweight body weight or obesity (10) (44) (45).

Table

Description automatically generated**Over half** of adults (54%) in England with class 3 obesity report chronic pain (12).

(47)

Obesity directly damages weight-bearing joints, such as knees and hips, because of the abnormally high loads they have to carry (48). In nearly a quarter (24.6%) of people with new onset knee pain, the symptoms can be attributed to having either overweight body weight or obesity (49).

Average BMI of hip and knee replacement patients (50):

* Hip (28.7) Overweight
* Knee (30.6) Obese

People who have obesity are:

|  |
| --- |
| 1.5-2.5 times more likely than someone with BMI in the ‘healthy’ range to have back pain (51) |
| 2 times more likely than someone with BMI in the ‘healthy’ range to develop gout and more likely to develop it at a younger age (52) |
| Have a significantly increased risk of developing rheumatoid arthritis (53) |

**Physical inactivity**

Being **physically inactive**, defined as doing less than 30 minutes of moderate intensity physical activity a week (54), can increase people’s risk of developing particular MSK conditions.

Around 1 in 4 people in the UK are physically inactive (10) (44) (45) (55).

(10) (44) (45)

In the Northern Ireland Health survey **20%** of respondents reported 0 days where they had completed at least 30 minutes of physical activity (inactive) (55).

People with a long-term MSK condition are around twice as likely to report being physically inactive than those without (10) (44) (45).

60% of people with rheumatoid arthritis are physically inactive (56).

45% of people who are physically inactive in England have chronic pain (12).

Regular physical activity reduces people’s risk of:

* Hip and knee osteoarthritis pain by 6% (57)
* Joint and back pain by 25% (58)
* Depression by 25% (59)
* Hip fractures by 24% (60)
* Falls by 76% (61)

**Those struggling with their MSK conditions are less likely to be active but have the most to gain, if offered the right support**.

|  |  |
| --- | --- |
| 6in10 | People (60%) surveyed with MSK conditions reported using physical activity as a way to manage their symptoms (24). |
| 7in10 | people (70%) surveyed with MSK conditions said they would like to be more active. (62) |
| 4in10 | people (36%) surveyed with MSK conditions who were active at least once a week said they exercised because it helped them with their pain. (24) |
| 8in10 | people (77%) surveyed withMSK conditions said they want practical support to help them be more physically active. (62) |
| over  half | of people **(56%)** surveyed with MSK conditions said that their pain, fatigue and dexterity were a significant barrier on their ability to be physically active. |

# **Mental health**

People with arthritis, MSK conditions or chronic pain are more likely to have mental health conditions.

* Around 20% of people with osteoarthritis experience symptoms of depression and anxiety (41).
* Around one-third of people with rheumatoid arthritis have mental health problems such as anxiety, depression (63).
* 1 in 5 people with Psoriatic Arthritis have depression (64).

The odds of having a self-reported mental health condition are 1.4 times as high in people with an MSK condition, compared with people with no MSK condition (6).

Depression is **4 times** more common among people in persistent pain compared to those without pain. (65)

Provision

[Chart, histogram

Description automatically generated](https://app.powerbi.com/MobileRedirect.html?action=OpenReport&groupObjectId=d5a27916-cd63-4dba-b413-cf9935328db3&reportObjectId=7742402c-edd3-47cb-8f28-e9cb672d8ff2&ctid=b3633860-15a8-46d3-ad32-0fba5ecb1d5f&reportPage=ReportSection&pbi_source=copyvisualimage)Access to care

**Joint replacements and waiting times**

An important treatment for osteoarthritis, when other less invasive interventions have not worked, is joint replacement surgery. Typically, this will be a replacement of the hip or knee.

(50)

The number of joint replacement surgeries conducted steadily increased from 2013 until 2020 where **around half** the number were conducted (50).

Due to the COVID-19 pandemic these operations were delayed and therefore waiting lists for these operations grew across each of the four UK nations (66) (67) (68) (69).

In England the waiting list for Trauma and Orthopaedic treatment contains **797,630** people, **7%** have waited over a year (December 2022 data) (66). **247,252** (31%) people on the list are waiting with a decision to be admitted to a hospital bed for treatment, **14%** of these people have waited over a year (December 2022 data) (66). At the waiting list’s peak, in March 2021 in England, 17% of those on the list had been waiting over a year (66).

In Wales 100,102 people are waiting for Trauma and Orthopaedic treatment with 36% waiting over a year and 14% waiting over two years (December 2022 data) (70).

In Scotland 88,057 people are waiting for Trauma and Orthopaedic inpatient and outpatient treatment with 15% waiting for a year (September 2022 data) (71).

In Northern Ireland 47,273 people are waiting for Trauma and Orthopaedic inpatient and outpatient treatment with 54% waiting over a year (December 2022 data) (72).

**Joint replacement and health inequalities**

Those living in the most deprived areas of England and Wales are more likely to need a hip replacement than those in more affluent areas (73). Yet those living in deprived areas are less likely to receive an NHS funded hip replacement than those in more affluent areas (73).

**National inflammatory arthritis waiting times**

These data come from the National Early Inflammatory Arthritis Audit (NEIAA) which collects data from England and Wales (74).

**54%** of inflammatory arthritis patients are referred within the target of 3 working days (74).

**58%** of inflammatory arthritis patients are not seen within 3 weeks of a rheumatology clinic receiving a referral (74).

**65%** of inflammatory arthritis patients start cDMARD therapy (a treatment method for inflammatory arthritis) within 6 weeks of referral(74).

For all the metrics above there is significant geographical variation.

**39%** of inflammatory arthritis patients are referred within 3 working days in the East of England compared to **72%** in the Northeast (74).

**34%** of inflammatory arthritis patients are seen within 3 weeks of referral in Wales- **8%** below England (74).

**44%** of inflammatory arthritis patients started cDMARD therapy within 6 weeks of referral in the East Midlands compared to **85%** in the South West (74).

Societal Impact

Impact on healthcare, social services, and the economy

**Health and Care Services**

Those with arthritis and MSK conditions are more likely to contact and use primary healthcare, secondary healthcare, and community healthcare such as physiotherapy.

|  |
| --- |
| MSK conditions accounted for 1.06M hospital admissions, 8.3% of the total number of hospital admissions in England in 2021-22 (75). |
| MSK conditions account for 1 IN 7 GP consultations (1). |
| Every year 1 IN 5 adults will consult their GP for a MSK condition (76). |
| 4 IN 10 people we surveyed see their GP as the main person they are supported by (24). |

People with arthritis and MSK conditions often take medicines to help manage their symptoms.

* Almost **5 in 10** people (47%) with long-term MSK conditions in England take **five or more** medicines on a regular basis (77)
* Around **30M prescriptions** were dispensed for MSK conditions and joint diseases in England 2021-2022 (78)
* Prescriptions for MSK conditions cost approximately **£151M** in England 2021-2022 (78)

**Social services**

Adults with chronic MSK pain have high levels of social care use in the UK (79). One study found that over half (54%) of those with Chronic pain received social care services in the last month (79).

**Economy**

Musculoskeletal ill-health results in significant costs for individuals, employers, the health service, and the wider economy.

|  |
| --- |
| The cost of working days lost due to osteoarthritis and rheumatoid arthritis was estimated at £2.58 billion in 2017 rising to £3.43 billion by 2030 (80). |
| Treating the two most common forms of arthritis (osteoarthritis and rheumatoid arthritis) is estimated to have cost the economy £10.2 billion in direct costs\* to the NHS and wider healthcare system in 2017. Cumulatively the healthcare cost will reach £118.6 billion over the next decade (80). |
| The total work-related costs of axial spondyloarthritis due to early retirement, absenteeism and presenteeism is estimated to be at £11,943 per person with axial spondyloarthritis per year (67). |
| MSK conditions accounted for the third largest area of NHS programme spending at £4.7 billion in 2013-14 (81). This was 3.5% of total spending in 2013-2014. If the proportion has stayed the same MSK conditions will have accounted for £5.5 billion spending in 2019-2020[[5]](#footnote-6) and an estimated £6.3 billion in 2022-2023 (82) (81). |
| Combined costs from worklessness and sickness absence in the UK amount to around £100 billion annually (83). |

Conditions where arthritis is the main symptom

Osteoarthritis

Osteoarthritis (OA) happens when the body can no longer maintain and repair one or more joints – commonly affecting hands, hips, and knees. The cartilage becomes thin and uneven, preventing the joint from moving easily. The body’s attempts to repair these changes can lead to pain, stiffness and swelling.

Prevalence and incidence

**10 million** people have OA (1).

**3.2 million** people are estimated to have hip OA (3).

**5.4 million** people are estimated to have knee OA (3).

[[6]](#footnote-7)

(3)

Every year around **350,000 people** are diagnosed with OA (18).

Studies suggest that the median age of symptom onset of OA is approximately 55 years old, although severity of symptoms will vary (84) (85).

Almost half (49% of women and 42% of men) of people aged 75 or over have OA (1).

Risk factors

* Rising age- OA is uncommon in people under 45 years old
* Men and women- for most joints, OA is more common and more severe in women
* Inherited genetic and genomic factors
* Abnormal loading onto joints, because of abnormalities in joint shape, or overweight/obesity
* Inflammatory arthritis leading to loss of cartilage

OA and other long-term conditions

People with OA are nearly **3 times** more likely to also have ischaemic heart disease or have heart failure than those without OA, probably because of shared underlying risk factors for these conditions (39).

Wider health

Around **20%** of people with OA experience symptoms of depression and anxiety (41).

Gout

Gout is a is a type of inflammatory arthritis where the immune system, which is the body’s natural self-defence system, attacks joints and surrounding tissues where urate crystals have formed, causing episodes of severe inflammation, stiffness, pain, and damage. Urate crystals form in joints when the body’s urate (uric acid) level is consistently too high.

1,600,000 (1 in 50) people have recorded diagnoses of gout (86).

**66,000 people** are newly diagnosed with gout each year (86).

Risk factors

|  |
| --- |
| Age- the risk increases with age |
| Men and women- gout is more common in men |
| Inherited genetic and genomic factors |
| Weight- being overweight or obese increases the risk of gout |
| Food and drink intake- some food and drink raise urate levels |
| Kidney disease |
| Medicines that increase urate levels |

Gout and other long-term conditions

Women and men with gout are **71%** and **22%** more likely to develop type 2 diabetes (179).

People with gout have a **29% higher risk** of chronic kidney disease than people without gout (180).

Recent evidence has also shown that flare up episodes of gout are associated with an increase in cardiovascular events in the 4 months following the flare (176).

Rheumatoid arthritis

Rheumatoid arthritis (RA) is a type of inflammatory arthritis where the immune system attacks the body’s joints, causing inflammation, swelling, pain, stiffness and damage to the joints.

Prevalence and incidence

Wider health

60% of people with RA are physically inactive (56).

Around one-third of people with RA have mental health problems such as anxiety, depression (63)

|  |  |
| --- | --- |
| **450,000** | adults have a recorded diagnosis of RA (87). |
| **27,000** | Adults are newly diagnosed with RA each year (87). |

Risk factors

Work

One-third people with RA quit work within 5 years of diagnosis (169)

|  |  |
| --- | --- |
| Age | Most people are aged between 46 and 70 years old when diagnosed with rheumatoid arthritis (19) |
| Men and women | RA is 2-3 times more common in women than men |
| Smoking tobacco | Increases risk, worsens disease, and weakens treatment response (88) |
| Weight | Being clinically overweight or obese increases risk (89) |
| Inherited genetic, genomic, and epigenetic factors | |
| Changes in the microbiome (90) (91) | |

RA and other long-term conditions

Osteoporosis- weak bone, develops in around 30% of people with RA (168).

Evidence suggests 1 in 10 people with rheumatoid arthritis will be diagnosed with interstitial lung disease over the lifetime of their disease, putting them at increased risk of early death (181).

Psoriatic arthritis

Psoriatic arthritis (PsA) is a type of inflammatory arthritis linked to psoriasis where the immune system attacks the body’s joints, causing inflammation, swelling, stiffness, pain and damage to the joints.

**Psoriasis is an autoimmune condition affecting the skin and around 1 in 4 people who have psoriasis have psoriatic arthritis** (92)**.**

Some people may develop psoriatic arthritis without noticeable skin psoriasis.

Prevalence and incidence

It is estimated that **190,000** adults have psoriatic arthritis (4).

Each year, around **8,430** adults are newly diagnosed with psoriatic arthritis (4).

Risk factors

|  |
| --- |
| Age- peak onset is between 30 and 50 years old |
| Personal or family history |
| Inherited genetic, genomic and epigenetic factors (93) |

|  |
| --- |
| Psoriatic arthritis and other long-term conditions |
| **Around 1 in 5 people (19%) with psoriatic arthritis have a cardiovascular disease** (46)**.** |
| **Wider health** |
| **1 in 4 Psoriatic arthritis patients have obesity** (46)**.** |
| **1 in 5 people with Psoriatic Arthritis have depression** (64) |

Axial Spondyloarthritis

Axial spondyloarthritis is a type of inflammatory arthritis where the immune system attacks the spine and sometimes joints causing inflammation, stiffness, pain, and damage.

Prevalence and incidence

An estimated **60,000** adults have a recorded diagnosis of axial spondyloarthritis (87). The number of adults who have symptomatic but undiagnosed axial spondyloarthritis, or where the diagnosis is not accurately recorded, is uncertain.

Each year around **2,200** adults are newly diagnosed with axial spondyloarthritis (87).

Risk factors

|  |
| --- |
| Age: axial spondyloarthritis often presents in people’s late teens or twenties |
| Men and women: Axial Spondyloarthritis with changes on X-ray/MRI is more frequently diagnosed in men than women (3:1), but axial spondyloarthritis with a normal X-ray/MRI has an equal sex distribution (21) |
| Inherited genetic factors |
| Axial spondyloarthritis is more common in those with psoriasis (94) or inflammatory bowel disease (95) |

Axial spondyloarthritis and other long-term conditions

**21%** of people with axial spondyloarthritis will have a painful eye condition called uveitis which can cause blindness (94)

Around **1 in 5 (22.8%)** of people with axial spondyloarthritis have hypertension (96).

Around **1 in 10 (10.9%)** of people with axial spondyloarthritis have depression (96).

Work

In a study on men with ankylosing spondylitis, a type of axial spondyloarthritis, **45%** changed to a less physically demanding job due to their condition (97) (98).

In the same study **24%** reported retiring early, again, due to axial spondyloarthritis (97) (98).

Juvenile Idiopathic arthritis (JIA)

JIA refers to a group of arthritis conditions that present before children are 16 years old. JIA are autoimmune diseases where the immune system attacks the body. There are different types of JIA, and the severity of the condition varies depending on the type (99).

Prevalence and incidence

It is estimated that **12,000** children under 16 years have JIA (100).

Risk factors

|  |  |
| --- | --- |
| Age- typical onset age is between 2 and 10 years | |
| Men and women- JIA is more common in girls |
| Inherited genetic, genomic and epigenetic factors |
| Changes in the microbiome |

JIA and other long-term conditions

|  |
| --- |
| Around half of children diagnosed with JIA will be discharged from care (perhaps due to drug-free remission) (101) |

11-38% of children with JIA have JIA associated uveitis, an eye condition which can cause eye pain and if untreated can lead to blindness (102) (103).

Around 15% of children with JIA in the UK develop Macrophage Activation Syndrome (MAS)- a rare inflammatory condition (104).

Conditions where arthritis is one symptom among many

Lupus

Lupus (systemic lupus erythematosus, SLE) is a condition where the immune system, which is the body’s natural self-defence system, attacks the body. Lupus commonly affects the joints, causing arthritis with inflammation, swelling, stiffness, pain, and damage. It can also attack other organs including the skin, kidneys, lungs, and nervous system.

Prevalence and incidence

An estimated70,000people in the UK have Lupus (105).

3,000 people are newly diagnosed with Lupus each year (105).

Risk factors

|  |
| --- |
| Age- onset in women is typically between 15 and 40 years old |
| Men and women- Lupus is more common in women |
| Ethnic background- Lupus is especially common in women of African, Caribbean, and Chinese origin |
| Inherited genetic, genomic and epigenetic factors (106) |
| Changes in the microbiome (107) |

In patients with mild lupus, of more than 10 years duration, there is a **three- four times** increased risk of cardiovascular events and death compared with people who do not have lupus (159).

Patients with lupus have a mortality rate nearly **two times** higher than those without lupus (157).

Other Musculoskeletal Conditions

Back pain

Back pain is a common MSK condition. Non-specific low back pain which has not been caused by damage or inflammation in the spine is the most common type.

**Low back pain is the top cause of years lived with disability in the UK (2019)** (5)**.**

Prevalence and incidence

**11 million** people in the UK experience low back pain in any given year and of these 11 million, **6.5 million** experience severe back pain (3).

**2.6 million** new cases of low back pain occur each year in the UK (5).

[[7]](#footnote-8) (3)

Risk factors

|  |
| --- |
| Age- whilst back pain can occur at any age it’s not more common with age and seems to decline in the oldest people (108). |
| Men and women- back pain is more common in women |
| Weight- those who are overweight or obese are more likely to have lower back pain than those classified as having a normal weight (51). |
| Poor general health |
| Injury |

Wider health

The odds of back pain in people with symptoms of depression have been shown to be **50% higher** than in those without symptoms of depression (109).

Work

**In June 2022, the ONS found that 262,272 people reported having back and neck pain that forced them to leave work** (110)**.**

Around 1 in 5 workers with back pain take time off work over a period of 6 months or longer (111).

Fibromyalgia

Fibromyalgia is a chronic condition, which is a form of chronic primary pain. Fibromyalgia does not itself cause any lasting damage on the body’s tissues but is associated with widespread pain, fatigue, physical symptoms, and cognitive symptoms.

Prevalence

|  |  |
| --- | --- |
| 1.7 to 2.8 Million | **people have fibromyalgia** (112)**.** |
| 270,000 | **Adolescents aged 11-18 years have fibromyalgia** (113)(114) |

Risk factors

* Age- fibromyalgia most commonly presents between 25 and 55 years
* Men and women- fibromyalgia is more common in women
* Inherited genetic, genomic, and epigenetic factors
* Changes in the microbiome (113)

Fibromyalgia and other long-term conditions

Fibromyalgia is associated with a 1.54-fold increased risk for irritable bowel syndrome (115)

Wider health

Lifetime prevalence of depression and anxiety in people with fibromyalgia go up to 70% and 60%, respectively. (116) (117)

Chronic pain

**Pain is one of the leading symptoms of MSK conditions.**

**Chronic pain** – defined as pain which has lasted for more than three months - affects between **18.4 million** (34%) (12) and **28 million people** (43%) in the UK (118).

**Chronic pain in England**

|  |  |  |  |
| --- | --- | --- | --- |
| 15.5M | people **(34%)** have chronic pain in England (12). | 5.5M | people **(12%)** have high-impact chronic pain, which is severe and where people are unable to carry out their daily activities (12). |

About **8 in every 10 people (84%)** with chronic pain in England report that at least some of their chronic pain is in the **neck or shoulder, back, limbs or extremities** – all sites where pain is most likely to be **musculoskeletal** (12)**.**

A picture containing diagram

Description automatically generated

**More women are affected by chronic pain than men.**

**38%** of women have chronic pain in England compared to **30%** of men (12).

**14%** of women have high-impact chronic pain compared to **9%** of men (12).

**Chronic pain increases with increasing age, but people of all ages can have it.**

A picture containing graphical user interface

Description automatically generated

Among young adults aged 16-34 with chronic pain in England, the proportion reporting high-impact chronic pain rose from 21% to 32% between 2011 and 2017 (12).

To find out more on chronic pain you can read our report, [Chronic Pain in England: Unseen, Unequal, Unfair](https://www.versusarthritis.org/about-arthritis/data-and-statistics/chronic-pain-in-england/)

Osteoporosis and Fragility fractures

Osteoporosis is a silent condition where bones are weak and can break easily. A fragility fracture is a broken bone which results from a force that would not usually result in a fracture, such as a fall from standing height or less.

Prevalence

More than 3 million people in the UK are estimated to have osteoporosis (119).

Osteoporosis and other long-term conditions

Adults over 50 years old with osteoporosis are more than 2 times more likely to develop arthritis, chronic low back pain, chronic heart failure and depression than someone without osteoporosis (120).

Fractures

Around 75,000 hip fractures occur each year in the UK (121).

Hip fractures are associated with a total cost to health and social services of OVER £1 BILLION per year (121).

4% of all femoral fractures in England and Wales in 2021 occurred in inpatient settings (122).

Those with inpatient femoral fractures were 9% less likely to see a geriatrician within the 72-hour target than non-inpatients (122).

Those with inpatient femoral fractures were 7% less likely to receive surgery within the 36-hour target than non-inpatients (122).

The economic burden of osteoporosis related fractures is approximately £4 billion per year in the UK (123).

Glossary

**Cartilage:** a type of connective tissue found throughout the human body including within the joints (124).

**Comorbidity:** the occurrence of more than one illness or condition at the same time (125).

**Epigenetic**: refers to a factor that affects the expression of a gene without altering the DNA sequence (126).

**Fatigue**: severe mental and physical exhaustion which is not attributable to exertion (127).

**Genomics**: the study of all of a person’s genes (the genome) including the interactions of those genes with each other and the environment (128).

**Health Inequalities:** unfair and avoidable differences in health across the population, and between different groups within society” (11).

**Immune system**: the network of cells and tissues in your body that work to provide defence from viruses, bacteria, and other infections (129).

**Incidence**: the number of individuals who develop a specific disease during a particular time period (130). In this report the time period used is year.

**Microbiome**: refers to all of the microbes including bacteria, fungi and viruses that naturally live on and within our bodies (131).

**Phototherapy**: is a therapy prescribed by a dermatologist to treat Psoriasis. The skin is exposed to ultraviolet light on a regular basis (132).

**Prevalence**: the total number of individuals in a population who have a disease or health condition at a specific period of time (130).

**Quantitative**: refers to the numerical measure of something. In quantitative research a range of methods concerned with the systematic investigation of a phenomena are used, using statistical or numerical data. Quantitative research involves measurement and assumes that the phenomena under study can be measured. (133)

**Years Lived with Disability (YLDs)**: is a measure which summarises levels of disability in a given population, it combines the prevalence of a disease with a rating of how disabling that disease is (23).

References

# References

1. *Annual consultation prevalence of regional musculoskeletal problems in primary care: an observational study.* **Jordan, K P, et al.** 144, s.l. : BMC Musculoskeletal Disorders, 2010, Vol. 11.

2. **Belluz, J. & Hoffman, S.** The one chart you need to understand any health study. . *Vox.* [Online] 2015. https://www.vox.com/2015/1/5/7482871/types-of-study-design.

3. **Versus Arthritis.** The Musculoskeletal Calculator. *Versus Arthritis .* [Online] 2023. [Cited: 05 01 2023.] https://www.versusarthritis.org/policy/resources-for-policy-makers/musculoskeletal-calculator/.

4. **Druce, K L, et al.** The epidemiology of Psoriatic Arthritis in the UK A health intelligence analysis of UK primary Care Electronic Health Records 1991-2020. . *In Preparation for submission .* s.l. : In Preparation for submission , 2023.

5. **Global Burden of Disease Collaborative Network.** Global Burden of Disease Study 2019. *Results.* [Online] 2020.

6. **Public Health England .** Public Health England Fingertips Musculoskeletal Conditions Profile. *GP Patient Survey 2021 data.* [Online] 2022. https://fingertips.phe.org.uk/profile/msk/data.

7. **Government, Scottish.** Scottish Health Survey 2021. *ScotCen Social Researh.* [Online] 2022. https://www.gov.scot/collections/scottish-health-survey/.

8. **Welsh Government.** National Survey Wales: April 2021 to March 2022. *Gov. Wales.* [Online] 2022. [Cited: 16 01 2023.] https://gov.wales/national-survey-wales-april-2019-march-2020.

9. **Northern Ireland Statistics and Research Agency.** Health. *NI Summary Statistics, UK National Wellbeing Measures: Northern Ireland Data.* [Online] 2017. [Cited: 23 01 2023.] https://www.nisra.gov.uk/statistics/uk-national-wellbeing-measures-northern-ireland-data/health.

10. **NHS Digital.** Health Survey for England 2018: Longstanding Conditions. *Health and Social Care Information Centre.* [Online] 2019. [Cited: 04 01 2023.] http://healthsurvey.hscic.gov.uk/support-guidance/public-health/health-survey-for-england-2018/longstanding-conditions.aspx .

11. **NHS England.** What are healthcare inequalities? *NHS England .* [Online] 2022. [Cited: 25 01 2023.] https://www.england.nhs.uk/about/equality/equality-hub/national-healthcare-inequalities-improvement-programme/what-are-healthcare-inequalities/.

12. **Versus Arthritis.** Chronic Pain in England: Unseen, unequal, unfair. *Versus Arthritis.* [Online] 2021. https://www.versusarthritis.org/about-arthritis/data-and-statistics/chronic-pain-in-england/.

13. *Does body mass index mediate the relationship between socioeconomic position and incident osteoarthritis?* **Witkam, Rozemarijn, et al.** s.l. : Seminars in Arthritis and Rheumatism, 2022, Vol. 56.

14. **Office for Health Improvement and Disparities.** Percentage of adults (18+) classified as overweight or obese . *Fingertips .* [Online] 2021. [Cited: 25 01 2023.] https://fingertips.phe.org.uk/profile/msk/data#page/7/gid/1938133152/pat/6/par/E12000008/ati/401/are/E07000223/iid/93088/age/168/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1/page-options/car-do-0\_ine-yo-1:2020:-1:-1\_ine-ct-44\_ine-pt-0\_ine-ao-1.

15. *Socio-economic status and the risk of developing hand, hip or knee osteoarthritis: a region-wide ecological study.* **Reyes, C, et al.** s.l. : Osteoarthritis and Cartilage, 2015, Vol. 23.

16. **Office for Health Improvement and Disparities.** Musculoskeletal health: trends, risk factors and disparities in England. *Fingertips.* [Online] 11 2022. [Cited: 02 02 2023.] https://fingertips.phe.org.uk/static-reports/musculoskeletal-conditions/musculoskeletal-health-trends-risk-factors-and-disparities-in-england.html.

17. **Watt, Toby, Raymond, Ann and Rachet-Jacquet, Laurie.** *Quantifying health inequalities in England .* s.l. : The Health Foundation , 2022.

18. *Trends in incidence and prevalence of osteoarthritis in the United Kingdom: findings from the Clinical Practice Research Datalink (CPRD).* **Swain, S, et al.** 6, s.l. : Osteoarthritis Cartilage, 2020, Vol. 28.

19. *Worse outcomes linked to ethnicity for early inflammatory arthritis in England and Wales: a national cohort study.* **Adas, Maryam A, et al.** 1, s.l. : Rheumatology (Oxford), 2022, Vol. 62.

20. *Rheumatoid Arthritis- Common origins, divergent mechanisms.* **Gravellese, Ellen M and Firestein, Gary S.** s.l. : The New England Journal of Medicine, 2023, Vol. 388.

21. *Sex and gender differences in axial spondyloarthritis: myths and truths.* **Rusman, T, van Bentum, R E and van der Horst-Bruinsma, I E.** 59, s.l. : Rheumatology, 2020, Vol. 1.

22. **Versus Arthritis.** *Musculoskeletal conditions and multimorbidity.* s.l. : Arthritis Research UK (Now Versus Arthritis).

23. **Public Health England .** *Research and analysis: Methods, data and definitions .* s.l. : Gov.UK, 2018.

24. **Versus Arthritis.** Unmet Needs Research- Survey Data (Unpublished) . 2020.

25. *How does arthritis affect employment? Longitudinal evidence on 18,000 British adults with arthritis compared to matched controls.* **Rajah, Nasir, et al.** s.l. : Social Science and Medicine, 2023, Vol. 155606.

26. **Martin, Adam, et al.** *How does arthritis affect employment in the UK?* s.l. : University of Leeds , 2023.

27. **Office for Health Improvement and Disparities.** Workplace Health: Applying All Our Health. . *Gov.uk.* [Online] 10 03 2022. [Cited: 05 01 2023.] https://www.gov.uk/government/publications/workplace-health-applying-all-our-health/workplace-health-applying-all-our-health.

28. **Public Health England .** Guidance: Health Matters: health and work . [Online] 2019. [Cited: 16 01 2023.] https://www.gov.uk/government/publications/health-matters-health-and-work/health-matters-health-and-work.

29. **Labour Force Survey.** Employment Status of persons by long-term main health condition (data request-unpublished). 2020.

30. **Office for National Statistics.** Sickness absence in the UK labour market 2021. *ONS.* [Online] 2022. [Cited: 16 01 2023.] https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/articles/sicknessabsenceinthelabourmarket/2021.

31. **NHS Digital.** NHS Sickness Absence Rates Official Statistics England. [Online] 2022. [Cited: 18 01 2023.] https://digital.nhs.uk/data-and-information/publications/statistical/nhs-sickness-absence-rates.

32. **Department of Work and Pensions.** Access to Work statistics: April 2007 to March 2022. *Official statistics.* [Online] 2022. [Cited: 16 01 2023.] https://www.gov.uk/government/statistics/access-to-work-statistics-april-2007-to-march-2022.

33. **Department for Work and Pensions.** Employment and Support Allowance: ESA data from May 2022 (data collection). *Stat-Xplore Online Tool .* [Online] 2022. [Cited: 17 01 2023.] https://stat-xplore.dwp.gov.uk/webapi/jsf/login.xhtml.

34. **NHS Digital.** Fit Notes Issued by GP Practices, England, June 2022. *Experimental Statistics.* [Online] 2022. [Cited: 04 01 2023.] https://digital.nhs.uk/data-and-information/publications/statistical/fit-notes-issued-by-gp-practices/june-2022#resources.

35. *Epidemiology of multimorbidity and implications for health care, research and medical education: a cross-sectional study. .* **Barnett, K, et al.** 9836, s.l. : The Lancet, 2012, Vol. 380.

36. *The epidemiology of multimorbidity in primary care: a retrospective cohort study.* **Cassell, A, et al.** 699, s.l. : Br J Gen Pract, 2018, Vol. 68.

37. *Multimorbidity-a defining challenge for health systems.* **Pearson-Stuttard, Jonathan, Ezzati, Majid and Gregg, Edward W.** 12, s.l. : The Lancet, 2019, Vol. 4.

38. *Comorbidities in Osteoarthritis: A systematic review and meta-analysis of observational studies .* **Swain, Subhashisa, et al.** 7, s.l. : Arthritis Care and Research , 2019, Vol. 72.

39. *Diabetes mellitus and arthritis is it a risk factor or comorbidity? A systematic review and meta-analysis .* **Dong, Qing, et al.** 18, s.l. : Medicin, 2017, Vol. 96.

40. *Long-term physical functioning and its association with somatic comorbidity and comorbid depression in patients with established rheumatoid arthritis: a longitudinal study.* **van den Hoek, J, et al.** s.l. : Arthritis Care & Research, 2013, Vol. 65.

41. *Prevalence of depressive symptoms and anxiety in osteoarthritis: a systematic review and meta-analysis.* **Stubbs, Brendon, et al.** 2, s.l. : Age and Ageing, 2016, Vol. 45.

42. *Prevalence and early-life determinants of mid-life multimorbidity: evidence from the 1970 British birth cohort.* **Gondek, D, et al.** 1, s.l. : BMC Public Health, 2021, Vol. 21.

43. **Office for Healh Improvement and Disparities.** Obesity Profile. *Fingertips Public Health Data.* [Online] 2021. [Cited: 23 01 2023.] https://fingertips.phe.org.uk/profile/national-child-measurement-programme/data#page/1/gid/1938133368/pat/159/par/K02000001/ati/15/are/E92000001/yrr/1/cid/4/tbm/1.

44. **Scottish Government.** Data Request. Scottish Health Survey 2021. . *ScotCen Social Research.* 2023.

45. **National Survey for Wales 2021-22.** Reported physical inactivity and overweight or obesity of adults who report that they have a long-standing MSK condition. s.l. : Data request, 2023.

46. *Comorbidities in psoriatic arthritis: a systematic review and meta-analysis.* **Gupta, Sonal, et al.** s.l. : Rheumatology International, 2021, Vol. 41.

47. **National Institute for Health and Care Excellence.** Obesity: How should I confirm if a person is overweight or obese. *National Institute for Health and Care Excellence.* [Online] 09 2022. [Cited: 01 03 2023.] https://cks.nice.org.uk/topics/obesity/diagnosis/identification-classification/.

48. *Obesity and knee osteoarthritis. The Framingham Studys.* **Felson, D, et al.** 1, s.l. : Annals of Internal Medicine , 1998, Vol. 109.

49. *Current evidence on risk factors for knee osteoarthritis in older adults: a systematic review and meta-analysis.* **Silverwood, V, et al.** 4, s.l. : Osteoarthritis and Cartilage, 2015, Vol. 23.

50. **National Joint Registry.** *National Joint Registry 19th Annual Report 2021- Surgical Data. National Joint Registry for England, Wales, Northern Ireland and the Isle of Man.* s.l. : National Joint Registry, 2022.

51. *Body mass index as a risk factor for developing chronic low back pain: a follow-up in the Nord-Trondelag Health Study.* **Heuch, I, Hagen, K and Zwart, J.** 2, s.l. : Spine, 2013, Vol. 38.

52. *Obesity and younger age at gout onset in a community-based cohort.* **McAdams DeMarco, Mara A, et al.** 8, s.l. : Arthritis Care and Research, 2011, Vol. 63.

53. *Body Mass Index and Risk of Rheumatoid Arthritis: A Meta-Analysis of Observattional Studies.* **Feng, Jian, et al.** s.l. : 95, 2016, Vol. 8.

54. **Gov.UK.** Physical Inactivity. *Health.* [Online] 14 05 2019. [Cited: 24 01 2023.] https://www.ethnicity-facts-figures.service.gov.uk/health/diet-and-exercise/physical-inactivity/latest.

55. **Department of Health .** Health Survey NI First Results 2020-21. [Online] 2022. [Cited: 23 01 2023.] https://www.health-ni.gov.uk/sites/default/files/publications/health/hsni-first-results-20-21.pdf.

56. *Physical inactivity and sedentary behavior: Overlooked risk factors in autoimmune rheumatic diseases?* **Pinto, Ana Jessica, et al.** 7, s.l. : Autoimmunity Reviews, 2017, Vol. 16.

57. *Exercise interventions and patient beliefs for people with hip, knee or hip and knee osteoarthritis: a mixed methods review .* **Hurley, Michael, et al.** 4, s.l. : Cochrane Database Systematic Review, 2018, Vol. 17.

58. *Exercises for prevention of recurrences of low-back pain.* **Choi, Brian KL, et al.** 1, s.l. : Cochrane Database Systematic Review, 2010, Vol. 20.

59. *Association Between Physical Activity and Risk of Depression: A Systematic Review and Meta-analysis.* **Pearce, M, et al.** 6, s.l. : JAMA psychiatry, 2022, Vol. 79.

60. *Physical activity and the risk of hip fracture in the elderly: a prospective cohort study.* **Lagerros, Y T, et al.** 11, s.l. : European journal of epidemiology, 2017, Vol. 32.

61. **Foster, C, et al.** *Muscle and bone strengthening and balance activities for general health benefits in adults and older adults: Summary of a rapid evidence review for the UK Chief Medical Officers' update of the physical activity guidelines.* s.l. : Public Health England , 2017.

62. **Versus Arthritis.** Musculosketal conditions and physical activity- Scoping Research (Unpublished). 2019.

63. *Increased burden of psychiatric disorders in rheumatoid arthritis.* **Marrie, R A, et al.** 7, s.l. : Arthritis care and research, 2018, Vol. 70.

64. *Systematic review of mental health comorbidities in psoriatic arthritis.* **Zhao, S S, et al.** 1, s.l. : Clinical Rheymatology, 2020, Vol. 39.

65. *The epidemiology of pain in depression.* **Lepine, J and Briley, M.** 1, s.l. : Human Psychopharmacology, 2004, Vol. 10.

66. **NHS England .** Consultant-led Referral to treatment Waiting Times Data 2022-23. *Statistics, Statistical work areas.* [Online] 2023. [Cited: 12 01 2023.]

67. **Department of Health.** Northern Ireland waiting time statistics: outpatient waiting times. *Hospital waiting times statistics, Department of Health .* [Online] 2022. [Cited: 24 01 2023.] https://www.health-ni.gov.uk/topics/doh-statistics-and-research/hospital-waiting-times-statistics.

68. **StatsWales.** Patient pathways waiting to start treatment by month, grouped weeks and treatment function, January 2021 onwards. *StatsWales.* [Online] 2023. [Cited: 19 01 2023.]

69. **Public Health Scotland.** NHS waiting times- 18 weeks referral to treatment . *Public Health Scotland.* [Online] 29 11 2022. [Cited: 24 01 2023.] https://publichealthscotland.scot/publications/show-all-releases?id=20545.

70. **StatsWales.** Referral to treatment. *StatsWales.* [Online] 19 01 2023. [Cited: 19 01 2023.] https://statswales.gov.wales/Catalogue/Health-and-Social-Care/NHS-Hospital-Waiting-Times/Referral-to-Treatment.

71. **Public Health Scotland.** NHS waiting times- stage of treatment. Inpatients, day cases and new outpatients. *Public Health Scotland.* [Online] 29 11 2022. [Cited: 29 11 2022.] https://publichealthscotland.scot/publications/nhs-waiting-times-stage-of-treatment/stage-of-treatment-waiting-times-inpatients-day-cases-and-new-outpatients-30-september-2022/.

72. **Department of Health.** Hospital waiting times statistics. *Department of health .* [Online] 2022. [Cited: 02 02 2023.] https://www.health-ni.gov.uk/topics/doh-statistics-and-research/hospital-waiting-times-statistics.

73. *Equity of access to NHS-funded hip replacements in England and Wales: Trends from 2006 to 2016.* **Wyatt, Steven, et al.** 21, s.l. : The Lancet, 2022.

74. **British Society for Rheumatology.** *National Early Inflammatory Arthritis Audit (NEIAA) Year 4 Annual Report.* s.l. : HQIP, 2022.

75. **NHS Digital .** Hospital Admitted Patient Care Activity 2021-22. [Online] 2022. [Cited: 11 01 2023.] https://digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity/2021-22.

76. *International comparisons of the prevalence of health care for musculoskeletal disorders using population-based health care data from England and Sweden. .* **Jordan, K P, et al.** 1, s.l. : Annals of the Rheumatic Diseases, 2014, Vol. 73.

77. **Ipsos Mori and NHS England.** GP Patient Survey January- March 2020 (data collection). *GP-patient.* [Online] 2020. [Cited: 16 01 2023.]

78. **NHS England Business Services Authority.** Prescription Cost Analysis- England. National Summary Tables- Financial Year. [Online] 2022. [Cited: 13 01 2023.] https://www.nhsbsa.nhs.uk/statistical-collections/prescription-cost-analysis-england/prescription-cost-analysis-england-202122.

79. *The Influence of Chronic Pain on Social Care Service Use in the UK.* **Humphreys, J H, et al.** s.l. : Journal of Long-term Care, 2022.

80. **York Health Economics.** The Cost of Arthritis: Calculation conducted on behlaf of Arthritits Research UK . s.l. : Unpublished, 2017.

81. **NHS England.** CCG Programme Budgeting Benchmarking Tool 2013/14. 2015.

82. **Kingsfund.** The NHS budget and how it has changed. *The King's fund.* [Online] 08 12 2022. [Cited: 21 02 2023.] https://www.kingsfund.org.uk/projects/nhs-in-a-nutshell/nhs-budget.

83. **Public Health England .** Health matters: health and work . *gov.uk.* [Online] 2019. [Cited: 11 01 2023.] https://www.gov.uk/government/publications/health-matters-health-and-work/health-matters-health-and-work.

84. *Primary osteoarthritis of hip, knee and hand in relation to occupational exposure.* **Rossignol, M, et al.** s.l. : Occup Environ Med, 2005, Vol. 62.

85. *Lifetime risk and age of diagnosis of symptomatic knee osteoarthritis in the US.* **Losina, Elena, et al.** 5, s.l. : Arthritis Care Res, 2013, Vol. 65.

86. *Has the gout epidemic peaked in the UK? A nationwide cohort study using data from the Clinical Practice Research Datalink, from 1997 to across the COVID-19 pandemic in 2021. .* **Abhishek, A, et al.** 6, s.l. : Annals of the Rheumatic Diseases, 2022, Vol. 86.

87. *Rheumatoid arthritis, psoriatic arthritis, and axial spondyloarthritis epidemiology in England from 2004 to 2020: An observational study using primary care electronic health record data.* **Scott, Ian C, et al.** 100519, s.l. : The Lancet, 2022, Vol. 23.

88. *Smoking and rheumatoid arthritis.* **Chang, Kathleen, et al.** 15, s.l. : International journal of molecular sciences , 2014, Vol. 3.

89. *Obesity in rheumatoid arthritis.* **Stavropoulos-Kalinglou, Antonios, et al.** 3, s.l. : Rheumatology, 2011, Vol. 50.

90. *Intestinal barrier dysfunction plays an integral role in arthritis pathology and can be targeted to ameliorate disease.* **Matei, D E, et al.** 7, s.l. : Med, 2021, Vol. 2.

91. *Expansion of intestinal Prevotella copri correlates with enhanced susceptibility to arthritis.* **Scher, J U, et al.** s.l. : eLife, 2013, Vol. 2.

92. *Prevalence of psoriatic arthritis in patients with psoriasis: A systematic review and meta-analysis of observational and clinical studies.* **Alinaghi, Farzad, et al.** 1, s.l. : Journal of the American Academy of Dermatology, 2019, Vol. 80.

93. *The Molecular Pathophysiology of Psoriatic Arthritis- The Complex Interplay Between Genetic Predisposition, Epigenetic Factors and the Microbiome.* **Carvalho, Ana L and Hedrich, Christian M.** 8, s.l. : Frontiers in molecular biosciences, 2021, Vol. 1.

94. *Identifying and visualising multimorbidity and comorbidity patterns in patients in the English National Health Service: a population-based study.* **Kuan, Valerie, et al.** 1, s.l. : Lancet Digital Health , 2023, Vol. 5.

95. **National Axial Spondyloarthritis Society.** Your Gut. *National Axial Spondyloarthritis Society.* [Online] 2022. https://nass.co.uk/.

96. *Prevalence and impact of comorbidities in axial spondyloarthritis: systematic review and meta-analysis.* **Zhao, Sizheng Steven, et al.** 4, s.l. : Rheumatology, 2020, Vol. 59.

97. *Patient Burden of Axial Spondyloarthritis.* **Strand, Vibeke and Singh, Jasvinder.** 7, s.l. : Journal of Clinical Rheumatology, 2017, Vol. 23.

98. *Work disability in ankylosing spondylitis: differences among working and work-disabled patients.* **Cakar, Engin, et al.** 11, s.l. : Clinical Rheumatology, 2009, Vol. 28.

99. **Harding, D M.** Juvenile Idiopathic Arthritis. *Patient.* [Online] 22 11 2018. [Cited: 27 01 2023.] https://patient.info/bones-joints-muscles/rheumatoid-arthritis-leaflet/juvenile-idiopathic-arthritis.

100. **Silman, A J and Hochberg,, M C.** Epidemiology of the Rheumatic Diseases. s.l. : 2nd Edition Oxford Medical Publications., 2001.

101. *Continuing specialist care into adulthood in young people with juvenile idiopathic arthritis: a retrospective cohort study using electronic health records in England .* **Costello, R E, et al.** s.l. : Rheumatology, 2022.

102. *The CARRA Registry Investigators (2013) Risk markers of juvenile idiopathic arthritis-associated uveitis in the childhood arthritis and rheumatology research Alliance (CARRA) registry.* **Angeles-Han, S T, et al.** 12, s.l. : Journal of Rheumatolofy, 2013, Vol. 40.

103. *The role of gender in juvenile idiopathic arthritis-associated uveitis.* **Moradi, A, Amin, R M and Thorne, J E.** s.l. : Jounrnal of Ophthalmology, 2014.

104. *Burden of comorbid conditions in children and young people with juvenile idiopathic arthritis: a collaborative analysis of 3 JIA registries.* **Kearsley-Fleet, Lianne, et al.** 6, s.l. : Rheumatology (Oxford(, 2022, Vol. 61.

105. *The incidence and prevalence of systemic lupus erythematosus in the UK, 1999-2012.* **Rees, Frances, et al.** 1, s.l. : Annals of the rheumatic diseases, 2016, Vol. 75.

106. *Epigenetics in SLE.* **Hedrich, Christian Michael.** 9, s.l. : Current Rheumatology Reports, 2017, Vol. 19.

107. *The microbiome and systemic lupus erythematosus. .* **Katz-Agranov, N and Zandman-Goddard, G.** 2, s.l. : Immunologic research, 2017, Vol. 65.

108. *Does back and neck pain become more common as you get older? A systematic literature review.* **Fejer, Rene and Leboeuf-Yde, Charlotte.** 24, s.l. : Chiropractic & Manual Therapies, 2012, Vol. 20.

109. *Symptoms of Depression and Risk of New Episodes of Low Back Pain: A Systematic Review and Meta-Analysis.* **Pinheiro, M, et al.** 11, s.l. : Arthritis Care & Research , 2015, Vol. 67.

110. **Office for National Statistics.** Half a million more people are out of the labour force because of long-term sickness . *ONS.* [Online] 10 11 2022. [Cited: 05 01 2023.] https://www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/economicinactivity/articles/halfamillionmorepeopleareoutofthelabourforcebecauseoflongtermsickness/2022-11-10.

111. *Absence from work and return to work in people with back pain: a systematic review and meta-analysis.* **Wynne-Jones, Gwenllian, et al.** 6, s.l. : Occupational and Environmental Medicine, 2013, Vol. 71.

112. *Jones, G., Atzeni, F., Beasley, M., Flüß, E.P. & Macfarlane, G. (2015). The prevalence of fibromyalgia in the general population: a comparison of the American College of Rheumatology 1990, 2010, and modified 2010 classification criteria. Arthritis & Rheumatology. 67 (2), 568-75. doi: 10.1002/art.38905*

113. *Long-term outcomes of adolescents with juvenile-onset fibromyalgia in early adulthood.* **Kashikar-Zuck, Susmita, et al.** 3, 2014 : Pediatrics, Vol. 133.

114. *Cognitive behavioural therapy for the treatment of juvenile fibromyalgia: a multisite, single-blind, randomised, controlled clinical trial.* **Kashikar-Zuck, Susmita, et al.** 1, s.l. : Arthritis and Rheumatism, 2012, Vol. 64.

115. *Risk for Irritable Bowel Synfrome in Fibromyalgia Patients: A National Database Study.* **Yang, T, et al.** 10, s.l. : Medicine, 2015, Vol. 94.

116. *The management of fibromyalgia from a psychosomatic perspective: an overview.* **Sancassiani, Federica, et al.** 5, s.l. : International Review of Psychiatry, 2017, Vol. 29.

117. *Poor Illness Perceptions Are a Risk Factor for Depressive and Anxious Symptomatology in Fibromyalgia Syndrome: A Longitudinal Cohort Study.* **de Heer, E, Vriezekolk, J and van der Feltz-Cornelis.** s.l. : Frontiers in Psychiatry, 2017.

118. *Prevalence of chronic pain in the UK: a systematic review and meta-analysis of population studies .* **Fayaz, A, et al.** 6, s.l. : BMJ Open, 2016, Vol. 20.

119. *Osteoporosis in the European Union: a compendium of country-specific reports .* **Svedbom, A, et al.** 1, s.l. : Archives of osteoporosis, 2013, Vol. 8.

120. *Prevalence and comorbidity of osteoporosis- a cross-sectional analysis on 10,660 adults aged 50 years and older in Germany.* **Puth, Marie-Therese, et al.** 1, s.l. : BMC Musculoskeletal Disorders, 2018, Vol. 19.

121. **Royal College of Physicians.** *National Hip Fracture Database Annual Report 2022.* s.l. : https://www.rcplondon.ac.uk/projects/outputs/nhfd-annual-report-2022, 2022.

122. —. *National Audit of Inpatient Falls (NAIF), Annual report 2022 .* s.l. : Royal College of Physicians, 2022.

123. *The epidemiology of osteoporosis.* **Clynes, Michael A, et al.** 1, s.l. : British Medical Bulletin, 2020, Vol. 133.

124. **Knapp, Sarah.** Cartilage. *Biology dictionary .* [Online] 27 10 2020. [Cited: 01 02 2023.] https://biologydictionary.net/cartilage/.

125. **Collins English Dictionary.** Collins English Dictionary- Complete and Unabridged. *Collins English Dictionary- Complete and Unabridged.* s.l. : HarperCollins, 2014.

126. **Tirado, C A.** Epigenetics. [book auth.] Linda M McManus and Richard N Mitchell. *Pathobiology of Human Disease, A Dynamic Encyclopedia of Disease Mechanisms.* s.l. : Academic press, 2014.

127. **NICE.** Tiredness/fatigue in Adults. *National Institute for Health and Care Excellence.* [Online] 10 2021. [Cited: 01 02 2023.] https://cks.nice.org.uk/topics/tiredness-fatigue-in-adults/.

128. **National Human Genome Research Institute.** A Brief Guide to Genomics. *National Human Genome Research Institute.* [Online] 16 08 2022. [Cited: 01 02 2023.] https://www.genome.gov/about-genomics/fact-sheets/A-Brief-Guide-to-Genomics.

129. **National Institute of Arthritis, and Musculoskeletal and Skin Diseases.** Autoimmune Diseases. *National Institutes of Health .* [Online] 2016. [Cited: 01 02 2023.] https://www.niams.nih.gov/health-topics/autoimmune-diseases.

130. **Harvard T H Chan School of Public Health.** Prevalence and Incidence Defined . *Harvard T H Chan School of Public Health.* [Online] 2023. [Cited: 01 02 2023.] https://www.hsph.harvard.edu/obesity-prevention-source/prevalence-incidence/#:~:text=Incidence%20refers%20to%20the%20number%20of%20individuals%20who,time%20period%20%28such%20as%20a%20month%20or%20year%29..

131. **National Institute of Environmental Health , Sciences.** Microbiome. *Health and Education .* [Online] 05 04 2022. [Cited: 01 02 2023.] https://www.niehs.nih.gov/health/topics/science/microbiome/index.cfm.

132. **National Psoriasis Foundation.** Phototherapy. *National Psoriasis Foundation.* [Online] 21 12 2022. [Cited: 01 02 2023.] https://www.psoriasis.org/phototherapy/.

133. *Quantitative research.* **Watson, Roger.** 31, s.l. : Nursing Standard , 2015, Vol. 29.

135. *Incidence and prevalence of juvenile idiopathic arthritis in the United Kingdom, 2000–2018: results from the Clinical Practice Research Datalink.* **Costello, Ruth, et al.** 6, s.l. : Rheumatology, 2022, Vol. 61.

136. *Physical activity and autoimmune diseases: Get moving and manage the disease.* **Sharif, K, et al.** 1, s.l. : Autoimmunity Reviews, 2018, Vol. 17.

137. *Osteoarthritis: new insights. Part 2: treatment approaches.* **Felson, D T, et al.** 9, s.l. : Annals of internal medicine , 2000, Vol. 133.

138. *Obeisty is a risk factor for musculoskeletal pain in adolescents: findings from a population- based cohort .* **Deere, Kevin C, et al.** 9, s.l. : Pain, 2012, Vol. 153.

139. *Factors associated with osteoarthritis of the knee in the first national Health and Nutrition Examination Survey (HANES I). Evidence for an association with overweight, race and physical demands of work. .* **Anderson, J and Felson, D.** 1, s.l. : American Journal of Epidemiology, 1998, Vol. 128.

140. *Does physical activity influence the relationship between low back pain and obesity? .* **Smuck, M, et al.** 2, s.l. : The Spine Journal, 2014, Vol. 14.

141. **Office for Health Improvement and Disparities.** Musculoskeletal Conditions. *Fingertips Public Health Data.* [Online] 2021. [Cited: 04 01 2023.] https://fingertips.phe.org.uk/profile/msk/data.

142. *Trends in incidence and prevalence of osteoarthritis in the United Kingdom: findings from the Clinical Practice Research Datalink (CPRD).* **Swain, S, et al.** 6, s.l. : Osteoarthritis Cartliage, 2020, Vol. 28.

143. **Labour Force Survey.** Labour Force Survey dataset for July-September 2022. Employment Status of persons by long-term main health condition. . s.l. : Data Request, Unpublished, 2022.

144. **National Services Scotland.** *Scottish Arthroplasty Project Report 2022.* s.l. : https://www.publichealthscotland.scot/publications/scottish-arthroplasty-project/scottish-arthroplasty-project-13-september-2022/dashboard/, 2022.

145. *The economic burden of back pain in the UK.* **Maniadakis, N and Gray, A.** 1, s.l. : Pain, 2000, Vol. 84.

146. *The Work-Related Costs of Ankylosing Spondylitis in a UK Cohort. .* **Husain, M J, et al.** s.l. : Rheumatology, 2014, Vol. 43.

147. *Fragility fractures in Europe: burden, management and opportunities.* **Borgstrom, F, et al.** 1, s.l. : Archives of osteoporosis, 2020, Vol. 15.

148. **National Osteoporosis Guideline Group- UK.** *Clinical Guideline for the Prevention and treatment of Osteoporosis.* s.l. : National Osteoporosis Guideline Group- UK, 2021.

149. *The prevalence of axial spondyloarthritis in the UK: a cross-sectional cohort study .* **Hamilton, Louise, et al.** s.l. : BMC Musculoskeletal Disorders, 2015, Vol. 16.

150. *The prevalence of depression in axial spondyloarthritis and its association with disease activity: a systematic review and meta-analysis.* **Zhao, S, et al.** 1, s.l. : Arthritis research and therapy, 2018, Vol. 20.

151. *Barriers and facilitatios for being physically active in patients with ankylosing spondylitis: a cross-sectional comparative study.* **Forgen, C, Halvorsen Sveaas, S and Dagfinrud, H.** s.l. : Musculoskeletal Care, 2015, Vol. 13.

152. **Office for National Statistics.** Half a million more people are out of the labour force because of long-term sickness. *Office for National Statistics.* [Online] 10 11 2022. [Cited: 18 01 2023.] https://cy.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/economicinactivity/articles/halfamillionmorepeopleareoutofthelabourforcebecauseoflongtermsickness/2022-11-10#:~:text=10%20November%202022%20The%20number%20of%20working-age%20adults,2019%2C%20.

153. *Family consequences of chronic back pain. .* **Strunin, L and Boden, L I.** 7, s.l. : Social Science and Medicine , 2004, Vol. 58.

154. *Fibromyalgia.* **Rahman, Anisur, Underwood, Martin and Carnes, Dawn.** s.l. : BMJ , 2014, Vol. 24.

155. **Harding, D M.** Juvenile idiopathic arthritis: Joint inflammation in children, Patient info. [Online] 2018. [Cited: 20 10 2022.] https://patient.info/bones-joints-muscles/rheumatoid-arthritis-leaflet/juvenile-idiopathic-arthritis.

156. **National Scientific Council on the Developing Chil.** Early Experiences Can Alter Gene Expression and Affect Long-term Development: Working Paper No. 10. [Online] 2010. http://www.developingchild.net.

157. *Mortality, causes of death and influence of medication use in patients with systemic lupus erythematosus vs matched controls.* **Bultink, Irene E M, et al.** 1, s.l. : Rheumatology, 2021, Vol. 60.

158. **Lupus UK.** Psychological and psychiatric problems in Lupus. *Lupus UK.* [Online] 2019. [Cited: 27 10 2022.] https://www.lupusuk.org.uk/medical/nurses-guide/psychiatricproblems/.

159. *Exercise and physical activity in systemic lupus erythematosus: A systematic review with meta-analyses. .* **O'Dwyer, T, Durcan, L and Wilson, F.** 2, s.l. : Seminars in arthritis and rheumatism, 2017, Vol. 47.

160. *Effect of Self-Care management on Health Outcomes and Symptoms for Females with Systemic Lupus Erythematosus.* **Mohamady, S H, Srour, O A A and Saad, N S E.** 22, s.l. : Tanta Scientific Nursing Journal, 2022, Vol. 25.

161. *Depression and osteoarthritis.* **Lin, E H.** 11, s.l. : THe American journal of medicine, 2008, Vol. 121.

162. **NHS Digital .** Finalised Patient Reported Outcome Measures (PROMs) in England, for Hip and Knee Replacement Procedures (April 2020 to March 2021). [Online] 2021. https://digital.nhs.uk/data-and-information/publications/statistical/patient-reported-outcome-measures-proms/finalised-hip-and-knee-replacement-april-2019---march-2020/introduction.

163. *Prevalence of rheymatologist- diagnosed psoriatic arthritis in patients with psoriasis in European/North American dematology clinics.* **Mease, P J, et al.** 5, s.l. : J Am Acad Dermatol, 2013, Vol. 69.

164. *Gender specific differences in patients with psoriatic arthritis.* **Nas, Kemal, et al.** 2, s.l. : Modern Rheymatology, 2017, Vol. 27.

165. *An epidemiological study on trigger factors and quality of life in psoriatic patients .* **Xhaja, Alert, et al.** 3, s.l. : Materia Socio-medica, 2014, Vol. 26.

166. *Prevalence and predictors of reduced work productivity in patients with psoriatic arthritis.* **Kennedy, M, et al.** s.l. : Clinical and Experimental Rheumatology, 2014.

167. *Epigenetics in rheumatoid arthritis: a primer for rheumatologists.* **Bottini, N and Firestein, G S.** 11, s.l. : Current rheumatology reports, 2013, Vol. 15.

168. *Osteoporosis in Rheumatoid Arthritis: Dangerous Liaisons.* **Llorente, Irene, et al.** 7, s.l. : Frontiers in medicine, 2020, Vol. 23.

169. *Which patients stop working because of rheumatoid arthritis? Results of five years' follow up in 732 patients from the Early RA Study (ERAS).* **Young, A, et al.** 4, s.l. : Annals of the Rheumatic Diseases, 2002, Vol. 61.

170. **Office for Health Improvement and Disparities.** Percentage of physically inactive adults. *Fingertips.* [Online] 2021. [Cited: 25 01 2023.] https://fingertips.phe.org.uk/profile/msk/data#page/7/gid/1938133151/pat/6/par/E12000008/ati/401/are/E07000223/iid/93015/age/298/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1/page-options/car-do-0\_ine-ao-1\_ine-yo-1:2020:-1:-1\_ine-ct-44\_ine-pt-0.

171. **NASS.** Facts & figures . *NASS.* [Online] 2023. [Cited: 26 01 2023.] https://nass.co.uk/about-as/as-facts-and-figures/#:~:text=Axial%20SpA%20has%20a%20profound%20effect%20not%20only,people%20with%20axial%20SpA%20report%20absenteeism%20at%20work.

172. *Symptoms of depression and risk of new episodes of low back pain: a systematic review and meta-analysis.* **Pinheiro, M B, et al.** 11, s.l. : Arthritis care & research, 2015, Vol. 67.

173. *The prevalence of fibromyalgia in the general population: a comparison of the American College of Rheumatology 1990, 2010 and modified 2010 classification criteria. .* **Jones, G, et al.** 2, s.l. : Arthritis & Rheumatology, 2015, Vol. 67.

174. *Continuing specialist care into adulthood in young people with juvenile idiopathic arthritis: a retrospective cohort study using electronic health records in England.* **Costello, Ruth E, et al.** s.l. : Rheumatology, 2022.

175. *Annual consultation incidence of osteoarthritis estimated from population-based health care data in England.* **Yu, Dahai, et al.** 11, s.l. : Rheumatology (Oxford), 2015, Vol. 54.

176. *Association between gout flare and subsequent cardiovascular events among patients with gout.* **Cipolletta, Edoardo, Tata, Laila J and Nakafero, Georgina.** 5, s.l. : JAMA, 2022, Vol. 382.

177. *Association between osteoarthritis and cardiovascular disease: Systematic review and meta-analysis.* **Hall, Andrew J, et al.** 9, s.l. : European Journal of PReventive Cardiology, 2020, Vol. 23.

178. *Excess mortality in rheumatoid arthritis: Gains in life expectancy over 25 years.* **Norton, Sam, et al.** 1, s.l. : Rheumatology, 2014, Vol. 53.

179. *Independent impact of gout on the risk of diabetes mellitus among women and men: a population-based, BMI-matched cohort study.* **Rho, Young Hee, et al.** 1, s.l. : Annals of The Rheumatic Diseases, 2016, Vol. 75.

180. *Gout and the risk of advanced chronic kidney disease in the UK health system: a national cohort study.* **Stack, Austin G, et al.** 8, s.l. : BMJ Open, 2019, Vol. 9.

181. *Incidence and mortality of interstitial lung disease in rheumatoid arthritis: A population-based study.* **Bongartz, T, et al.** s.l. : Arthritis & Rheumatism, 2010, Vol. 62.

182. *Mortality, causes of death and influence of medication use in patients with systemic lupus erythematosus vs matched controls.* **Bultink, Irene E, et al.** 1, s.l. : Rheumatology, 2020, Vol. 60.

183. **University of Manchester.** Estimated number of people with Psoriatic Arthritis and Fibromyalgia in 2020. Manchester : Unpublished, 2023.

1. Data is unavailable for Northern Ireland and Wales so has not been included [↑](#footnote-ref-2)
2. Defined as a condition or illness that has lasted or is expected to last a year or more. [↑](#footnote-ref-3)
3. Northern Ireland has not been included in this graph as data for the prevalence of MSK conditions with varying deprivation is not available for Northern Ireland. [↑](#footnote-ref-4)
4. Defined as a condition or illness that has lasted or is expected to last a year or more. [↑](#footnote-ref-5)
5. Data for 2019-2020 are shown here to demonstrate the increase prior to the COVID-19 pandemic. [↑](#footnote-ref-6)
6. Due to data unavailability, we have applied the prevalence rate of England to produce the totals for Northern Ireland. Please use this statistic with caution. [↑](#footnote-ref-7)
7. Due to data unavailability, we have applied the prevalence rate of England to produce the totals for Northern Ireland. Please use this statistic with caution. [↑](#footnote-ref-8)