THE STATE OF MUSCULOSKELETAL HEALTH 2023

Arthritis and other musculoskeletal conditions in numbers
<table>
<thead>
<tr>
<th>CONTENTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction &amp; methods</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>What is arthritis?</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>01 Population health</strong></td>
<td>5</td>
</tr>
<tr>
<td>How many people have arthritis?</td>
<td>6</td>
</tr>
<tr>
<td>What are musculoskeletal conditions?</td>
<td>7</td>
</tr>
<tr>
<td>How many people have musculoskeletal conditions?</td>
<td>8</td>
</tr>
<tr>
<td>Health inequalities</td>
<td>9</td>
</tr>
<tr>
<td><strong>02 Person</strong></td>
<td>14</td>
</tr>
<tr>
<td>Impact of arthritis and musculoskeletal conditions</td>
<td>15</td>
</tr>
<tr>
<td>Arthritis, musculoskeletal conditions and multiple long-term conditions</td>
<td>18</td>
</tr>
<tr>
<td>Arthritis, musculoskeletal conditions, and wider health</td>
<td>20</td>
</tr>
<tr>
<td><strong>03 Provision</strong></td>
<td>23</td>
</tr>
<tr>
<td>Access to care</td>
<td>24</td>
</tr>
<tr>
<td><strong>04 Societal impact</strong></td>
<td>26</td>
</tr>
<tr>
<td>Impact on healthcare, social services, and the economy</td>
<td>27</td>
</tr>
<tr>
<td><strong>05 Conditions where arthritis is the main symptom</strong></td>
<td>29</td>
</tr>
<tr>
<td>Osteoarthritis</td>
<td>30</td>
</tr>
<tr>
<td>Gout</td>
<td>32</td>
</tr>
<tr>
<td>Rheumatoid arthritis</td>
<td>34</td>
</tr>
<tr>
<td>Psoriatic arthritis</td>
<td>36</td>
</tr>
<tr>
<td>Axial spondyloarthritis</td>
<td>38</td>
</tr>
<tr>
<td>Juvenile idiopathic arthritis (JIA)</td>
<td>40</td>
</tr>
<tr>
<td><strong>06 Conditions where arthritis is one symptom among many</strong></td>
<td>42</td>
</tr>
<tr>
<td>Lupus</td>
<td>43</td>
</tr>
<tr>
<td><strong>07 Musculoskeletal conditions</strong></td>
<td>45</td>
</tr>
<tr>
<td>Back pain</td>
<td>46</td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>48</td>
</tr>
<tr>
<td>Chronic pain</td>
<td>50</td>
</tr>
<tr>
<td>Osteoporosis and fragility fractures</td>
<td>52</td>
</tr>
<tr>
<td><strong>Glossary</strong></td>
<td>54</td>
</tr>
<tr>
<td><strong>References</strong></td>
<td>55</td>
</tr>
</tbody>
</table>
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 arthritis1. 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.

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.

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.

Figure 1. Hierarchy of evidence2

<table>
<thead>
<tr>
<th>Strength of conclusions</th>
<th>Systematic review &amp; meta-analysis</th>
<th>Collects all previous studies on the topic and statistically combines their results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rondomised-controlled trial</td>
<td>Randomly allocates people to receive one of several clinical interventions</td>
</tr>
<tr>
<td></td>
<td>Quasi-experiment</td>
<td>Non-randomly assigns groups of patients to receive either a treatment or placebo</td>
</tr>
<tr>
<td></td>
<td>Cohort study</td>
<td>Follows a group of people to track risk factors and outcomes over time</td>
</tr>
<tr>
<td></td>
<td>Case-control study</td>
<td>Compares histories of a group of people with a condition to a group of people without</td>
</tr>
<tr>
<td></td>
<td>Cross-sectional survey</td>
<td>Assesses the prevalence of an outcome in a broad population at one point in time</td>
</tr>
<tr>
<td></td>
<td>Case reports</td>
<td>Detailed histories of a small number of individual cases</td>
</tr>
</tbody>
</table>
WHAT IS ARTHRITIS?

Arthritis refers to painful, stiff, or restricted joints. These symptoms are common in conditions that cause joint damage or inflammation. These include osteoarthritis (OA), autoimmune inflammatory arthritis conditions including axial spondyloarthritis, crystal arthritis (such as gout), or as symptoms 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 (RA), 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 idiopathic arthritis (JIA) in childhood. Arthritis is also a common symptom in other, mainly rare autoimmune conditions, including lupus, sarcoidosis 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.
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 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

**HOW MANY PEOPLE HAVE ARTHRITIS?**

| Number of people with hip and knee osteoarthritis in the UK³ |
|---|---|
| Number of people with knee osteoarthritis | Number of people with hip osteoarthritis |
| 423,470 | 257,654 |
| 147,418 | 88,289 |
| 4,538,461 | 2,718,089 |
| 274,072 | 179,719 |

**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
**1.6 MILLION** people have recorded diagnoses of gout.⁷⁷

**450,000** adults have a recorded diagnosis of RA.⁸⁷
**190,000** adults are estimated to have psoriatic arthritis.⁴
**60,000** adults have a recorded diagnosis of axial spondyloarthritis.⁸⁷
**12,000** children have JIA.¹⁰⁰

Note: The numbers are estimates and may not be exhaustive. The prevalence of arthritis can vary by region and age group.
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.

I feel pain all of the time and this affects my ability to do day-to-day tasks. Every task I choose to do has a trade-off with another. For example, if I choose to cook something, doing the laundry becomes more difficult.

Chris

UK Population, 2022
67,508,936

20,295,706
People live with an MSK condition in the UK
Around a third of the UK population, **OVER 20 MILLION PEOPLE** (20,295,706), live with an MSK condition.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.70

### The estimated number of people with a MSK condition in...

<table>
<thead>
<tr>
<th>Region</th>
<th>Estimated Number of People (MSK Condition)</th>
<th>Percentage of the Adult Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Ireland</td>
<td>525,000 people</td>
<td>29%</td>
</tr>
<tr>
<td>Scotland</td>
<td>1.7M people</td>
<td>33%</td>
</tr>
<tr>
<td>Wales</td>
<td>974,000 people</td>
<td>32%</td>
</tr>
<tr>
<td>England</td>
<td>17.1M people</td>
<td>32%</td>
</tr>
</tbody>
</table>

### Children and long-term MSK conditions

<table>
<thead>
<tr>
<th>Estimated Number of People (MSK Condition)</th>
<th>Percentage of Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>18,427 people</td>
<td>2%</td>
</tr>
<tr>
<td>216,344 people</td>
<td>2%</td>
</tr>
</tbody>
</table>

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i Defined as a condition or illness that has lasted or is expected to last a year or more.

ii Data is unavailable for Northern Ireland and Wales so has not been included in the infographic.
Health inequalities are “unfair and avoidable differences in health across the population, and between different groups within society.”

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

Arthritis
Prevalence of osteoarthritis (OA) in people aged 45 and over

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
Percentage reporting a long-term MSK condition

People who live in the most deprived fifth of society are more likely to report arthritis or a long-term MSK condition compared to those living in the least deprived fifth.

Defined as a condition or illness that has lasted or is expected to last a year or more.

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.
HEALTH INEQUALITIES

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

- **41%** of the most deprived fifth report chronic pain
- **30%** of the least deprived quintile report chronic pain

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

To find out more on health inequalities and chronic pain you can read our report, *Chronic Pain in England: Unseen, Unequal, Unfair*. 

**Percentage of adults (18+) classified as overweight or obese**

- **58.2%**
- **60.8%**
- **61.6%**
- **62.6%**
- **62.9%**
- **64.6%**
- **64.7%**
- **64.8%**
- **67.7%**
- **71.9%**

The risk of developing osteoarthritis increases **BY 1% FOR EACH 1KG/M²** increase in BMI

The risk of developing osteoarthritis increases **BY 3% FOR EVERY 5CM** increase in waist circumference
HEALTH INEQUALITIES

Ethnicity

MSK conditions and chronic pain disproportionately affect some minority ethnic groups

In England, Pakistani (20.8%), Black Caribbean (18.7%) and White British (16.8%) ethnic groups are the most likely to report a long-lasting MSK condition.¹⁶

Prevalence of long term musculoskeletal conditions by ethnicity, 2012 to 2018

- Bangladeshi: 15.3%
- Black African: 15.4%
- Black Caribbean: 18.7%
- Chinese: 7.4%
- Indian: 13.7%
- Mixed/multiple: 13.8%
- Other backgrounds: 14.7%
- Other white backgrounds: 13.3%
- Pakistani: 20.8%
- White British: 16.8%
- White Irish: 14.8%

The Musculoskeletal health: trends, risk factors and disparities in England report provides data to expand awareness of disparities in MSK health at a national level. To find out more about this report please click here.
HEALTH INEQUALITIES

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

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.

Age
Arthritis
Osteoarthritis prevalence increases with age.

Prevalence of OA in any joint in men and women (%)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.

2.8 MILLION people aged under 35 years (11%) live with an MSK condition,⁵
10.2 MILLION people aged 35-64 years (40%) live with an MSK condition,⁶
7.4 MILLION people aged 65 and over (61%) live with an MSK condition.⁶
HEALTH INEQUALITIES

Percentage of people with an MSK condition

<table>
<thead>
<tr>
<th>Age group</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>20-34</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>35-44</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>45-54</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>55-64</td>
<td>51%</td>
<td></td>
</tr>
<tr>
<td>65-74</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>75-84</td>
<td>63%</td>
<td></td>
</tr>
<tr>
<td>85+</td>
<td>60%</td>
<td></td>
</tr>
</tbody>
</table>

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).\(^{21}\)
- Non-radiographic axial spondyloarthritis has an equal distribution between men and women.\(^{21}\)

**Osteoarthritis in the UK\(^{18}\)**

- **Women**
  - 6M
  - 35% have an MSK condition\(^{5}\)
- **Men**
  - 4M
  - 28% have an MSK condition\(^{5}\)

**MSK conditions**

- **Women of all ages**
  - 11.6M
  - 35% have an MSK condition\(^{5}\)
- **Men of all ages**
  - 8.7M
  - 28% have an MSK condition\(^{5}\)

**Chronic pain**

- **Women**
  - 38% have chronic pain in England.\(^{12}\)
  - 14% have high-impact chronic pain.\(^{12}\)
- **Men**
  - 30% have chronic pain in England.\(^{12}\)
  - 9% have high-impact chronic pain.\(^{12}\)
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

<table>
<thead>
<tr>
<th>UK causes of YLDs are:5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Low back pain</td>
</tr>
<tr>
<td>2. Diabetes</td>
</tr>
<tr>
<td>3. Depressive disorders</td>
</tr>
<tr>
<td>4. Headache disorders</td>
</tr>
<tr>
<td>5. Falls</td>
</tr>
<tr>
<td>6. Neck pain</td>
</tr>
<tr>
<td>7. Age-related hearing loss</td>
</tr>
<tr>
<td>8. Osteoarthritis</td>
</tr>
<tr>
<td>9. Other MSK conditions</td>
</tr>
<tr>
<td>10. Gynaecological</td>
</tr>
</tbody>
</table>

21% of YLDs in the UK are accounted for by MSK conditions.5
Impact on daily activities

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

Factors impacting the lives of people with MSK conditions

- Pain: 74% significant impact, 29% any impact
- Fatigue: 68% significant impact, 28% any impact
- Feeling low: 63% significant impact, 22% any impact
- Difficulty getting out: 61% significant impact, 24% any impact
- Feeling anxious: 61% significant impact, 22% any impact
- Difficulty with dexterity: 53% significant impact, 17% any impact
- Difficulty taking care of yourself: 45% significant impact, 13% any impact

1/2 of respondents reported they cannot do anything themselves to lessen the impact of their condition on their lives.

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.

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.

1 in 3 current UK employees have a long-term health condition.

1 in 10 current UK employees have an MSK condition.

1 in 3 employees with a long-term condition have not discussed it with their employer.

Percentage in employment

- MSK condition: 62.4%
- No long-term condition: 82.1%

Percentage economically inactive

- MSK condition: 34.9%
- No long-term condition: 15.2%
**IMPACT OF ARTHRITIS AND MSK CONDITIONS**

**23.3M**

Working days were lost in 2021 due to MSK conditions.\(^{30}\)

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

---

**Percentage of occurrences of sickness absence**\(^{30}\)

<table>
<thead>
<tr>
<th>Year</th>
<th>Other (Including COVID-19)</th>
<th>Minor Illnesses</th>
<th>MSK Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>14%</td>
<td>27%</td>
<td>30%</td>
</tr>
<tr>
<td>2020</td>
<td>17%</td>
<td>26%</td>
<td>22%</td>
</tr>
<tr>
<td>2021</td>
<td>20%</td>
<td>16%</td>
<td>13%</td>
</tr>
</tbody>
</table>

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**12%**

Of sickness absence within the NHS between September 2021 and August 2022 was due to back problems and other MSK conditions.\(^{31}\)

---

**3,252,147**

Equal to full-time equivalent working days lost\(^{31}\)

---

**53%**

Of people we surveyed with MSK conditions say their symptoms have a negative impact on work.\(^{24}\)

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**13%**

Of Employment and Support Allowance (ESA) claimants 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.**\(^{34}\)

---

**18%**

Of fit notes issued for MSK conditions from June 2021 to June 2022.\(^{34}\)

---

**54%**

Of fit notes issued for MSK conditions cited episodes lasting 5 or more weeks.\(^{34}\)

---

**4,510**

People receiving support from the UK’s access to work scheme in 2021-22 had an MSK condition.\(^{32}\)
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.\(^ {35,36} \)

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 OA are:

1.2x more likely to have an additional long-term condition than people without.\(^ {38} \)

People with OA are:

2.5x more likely to have three or more additional conditions than people without.\(^ {38} \)

People with OA have a

3x 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.\(^ {39} \)

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

61% higher risk of having diabetes mellitus than those without arthritis.\(^ {39} \)

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.

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

**Four in Ten**
people with multiple long-term conditions are living with a physical and a mental health condition.\(^{35,36}\)

**One in Five**
adults (21%) aged 46-48 in Britain with multiple long-term conditions have recurrent back issues.\(^{42}\)

**One in Eight**
people (12.1%) in England report living with at least two long-term conditions, one of which is MSK related.\(^6\)

**One in Three**
adults (34%) who are 46-68 years old live with multiple long-term conditions in Britain.\(^{42}\)

**Six in Ten People** aged 65-84 years have multiple long-term conditions.\(^{35,36}\)

**Eight in Ten 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\(^{36}\) 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.\(^{42}\)
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.

**Prevalence of overweight and obesity (%)**

<table>
<thead>
<tr>
<th>Country</th>
<th>With a long-term MSK condition</th>
<th>No long-term MSK condition</th>
<th>Total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>69%</td>
<td>61%</td>
<td>64%</td>
</tr>
<tr>
<td>Scotland</td>
<td>78%</td>
<td>65%</td>
<td>67%</td>
</tr>
<tr>
<td>Wales</td>
<td>72%</td>
<td>60%</td>
<td>62%</td>
</tr>
</tbody>
</table>

The risk of developing osteoarthritis increases by:

- **1% for each 1kg/m² increase in BMI**
- **3% for every 5cm increase in waist circumference**
- **7 in 10 adults 16+ with a long-term MSK condition have overweight body weight or obesity**
- **54% of adults in England with class 3 obesity report chronic pain**

With Psoriatic Arthritis have obesity

**Over a half**
Arthritis, MSK conditions and wider health

Average BMI of hip and knee replacement patients

<table>
<thead>
<tr>
<th>Healthy weight (18.5-24.9)</th>
<th>Overweight (25-29.9)</th>
<th>Obesity class 1 (30-34.9)</th>
<th>Obesity class 2 (35-39.9)</th>
<th>Obesity class 3 (40+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIP 28.7</td>
<td>KNEE 30.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Obesity directly damages weight-bearing joints, such as knees and hips, because of the abnormally high loads they have to carry. 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.

Physical inactivity

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

Around 1 in 4 people in the UK are physically inactive.

Prevalence of inactivity

People who have obesity are:

- 1.5–2.5x more likely to have back pain than someone with BMI in the ‘healthy’ range.
- 2x more likely than someone with BMI in the ‘healthy’ range to develop gout and more likely to develop it at a younger age.
- Have a significantly increased risk of developing rheumatoid arthritis.

IN THE NORTHERN IRELAND HEALTH SURVEY

20% of respondents reported 0 days where they had completed at least 30 minutes of physical activity (inactive).

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

60% of people with rheumatoid arthritis are physically inactive.

45% of people who are physically inactive in England have chronic pain.
**Arthritis, MSK Conditions and Wider Health**

Regular physical activity reduces people's risk of:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip and knee osteoarthritis pain</td>
<td>6%</td>
</tr>
<tr>
<td>Joint and back pain</td>
<td>25%</td>
</tr>
<tr>
<td>Falls</td>
<td>76%</td>
</tr>
<tr>
<td>Hip fractures</td>
<td>24%</td>
</tr>
<tr>
<td>Depression</td>
<td>25%</td>
</tr>
</tbody>
</table>

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

- 6 IN 10 people (60%) surveyed with MSK conditions reported using physical activity as a way to manage their symptoms.
- 7 IN 10 people (70%) surveyed with MSK conditions said they would like to be more active.
- 4 IN 10 people (36%) surveyed with MSK conditions who were active at least once a week said they exercised because it helped them with their pain.
- 8 IN 10 people (77%) surveyed with MSK conditions said they want practical support to help them be more physically active.
- 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.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>of people with osteoarthritis experience symptoms of depression and anxiety</td>
<td>20%</td>
</tr>
<tr>
<td>of people with rheumatoid arthritis have mental health problems such as anxiety, depression</td>
<td>33%</td>
</tr>
<tr>
<td>people with psoriatic arthritis have depression</td>
<td>20%</td>
</tr>
</tbody>
</table>

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

Depression is 4x more common among people in persistent pain compared to those without pain.
03 PROVISION
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.

The number of hip and knee replacements conducted each year from 2013-2021

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

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.

In England the waiting list for Trauma and Orthopaedic treatment includes 797,630 people. 7% have waited over a year (December 2022 data).

In Wales 100,102 people are waiting for Trauma and Orthopaedic treatment with 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). At the waiting list’s peak, in March 2021 in England, 17% of those on the list had been waiting over a year.

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).
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

For all the NEIAA metrics there is significant geographical variation.74

<table>
<thead>
<tr>
<th>Region</th>
<th>Metric Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EAST OF ENGLAND</strong></td>
<td>39% of inflammatory arthritis patients are referred within 3 working days.</td>
</tr>
<tr>
<td><strong>NORTH EAST OF ENGLAND</strong></td>
<td>72% of inflammatory arthritis patients are referred within 3 working days.</td>
</tr>
<tr>
<td><strong>EAST MIDLANDS</strong></td>
<td>44% of inflammatory arthritis patients started cDMARD therapy within 6 weeks of referral.</td>
</tr>
<tr>
<td><strong>SOUTH WEST</strong></td>
<td>85% of inflammatory arthritis patients started cDMARD therapy within 6 weeks of referral.</td>
</tr>
<tr>
<td><strong>WALES</strong></td>
<td>34% of inflammatory arthritis patients are seen within 3 weeks of referral in Wales.</td>
</tr>
<tr>
<td><strong>BELOW ENGLAND</strong></td>
<td>-8%</td>
</tr>
</tbody>
</table>
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

Every year:

1 in 5 adults will consult their GP for an MSK condition.76

1 in 7 GP consultations.1

1 in 2 47% of people with long-term MSK conditions in England take five or more medicines on a regular basis.77

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

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

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
IMPACT ON HEALTHCARE, SOCIAL SERVICES, AND THE ECONOMY

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.\(^\text{80}\)

Combined costs from worklessness and sickness absence in the UK amount to around £100 billion annually.\(^\text{63}\)

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.\(^\text{80}\)

**Economy**

MSK conditions accounted for the third largest area of NHS programme spending at £4.7 billion in 2013-14.\(^\text{61}\) 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\(^\text{4}\) and an estimated £6.3 billion in 2022-2023.\(^\text{82,81}\)

The total work-related costs of axial spondyloarthritis due to early retirement, absenteeism and presenteeism is estimated to be £11,943 per person per year.\(^\text{67}\)

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\(^{vi}\) Data for 2019-2020 are shown here to demonstrate the increase prior to the COVID-19 pandemic.
05 CONDITIONS WHERE ARTHRITIS IS THE MAIN SYMPTOM
What I don’t forget is what it used to be like before I had my hips replaced, which was unbearable pain. I couldn’t get out of bed or get dressed in the mornings. I couldn’t put my socks on, I felt useless, I felt a burden on my daughter.

When you’re in so much pain and taking so many painkillers you can’t think straight. You’re going from one hospital appointment to another, doing blood tests and scans. I was worn out constantly.

Brenda
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

- 10M people have OA
- 3.2M people have hip OA
- 5.4M people are estimated to have knee OA

Number of people with hip and knee osteoarthritis in the UK

- Northern Ireland: 147,418
- Wales: 88,289
- Scotland: 274,072
- England: 179,719
- Total: 423,470

- Northern Ireland: 423,470
- Wales: 257,654
- Scotland: 274,072
- England: 179,719
- Total: 2,718,089

- Northern Ireland: 423,470
- Wales: 257,654
- Scotland: 274,072
- England: 179,719
- Total: 4,538,461

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

Every year around 350,000 people are diagnosed with OA.

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.
- Heredity – Inherited genetic and genomic factors.
- Abnormal loading onto joints – Due to 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.

Wider health

Around 20% of people with OA experience symptoms of depression and anxiety.
My gout started when I was only a year into my thirties and the only way that I could get around was by crawling on all fours. At its worst I couldn’t walk for three months, I couldn’t drive, I couldn’t even play with my daughter.

Neil
Gout 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.

Prevalence and incidence

1.6M
(1 in 50) people have recorded diagnoses of gout.\(^{86}\)

66,000
people are newly diagnosed with gout each year.\(^{86}\)

Gout and other long-term conditions

People with gout are at 71% 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.\(^{176}\)

Risk Factors

- **Age** – The risk increases with age.
- **Men and women** – Gout is more common in men.
- **Weight** – Being overweight or obese increases the risk of gout.
- **Heredity** – Inherited genetic and genomic factors.
- **Food and drink intake** – Some food and drink raise urate levels.
- **Medicines** – That lead to increased urate levels.
- **Long term conditions** – Kidney disease.
I was diagnosed with rheumatoid arthritis at the age of 21. I was in my third year of university, studying to be a primary school teacher. Suddenly, one morning, my thumbs became very painful. Then my elbows became stiff and sore, and I couldn’t straighten my arms.

At the moment, I’m doing ok. There are good days and bad days. I still experience pain every day, but am doing much better than when I was first diagnosed. I have fewer flare-ups, which shows that the medication I’m using is really helping me.

Keri
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

450,000 adults have a recorded diagnosis of RA.\(^{87}\)

27,000 adults are newly diagnosed with RA each year.\(^{87}\)

RA and other long-term conditions

Around 30% of people with RA develop osteoporosis (weak bones).\(^{168}\)

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.\(^{181}\)

Wider health

60% of people with RA are physically inactive.\(^{56}\)

Around 1 in 3 of people with RA have mental health problems such as anxiety, depression.\(^{53}\)

Work

Around 1 in 3 of people with RA quit work within 5 years of diagnosis.\(^{169}\)

Risk Factors

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.

Weight – Being clinically overweight or obese increases risk.\(^{89}\)

Hereditity – Inherited genetic, genomic, and epigenetic factors.

Microbiomes – Changes in the microbiome.\(^{90,91}\)

Smoking tobacco – Increases risk, worsens disease, and weakens treatment response.\(^{88}\)
After my diagnosis, my arthritis developed quite fast over the next 10 years. My back had naturally fused with the arthritis and spondylitis had developed. I medically retired in 2015 because of this. Effectively, arthritis cost me my career.

Sarah
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.ª

Each year, around
8,430
adults are newly diagnosed with psoriatic arthritis.ª

Psoriatic arthritis and other long-term conditions

1 IN 5
Around 19% of people with psoriatic arthritis have a cardiovascular disease.ª

1 IN 4
25% who have psoriasis have psoriatic arthritis.92

Wider Health

1 IN 5
Around 20% people with psoriatic arthritis have depression.ª

1 IN 4
25% Psoriatic arthritis patients have obesity.ª
If you’re young and have a condition like ankylosing spondylitis, you shouldn’t think it’s the end of the world. The key is to have faith in yourself, that you are strong enough to overcome the obstacles. But also, be realistic and pre-empt what might be difficult and take steps to overcome or avoid potential problems.

It can be difficult, and there will be days when you won’t want to get out of bed, when everything hurts, and it sucks, but you have to break through it. As soon as you’re up and moving, the adrenalin takes over and it goes to the back of your mind.

I cannot emphasise strongly enough that you should use the people around you for support. It can take a lot of strength to ask for help, but it’s important to.

Ben
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. The number of adults who have symptomatic but undiagnosed axial spondyloarthritis, or where the diagnosis is not accurately recorded, is uncertain.

**21%**

of people with axial spondyloarthritis will have a painful eye condition called uveitis which can cause blindness.

**Work**

In a study on men with ankylosing spondylitis, a type of axial spondyloarthritis,

**24%**

reported retiring early due to axial spondyloarthritis.

**45%**

changed to a less physically demanding job due to their condition.

### Risk Factors

- **Age** – Axial spondyloarthritis often presents in people’s late teens or twenties.
- **Chronic Conditions** – Axial spondyloarthritis is more common in those with psoriasis or inflammatory bowel disease.
- **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.
- **Heredity** – Inherited genetic factors.
I started getting really bad swelling a few years before my diagnosis at 11. I had loads of inflammation, to the point where I couldn’t go to school or even walk. I was in a lot of pain. I’d be on the sofa or couldn’t get out of bed. There was no way I’d be able to walk around the school building.

The main thing after the diagnosis was telling people I had arthritis. They’d be like, “don’t be silly, kids don’t get arthritis”. People will still say to me now, “aren’t you too young to be getting that?” I was glad to know what it was, but it was strange to have a lot of people not believe I had arthritis.

Becca
JUVENILE IDIOPATHIC ARTHRITIS (JIA)

JIA refers to a group of arthritis conditions that present before children are 16 years old. They 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.98

Prevalence and incidence

It is estimated that 12,000 children under 16 years have ever been diagnosed with JIA.100

AROUND HALF of the children diagnosed with JIA will be discharged from care (perhaps due to drug-free remission).101

JIA and other long-term conditions

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

Risk Factors

- **Age** – Typical onset age is between 2 and 10 years.
- **Men and women** – JIA is more common in girls.
- **Heredity** – Inherited genetic, genomic and epigenetic factors.
- **Microbiomes** – Changes in the microbiome.
06 Conditions where arthritis is one symptom among many
One day I went to the cinema and I became very unwell. When the movie was finished, I couldn’t put my feet on the ground, I was in excruciating pain. It was like pins and needles multiplied by 1,000 times. I had to be carried out of the cinema. It was scary.

Shortly after I got home to London, I went to my local hospital for further tests. This led to a diagnosis of lupus.

Monique
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 estimated 70,000 people in the UK have lupus.105

3,000 people are newly diagnosed with lupus each year.106

**Lupus and other long-term conditions**

Patients with lupus have a mortality rate nearly 2 TIMES HIGHER than those without lupus.157

In patients with mild lupus, of more than 10 years duration, there is a 3–4 TIMES increased risk of cardiovascular events and death compared with people who do not have lupus.159

**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.
- **Heredity** – Inherited genetic, genomic and epigenetic factors.106
- **Microbiomes** – Changes in the microbiome.107
07 OTHER MUSCULOSKELETAL CONDITIONS
I was diagnosed with osteochondritis at 7, and then with osteoarthritis in the back at 23. It affects my shoulders, back, knees and hands. I also have fibromyalgia.

I developed reactive arthritis and I have daily pain. My back is strapped up at the moment. I have lost 2.5 inches in height which is being looked at and creates immense pain.

Sarah
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).\textsuperscript{5}

### Prevalence and incidence

<table>
<thead>
<tr>
<th>The number of people with low back pain\textsuperscript{3,v}</th>
<th>Wider health</th>
<th>Work</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>11,000,000</strong> people in the UK experience low back pain in any given year and of these 11 million, <strong>6.5 MILLION</strong> experience severe back pain.\textsuperscript{3}</td>
<td>The odds of back pain in people with symptoms of depression have been shown to be <strong>50% HIGHER</strong> than in those without symptoms of depression.\textsuperscript{109}</td>
<td>In June 2022, the ONS found that <strong>262,272</strong> people reported having back and neck pain that forced them to leave work.\textsuperscript{10}</td>
</tr>
<tr>
<td><strong>2,600,000</strong> new cases of low back pain occur each year in the UK.\textsuperscript{5}</td>
<td></td>
<td>Around <strong>1 IN 5</strong> workers with back pain take time off work over a period of 6 months or longer.\textsuperscript{111}</td>
</tr>
</tbody>
</table>

\* 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.

### 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.\textsuperscript{108}
- **Men and women** – Back pain is more common in women.
- **Injury**
- **Weight** – Those who are overweight or obese are more likely to have lower back pain than those classified as having a normal weight.\textsuperscript{51}
- **Poor general health**

In June 2022, the ONS found that 262,272 people reported having back and neck pain that forced them to leave work.\textsuperscript{10} Around **1 IN 5** workers with back pain take time off work over a period of 6 months or longer.\textsuperscript{111}
I had the symptoms for years before I found out I had fibromyalgia. I knew I wasn’t right. I’d feel awful. When I eventually saw a rheumatologist, she just pressed my trigger points – I went through the roof. Tears were pouring down my face.

Knowing I had fibromyalgia made such a difference. When you can name it, you can start dealing with it.

Lynn
Fibromyalgia

Fibromyalgia is a chronic condition, which is a form of chronic primary pain. Fibromyalgia does not itself cause any lasting damage to 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.\(^{113,114}\)

Wider health

\(\%\), Lifetime prevalence in people with fibromyalgia

Depression 70%

Anxiety 60%

Common comorbidities

Fibromyalgia is associated with a 1.54-FOLD INCREASED RISK for irritable bowel syndrome.\(^{116}\)

Risk Factors

Age – Fibromyalgia most commonly presents between 25 and 55 years.

Men and women – Fibromyalgia is more common in women.

Heridity – Inherited genetic, genomic, and epigenetic factors.

Microbiomes – Changes in the microbiome.\(^{113}\)

*prevalence estimation varies due to variation in classification/diagnostic criteria
CHRONIC PAIN

When it first started, I was completely bedridden and then I went to the wheelchair and slowly I was able to start walking with the stick. It got better, but it never went away. I’m in constant pain to be quite honest.

I’ve learnt to control the pain and live with it. In the morning, as soon as I get up it takes me about 3 hours to straighten up. I get up slowly and then I try to take a few steps and take my medicines. I haven’t been able to walk now for some time.

Kokila
Pain is one of the leading symptoms of MSK conditions. Chronic pain is defined as pain which has lasted for more than three months – it affects between 18.4 MILLION (34%) and 28 MILLION people (43%) in the UK.  

**Chronic pain in England**

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.  

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.  

More women are affected by chronic pain than men.  
**38% OF WOMEN** have chronic pain in England compared to **30% OF MEN**.  
**14% OF WOMEN** have high-impact chronic pain compared to **9% OF MEN**.  
Chronic pain increases with increasing age, but people of all ages can have it.  

To find out more on chronic pain you can read our report, *Chronic Pain in England: Unseen, Unequal, Unfair*.  

---  

**Pain in arms, hands, hips, legs or feet**  
**Pain in neck or shoulder**  
**Back pain**  
**Neck or shoulder pain**  

**24%**  
**55%**  
**42%**  
**43%**  

**39%**  
**29%**  
**18%**  

**53%**  
**49%**  
**43%**  
**39%**  

**Age**  
16-34  
35-44  
45-54  
55-64  
65-74  
75+  

**42%**  
**55%**  
**24%**  

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**Age**  
16-34  
35-44  
45-54  
55-64  
65-74  
75+  

---
I was diagnosed with cervical spondylosis, and then with osteoarthritis in my spine quite a bit later. I can’t walk long distances. Days vary, but on some I’m severely restricted. When I walk, I get chronic lower back pain and mobility is a bit of an issue.

Margaret
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 3,000,000 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 7% LESS LIKELY to receive surgery within the 36-hour target than non-inpatients.122

Those with inpatient femoral fractures were 9% LESS LIKELY TO SEE A GERIATRICIAN within the 72-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


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