

# THE STATE OF MUSCULOSKELETAL HEALTH 2023

Arthritis and other musculoskeletal  
conditions in numbers



**DATA**  
**VERSUS**  
**ARTHRITIS**

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# 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<sup>1</sup>. 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.

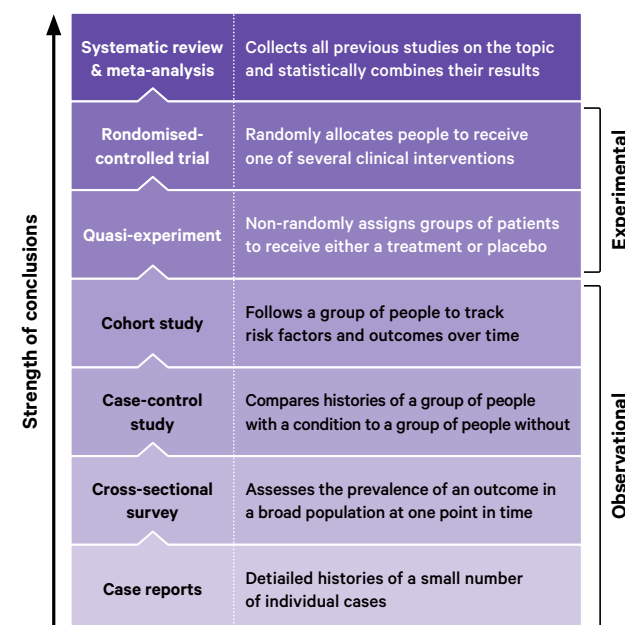


Figure 1. Hierarchy of evidence<sup>2</sup>

# 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.



**OVER  
10 MILLION  
PEOPLE IN  
THE UK HAVE  
ARTHRITIS<sup>1</sup>**



01

**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 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.<sup>1,87</sup>

**10 MILLION** people have Osteoarthritis (OA).<sup>1</sup>

**5.4 MILLION** people are estimated to have knee OA.<sup>3</sup>

**3.2 MILLION** people are estimated to have hip OA.<sup>3</sup>

**1.6 MILLION** people have recorded diagnoses of gout.<sup>77</sup>

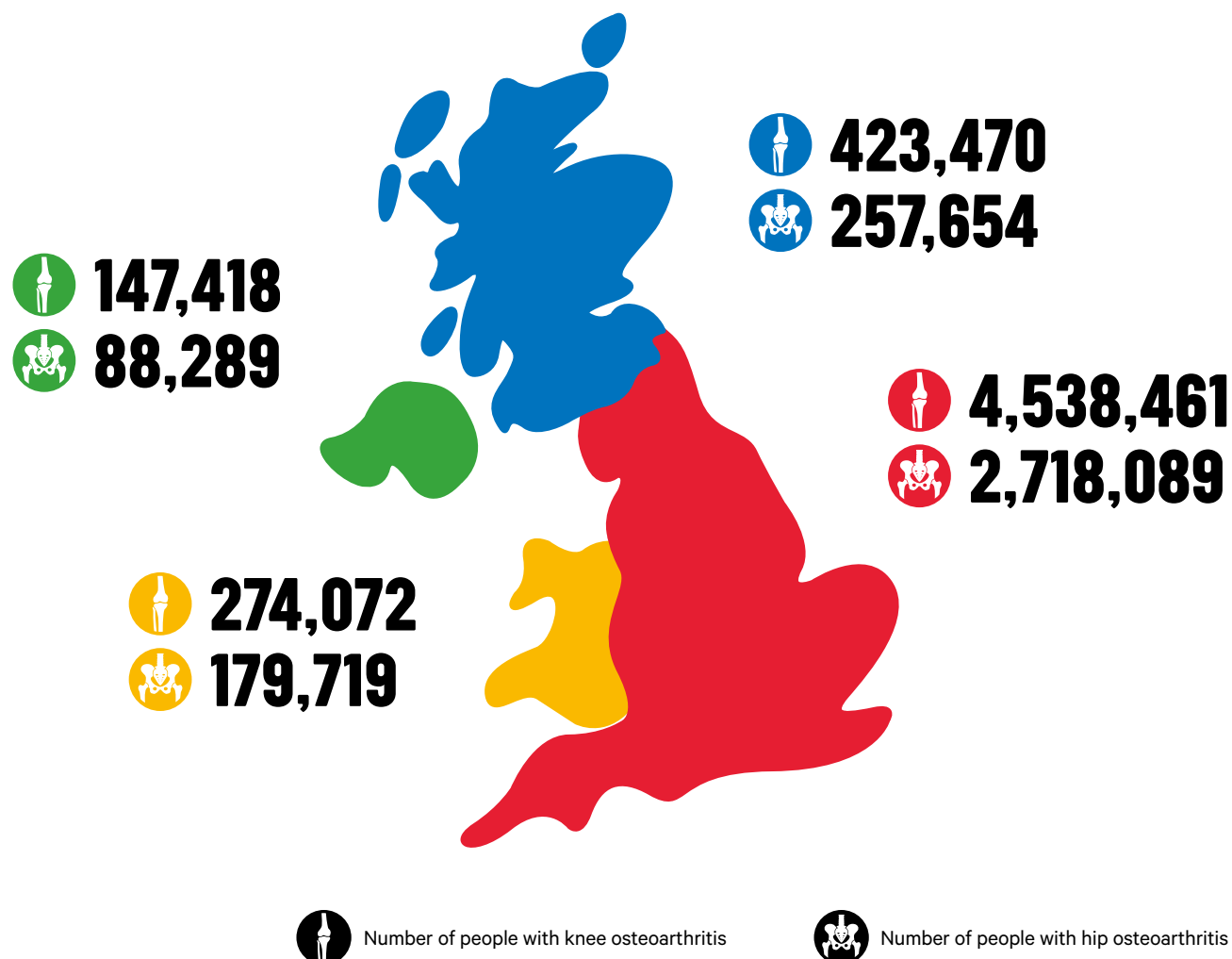
**450,000** adults have a recorded diagnosis of RA.<sup>87</sup>

**190,000** adults are estimated to have psoriatic arthritis.<sup>4</sup>

**60,000** adults have a recorded diagnosis of axial spondyloarthritis.<sup>87</sup>

**12,000** children have JIA.<sup>100</sup>

## Number of people with hip and knee osteoarthritis in the UK<sup>3</sup>



# 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.



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

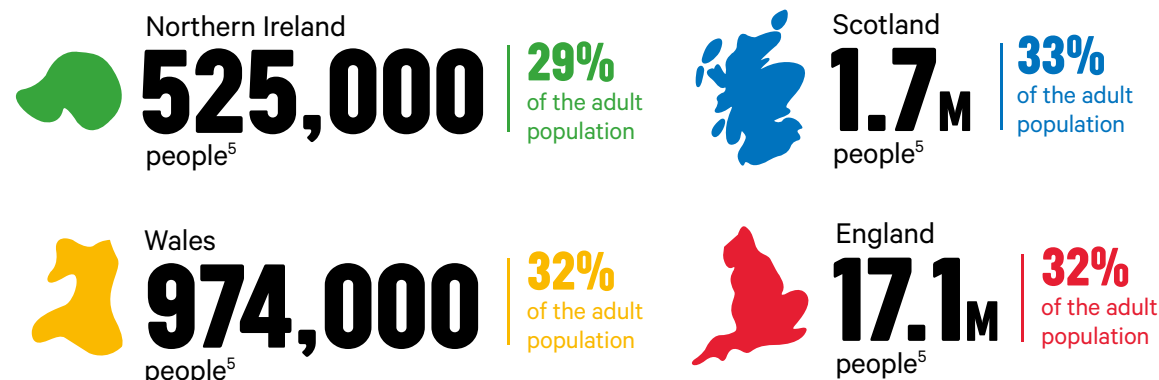
People live with an MSK condition in the UK



# HOW MANY PEOPLE HAVE MSK CONDITIONS?

Around a third of the UK population, **OVER 20 MILLION PEOPLE** (20,295,706), live with an MSK condition.<sup>5</sup>

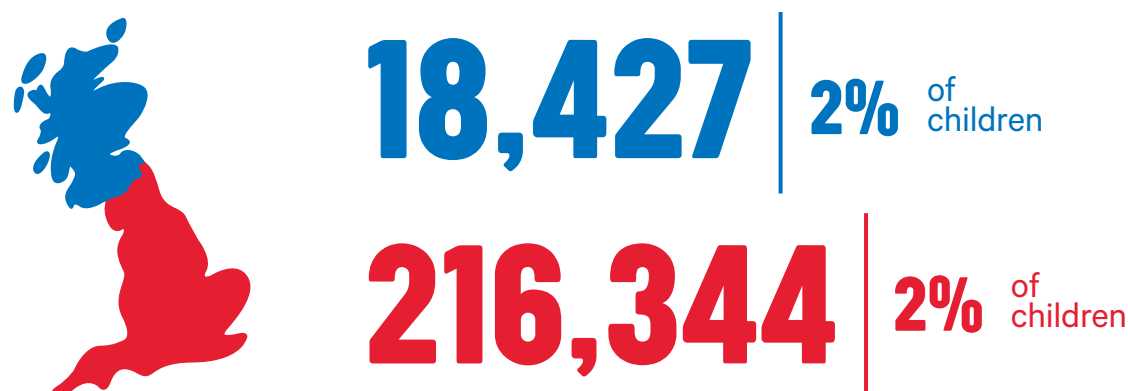
## The estimated number of people with a MSK condition in...



## 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.<sup>7,10</sup>

## Children and long-term MSK conditions<sup>i,ii</sup>



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

<sup>ii</sup> Data is unavailable for Northern Ireland and Wales so has not been included in the infographic.

# HEALTH INEQUALITIES

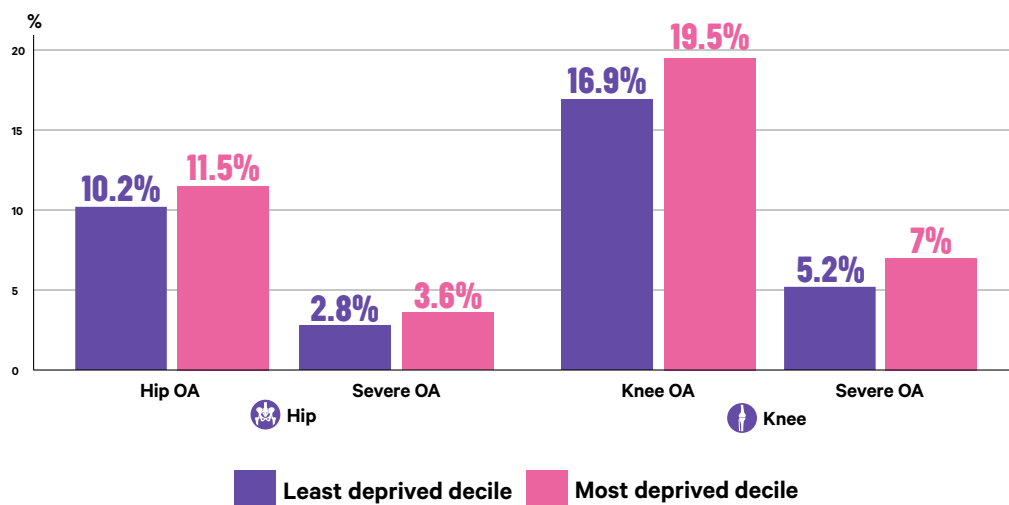
Health inequalities are “unfair and avoidable differences in health across the population, and between different groups within society.”<sup>11</sup>

## Deprivation

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

## Arthritis<sup>6</sup>

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

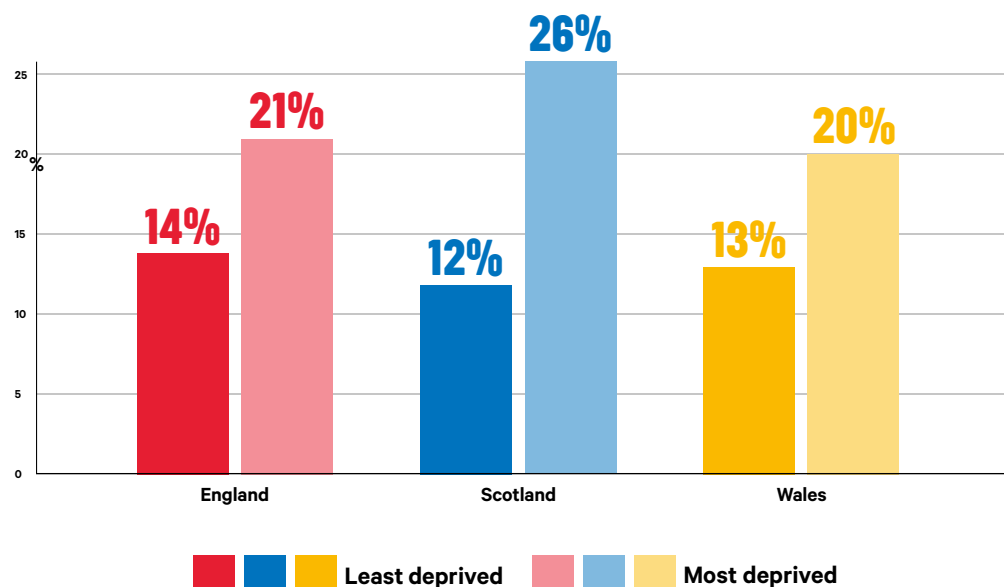


The prevalence of hip osteoarthritis is higher in people living in the most deprived tenth of society than those living in the least deprived tenth.<sup>6</sup>

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.<sup>6</sup>

## MSK conditions<sup>iii</sup>

Percentage reporting a long-term MSK condition<sup>7,8,10</sup>



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

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

iv 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.<sup>12</sup>

**41%** of the most deprived fifth report chronic pain



4 in 10 people

**30%** of the least deprived quintile report chronic pain



3 in 10 people

## Overweight and physical inactivity

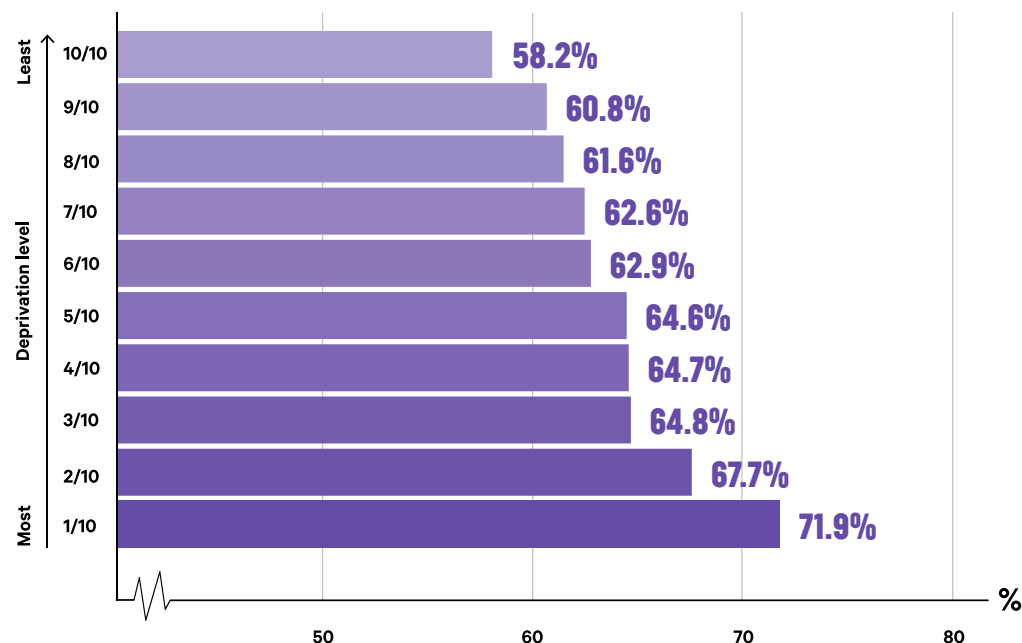
### Arthritis

The risk of developing osteoarthritis increases by 1% for each 1kg/m<sup>2</sup> increase in BMI (Body Mass Index – an estimate of body fat based on weight and height)<sup>13</sup>. The risk of developing osteoarthritis increases by 3% for every 5cm increase in waist circumference.<sup>13</sup>

People living in more deprived areas are more likely to be overweight or obese than those in less deprived areas.<sup>14</sup>

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.<sup>15</sup>

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



The risk of developing osteoarthritis increases  
**BY 1% FOR EACH 1KG/M<sup>2</sup>**  
increase in BMI

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

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

# HEALTH INEQUALITIES

## Ethnicity

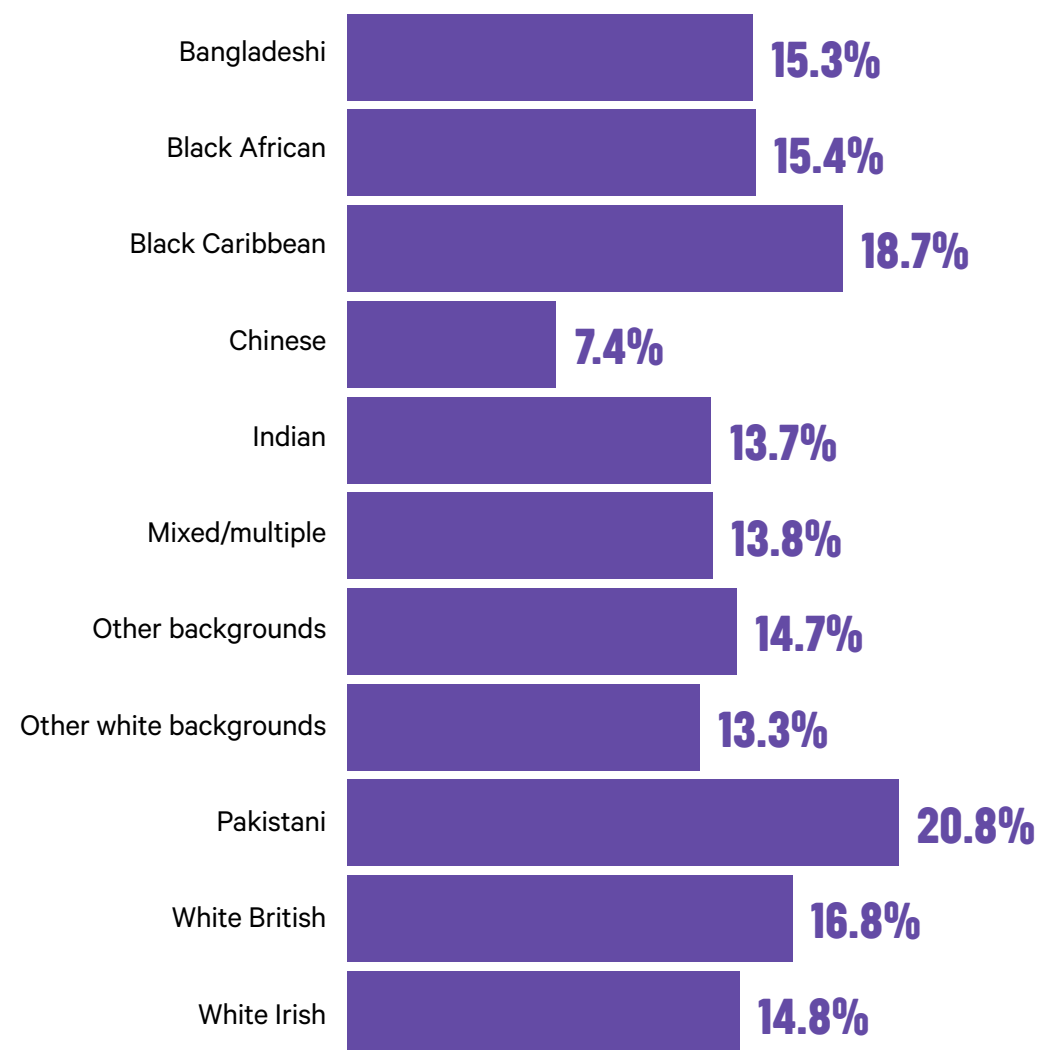
### MSK conditions and chronic pain disproportionately affect some minority ethnic groups

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.<sup>16</sup>

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](#).



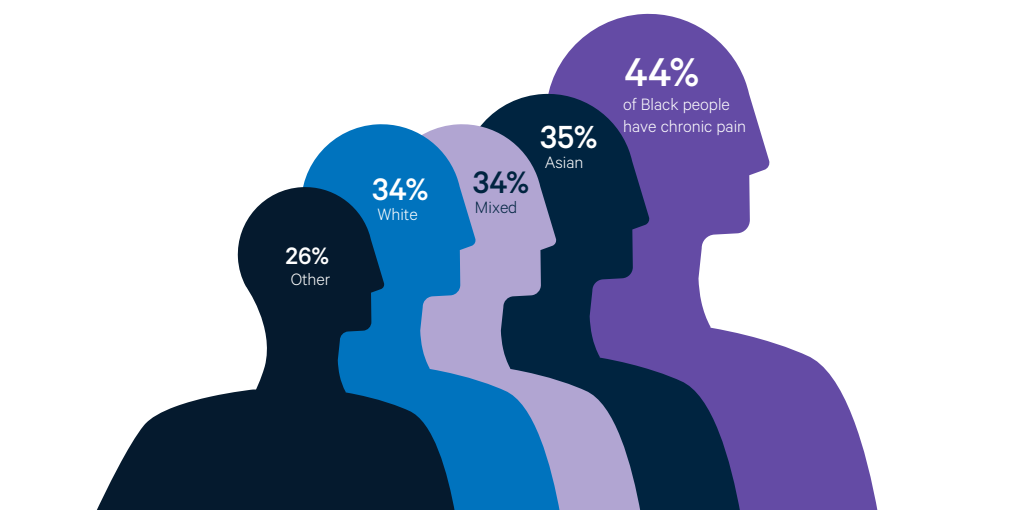
### Prevalence of long term musculoskeletal conditions by ethnicity, 2012 to 2018<sup>16</sup>



# HEALTH INEQUALITIES

## Chronic pain

The prevalence of chronic pain differs between some ethnic groups.<sup>12</sup>



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.<sup>12</sup> Another study in England found that people from Pakistani and Bangladeshi ethnic backgrounds have the highest rates of chronic pain of all ethnic groups.<sup>17</sup>

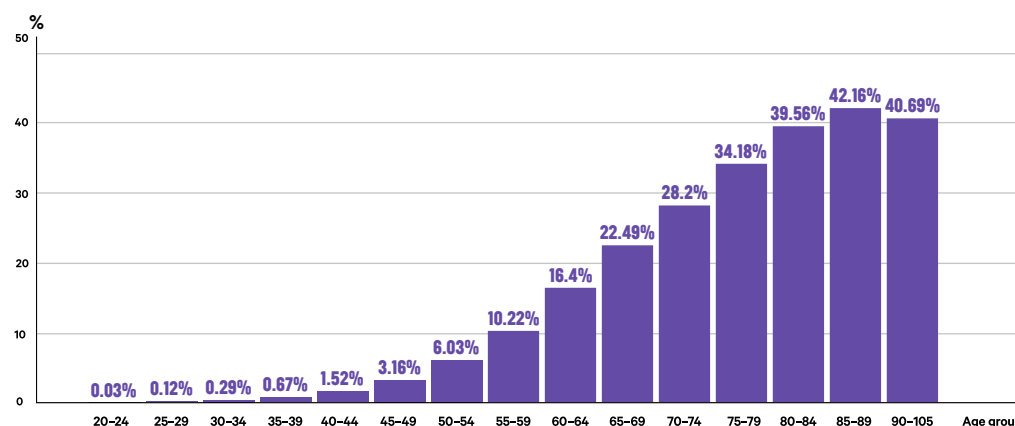
To find out more on health inequalities and chronic pain you can read our report, [Chronic Pain in England: Unseen, Unequal, Unfair](#)

## Age

### Arthritis

Osteoarthritis prevalence increases with age.

#### Prevalence of OA in any joint in men and women (%)<sup>18</sup>



Most people are aged between 46 and 70 years old when diagnosed with rheumatoid arthritis.<sup>19</sup>

### MSK conditions

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

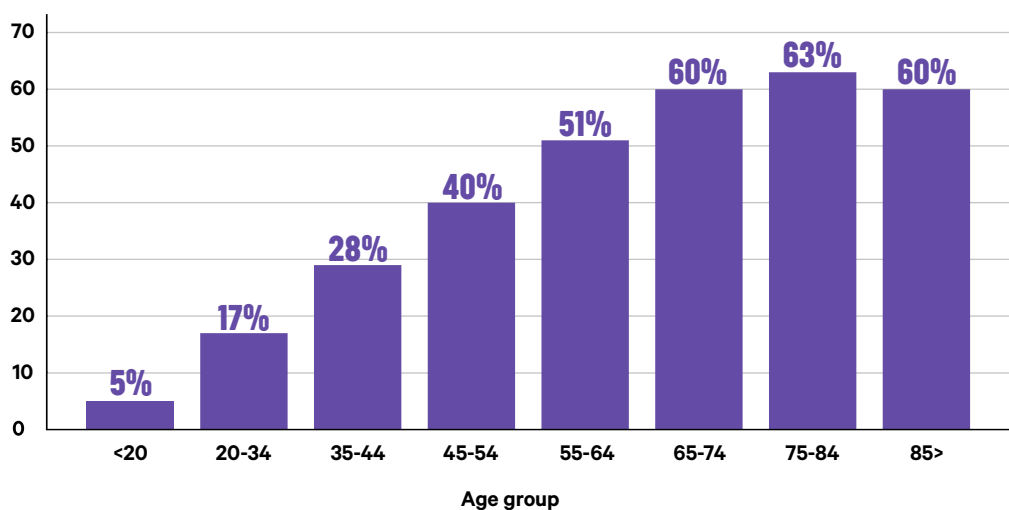
**2.8 MILLION** people aged under 35 years (11%) live with an MSK condition.<sup>5</sup>

**10.2 MILLION** people aged 35-64 years (40%) live with an MSK condition.<sup>5</sup>

**7.4 MILLION** people aged 65 and over (61%) live with an MSK condition.<sup>5</sup>

# HEALTH INEQUALITIES

Percentage of people with an MSK condition<sup>5</sup>



## Differences between Men and Women

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

### Arthritis

Women are

**2-3x**

more likely to develop rheumatoid arthritis than men.<sup>20</sup>



Axial spondyloarthritis or radiological axial spondyloarthritis is more frequently diagnosed in men compared with women (3:1).<sup>21</sup>



Non-radiographic axial spondyloarthritis has an equal distribution between men and women.<sup>21</sup>

## Osteoarthritis in the UK<sup>18</sup>

**6M**  
Women

**4M**  
Men

## MSK conditions

**11.6M**  
Women  
of all ages

**35%**  
have an MSK  
condition<sup>5</sup>

**8.7M**  
Men  
of all ages

**28%**  
have an MSK  
condition<sup>5</sup>

## Chronic pain

**38%**  
of women

**30%**  
of men

have chronic pain in England.<sup>12</sup>

**14%**  
of women

**9%**  
of men<sup>12</sup>

have high-impact chronic pain.<sup>12</sup>

02

**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).<sup>22</sup>

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.<sup>23</sup>

Low back pain is the leading cause of YLDs.<sup>5</sup>



**21%**

of YLDs in the UK are accounted for by MSK conditions.<sup>5</sup>

### UK causes of YLDs are:<sup>5</sup>

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

Low back pain accounts for

**960,132** YLDs<sup>5</sup>



Neck pain accounts for

**370,075** YLDs<sup>5</sup>



Osteoarthritis accounts for

**314,504** YLDs<sup>5</sup>



Rheumatoid arthritis accounts for

**50,322** YLDs<sup>5</sup>



Gout accounts for

**21,760** YLDs<sup>5</sup>

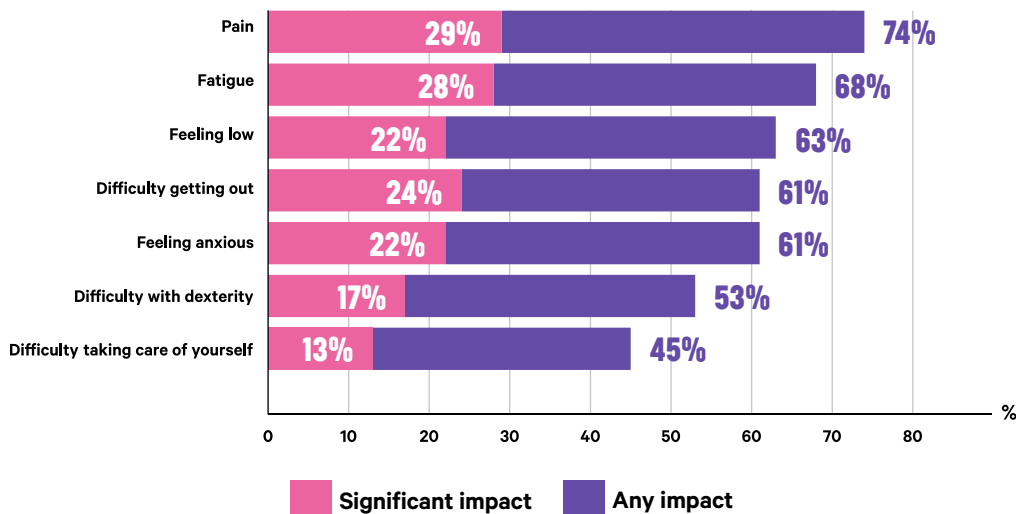


# IMPACT OF ARTHRITIS AND MSK CONDITIONS

## 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<sup>24</sup>



**1/2**  
of respondents

reported they cannot do anything themselves to lessen the impact of their condition on their lives.<sup>24</sup>

## 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.<sup>25</sup>

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.<sup>26</sup>



**1 IN 3**

current UK employees have a long-term health condition.<sup>27</sup>



**1 IN 10**

current UK employees have an MSK condition.<sup>27</sup>



**1 IN 3**

employees with a long-term condition have not discussed it with their employer<sup>28</sup>

### Percentage in employment<sup>29</sup>

MSK condition

**62.4%**

No long-term condition

**82.1%**

### Percentage economically inactive<sup>29</sup>

MSK condition

**34.9%**

No long-term condition

**15.2%**

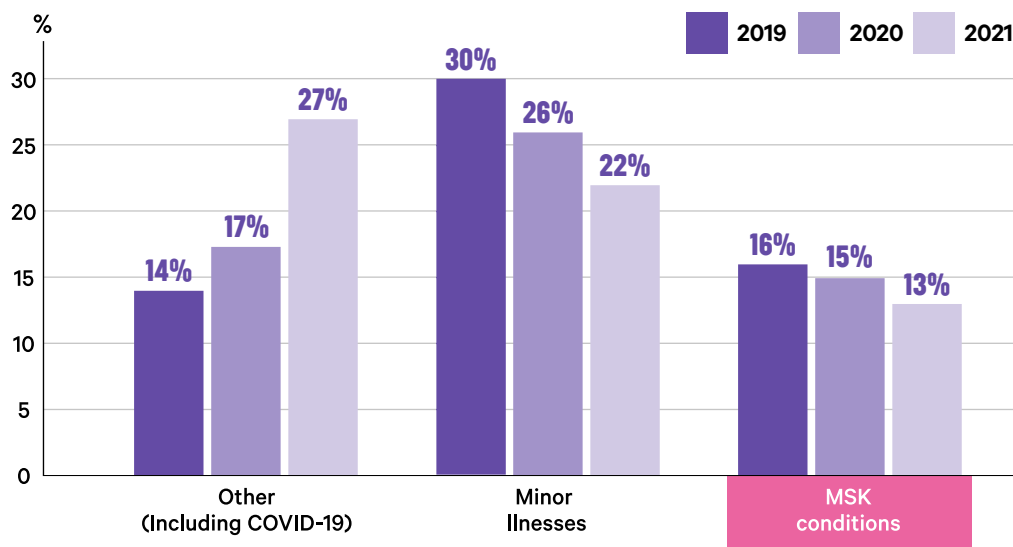
# IMPACT OF ARTHRITIS AND MSK CONDITIONS

## 23.3M

working days were lost in 2021 due to MSK conditions.<sup>30</sup>

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

Percentage of occurrences of sickness absence<sup>30</sup>



**12%**  
of sickness  
absence

within the NHS between September 2021 and August 2022 was due to back problems and other MSK conditions.<sup>31</sup>

**= 3,252,147**  
full-time equivalent  
working days lost<sup>31</sup>

**OVER HALF** **53%**  
of people we surveyed with MSK conditions say their symptoms have a negative impact on work.<sup>24</sup>

**1 IN 8** **13%**  
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.<sup>33</sup>

**18%**  
of fit notes issued to patients by GPs in England were for MSK conditions from June 2021 to June 2022.<sup>34</sup>

**1 IN 8** **4,510**  
people receiving support from the UK's access to work scheme in 2021-22 had an MSK condition.<sup>32</sup>

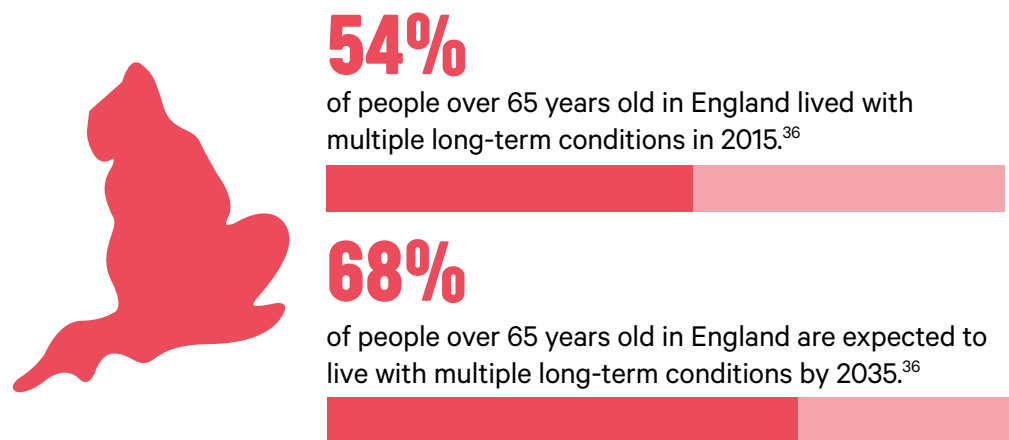
MSK conditions remain  
**THE SECOND MOST COMMON**  
diagnosis on fit notes written by GPs in England, after mental health conditions, in 2021 to 2022.<sup>34</sup>

**OVER HALF** **54%**  
of fit notes issued for MSK conditions cited episodes lasting 5 or more weeks.<sup>34</sup>

# 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.<sup>35,36</sup>



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<sup>37</sup>**

**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.<sup>38</sup>

People with OA are:

**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.<sup>39</sup>

People with OA have a

**61%** 

higher risk of having diabetes mellitus than those without arthritis.<sup>39</sup>

People with OA are:

**2.5x** 

more likely to have three or more additional conditions than people without.<sup>38</sup>

**20%** 

The prevalence of depression in those with rheumatoid arthritis is 2-3 times higher than those without the condition.<sup>40</sup>

**AROUND 20% OF PEOPLE WITH OA EXPERIENCE SYMPTOMS OF DEPRESSION AND ANXIETY.<sup>41</sup>**

# ARTHRITIS, MSK CONDITIONS AND MULTIPLE LONG-TERM CONDITIONS

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.<sup>35,36</sup>

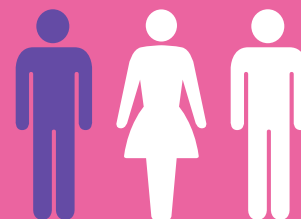
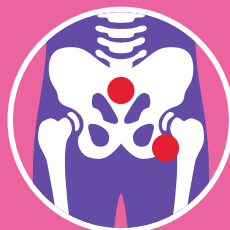


## ONE IN FIVE

adults (21%) aged 46-48 in Britain with multiple long-term conditions have recurrent back issues.<sup>42</sup>

## ONE IN EIGHT

people (12.1%) in England report living with at least two long-term conditions, one of which is MSK related.<sup>6</sup>



## ONE IN THREE

adults (34%) who are 46-68 years old live with multiple long-term conditions in Britain.<sup>42</sup>



**SIX IN TEN PEOPLE** aged 65-84 years have multiple long-term conditions.<sup>35,36</sup>



**EIGHT IN TEN PEOPLE** aged 85 years or over have multiple long-term conditions.<sup>35,36</sup>

## Multimorbidity is associated with social deprivation

People living in the most deprived areas are significantly more likely to report two or more conditions<sup>35</sup> and can expect to develop them **10-15 YEARS EARLIER** than those in the least deprived.<sup>36</sup>

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.<sup>42</sup>

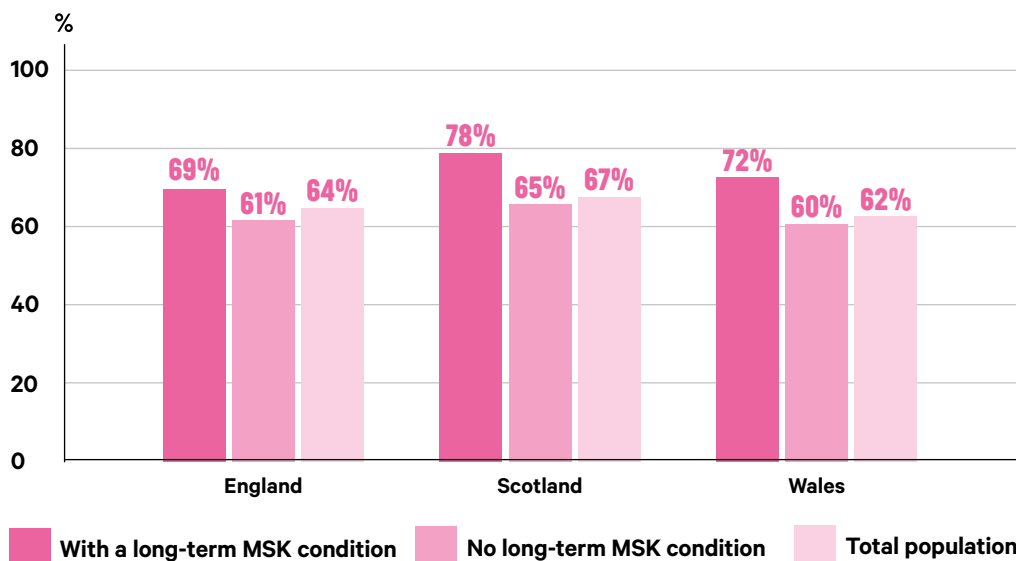
# ARTHRITIS, MSK CONDITIONS AND WIDER HEALTH

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.

Prevalence of overweight and obesity (%)<sup>10,44,45</sup>



## 6 IN 10 ADULTS



IN THE UK HAVE  
OVERWEIGHT  
BODY WEIGHT OR  
OBESITY.<sup>43,44,45</sup>

The risk of developing osteoarthritis increases by:

## 3% FOR EVERY 5CM

INCREASE IN WAIST CIRCUMFERENCE<sup>13</sup>



## 7 IN 10



(70%) adults 16+ with a long-term MSK condition have overweight body weight or obesity.<sup>10,44,45</sup>

The risk of developing osteoarthritis increases by:

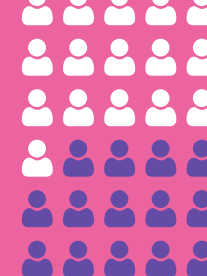
## 1% FOR EACH 1KG/M<sup>2</sup> INCREASE IN BMI<sup>13</sup>

## 1 IN 4 PEOPLE



WITH PSORIATIC ARTHRITIS  
HAVE OBESITY<sup>46</sup>

## OVER A HALF

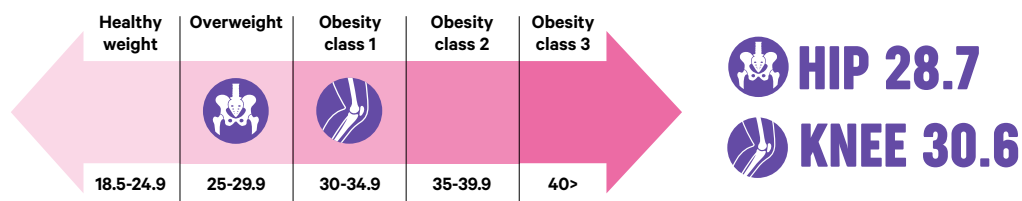


## 54%

of adults in  
England with class  
3 obesity report  
chronic pain.<sup>12</sup>

# ARTHRITIS, MSK CONDITIONS AND WIDER HEALTH

## Average BMI of hip and knee replacement patients<sup>47,50</sup>



Obesity directly damages weight-bearing joints, such as knees and hips, because of the abnormally high loads they have to carry.<sup>48</sup> 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.<sup>49</sup>

People who have obesity are:

**1.5–2.5x**

more likely to have back pain than someone with BMI in the 'healthy' range.<sup>51</sup>

**2x** 

more likely than someone with BMI in the 'healthy' range to develop gout and more likely to develop it at a younger age.<sup>52</sup>



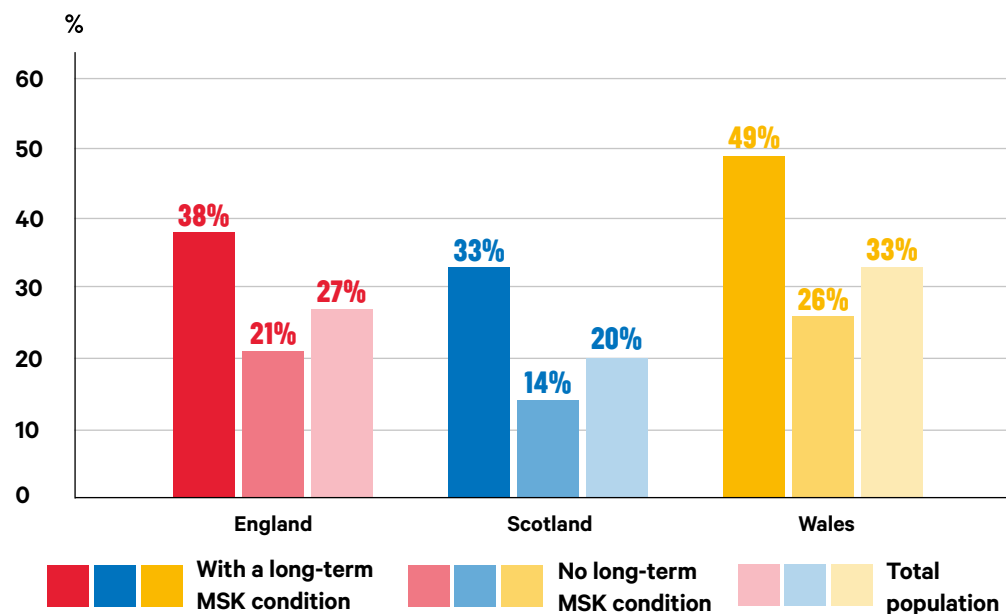
Have a significantly increased risk of developing rheumatoid arthritis.<sup>53</sup>

## Physical inactivity

Being physically inactive, defined as doing less than 30 minutes of moderate intensity physical activity a week<sup>54</sup>, can increase people's risk of developing particular MSK conditions.

**AROUND 1 IN 4 PEOPLE** in the UK are physically inactive.<sup>10,44,45,55</sup>

## Prevalence of inactivity<sup>10,44,45</sup>



## IN THE NORTHERN IRELAND HEALTH SURVEY

**20%**

of respondents reported 0 days where they had completed at least 30 minutes of physical activity (inactive).<sup>55</sup>



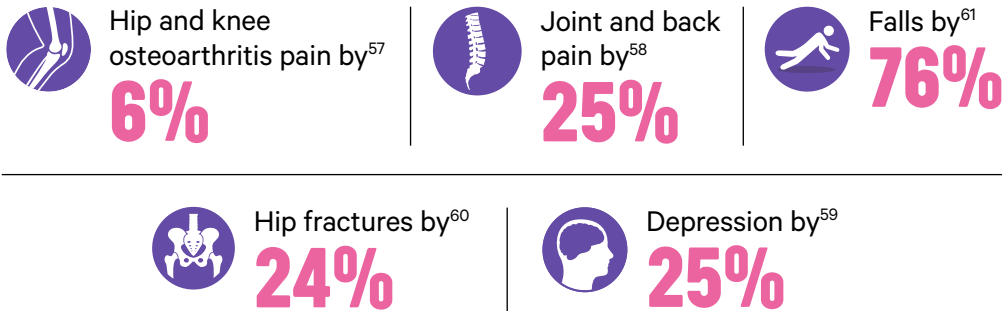
People with a long-term MSK condition are around **twice as likely** to report being physically inactive than those without.<sup>10,44,45</sup>

**60% OF PEOPLE** with rheumatoid arthritis are physically inactive.<sup>56</sup>

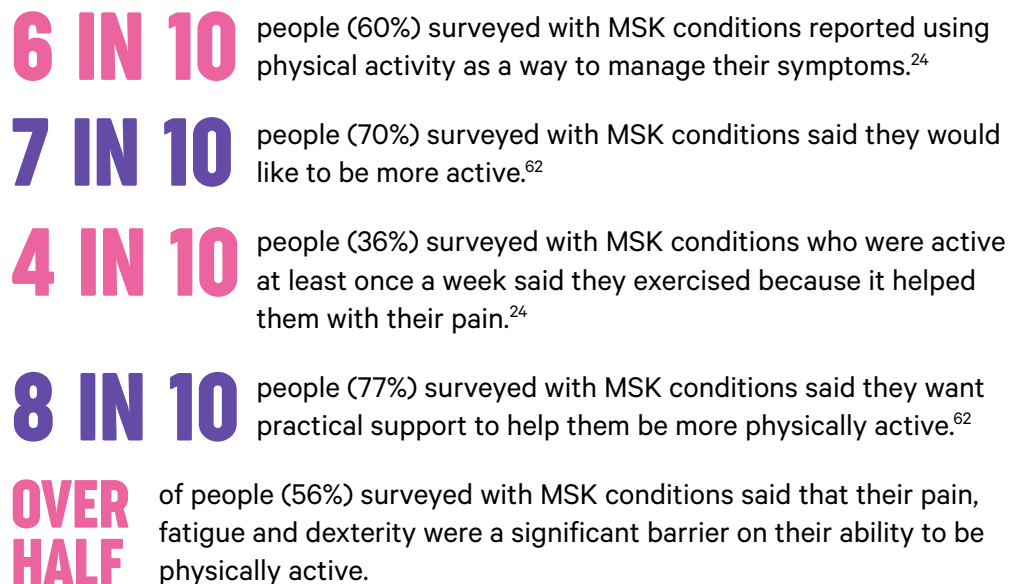
**45% OF PEOPLE** who are physically inactive in England have chronic pain.<sup>12</sup>

# ARTHRITIS, MSK CONDITIONS AND WIDER HEALTH

## Regular physical activity reduces people's risk of:

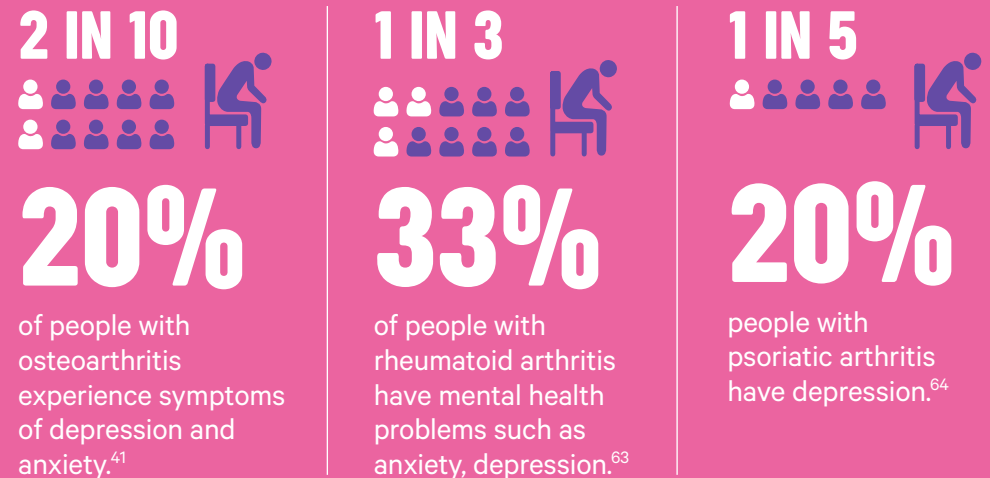


Those struggling with their MSK conditions are less likely to be active but have the most to gain, if offered the right support.

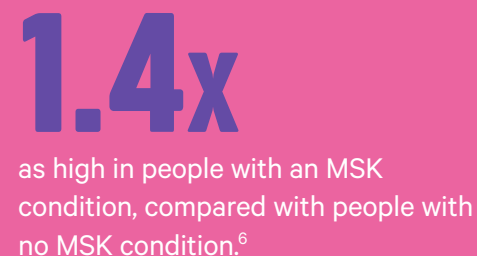


## Mental health

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



The odds of having a self-reported mental health condition are



Depression is



03

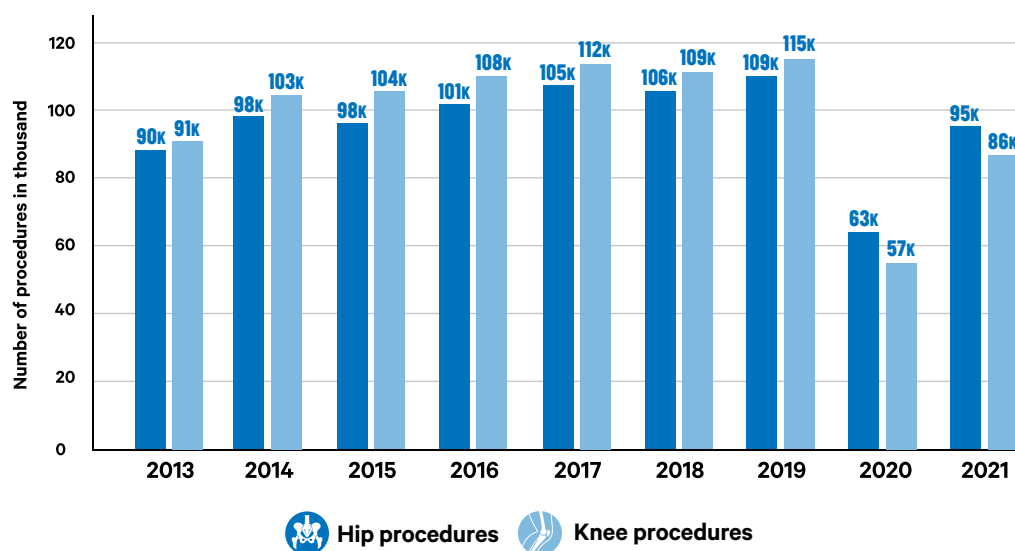
**PROVISION**

# 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.

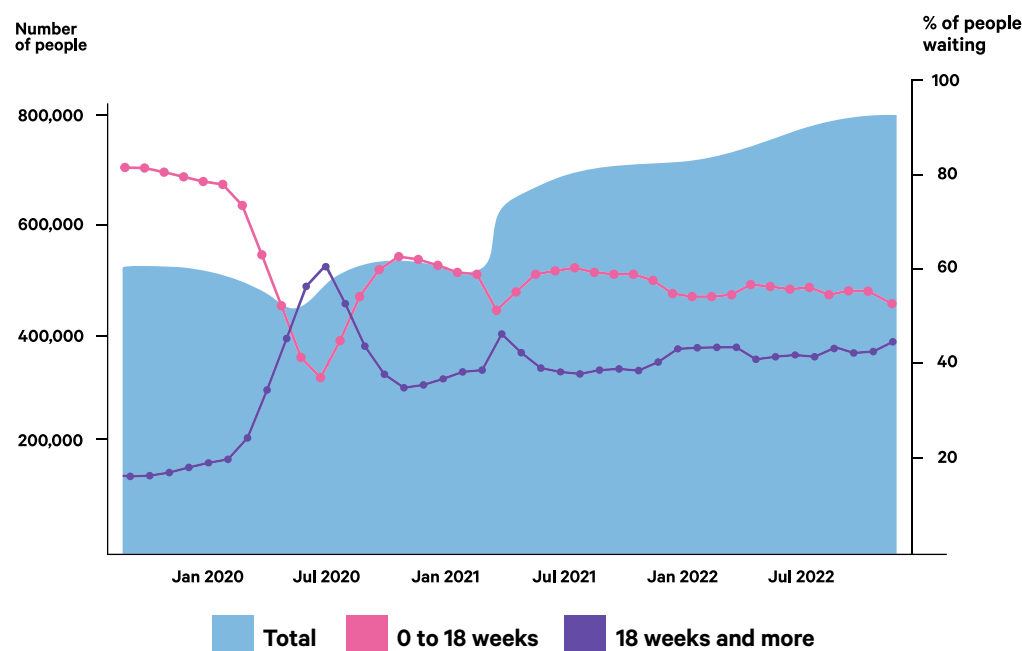
The number of hip and knee replacements conducted each year from 2013-2021<sup>50</sup>



The number of joint replacement surgeries conducted steadily increased from 2013 until 2020 where around half the number were conducted.<sup>50</sup>

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.<sup>66,67,68,69</sup>

## Number of people waiting for treatment in England<sup>66</sup>



In England the waiting list for Trauma and Orthopaedic treatment includes **797,630** people, **7%** have waited over a year (December 2022 data).<sup>66</sup> **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).<sup>66</sup> At the waiting list's peak, in March 2021 in England, **17%** of those on the list had been waiting over a year.<sup>66</sup>

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).<sup>70</sup>

# ACCESS TO CARE

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

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).<sup>72</sup>

## 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.<sup>73</sup> Yet those living in deprived areas are less likely to receive an NHS funded hip replacement than those in more affluent areas.<sup>73</sup>

## National inflammatory arthritis waiting times

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

**54%**

of inflammatory arthritis patients are referred within the target of 3 working days.<sup>74</sup>

**58%**

of inflammatory arthritis patients are not seen within 3 weeks of a rheumatology clinic receiving a referral.<sup>74</sup>

**65%**

of inflammatory arthritis patients start DMARD therapy (a treatment method for inflammatory arthritis) within 6 weeks of referral.<sup>74</sup>

For all the NEIAA metrics there is significant geographical variation.<sup>74</sup>

**EAST OF ENGLAND**

**39%**

of inflammatory arthritis patients are referred within 3 working days.

**NORTH EAST OF ENGLAND**

**72%**

of inflammatory arthritis patients are referred within 3 working days.

**EAST MIDLANDS**

**44%**

of inflammatory arthritis patients started cDMARD therapy within 6 weeks of referral.

**SOUTH WEST**

**85%**

of inflammatory arthritis patients started cDMARD therapy within 6 weeks of referral.

**WALES**

**34%**

of inflammatory arthritis patients are seen within 3 weeks of referral in Wales.

**-8%**

**BELOW ENGLAND<sup>74</sup>**

04

**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.<sup>75</sup>


### Every year:


**1 IN 5**   
adults will consult their GP for an MSK condition.<sup>76</sup>

**1 IN 7**   
GP consultations.<sup>1</sup>


**2 IN 5**   
people we surveyed see their GP as the main person they are supported by.<sup>24</sup>

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

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

**30M**   
prescriptions were dispensed for MSK conditions and joint diseases in England 2021-2022.<sup>78</sup>

Prescriptions for MSK conditions cost approximately

**£151M**   
in England 2021-2022.<sup>78</sup>

## Social services

Adults with chronic MSK pain have high levels of social care use in the UK.<sup>79</sup> One study found that **OVER HALF (54%)** of those with chronic pain received social care services in the last month.<sup>79</sup>

# 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**.<sup>80</sup>



The total work-related costs of axial spondyloarthritis due to early retirement, absenteeism and presenteeism is estimated to be

**£11,943 PER PERSON**

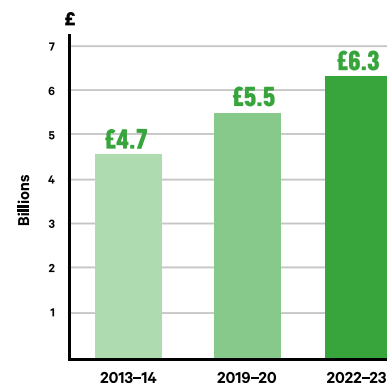
with axial spondyloarthritis per year.<sup>67</sup>

Combined costs from worklessness and sickness absence in the UK amount to around

**£100 BILLION ANNUALLY**<sup>83</sup>

vi Data for 2019-2020 are shown here to demonstrate the increase prior to the COVID-19 pandemic.

MSK conditions accounted for the third largest area of NHS programme spending at £4.7 billion in 2013-14.<sup>81</sup> 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<sup>vi</sup> and an estimated £6.3 billion in 2022-2023.<sup>82,81</sup>



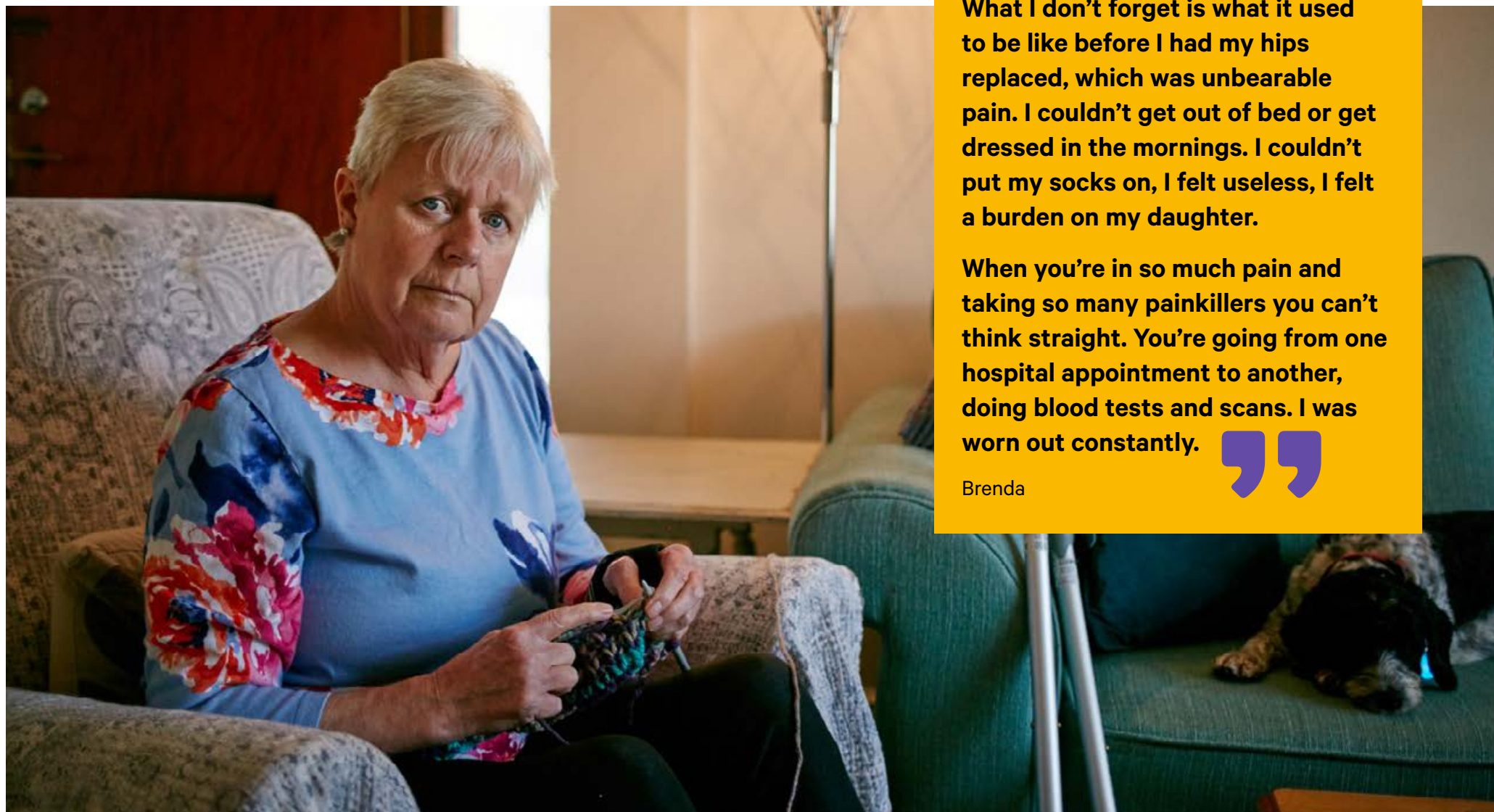
Treating the two most common forms of arthritis (osteoarthritis and rheumatoid arthritis) is estimated to have cost the economy **£10.2 BILLION IN DIRECT COSTS\* TO THE NHS** and wider healthcare system in 2017.

Cumulatively the healthcare cost will reach **£118.6 BILLION** over the next decade.<sup>80</sup>

05

**CONDITIONS  
WHERE ARTHRITIS  
IS THE MAIN  
SYMPTOM**

# OSTEOARTHRITIS



“

**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

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.

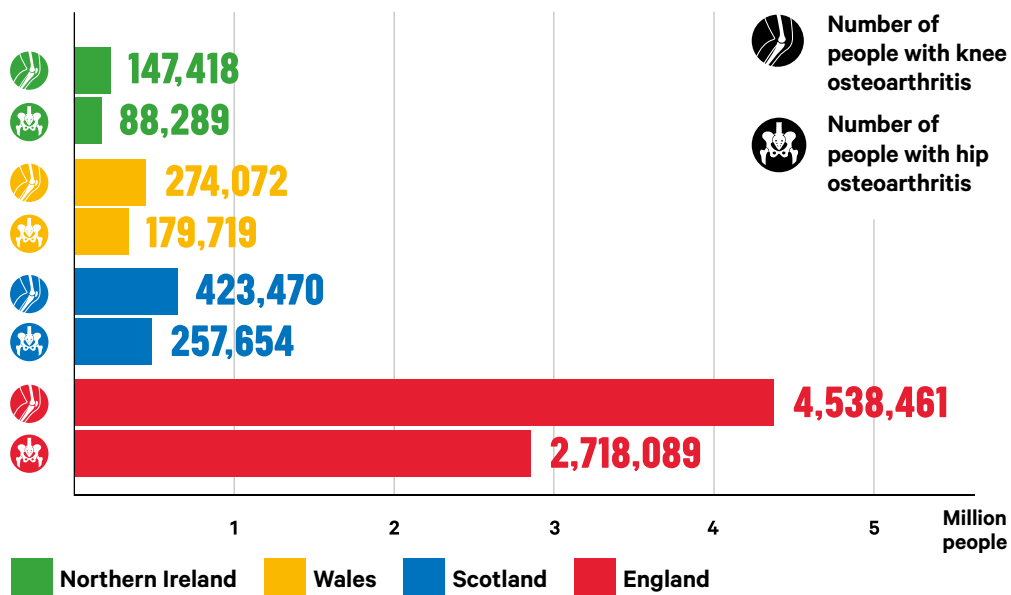
## Prevalence and incidence

**10M**  
people have OA<sup>1</sup>

**3.2M**  
people have hip OA<sup>3</sup>

**5.4M**  
people are estimated  
to have knee OA<sup>3</sup>

## Number of people with hip and knee osteoarthritis in the UK<sup>3,v</sup>

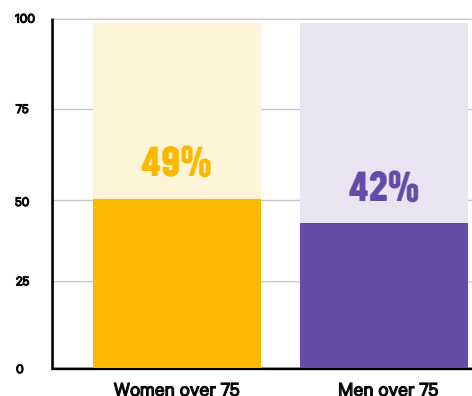


Every year around

**350,000**  
people are diagnosed with OA<sup>18</sup>

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






## % Prevalence of OA



Almost half (**49% OF WOMEN** and **42% OF MEN**) of people aged 75 or over have OA.<sup>1</sup>

<sup>v</sup> 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

-  **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.

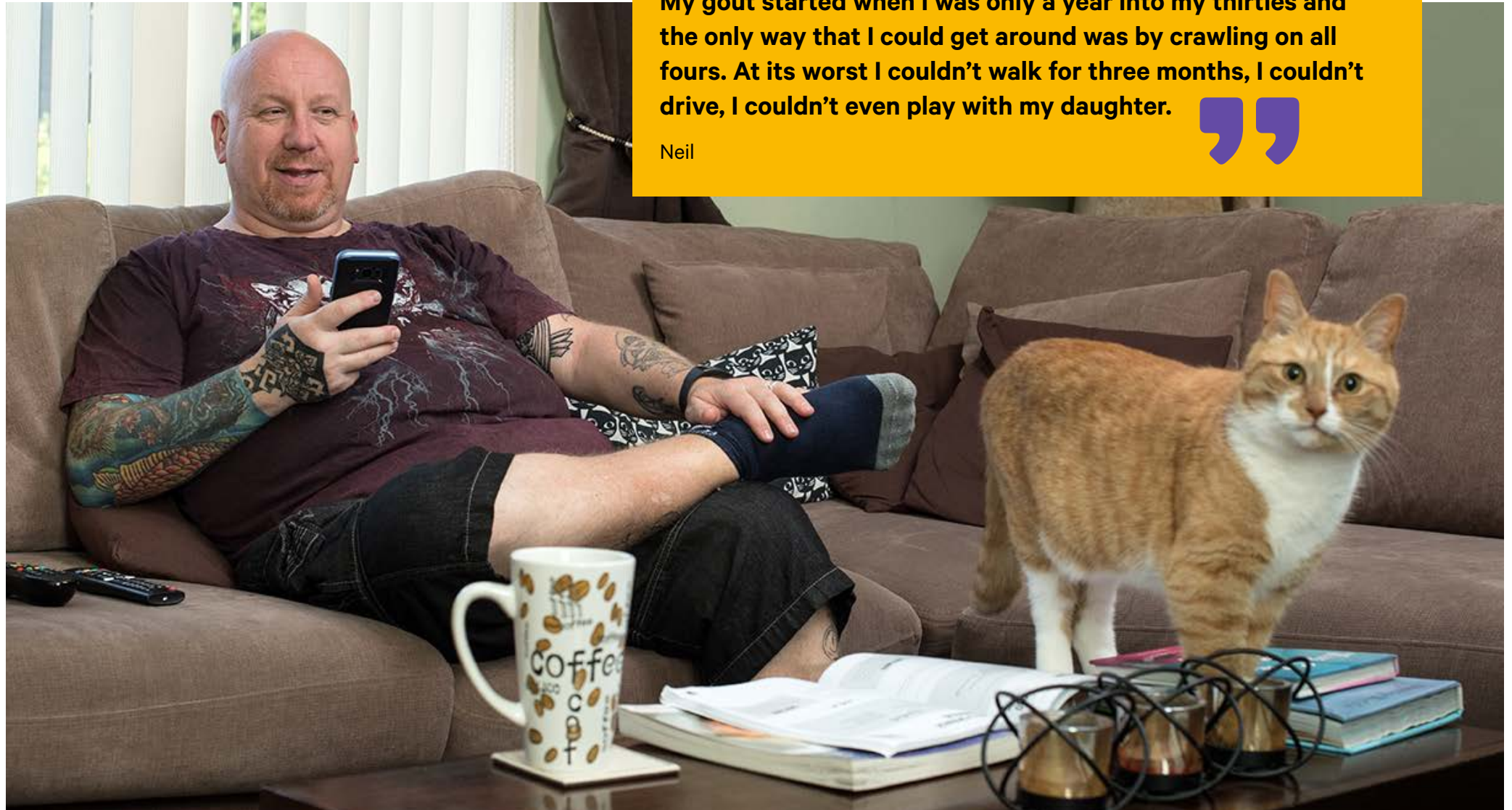
## OA and other long-term conditions

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.<sup>39</sup>

## Wider health

Around **20%** of people with OA experience symptoms of depression and anxiety.<sup>41</sup>

# GOUT



“

**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

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

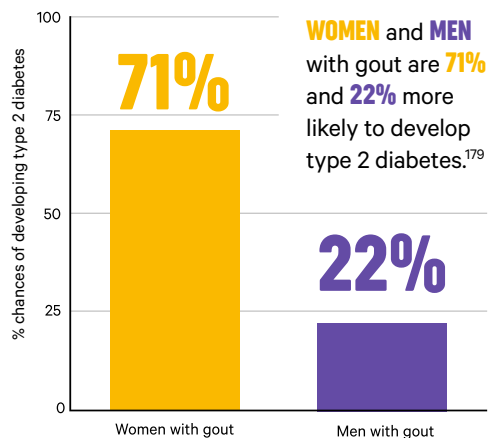
**1.6M**

(1 in 50) people have recorded diagnoses of gout.<sup>86</sup>

**66,000**

people are newly diagnosed with gout each year.<sup>86</sup>

## Gout and other long-term conditions




People with gout are at


**29%**

**HIGHER RISK**

of chronic kidney disease than people without gout.<sup>180</sup>



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.<sup>176</sup>



## 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.

# RHEUMATOID ARTHRITIS



“

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.<sup>87</sup>

**27,000**

adults are newly diagnosed with RA each year.<sup>87</sup>

## RA and other long-term conditions



Around **30%** of people with RA develop osteoporosis (weak bones).<sup>168</sup>



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.<sup>181</sup>

## Wider health

**60%**

of people with RA are physically inactive.<sup>56</sup>

Around **1/3** of people with RA have mental health problems such as anxiety, depression.<sup>63</sup>



## Work



Around **1/3**

of people with RA quit work within 5 years of diagnosis.<sup>169</sup>



## Risk Factors



**Age** – Most people are aged between 46 and 70 years old when diagnosed with rheumatoid arthritis.<sup>19</sup>



**Men and women** – RA is 2-3 times more common in women than men.



**Weight** – Being clinically overweight or obese increases risk.<sup>89</sup>



**Heredity** – Inherited genetic, genomic, and epigenetic factors.

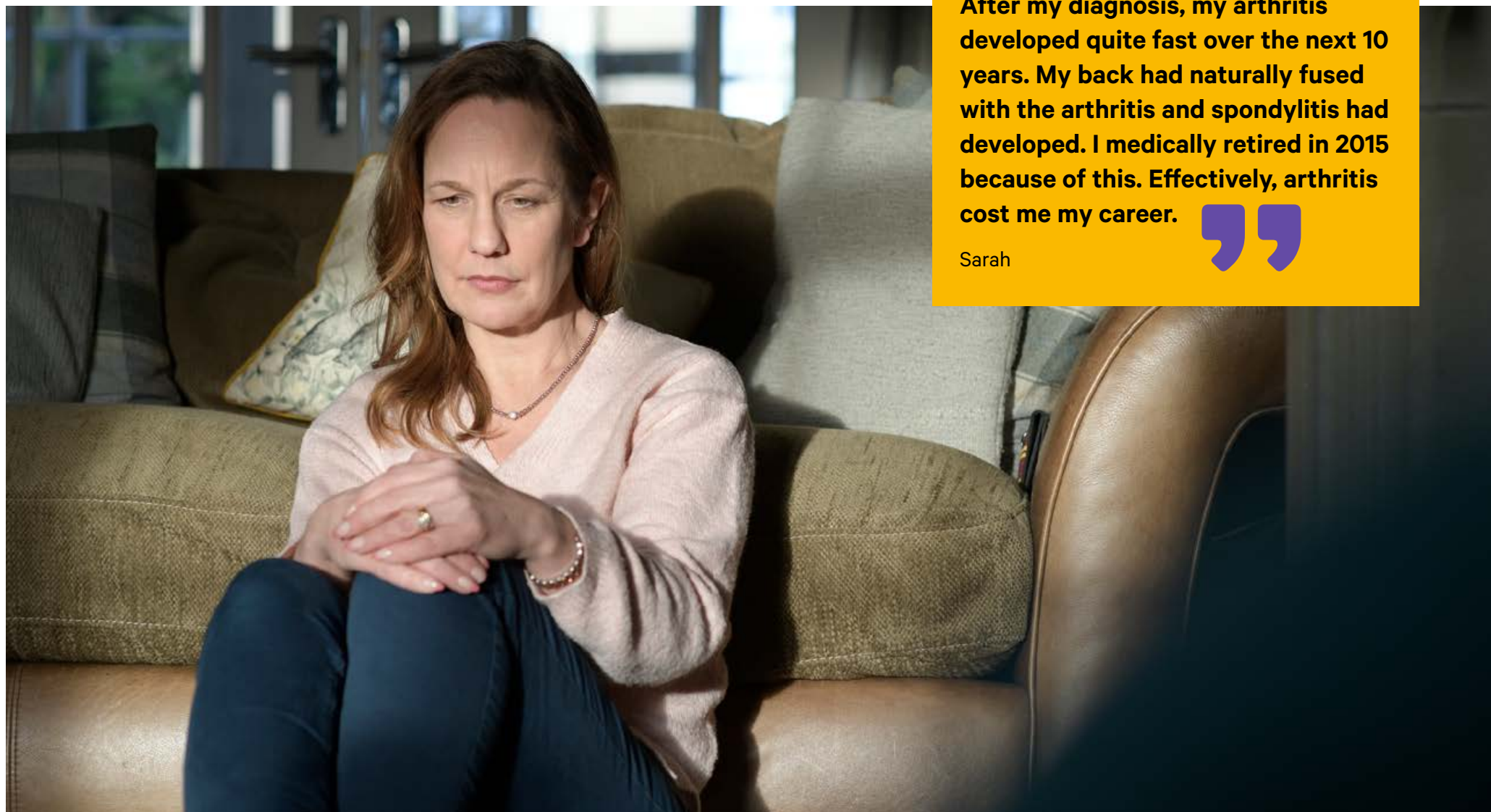


**Microbiomes** – Changes in the microbiome.<sup>90,91</sup>



**Smoking tobacco** – Increases risk, worsens disease, and weakens treatment response.<sup>88</sup>

# PSORIATIC ARTHRITIS



“

**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

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.<sup>92</sup> Some people may develop psoriatic arthritis without noticeable skin psoriasis.

## Prevalence and incidence

It is estimated that

**190,000**

adults have psoriatic arthritis.<sup>4</sup>

Each year, around

**8,430**

adults are newly diagnosed with psoriatic arthritis.<sup>4</sup>

## Risk Factors



**Age** – Peak onset is between 30 and 50 years old.



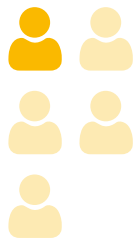
**Heredity** – Inherited genetic, genomic, and epigenetic factors.<sup>93</sup>



**Personal or family history.**

## Psoriatic arthritis and other long-term conditions

**1 IN 5**



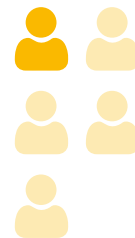
Around **19%** of people with psoriatic arthritis have a cardiovascular disease.<sup>46</sup>

**1 IN 4**



**25%** who have psoriasis have psoriatic arthritis.<sup>92</sup>

**1 IN 5**



Around **20%** people with psoriatic arthritis have depression.<sup>64</sup>

**1 IN 4**



**25%** Psoriatic arthritis patients have obesity.<sup>46</sup>

## Wider Health

# AXIAL SPONDYLOARTHRITIS



“

**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

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.<sup>87</sup> 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.<sup>87</sup>

## 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<sup>94</sup> or inflammatory bowel disease.<sup>95</sup>
-  **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.<sup>21</sup>
-  **Heredity** – Inherited genetic factors.<sup>93</sup>

## Axial spondyloarthritis and other long-term conditions

# 21%



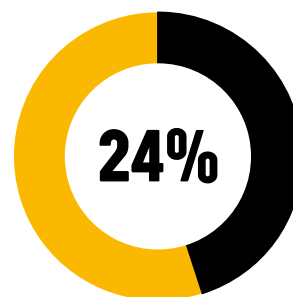
of people with axial spondyloarthritis will have a painful eye condition called uveitis which can cause blindness.<sup>94</sup>

Around  
**1 IN 5**    
people with axial spondyloarthritis have hypertension.<sup>96</sup>

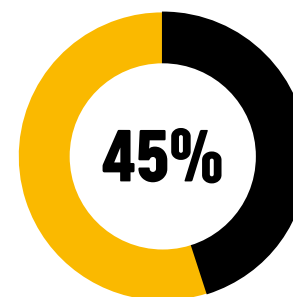
Around  
**1 IN 10**   
people with axial spondyloarthritis have depression.<sup>96</sup>

## Work

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



reported retiring early due to axial spondyloarthritis.<sup>97,98</sup>



changed to a less physically demanding job due to their condition.<sup>97,98</sup>

# JUVENILE IDIOPATHIC ARTHRITIS (JIA)



“

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.<sup>99</sup>

## Prevalence and incidence

It is estimated that

# 12,000

children under 16 years have ever been diagnosed with JIA.<sup>100</sup>

# AROUND HALF

of the children diagnosed with JIA will be discharged from care (perhaps due to drug-free remission).<sup>101</sup>

## Risk Factors



**Age** – Typical onset age is between 2 and 10 years.



**Men and women** – JIA is more common in girls.

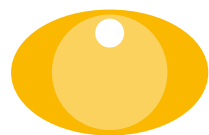


**Heredity** – Inherited genetic, genomic and epigenetic factors.



**Microbiomes** – Changes in the microbiome.

## 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.<sup>102, 103</sup>



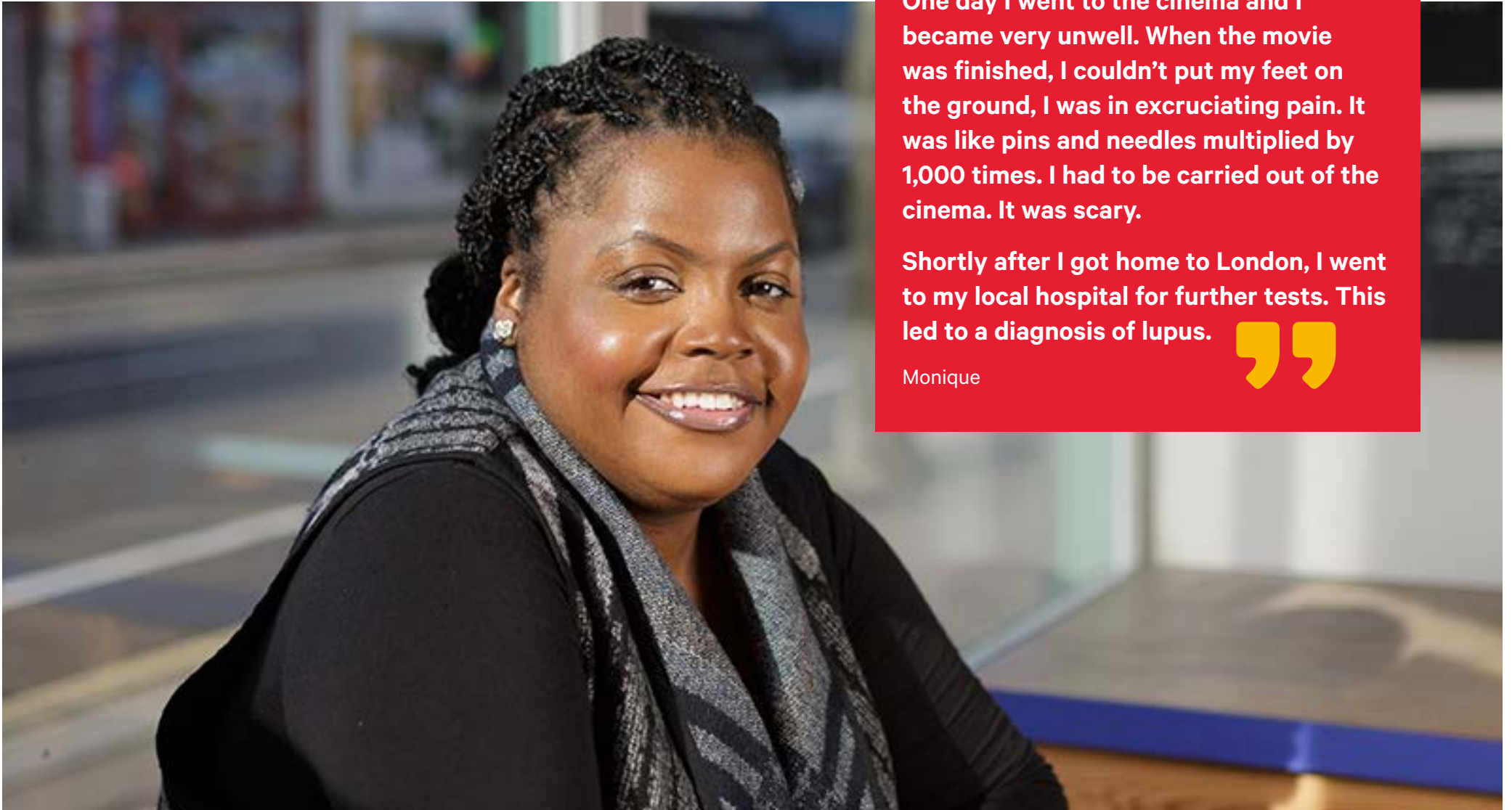
# AROUND 15% OF CHILDREN

with JIA in the UK develop macrophage activation syndrome (MAS) – a rare inflammatory condition.<sup>104</sup>

06

**CONDITIONS  
WHERE ARTHRITIS  
IS ONE SYMPTOM  
AMONG MANY**

# LUPUS



“

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

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.<sup>105</sup>

**3,000**

people are newly diagnosed with lupus each year.<sup>105</sup>

## Lupus and other long-term conditions



Patients with lupus have a mortality rate nearly

**2 TIMES HIGHER**

than those without lupus.<sup>157</sup>



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.<sup>159</sup>

## 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.<sup>106</sup>



**Microbiomes** – Changes in the microbiome.<sup>107</sup>

07

**OTHER  
MUSCULOSKELETAL  
CONDITIONS**

# BACK PAIN



“

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

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).<sup>5</sup>

## Prevalence and incidence

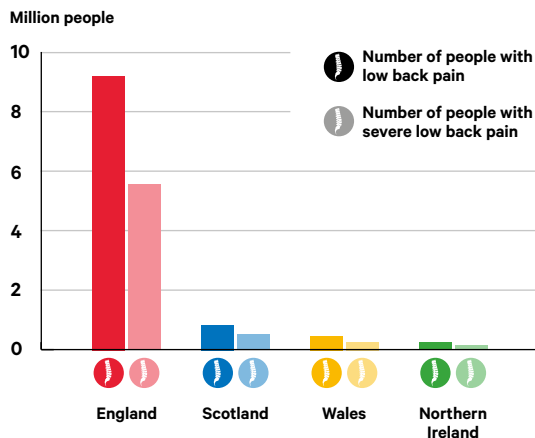
# 11,000,000

people in the UK experience low back pain in any given year and of these 11 million, **6.5 MILLION** experience severe back pain.<sup>3</sup>

# 2,600,000

new cases of low back pain occur each year in the UK.<sup>5</sup>

## The number of people with low back pain<sup>3,vi</sup>



<sup>vi</sup> 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.

## 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.<sup>109</sup>



## Work

In June 2022, the ONS found that

# 262,272






people reported having back and neck pain that forced them to leave work.<sup>110</sup>

Around

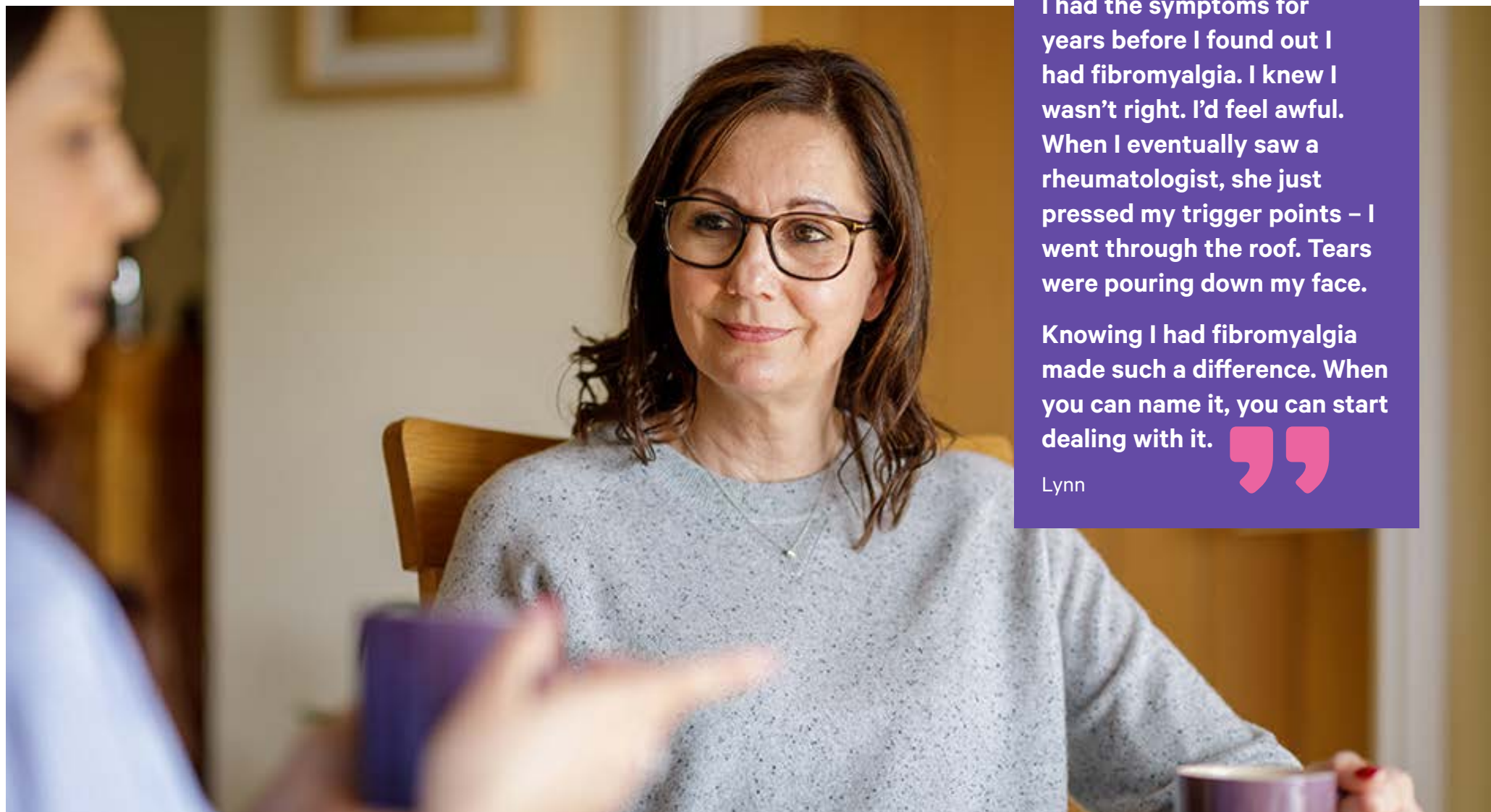
# 1 IN 5

workers with back pain take time off work over a period of 6 months or longer.<sup>111</sup>

## 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.<sup>108</sup>
-  **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.<sup>51</sup>
-  **Poor general health**

# FIBROMYALGIA



“

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

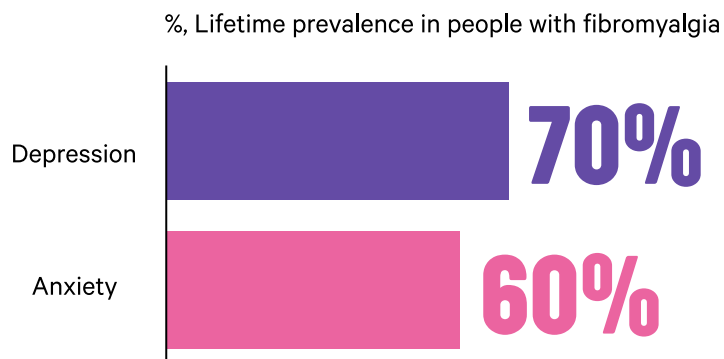
# FIBROMYALGIA

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.<sup>112</sup>

## Wider health




Lifetime prevalence of **DEPRESSION** and **ANXIETY** in people with fibromyalgia go up to **70%** and **60%**, respectively.<sup>116,117</sup>





**270,000**  
Adolescents aged 11–18 years have  
fibromyalgia.<sup>113,114</sup>

## Common comorbidities

Fibromyalgia is associated with a  
**1.54-FOLD  
INCREASED RISK**  
for irritable bowel syndrome.<sup>115</sup>



## Risk Factors

-  **Age** – Fibromyalgia most commonly presents between 25 and 55 years.
-  **Men and women** – Fibromyalgia is more common in women.
-  **Heredity** – Inherited genetic, genomic, and epigenetic factors.
-  **Microbiomes** – Changes in the microbiome.<sup>113</sup>

\*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

# CHRONIC PAIN

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%)<sup>12</sup> and **28 MILLION** people (43%) in the UK.<sup>118</sup>

## Chronic pain in England

**15,500,000**  
people (34%) have chronic pain in England.<sup>12</sup>

**5,500,000**  
people (12%) have high-impact chronic pain, which is severe and where people are unable to carry out their daily activities.<sup>12</sup>

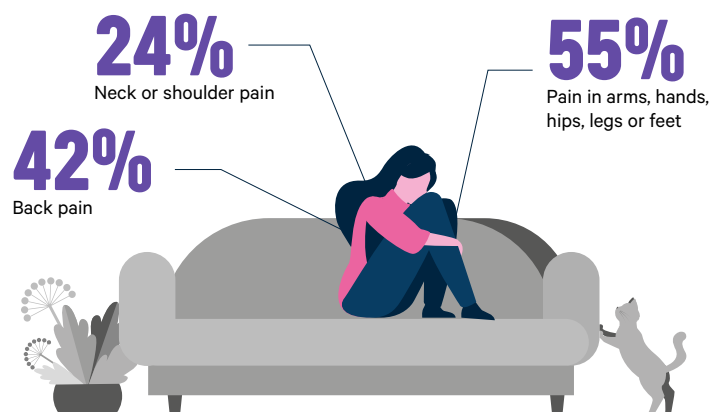
**More women are affected by chronic pain than men.**

**38% OF WOMEN** have chronic pain in England compared to **30% OF MEN**.<sup>12</sup>

**14% OF WOMEN** have high-impact chronic pain compared to **9% OF MEN**.<sup>12</sup>

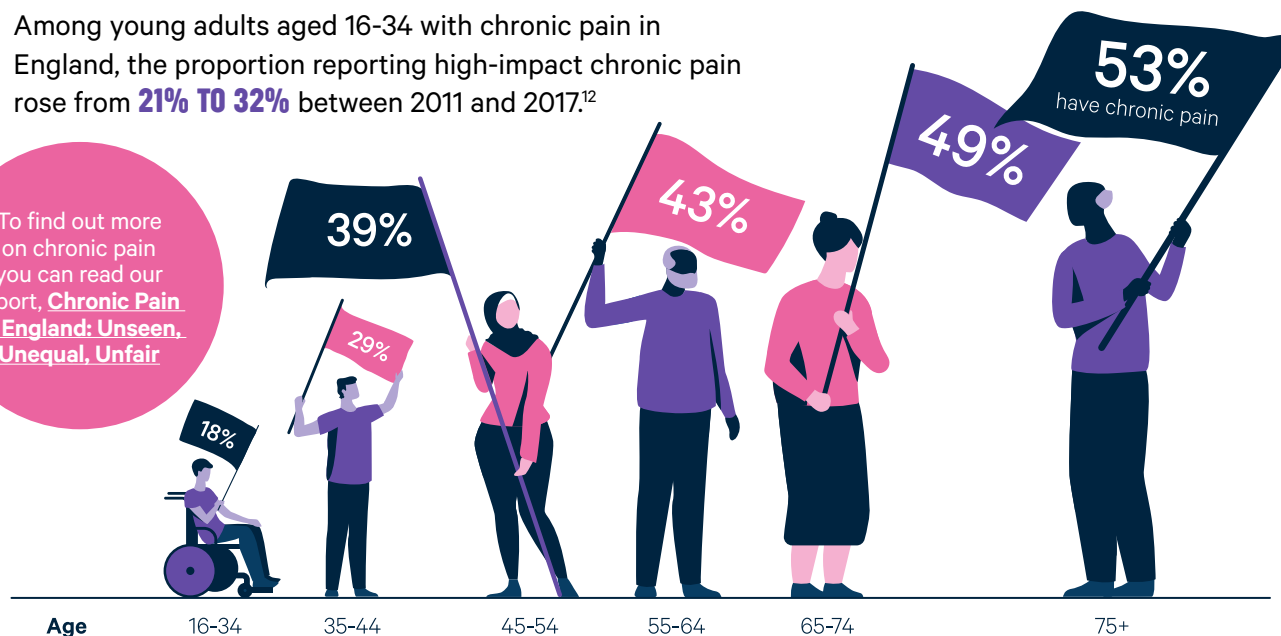
**Chronic pain increases with increasing age, but people of all ages can have it.**

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.<sup>12</sup>



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.<sup>12</sup>

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



# OSTEOPOROSIS AND FRAGILITY FRACTURES



“

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.<sup>119</sup>

## 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.<sup>120</sup>

## Fractures

Around

**75,000**  
**HIP FRACTURES**

occur each year in the UK.<sup>121</sup>

Hip fractures are associated with a total cost to health and social services of

**OVER**  
**£1 BILLION**  
**PER YEAR**<sup>121</sup>

**4%** of all femoral fractures in England and Wales in 2021

**OCCURRED**  
**IN INPATIENT**  
**SETTINGS**<sup>122</sup>

Those with inpatient femoral fractures were

**9% LESS**  
**LIKELY**  
**TO SEE A**  
**GERIATRICIAN**

within the 72-hour target than non-inpatients.<sup>122</sup>

Those with inpatient femoral fractures were

**7% LESS**  
**LIKELY**

to receive surgery within the 36-hour target than non-inpatients.<sup>122</sup>

The economic burden of osteoporosis related fractures is approximately

**£4 BILLION**  
**PER YEAR**

in the UK.<sup>123</sup>

# GLOSSARY

**Cartilage:** a type of connective tissue found throughout the human body including within the joints.<sup>124</sup>

**Comorbidity:** the occurrence of more than one illness or condition at the same time.<sup>125</sup>

**Epigenetic:** refers to a factor that affects the expression of a gene without altering the DNA sequence.<sup>126</sup>

**Fatigue:** severe mental and physical exhaustion which is not attributable to exertion.<sup>127</sup>

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

**Health inequalities:** unfair and avoidable differences in health across the population, and between different groups within society.<sup>11</sup>

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

**Incidence:** the number of individuals who develop a specific disease during a particular time period.<sup>130</sup> 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.<sup>131</sup>

**Phototherapy:** is a therapy prescribed by a dermatologist to treat psoriasis. The skin is exposed to ultraviolet light on a regular basis.<sup>132</sup>

**Prevalence:** the total number of individuals in a population who have a disease or health condition at a specific period of time.<sup>130</sup>

**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.<sup>133</sup>

**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.<sup>23</sup>

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