



## ■ GENERAL ORTHOPAEDICS

# The impact of deprivation on patients awaiting planned care

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## Aims

Deprivation underpins many societal and health inequalities. COVID-19 has exacerbated these disparities, with access to planned care falling greatest in the most deprived areas of the UK during 2020. This study aimed to identify the impact of deprivation on patients on growing waiting lists for planned care.

## Methods

Questionnaires were sent to orthopaedic waiting list patients at the start of the UK's first COVID-19 lockdown to capture key quantitative and qualitative aspects of patients' health. A total of 888 respondents were divided into quintiles, with sampling stratified based on the Index of Multiple Deprivation (IMD); level 1 represented the 'most deprived' cohort and level 5 the 'least deprived'.

## Results

The least deprived cohort were older (mean 65.95 years (SD 13.33)) than the most deprived (mean 59.48 years (SD 13.85)). Mean symptom duration was lower in the least deprived areas (68.59 months (SD 112.26)) compared to the most deprived (85.85 months (SD 122.50)). Mean pain visual analogue scores (VAS) were poorer in the most compared to the least deprived cohort (7.11 (SD 2.01) vs 5.99 (SD 2.57)), with mean mood scores also poorer (6.06 (SD 2.65) vs 4.71 (SD 2.78)). The most deprived areas exhibited lower mean quality of life (QoL) scores than the least (0.37 (SD 0.30) vs 0.53 (SD 0.31)). QoL findings correlated with health VAS and Generalized Anxiety Disorder 2-item (GAD2) scores, with the most deprived areas experiencing poorer health (health VAS 50.82 (SD 26.42) vs 57.29 (SD 24.19); GAD2: 2.94 (SD 2.35) vs 1.88 (SD 2.07)). Least-deprived patients had the highest self-reported activity levels and lowest sedentary cohort, with the converse true for patients from the most deprived areas.

## Conclusion

The most deprived patients experience poorer physical and mental health, with this most adversely impacted by lengthy waiting list delays. Interventions to address inequalities should focus on prioritizing the most deprived.

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## Introduction

Inequalities in healthcare place some groups of individuals at higher risk of illness and injury than others.<sup>1</sup> Deprivation underpins many societal inequalities, being associated with poorer health, disability, adverse behaviours that impact health (such as smoking), variation in postoperative outcomes,<sup>2,3</sup> and ultimately, higher rates of pathologies.<sup>4</sup> Causes of deprivation

in the UK are complex. The most and least deprived neighbourhoods are unevenly dispersed across the nation, with selected pockets of high deprivation (61% of local authority districts contain one of the leading 10% of deprived neighbourhoods).<sup>5</sup> Since 2015, there has been little change in the distribution of the most and least deprived regions. Health inequalities are experienced by more than just those at the extremes of

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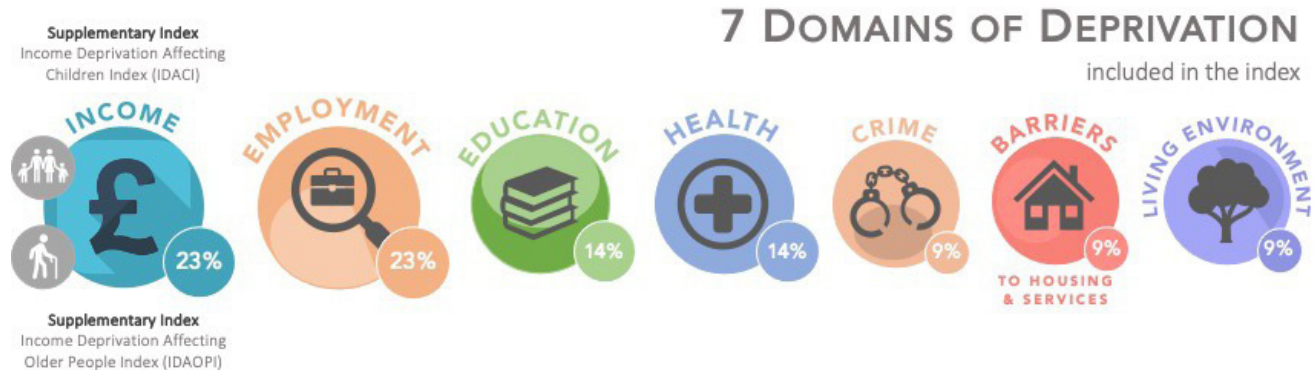


Fig. 1

Seven domains of deprivation.

the deprivation spectrum. However, disability-free life expectancy increases as deprivation falls, with what is known as the “Marmot curve”.<sup>6</sup> Similar relationships can be drawn for other measures of deprivation, including income or education.

Recent studies have demonstrated that individuals from more socioeconomically disadvantaged areas have higher rates of most known underlying clinical risk factors that increase the severity and mortality of COVID-19. These include hypertension, diabetes, asthma, chronic obstructive pulmonary disease (COPD), heart disease, liver disease, renal disease, cancer, cardiovascular disease, obesity, and smoking. Those in the most deprived areas experience approximately twice the COVID-19 mortality rate.<sup>7-9</sup> Such long-term conditions significantly influence poorer quality of life, adversely impacting an individual’s ability to work, alongside their physical and mental health.<sup>10</sup> Individuals in lower socioeconomic groups are more likely to have multiple and more severe long-term health conditions than those in higher socioeconomic groups.<sup>11</sup>

Despite this, the COVID-19 Marmot review found that from 2009 to 2020, net expenditure per person in local authorities in the 10% of most deprived areas fell by 31%, compared with a 16% decrease in the least deprived areas.<sup>12</sup> Just as COVID-19 has exacerbated existing inequalities, access to planned care fell further in the most deprived areas of the UK during 2020 than in the least deprived areas; the number of completed treatment pathways in the most deprived areas fell by 31% compared to 26% in the least deprived, with planned care less disrupted and also recovering more quickly in regions with lower COVID-19 rates.<sup>13</sup> A similar trend has been observed in cancer referrals.<sup>14</sup> Consequently, stark inequalities have appeared in waiting lists for planned care, with some regions facing huge backlogs, while others have minimal delays.<sup>15-17</sup>

With 6.48 million people awaiting planned care as of April 2022,<sup>18</sup> and this number set to grow as the

pandemic recovery continues, addressing the experiences, concerns, and expectations of patients on waiting lists will be increasingly critical, particularly in the light of growing inequalities in health.<sup>19</sup> Therefore, this study seeks to identify the impact of deprivation on patients on waiting lists for planned care.

## Methods

**Index of Multiple Deprivation.** The Index of Multiple Deprivation (IMD) is the official measure of relative deprivation in the UK.<sup>5</sup> It is a combination of seven distinct domains of deprivation, each weighted individually and subsequently combined (Figure 1). These include income (22.5%), employment (22.5%), education (13.5%), health (13.5%), crime (9.3%), barriers to housing and services (9.3%), and living environment (9.3%). Each neighbourhood is then ranked according to its level of deprivation relative to that of other areas. Hence, a neighbourhood ranked 100th is more deprived than a neighbourhood ranked 200th, although is not necessarily twice as deprived.<sup>5</sup>

**Setting.** This cross-sectional study was conducted at the elective orthopaedic department of University Hospitals of Leicester NHS Trust, with institutional approval.

**Patients and sample size calculation.** The UK’s first COVID-19 lockdown period began on 23 March 2020. At its outset, 3,929 patients were on our elective orthopaedic surgery waiting list. After 312 exclusions (patients aged < 16 years, lumps and bumps (i.e. non-site-specific minor operations), deceased), 3,617 were deemed suitable for inclusion. Assuming at least 50% of patients were still symptomatic, we undertook a sample size calculation to determine the minimum number of patients to include to provide a representative sample. This required us to survey 824 patients to provide a 3% margin of error (MOE) and confidence interval of 95% (95% CI). With a predicted response rate of 60%, we estimated that we needed to sample 1,380 patients. A total of 888 responded, 64 more than the minimum requirement. An earlier study aimed to identify the experiences, concerns, and expectations of these

patients via a postal questionnaire, sent out in September 2020, with our findings recently reported.<sup>19</sup> For this study, the 888 respondents were divided into quintiles, with sampling stratified based on the IMD. Level 1 represented the 'most deprived' cohort and level 5 the 'least deprived'. In our analysis, descriptive statistics were presented as means with standard deviation (SD) (as data were normally distributed) and medians with interquartile range (IQR).

**Questionnaire.** This was designed to capture key aspects of patients' health, including baseline demographic details (supplemented by our databases), objective and validated patient-reported outcomes measures (PROMs), and free-text sections to capture qualitative elements of health-related quality of life (QoL). Questions included duration of symptoms, variation in pain (linear visual analogue scale (VAS) from 1 (least pain) to 10 (most pain)), activity ('active' defined as an average of  $\geq 150$  minutes of moderate activity (e.g. running, cycling) per week, 'inactive' defined as  $< 150$  minutes, and 'sedentary' being minimal average activity), mood (linear scale from 1 (best) to 10 (worst)), overall health state (linear scale from 0 (worst imaginable health) to 100 (best imaginable health)), treatments tried to alleviate symptoms, new symptoms since added to waiting list, and feelings/anxiety about attending hospital during the pandemic. Objective (quantitative) measurement of current health status was undertaken using the EuroQol five-dimension health questionnaire (EQ-5D)<sup>20</sup> and Generalized Anxiety Disorder 2-item (GAD-2) questionnaires.<sup>21</sup>

**Patient and public involvement.** Comments and suggestions pertaining to difficulties secondary to deprivation (i.e. lack of money or resources) were also sought from interviews of the same cohort of patients when they attended for their intervention. The findings of our initial analysis were fed back to patients via an infographic on our novel patient website.<sup>19</sup>

## Results

The results are summarized in Tables I and II.

The median wait across all deprivation quintiles at the time of the first lockdown was 25.0 weeks (interquartile range IQR 15.0 to 36.0). The time on the waiting list was similar across the deprivation quintiles, with the most deprived waiting for a mean of 23.89 weeks (SD 14.22) and least deprived waiting for 25.84 weeks (SD 13.86). The mean age across the sample size was 63.09 years (SD 13.93). The least deprived cohort were almost half a decade older (mean 65.95 years (SD 13.33)) than the most deprived cohort (59.48 years (SD 13.85)) at the time of getting onto the waiting list. Sex distribution was broadly equal (50.2% female ( $n = 446$ ) and 49.8% male ( $n = 442$ )).

**Symptom duration.** The mean duration of symptoms was lower in the least deprived areas (68.59 months (SD 112.26)) compared to the most (85.85 months (SD

122.50)). The median duration was also similar, ranging from a median of 39.0 months (IQR 24.0 to 96.0) for the most deprived to 36.0 months (IQR 24.0 to 72.0) in the least deprived across all quintiles, inferring that most patients had been symptomatic for a significant duration before being added to the waiting list.

**Pain.** Pain VAS scores were almost 10% poorer in the most deprived cohort compared to the least deprived cohort (7.11 (SD 2.01) vs 5.99 (SD 2.57)). Conversely, median VAS pain scores showed no variation between with the quintiles (all 7.0), suggestive of no significantly symptomatic outliers in each group.

**Mood.** Mood scores were also noted to be poorer in the most deprived areas (6.06 (SD 2.65)) compared to the least (4.71 (SD 2.73)). Median score variation revealed a two-point difference between these extremes (6.0 (IQR 4.0 to 8.0) vs 4.0 (IQR 2.0 to 6.0)).

**QoL.** QoL assessments once again showed notable variation between groups, with the most deprived areas exhibiting lower mean scores (0.37 (SD 0.30)) than the least deprived areas (0.53 (SD 0.31)).

**Activity levels.** The patients from the least deprived areas had the highest overall self-reported activity levels, as well as the lowest proportion leading a sedentary lifestyle. The converse was true for the most deprived areas, where there was a higher proportion reporting an inactive or sedentary lifestyle (45.4% ( $n = 44$ ) and 24.7% ( $n = 24$ )), compared to an active lifestyle (29.9% ( $n = 29$ )).

**Proceeding with the proposed intervention.** Most patients across all quintiles wished to proceed with their operations ( $> 90\%$ ). Fewer than 25% of patients across all quintiles were willing to tolerate deferral. Similar proportions either did not want to have the procedure or were willing to accept a delay.

**Self-help to improve symptoms.** The greatest proportion to try medication, ice/heat, and rest to help improve symptoms, were in the most deprived cohort. In contrast, this cohort exhibited the lowest proportion to try exercise to help symptoms (Table II).

**Measures patients feel would help them cope.** Qualitative review of the free-text responses patients provided highlighted several key themes where patients felt they would benefit from greater support. These themes, along with selected verbatim patient comments, are highlighted in Figure 2.

## Discussion

Our findings demonstrate that increasing deprivation is one of the factors that may be associated with an adverse impact upon patients on waiting lists for planned care. While baseline demographic characteristics were similar across all IMD quintiles, the most deprived cohort were younger, with poorer pain, mood, and QoL scores, alongside lower overall activity levels (Figure 3).

**Table 1.** Baseline patient characteristics and responses to survey questions.

Characteristic	1 (most deprived)	2	3	4	5 (least deprived)	Total
Patients, n	98	141	155	237	257	888
<b>Gross RTT wait, wks</b>						
Mean (SD)	23.89 (14.22)	25.36 (13.30)	26.59 (13.58)	26.49 (13.51)	25.84 (13.86)	25.85 (13.67)
Median (IQR)	22.0 (15.0 to 33.0)	25.0 (15.0 to 34.0)	27.0 (15.0 to 37.0)	26.0 (16.0 to 37.0)	25.0 (15.0 to 36.0)	25.0 (15.0 to 36.0)
<b>Age, yrs</b>						
Mean (SD)	59.48 (13.85)	58.49 (14.41)	62.01 (13.82)	64.91 (13.36)	65.95 (13.33)	63.09 (13.93)
Median (IQR)	61.0 (53.0 to 71.0)	60.0 (50.0 to 68.0)	63.0 (53.0 to 72.0)	67.0 (58.0 to 74.0)	68.0 (58.0 to 75.0)	65.0 (55.0 to 73.0)
<b>Sex, n (%)</b>						
Female	46 (46.9)	67 (47.5)	92 (59.4)	116 (48.9)	125 (48.6)	446 (50.2)
Male	52 (53.1)	74 (52.5)	63 (40.6)	121 (51.1)	132 (51.4)	442 (49.8)
<b>Pain VAS</b>						
Mean (SD)	7.11 (2.01)	6.38 (2.41)	6.28 (2.58)	6.10 (2.56)	5.99 (2.57)	6.26 (2.50)
Median (IQR)	7.0 (6.0 to 8.0)	7.0 (5.0 to 8.0)	7.0 (5.0 to 8.0)	7.0 (5.0 to 8.0)	7.0 (5.0 to 8.0)	7.0 (5.0 to 8.0)
<b>Mood</b>						
Mean (SD)	6.06 (2.65)	5.38 (2.71)	4.99 (2.73)	5.00 (2.62)	4.71 (2.78)	5.09 (2.73)
Median (IQR)	6.0 (4.0 to 8.0)	6.0 (4.0 to 8.0)	6.0 (4.0 to 7.0)	4.5 (4.0 to 7.5)	4.0 (2.0 to 6.0)	6.0 (4.0 to 8.0)
<b>Symptom duration, mths</b>						
Mean (SD)	85.85 (122.50)	67.70 (98.48)	67.81 (123.02)	76.97 (142.03)	68.59 (112.26)	72.46 (121.76)
Median (IQR)	39.0 (24.0 to 96.0)	36.0 (24.0 to 66.0)	36.0 (24.0 to 60.0)	36.0 (24.0 to 72.0)	36.0 (24.0 to 72.0)	36.0 (24.0 to 72.0)
<b>EQ-5D</b>						
Mean (SD)	0.37 (0.30)	0.47 (0.33)	0.52 (0.30)	0.50 (0.32)	0.53 (0.31)	0.49 (0.32)
Median (IQR)	0.4 (0.1 to 0.6)	0.5 (0.2 to 0.8)	0.6 (0.2 to 0.8)	0.5 (0.2 to 0.7)	0.6 (0.2 to 0.8)	0.5 (0.2 to 0.8)
<b>Health VAS</b>						
Mean (SD)	50.82 (26.49)	53.32 (26.76)	56.77 (45.07)	57.63 (24.81)	57.29 (24.19)	55.91 (29.73)
Median (IQR)	50.0 (30.0 to 70.0)	55.5 (30.0 to 75.0)	50.0 (35.0 to 70.0)	57.5 (40.0 to 80.0)	60.0 (40.0 to 75.0)	55.0 (40.0 to 75.0)
<b>GAD2</b>						
Mean (SD)	2.94 (2.35)	2.55 (2.32)	2.18 (2.19)	2.03 (2.22)	1.88 (2.07)	2.20 (2.22)
Median (IQR)	3.0 (0.5 to 6.0)	2.0 (0.0 to 5.0)	2.0 (0.0 to 4.0)	1.0 (0.0 to 4.0)	2.0 (0.0 to 3.0)	2.0 (0.0 to 4.0)
<b>Activity level, n (%)</b>						
Active	29 (29.9)	53 (39.3)	70 (47.0)	99 (44.0)	117 (47.6)	368 (43.2)
Inactive	44 (45.4)	53 (39.3)	48 (32.2)	81 (36.0)	89 (36.2)	315 (37.0)
Sedentary	24 (24.7)	29 (21.5)	31 (20.8)	45 (20.0)	40 (16.3)	169 (19.8)
<b>Proceed with operation, n (%)</b>						
No	6 (6.2)	10 (7.5)	3 (2.2)	8 (3.7)	19 (7.9)	46 (5.6)
Yes	90 (93.8)	123 (92.5)	134 (97.8)	207 (96.3)	221 (92.1)	775 (94.4)
<b>Delay operation, n (%)</b>						
No	72 (78.3)	95 (73.1)	108 (81.2)	172 (82.3)	177 (79.0)	624 (79.2)
Yes	20 (21.7)	35 (26.9)	25 (18.8)	37 (17.7)	47 (21.0)	164 (20.8)
<b>GAD category, n (%)</b>						
Not anxious	39 (46.4)	68 (55.3)	88 (64.7)	144 (68.9)	156 (71.2)	495 (64.2)
Anxious	45 (53.6)	55 (44.7)	48 (35.3)	65 (31.1)	63 (28.8)	276 (35.8)

EQ-5D, EuroQol five-dimension health questionnaire; GAD2, Generalized Anxiety Disorder 2-item; IQR, interquartile range; RTT, referral to treatment; SD, standard deviation; VAS, visual analogue scale.

More than one in six people in the UK have a relative low income before housing costs (BHC), rising to more than one in five once accounting for housing costs (AHC).<sup>22</sup> While overall measures of relative AHC poverty are broadly unchanged in recent years, relative child poverty has continued to rise, being 4% higher in 2019-20 than 2011-12.<sup>23</sup> The healthy life expectancy gap between the most and least deprived parts of the UK is 19 years.<sup>24</sup> A recent UK House of Commons briefing paper

reports that poverty is set to increase over the coming years, with the impact of COVID-19 undoubtedly exacerbating this problem.<sup>22</sup> The reasons for this are complex and intertwined, as reflected in the IMD. Geography is an important factor that matters for social mobility, both directly and indirectly through its impact on education, employment, and finances.<sup>25</sup> It is clear that better health can enable access to social and economic opportunities; without these, individuals can become trapped in

**Table II.** Responses to questions about whether patients had tried anything at home to improve their symptoms.

Response	1 (most deprived)	2	3	4	5 (least deprived)	Total
Patients, n	98	141	155	237	257	888
<b>Nothing, n (%)</b>						
No	79 (80.6)	118 (83.7)	131 (84.5)	194 (81.9)	205 (79.8)	727 (81.9)
Yes	19 (19.4)	23 (16.3)	24 (15.5)	43 (18.1)	52 (20.2)	161 (18.1)
<b>Medication, n (%)</b>						
No	44 (44.9)	71 (50.4)	82 (52.9)	143 (60.3)	154 (59.9)	494 (55.6)
Yes	54 (55.1)	70 (49.6)	73 (47.1)	94 (39.7)	103 (40.1)	394 (44.4)
<b>Ice/heat, n (%)</b>						
No	71 (72.4)	96 (68.1)	109 (70.3)	179 (75.5)	203 (79.0)	658 (74.1)
Yes	27 (27.6)	45 (31.9)	46 (29.7)	58 (24.5)	54 (21.0)	230 (25.9)
<b>Exercise, n (%)</b>						
No	65 (66.3)	81 (57.4)	93 (60.0)	153 (64.6)	165 (64.2)	557 (62.7)
Yes	33 (33.7)	60 (42.6)	62 (40.0)	84 (35.4)	92 (35.8)	331 (37.3)
<b>Rest, n (%)</b>						
No	57 (58.2)	81 (57.4)	95 (61.3)	145 (61.2)	164 (63.8)	542 (61.0)
Yes	41 (41.8)	60 (42.6)	60 (38.7)	92 (38.8)	93 (36.2)	346 (39.0)
<b>Other, n (%)</b>						
No	89 (90.8)	120 (85.1)	139 (89.7)	209 (88.2)	223 (86.8)	780 (87.8)
Yes	9 (9.2)	21 (14.9)	16 (10.3)	28 (11.8)	34 (13.2)	108 (12.2)

negative and propagating cycles of poor physical and mental health and deprivation, with difficulty meeting the costs of their care, resulting in further deterioration of any conditions over time.<sup>26</sup> This negative cycle can also transfer across generations, further increasing the deprivation divide.<sup>27</sup>

In publicly funded health systems, such as the NHS, waiting times act as a rationing mechanism to provide a buffer between demand and supply.<sup>28</sup> They are intended to be equitable and objective, and to not directly discriminate based upon social class and status. However, some studies from across the developed world do suggest that individuals from less deprived backgrounds wait for shorter times for care than their more deprived counterparts.

An NHS-based study found patients in the lowest deprivation and education quintiles waited 9% less than patients in the second quintile, and 14% less than patients in the third-to-fifth quintile, after accounting for illness severity.<sup>29</sup> Similarly, individuals with high education levels were found to have a reduction in waiting times for specialist consultations of 68% in Spain, 67% in Italy, and 34% in France, compared with their counterparts from lower education backgrounds.<sup>30</sup> An adverse association between education and waiting times for non-emergency surgery were also found in Denmark, the Netherlands, and Sweden, with higher education levels reducing waits by 66%, 32%, and 48%, respectively. An increase in income of €10,000 was found to reduce waiting times for specialist consultation by 8% in Germany and waiting times for non-emergency surgery by 26% in Greece. A Norwegian study similarly found a statistically significant negative association between income and waiting time

for men, and education and waiting time for women.<sup>28</sup> Italian groups have also observed that individuals with lower education and economic resources have a higher risk of experiencing excessive waiting times for diagnostic and specialist visits, and elective surgery.<sup>31,32</sup> Inequality also plays a role in more specialist care, with a UK-based study finding individuals from more socially deprived areas had reduced access to transplant waiting lists.<sup>33</sup> Deprivation can also impact length of hospital stay, with another UK study finding patients from the most deprived areas remained an inpatient for 6% longer than their least deprived counterparts in 2001-2, although the differences reduced to 2% by 2007-8.<sup>34</sup>

Notwithstanding differences in healthcare systems, the adverse impact of deprivation on care is not a universal finding, with some authors suggesting other factors may play a more significant role. A Canadian group found that socioeconomic status did not predict the timeliness of delivery of paediatric surgical services.<sup>34</sup> Similarly, a study from Norway found that socioeconomic status (measured by income and education) did not affect treatment waiting time when illness severity and logistical hospital factors (such as travel) were also considered.<sup>35</sup> Other groups have also found that geographical and institutional differences across hospitals accounted for a greater proportion of differences in care metrics than deprivation factors.<sup>36</sup> Interestingly, a UK analysis found most inequalities occurred within rather than between hospitals, with a failure to control for hospital fixed effects resulting in underestimation of the income gradient.<sup>29</sup>

While the prior evidence might be mixed, the COVID-19 pandemic has undoubtedly unmasked and exacerbated any disproportionately adverse health

- **Better transport:** Better transport support for hospital visits. Because of my pain I can't drive, and I can't afford taxis. It can take a whole day to travel by ambulance for a short appointment as they're so busy.
- **More flexible therapy support:** Someone to call for support while I wait for my operation. A private physio was very useful when I was really struggling but it was too expensive to keep going.
- **Prioritisation tailored to patient circumstances:** I've had to stop working because of my arthritis pain, which has made money tight as I'm self-employed, especially because of the long delays. I know everyone struggles, but an earlier date would have meant going back to work much sooner.
- **Non-IT based support:** I want to know where I am on the list, but no one can tell me as the list is so long because of COVID-19. I know people who've gone for private care but I can't afford that, and there's no old fashioned (face to face) support and advice - it's all online and I'm not very good with technology so I don't really know how to follow lots of the advice.

Fig. 2

What do our more deprived patients feel will help them cope? Selected themes from patients, with a focus on those with a financial or resource impact.

impacts experienced by the most deprived groups in our society, including those either living in areas of highest deprivation, or from Black, Asian and minority ethnic (BAME) communities.<sup>7-10</sup> Consequently, waiting lists do appear to discriminate against the most deprived, with our findings demonstrating the health of this cohort to be most adversely impacted by delays. This is an important finding to recognize so that future interventions to address inequalities can focus on the most deprived.

The NHS Long Term Plan aims to prevent illness through tackling such health inequalities.<sup>37</sup> Improving equitability is a key factor, with the need to provide more for the most deprived groups to close the inequality gap, including improving access to information, services, and support. Clear communication is key to identifying the barriers, including improved multi-agency engagement with a diverse range of individuals who any, ideally codesigned, intervention intends to support. To obtain better quality data for more targeted interventions, a new Health Inequalities Improvement Dashboard is under development, alongside plans to improve patient and staff feedback data and Health Equity Audits to identify health inequalities between different groups.

Ultimately, more definitive solutions will only be achieved in the longer term. So, what can be done in the shorter term for the most deprived in our growing list of patients awaiting planned care? In an earlier study, we proposed a locally reproducible action plan, the "3 C" model, to better hear patient *concerns*, help them *cope*, and provide more engaged *catch-up*, mostly within the confines of current resource limitations.<sup>19</sup> Key to this is improved two-way communication and improved access to a ladder of information and support resources offered as patients' physical and psychosocial health situation changes. While tackling the underlying elements of deprivation may be

largely beyond the remit of most clinicians, by providing more flexible accessibility to our available services as the need arises on the part of our patients, we can attempt to influence the prioritization of care delivery for individual patients, thereby ensuring the most urgent care is provided to those most in need. While the ongoing effects of the pandemic mean that these are undoubtedly small steps, they can eventually culminate in bigger changes, which all seek to improve more equitable care delivery.

For the most deprived patients, the first goal in a resource-constrained environment is identification to ensure that interventions are appropriately targeted at the most vulnerable. This necessitates changes to current prioritization strategies, with the need to incorporate additional metrics beyond clinical parameters in determining the urgency of proposed interventions. At a practical level, strategies to support patients while they wait also need to be adapted to ensure the most deprived receive the appropriate additional support they need, particularly regarding improving their pain, mood, QoL, and activity levels; areas in which this cohort suffer more than their less deprived counterparts. For example, this cohort could also be prioritized for delivery of practical measures (such as raised seats, splints, therapy) while they await their planned intervention. With deprivation metrics relatively easy to access from waiting list patient demographic data, the most deprived patients can be readily identified. Existing strategies to support patients on waiting lists then need to be adapted accordingly to enable more focused support to be delivered to this cohort. For example, with our 3 C model, more technology-based solutions may need to be replaced with either community-based or face-to-face approaches so as not to discriminate against patients excluded from reliable access to the internet, particularly

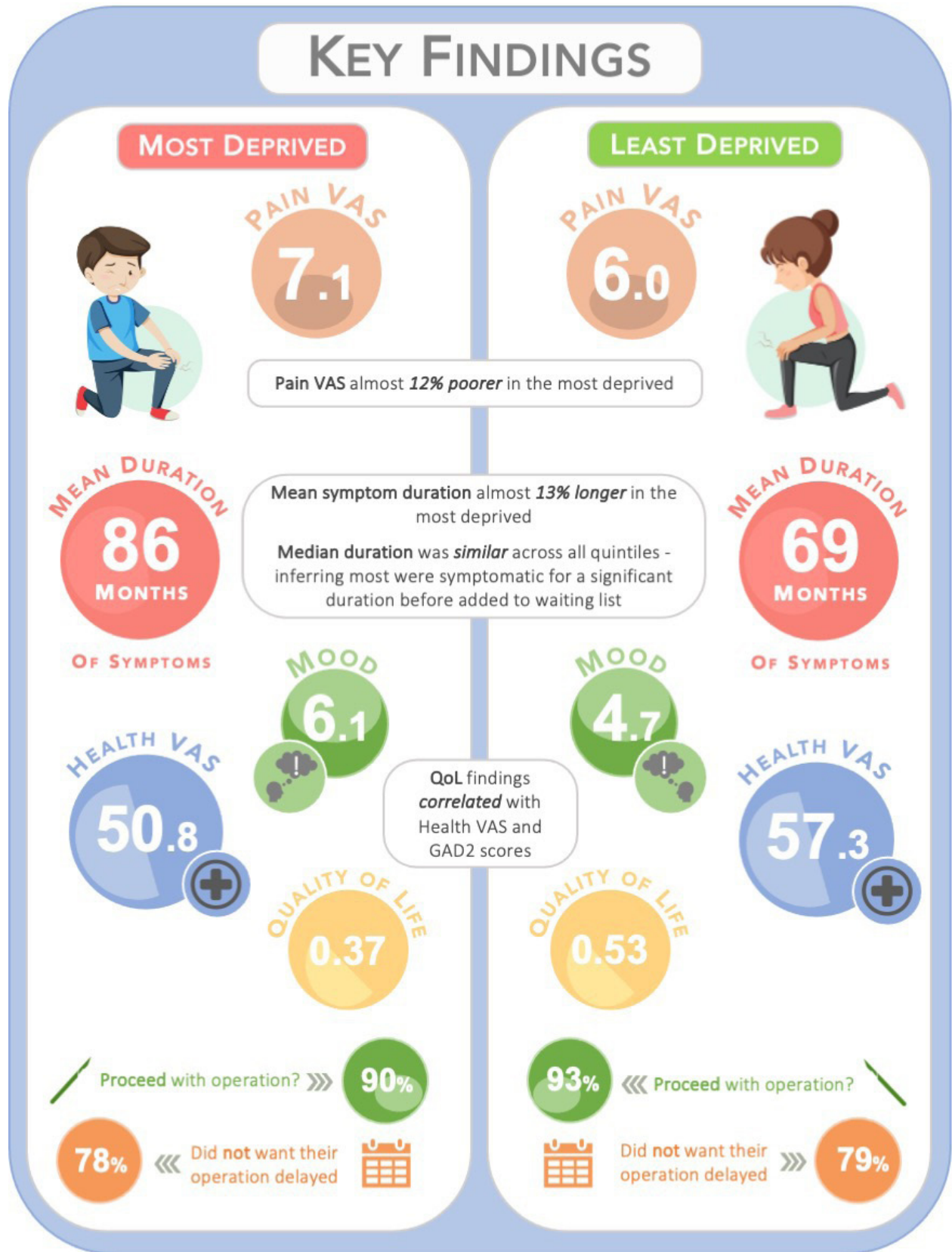


Fig. 3

Key findings. GAD2, Generalized Anxiety Disorder 2-item; QoL, quality of life; VAS, visual analogue scale.

with COVID-19 having widened the 'digital divide' for the poorest in society.<sup>38</sup>

Measures that our patients feel would benefit them are highlighted in Figure 2. Improving activity levels of the most deprived (who also struggle the most with pain management) is a more challenging issue to address, particularly given the greater likelihood of limited household outdoor space in this cohort, therefore ultimately requiring greater resource and intervention at a broader societal level. Deprivation is known to be associated with inactivity, with even low-cost activities (such as walking) affected by socioeconomic status.<sup>39</sup> While tackling inactivity requires national measures to be implemented (for example, more physical activity in schools), as clinicians we can play a role in delivering more proactive pain management, which may in turn help those struggling the most to get more active. With analgesic prescriptions (including of opioids) known to be higher in more deprived regions, approaches need to be more holistic rather than solely pharmacological, for example including delivery of more targeted physical therapy sessions, earlier identification of occupational therapy measures, and better psychological support to help individuals cope better despite their discomfort while they await their planned intervention.<sup>40,41</sup> Group therapy sessions targeted at those most at risk of adverse outcomes are one such intervention that may deliver the most helpful outcomes for the least resource expenditure, with proven benefits in improving both, pain management, and physical activity.<sup>42</sup>

Ultimately, while there is no single magic bullet to address the identified inequalities that affect the most deprived patients on our waiting lists, current prioritization measures do appear to indirectly discriminate against the most deprived and struggling cohorts through a lack of consideration of patient factors beyond solely clinical parameters. We hope our findings will spark discussion among policy makers into developing more holistic and flexible strategies with which to prioritize planned interventions, incorporating the views of the most deprived patients, thereby playing a small but not insignificant part in reducing societal inequalities in healthcare.



### Take home message

- This is the first study to identify that increasing deprivation has an adverse impact upon patients on waiting lists for planned care.

- The most deprived patients are younger, with poorer pain, mood, and quality of life scores, alongside lower overall activity levels.

- With greater difficulties coping, this cohort of patients want better support while they await their planned intervention; with resources constrained, the most deprived patients should be prioritized for support.

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