


# BMJ Open How has physical distancing impacted on health and well-being during the COVID-19 pandemic? A Scottish longitudinal qualitative study

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## ABSTRACT

**Objectives** This study provides an in-depth understanding of the impact of physical distancing restrictions and other quarantining measures during the first 6 months of the COVID-19 pandemic on physical and mental health and well-being.

**Design** Longitudinal qualitative research using semistructured interviews at two time points (21 May to 10 June 2020 when the first restrictions were eased, and 2 to 26 August 2020 when many restrictions had been eased, but physical distancing measures remained) and framework analysis.

**Setting** Interviews by telephone or video call in Scotland.

**Participants** Thirty participants: 16 women, 93% reporting white ethnicity, 18+ years, 47% from deprived areas, 47% reported mental and/or physical health conditions.

**Results** Four main themes described the impact of physical distancing restrictions on (1) health behaviours; (2) healthcare access; (3) physical health; and (4) mental health. Changes in impact over the two time points were compared. For example, health behaviours in May/June, such as reduced physical activity and increased calorie intake, appeared to improve by August. From May/June to August, an increasing number of participants expressed dissatisfaction with healthcare they received. Participants with existing physical health conditions reported continued negative impact of restrictions on their physical health. All participants reported some negative mental health impact, mostly anxiety. An increasing number reported mental health improvements in August, with those with mental health conditions or under 30 years reporting improvement most frequently.

**Conclusions** In line with previous research, our participants felt able to return to prepandemic health habits. Our findings corroborate evidence of reduced preventive healthcare use and help-seeking behaviours. People with existing health conditions appear to be most vulnerable to negative mental and physical health impacts of physical distancing. These negative impacts and periods of unhealthy behaviours have potential long-term consequences, especially among already underserved groups. We recommend public health and policy strategies to mitigate long-term impacts of physical distancing.

## Strengths and limitations of this study

- ⇒ Our study elaborates on existing evidence of the impact of the physical distancing restrictions on physical and mental health and well-being.
- ⇒ A key strength of our study is its longitudinal design allowing us to track people's experiences over the first 6 months of physical distancing and its impact on their health and well-being.
- ⇒ By linking a purposive sampling strategy to two surveys that informed the interviews, we achieved a balanced sample in terms of social and clinical characteristics.
- ⇒ Although the proportion of participants in our sample reporting white ethnicity (93%) matches that proportion in the 2011 census (96%), our findings cannot give insight into challenges particular to ethnic minority groups who appear disproportionately affected by the pandemic and physical distancing restrictions.
- ⇒ Data collection for this study ceased in August 2020 and further research is required to establish whether apparent improvements in health behaviours and mental health were sustained through winter 2020/2021 or whether the recurrence of tightened physical distancing restrictions exacerbated negative effects on health and well-being.

## INTRODUCTION

People have had to change drastically how they live to achieve physical distancing to prevent the spread of COVID-19. Evidence is growing that physical distancing and other quarantining measures introduced by the UK and Scottish governments adversely affect general population health and mental health.<sup>1</sup> Physical distancing restrictions negatively impact on a diverse range of behaviours which directly affect health and well-being, including eating habits,<sup>2</sup> physical activity,<sup>2-4</sup> sleep,<sup>5 6</sup> alcohol consumption<sup>2 7</sup> and other drug use.<sup>8-11</sup> In addition, recent research shows a decline in preventive healthcare use and help-seeking behaviours during the

pandemic.<sup>5</sup> The pandemic also adversely affects mental health outcomes, especially among young people, including increased loneliness and social isolation due to physical distancing and quarantining measures.<sup>3 8 12–18</sup> There is concern that those in low socioeconomic groups, women, carers, people with pre-existing health conditions and ethnic minorities experience this burden disproportionately.<sup>1 9 17 18</sup>

While the population has adjusted to physical distancing restrictions,<sup>2 4 16 18 19</sup> the long-term effects of this decline in health, well-being and equality are expected to continue well beyond the COVID-19 pandemic.<sup>1</sup> Mitigating and preventive public health solutions, in the form of tailored interventions and health policies, are needed.<sup>13 18 20</sup> Their development necessitates an in-depth understanding of the impact of physical distancing and other protective measures.

Our study aimed to provide this information in the context of restrictions implemented in Scotland through semistructured interviews by (1) identifying the key health and mental health concerns, and (2) examining how people's experiences changed over the first 4 months of physical distancing. We address four research questions:

1. What is the nature of the impact of physical distancing on the health and mental health of Scottish people?
2. Do people's experiences of the impact of physical distancing on health and mental health change over the first 4 months of physical distancing?
3. Does the impact of physical distancing differ across demographic (eg, age, sex) and health (eg, cancer, depression) characteristics?
4. What are the key recommendations to prevent or mitigate the adverse effects of physical distancing on health and mental health, now and in the future?

## METHODS

### Sampling and recruitment

Potential participants had completed related surveys on health and well-being during the COVID-19 pandemic: the UK COVID-19 Mental Health & Well-being Study<sup>14</sup> and the Scottish COVID-19 (SCOVID) Mental Health Tracker Study.<sup>15 16</sup> We used purposive sampling to recruit interview participants. Survey participants residing in Scotland who had consented to being contacted for further research were selected to receive an interview invitation based on the sampling frame criteria to ensure a range of age, sex, location (rural/urban), socioeconomic status (SES) and existing health or mental health conditions. **Table 1** displays the expected number of participants for each criterion. SES was assessed using the National Readership Survey's social grade classification based on occupation.<sup>21</sup> We grouped grades A, B and C1 as high SES and grades C2, D and E as low SES.

We identified 218 survey participants as potential participants and provided a list of their identifiers to the market research company who had administered both surveys to contact them and recruit up to 30 interview

**Table 1** Participant characteristics

| Demographic category      | n, % (expected) |
|---------------------------|-----------------|
| Age (years)               |                 |
| 18–29                     | 9, 30.0 (8)     |
| 30–69                     | 16, 53.3 (14)   |
| 70+                       | 5, 16.7 (8)     |
| Sex                       |                 |
| Female                    | 16, 53.3 (15)   |
| Male                      | 14, 46.7 (15)   |
| Location                  |                 |
| Urban                     | 20, 66.7 (20)   |
| Rural                     | 10, 33.3 (10)   |
| Socioeconomic status      |                 |
| Low                       | 14, 46.7 (15)   |
| High                      | 16, 53.3 (15)   |
| Health*                   |                 |
| No health condition       | 16, 53.3 (14)   |
| Physical health condition | 9, 30.0 (8)     |
| Mental health condition   | 5, 16.7 (8)     |

\*Some participants reported both.

participants. The market research company held the survey participants' contact details and emailed potential interview participants the information about the study. They followed up the emails with a phone call and interested participants agreed a day and time for the interviewer (MK) to call the participants and carry out the interview. Participants could choose to be interviewed by phone, Skype or Zoom. Participants were interviewed twice: in May/June and August. They received £20.00 to compensate for the time taken for the interview in May/June and £40.00 for the interview in August.

### Interview procedure and materials

The interviews were carried out by MK, who is a behavioural scientist with a PhD in health psychology and extensive experience of conducting qualitative interviews. MK is female and had been a postdoctoral researcher studying inequalities in health behaviours for 4 years at the time of data collection. She had no contact with the participants prior to the first interview, who were told only her name prior to the interviews.

The market research company obtained informed consent from the participants prior to the interview. MK called the participants at the agreed time, introduced herself, explained the purpose of the study, answered any questions and ascertained that they were happy to begin the interview. Interviews in May/June and August followed similar topic guides. We first elicited general information on the participants' experiences of physical distancing restrictions. Then the interviews focused on physical health and health behaviours, followed by mental health and health behaviours. Finally, we asked

about participants' experiences of physical distancing. At the end of each interview, participants had the opportunity to ask questions about the study before MK thanked them for their time and ended the interview. MK then prepared notes on the content of each interview which informed the analysis and allowed MK to follow-up on particular experiences in the August interviews. The interviews lasted on average 45 min, they were audio recorded and transcribed verbatim.

The first wave of interviews took place between 21 May 2020 and 10 June 2020, during which time Scotland moved to phase 1 of the route map out of lockdown,<sup>22</sup> meaning public outdoor spaces could now be used for recreation, one household could now meet one other household outdoors staying 2m apart, while homeworking remained in place and schools remained closed except for critical childcare.

The second wave of interviews took place between 2 August 2020 and 26 August 2020 in phase 3 of the Scottish route map out of lockdown.<sup>22</sup> During this time, vulnerable people were no longer required to isolate at home, three households could meet indoors, workplaces, schools and hospitality reopened gradually and urgent dental work resumed.

### Analysis

We analysed the interviews longitudinally using framework analysis.<sup>23</sup> This approach facilitated comparison of themes among different demographic groups and over time.

MK and KAR discussed the interview notes to create an initial thematic framework which MK applied to the interview transcripts. Additional themes and codes that emerged from the interview transcripts were integrated into the thematic framework. We used NVivo to code the transcripts and create matrices charting data extracts by participant, demographic categories and interview time point. Matrices counting the number of data extracts per participant per interview wave per subtheme and the number of participants describing a subtheme per interview wave per demographic categories were exported to MS Excel to follow the development of each theme over time. To identify qualitative differences in the participants' accounts, MK reviewed the corresponding data extracts in NVivo. While this process did not use the typical framework matrix described by Ritchie and colleagues,<sup>23</sup> our approach yields similar information while saving time by avoiding both data duplication and the lengthy transfer of data extracts from NVivo to MS Excel.

MK analysed each theme through comparison of patterns in the number and content of data extracts across time and demographic categories. MK also noted representative data extracts. KAR reviewed each summary and discussed with MK to ensure consistency.

### Patient and public involvement

This study was funded by a rapid research into COVID-19 programme. Given the intentionally brief turn-around

**Table 2** Themes and subthemes

| Theme             | Subthemes  |
|-------------------|--|
| Health behaviours | Diet   |
|                   | Physical activity                                  |
|                   | Alcohol intake                                     |
|                   | Smoking  |
| Healthcare access | Access to face-to-face healthcare                  |
|                   | Quality of care                                    |
|                   | Access to physical healthcare                      |
|                   | Access to mental healthcare                        |
|                   | Willingness to access healthcare                   |
| Physical health   | View of healthcare suspension                      |
|                   | Perceived ability to look after health             |
|                   | Impact of movement restrictions on physical health |
| Mental health     | Quality of sleep                                   |
|                   | Impact on mental health and coping                 |
|                   | Experience of stress                               |
|                   | Experience of social support                       |

time for funding application and study conduct, in addition to the strict physical distancing restrictions in place during the conceptual, data collection and analysis stages of the study, we were unable to seek direct patient and public input into the project. However, this study was informed by a position paper coauthored by RCO'C which included contributions from people with lived experience.<sup>13</sup>

## RESULTS

### Participant characteristics

Thirty participants were interviewed. Table 1 displays their demographic characteristics. Approximately half of the participants were women and/or from low socioeconomic groups. All but two participants (93.3%) reported a white ethnic background.

The analysis identified four main themes: impact on health behaviours; healthcare access; physical health; and mental health. Table 2 displays the themes and subthemes. Proportions of how the participants' experiences changed over time are displayed in online supplemental figures 1–4.

### Impact on health behaviours

Most participants described negative impacts on health behaviours (n=26 in May/June, n=25 in August). In May/June, 19 participants, primarily with low SES, reported that movement restrictions had reduced their usual amount of physical activity. Women described reduced exercise from working, commuting, shopping and childcare, while four men described less exercise due to shielding and no longer having access to exercise facilities, for example, swimming. By August, eight participants

reported reduced physical activity. Three participants reported difficulties accessing an outdoor space suitable for exercising in May/June. No participants said this was an issue in August.

Haven't been out at all, I'm not allowed a daily walk or a cycle. [because I've been shielding] I just sit here and get fat now (laugh). And very unfit. (P14, male, 30–69 years, high SES, chronic obstructive pulmonary disease, May/June)

Nine participants described unhealthy eating habits like snacking, eating energy-dense foods and larger portions in May/June, decreasing to seven participants in August.

When I feel rubbish, I eat rubbish. So I've stopped eating fruit and veg, and I'm eating more crisps and stuff, [...] I eat far too much chocolate [...] just had the opportunity to eat all day. (P21, female, 18–29 years, low SES, obsessive-compulsive disorder, May/June)

However, the number of participants describing healthier eating habits increased from May/June to August: older participants talked more about cooking meals while at home and young women described healthier eating to lose weight they had gained between March and May.

About half of the participants described how physical distancing increased exercising in May/June and August with most demographic groups reporting increased physical activity in August to manage weight gained earlier in the year.

Few participants reported increased alcohol intake at either interview time point. However, those who did described having a drink with meals they now ate at home rather than work, increased drinking in the evening, or social drinking once they could meet other households again. One participant explained how his alcohol intake resulted from the uncertainty and boredom from physical distancing restrictions.

Drinking too much. [...] I don't think the social distancing is what does it. It's just the sameness of every day really. [...] it's the whole uncertainty thing. The lack of light at the end of the tunnel. (P5, male, 30–69 years, high SES, no health conditions, May/June)

More frequently, participants reported reduced alcohol consumption: 10 in May/June and 13 in August. They reported being social drinkers with fewer opportunities to have a drink with others and enjoying alcohol less without others.

I probably am a bit of binge drinker normally. But during lockdown, I have barely drunk anything. [...] I'd prefer to be in company to drink. (P18, male, 18–29 years, high SES, no health conditions, May/June)

More than half of participants reported being non-smokers or ex-smokers. Two participants, both with mental health conditions, mentioned difficulties related

to smoking. One woman described how heightened anxiety during the pandemic had created a desire to relapse into smoking in May/June, which had abated by August. Another woman explained that she had found giving up smoking in May/June harder than expected and she had stopped trying to give up in August.

### Impact on healthcare access

Views on the quality of healthcare during physical distancing restrictions were mixed. At both time points, over a third of participants had received healthcare remotely, primarily by phone, including dental, general practitioner (GP), physiotherapy, prenatal and mental healthcare. Participants were mostly satisfied with their care. Six participants expressed dissatisfaction with their care (remote and face to face) in May/June, doubling to 12 participants by August. Some participants felt unfamiliar with phone consultations while others felt they offered worse care.

I prefer to see [my therapist] in person. Just 'cause that's what I'm used to. It's kinda strange hearing them on the phone, and... like I'm quite visual, so she draws me diagrams and stuff. [...] Obviously you can't do that on the phone. (P21, female, 18–29 years, low SES, obsessive-compulsive disorder, May/June)

One participant who had social anxiety and suicidal thoughts reported that her doctor had difficulty reading her body language on the video call. She also expressed concern about being overheard by her family during the call.

Six participants were unable to access National Health Service (NHS) services in May/June. Of these, two participants had dental problems between April and August and were unable to access treatment. Two were also unable to access bowel or cervical screening, and four had specialist appointments cancelled, including tests and treatments for lung and breast cancer. In August more affluent men reported difficulties accessing acute dental or GP care or filling prescriptions, and uncertainty about getting elective surgery. Three participants felt uncertain about how to access mental health services during physical distancing restriction.

I've still no' got any front teeth. [...] when you've got bridge work, they file your teeth down and they leave it in points. So the cement sticks into the bridge work. Well I've still got some of these teeth sticking down to points and they've catching my tongue, [...] that's nearly six month now that I've been without them. [...] It was very frustrating (laugh). (P26, male, aged 30–69 years, low SES, lung cancer, arthritis, August)

I was meant to be getting therapy but that's kind of disappeared at the moment. I've had one phone call, so I've kinda been left hanging a bit. So, like, my anxiety's getting a bit worse at the moment I think, cos I'm imagining what it's gonna be like going back out when things are back to normal and just feel like I'm

starting from scratch again cos I've been left all this time. (P3, female, 18–29 years, high SES, social anxiety, August)

Most participants were willing to use NHS services, at both times although some preferred to avoid NHS services, unless they were seriously ill, because they perceived services to be busy or feared COVID-19 infection while accessing NHS services. In August, especially young participants had plans to contact mental health services. One man described plans to contact a counsellor because his mental health had worsened.

I would be wary of seeking professional help, just because I don't want to put an extra burden on the NHS. And I know that the doctors are open and that they want us to go and see them, but if I didn't feel like it was urgent, I don't think I would go. Like if I was like uncontrollably bleeding, or if I was feeling really sick for quite a few days. [...] if it was anything mild I don't think I would go. (P11, female, 18–29 years, low SES, no health conditions, May/June)

Participants expressed understanding of NHS services suspensions in May/June, including two-thirds of those with physical health conditions. However, 18 participants criticised NHS services suspensions in May/June and two participants repeated this in August. Primarily women reported this, who described being angry, worried or upset, and those with low SES, expressed concern about seriously ill patients not receiving treatment or themselves not receiving check-ups and treatment for asthma and breast cancer or dental work.

They stopped my injections. I've had my check-ups cancelled. So it's made me feel worried a bit as well, no' getting checked up, it's... I would've liked to have got my mammograms and things done, to make sure everything is okay. (P20, female, 30–69 years, low SES, breast cancer, May/June)

### Impact on physical health

More participants reported feeling able to look after their health than not, and their numbers almost tripled from eight participants in May/June to 21 in August.

Participants who attributed negative health outcomes directly to restricted movement halved from May/June to August. However, six participants with health conditions reported negative health outcomes at each time point. In May/June, these included concerns about losing fitness; lack of fresh air; and aches and pains from increased sedentary behaviour. By August, they worried that reduced physical activity had reduced mobility in arthritic limbs, increased their weight, reduced their quality of sleep and may have reduced their immunity to infections. In addition, one woman, a key worker in the postal service, explained that daily mask wearing had worsened her sinusitis and the regular use of hand sanitiser affected her skin.

I miss the swimming, because the swimming helped me a lot [with osteoarthritis and my broken back] I'm overweight to start with, and being in the water, it takes the buoyancy and the strain off your legs and your back. (P2, male, 30–69 years, high SES, osteoarthritis, May/June)

Reduced quality of sleep decreased by a third from May/June to August and was more frequent among men and participants with low SES. Participants went to bed later or struggled to fall asleep, while also rising later or rising at their usual time, but experiencing daytime sleepiness. Some participants felt their late bedtimes resulted from lack of tiring activity during the day and reasons to get up early in the morning. One participant reported being unable to stay asleep due to worries about the pandemic.

There is times when you wake up and you cannae get back to sleep again, and [...] you worry about what's gonnae happen tomorrow, or the next day, or the next day, [...] are they gonnae go into full lockdown again, is it gonnae get worse, is it gonnae get better, it's... it's always that... that thing in your mind that makes you stay awake, shall we say, you know? (P4, male, 70+ years, high SES, diabetes, August)

In contrast, primarily women reported improved health while protective measures were in place. In May/June, participants reported experiencing fewer cold-like symptoms and two women described how being at home had allowed them to establish routines for regular mealtimes and exercise. In August, participants reported improving health and fitness, with most having adjusted to exercising from home or going on walks.

I think I'm getting fitter. Me and my sister have done gym class, like, YouTube workout classes, and over Zoom we've done a few live classes of, like, Zumba and stuff like that. And we've done something pretty much every day for the last few months. (P3, female, 18–29 years, high SES, body dysmorphia, social anxiety, August)

Similarly, reports of improved or unchanged quality of sleep increased from May/June to August and were more frequent among women. Participants with high SES most often reported that their sleep quality remained unchanged throughout.

Sixteen participants felt the restrictions had not impacted their physical health.

### Impact on mental health

All participants experienced some negative impact on their mental health at both interview time points. Most reported symptoms of anxiety and feeling restricted but also feeling frustrated, demotivated, uncertain about the future and a general worsening of mental health.

In May/June, participants were most anxious about getting COVID-19. Women, participants younger than 30 years, with low SES or with mental health conditions

described anxiety most often. Participants with low SES were more anxious about uncertainty created by the pandemic, while participants with high SES worried more about the pandemic's economic implications. Fear of passing COVID-19 on to others and anxiety about others failing to follow the guidance were most common among women, those with low SES and participants younger than 30 years. Women also often worried about how family members in their or other households coped with the restrictions.

In August, participants described the same sources of anxiety with constant or decreasing frequency overall; however, reports of anxiety increased among men and those with physical health conditions who worried increasingly about others failing to follow government guidance. Against the overall trend, fear of passing COVID-19 on to others and worries about existing health condition worsening were also described in August.

I felt a strong sense of cabin fever because I couldn't see friends, I couldn't go out and just do the most basic of things when seeing people, going out for coffee, going to the pub, etc. And for me, that created quite a lot of [...] anxiety, actually. I really felt kind of, there was definitely a sense of [...] disconnect from other people because of it. (P18, male, 18–29 years, high SES, no health conditions, May/June)

In May/June, two-thirds of the participants, more commonly men, younger participants and those with health conditions, described being upset about physical distancing restrictions having curtailed cherished routines and activities. A smaller number of these participants, predominantly with high SES, experienced this restrictedness as an imprisonment. Feelings of restrictions had declined somewhat in August, but were described by more than half of the participants still.

Our freedom has been totally curtailed, that's what I'm basically, what I'm trying to say. And your freedom of choice is being curtailed, and for good reasons [...] I've never been in jail, but I imagine that's what it's like. (P2, male, 30–69 years, high SES, heart condition, arthritis, May/June)

Participants appeared to move from feeling demotivated by physical distancing restrictions in May/June to feeling frustrated by them in August. Demotivation was primarily described as feeling bored while having to stay at home. In August, particularly men and participants with low SES described feeling frustrated with having to continue living in a crisis situation with a limited choice of activities and reduced access to healthcare.

I think it makes me worried, like makes me kind of anxious about what's happening. And also the fact that we're waiting for everything to happen, it feels like so much of our lives depend on it. So it can make you really frustrated. And I think that I get frustrated

easily with it. (P10, male, 18–29 years, low SES, asthma, August)

More participants described feeling uncertain about the future in August (n=18) compared with May/June (n=14). While uncertainty remained stable among women, participants with low SES and those younger than 30 years, uncertainty increased among men, those with high SES and older participants. Participants expressed uncertainty about whether the lifting of restrictions would result in a second wave of infections, whether and how soon vaccines or better treatments for COVID-19 would be found, for how long the pandemic might continue and its implications for economic, career and educational prospects. Fewer participants with mental health conditions described uncertainty in August. Initially, this group expressed uncertainty about how the pandemic might change their lives for better or worse, when it would end and whether a vaccine would be developed, while in August one participant repeated the latter.

I would like us to find some medicine that helps people if they do get it. So, you know, a bit like the flu vaccine, so that if they do get it, it's not severe, they will survive. That's what I would hope would happen in the next six months. Do I think it'll happen? I'm not sure. (P8, female, 30–69 years, high SES, anxiety, August)

Almost two-thirds of participants described experiencing more stress, particularly in adapting to restrictions, in May/June, compared with just over half of the participants in August. The decrease was most notable among participants younger than 30 years. In August, the restrictions remained the main cause of stress, but homeworking and dealing with holiday cancellations also increased stress. Particularly participants aged 70 years or older reported the latter.

I felt like I wanted to cry, [...] the shop was packed. [...] every aisle I went down had at least ten people in it. [...] I wanted just to get in, get what I needed and get back out again. And I think I was probably about twenty minutes, [...] waiting for the aisle to clear before I can go and get my stuff, and it just wasn't happening, so I think I left without getting half my stuff as well. (P1, female, 30–69 years, low SES, no health conditions, May/June)

Some participants reported reduced stress in May/June and August due to being happy to spend more time at home and better opportunities to relax without upcoming events or appointments.

Sixteen participants described how aspects of the pandemic had made their mental health worse in May/June. While their number reduced to 12 participants in August, nine participants reported mental health impact of restricted movement at both time points and the number of participants reporting that physical distancing restrictions had worsened their mental health

increased from seven to eight from May/June to August. Several participants also reported increased irritability because they were unable to get time and space away from others in their households. Women, participants younger than 30 years and from high SES backgrounds reported adverse mental health impacts more often. One woman described having suicidal thoughts in May/June and another appeared to have progressed to suicidal behaviours in August.

I'm quite pessimistic about the future as it is [...] one of the recurring themes wi' that is obviously, maybe it's better if I'm not here. So I am trying to get out of that mindset. But I'm not sure how I'm gonnae cope wi' the future. [...] But it's hard to look ahead. (P21, female, 18–29 years, low SES, obsessive-compulsive disorder, May/June)

I've had a couple – like, suicidal thoughts a few times during lockdown, [...] I probably would have had them anyway, but I think yeah – just my mental health's been struggling, I think, without that support there, really. [...] I almost did something but I didn't. My family found me and they kept me safe. (P3, female, 18–29 years, high SES, body dysmorphia, social anxiety, suicidal thoughts, May/June)

At the same time, the number of participants reporting improving mental health as restrictions were lifted almost tripled from May/June to 21 participants in August, especially among participants with mental health conditions and those younger than 30 years. At both time points, most participants, especially participants aged 70 years and older, described feeling hopeful, while a third of participants appeared to accept the pandemic situation.

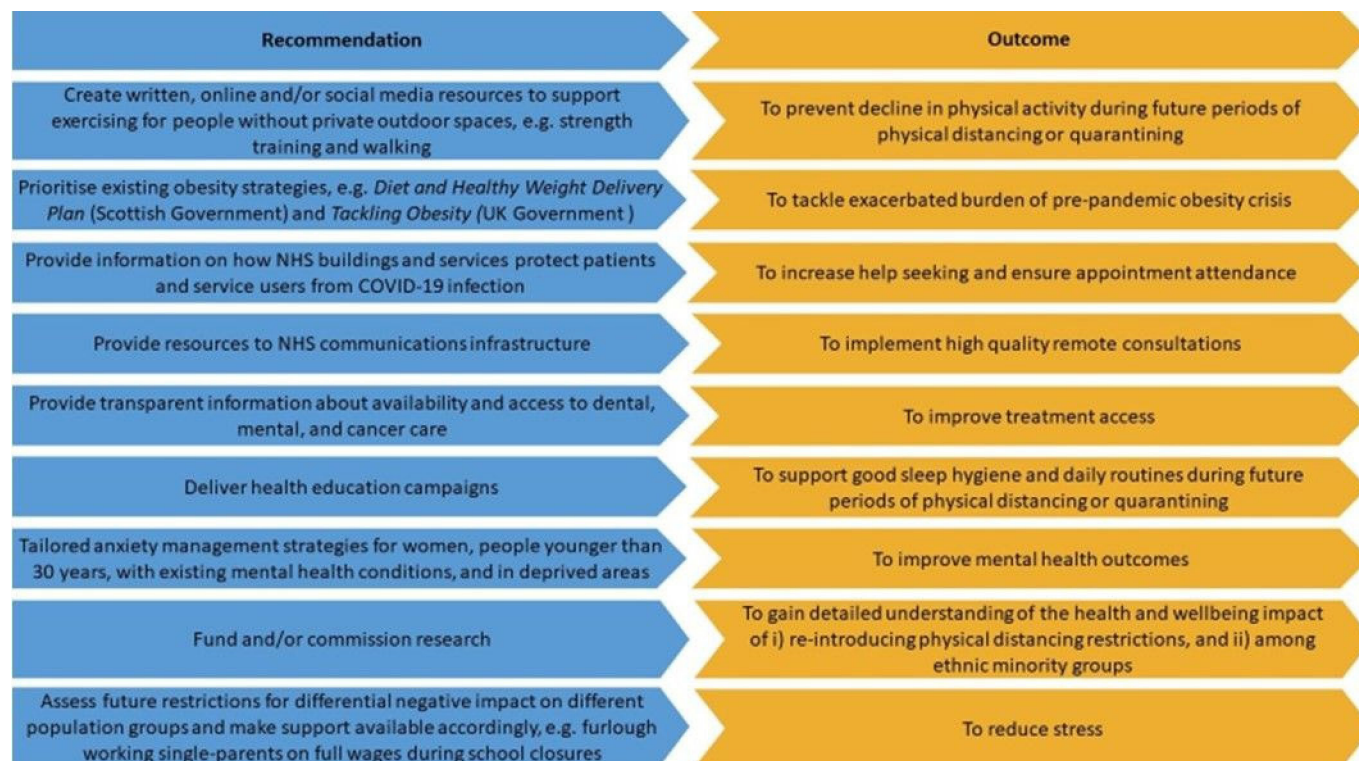
## DISCUSSION

Our findings show that physical distancing restrictions impacted physical health especially in May/June through reduced physical activity and increased calorie intake. However, both issues appeared to improve by August with increased reporting of exercising and healthier eating to manage weight gained earlier in the pandemic. From May/June to August, an increasing number of participants expressed dissatisfaction with the healthcare they received while physical distancing restrictions were in place, with some questioning the effectiveness of phone consultations. Access to cancer screening or treatment and dental care seemed poor in May/June, while uncertainty over service availability and how to access mental healthcare appeared to increase in August. Some participants preferred to avoid healthcare because they perceived services to be busy or feared COVID-19 infection. Although more participants, particularly women, appeared to feel able to look after their health on their own from May/June to August, those with existing physical health conditions reported continued negative health impacts. Men and those living in more deprived areas

reported poor sleep quality. All participants reported some negative mental health impact, most commonly anxiety from uncertainty over, and economic implications of, the pandemic or physical distancing. Women, participants younger than 30 years, living in more deprived areas or with existing health conditions seemed most affected. Nevertheless, an increasing number reported mental health improvements in August as restrictions were lifted.

A key strength of our study, its longitudinal design, allowed us to track people's experiences over the first 6 months of physical distancing and its impact on their health and well-being. Our participants have diverse social and clinical characteristics due to purposive sampling linked to two related surveys that informed the interviews and vice versa. These methodological features allow us to identify aspects of healthcare likely to have worsened, and population groups that will need particular support, over the course of the pandemic, but also to suggest approaches to meeting these needs based on reports from participants who have adapted well over the course of the study. However, the pandemic negatively impacts the health of ethnic minority groups particularly in the UK,<sup>1 8 9 18</sup> and, as our participants reported predominantly white ethnicity, our findings cannot give insight into challenges particular to this group or suggest ways to support them. In addition, our research was conducted prior to the second wave of increasing COVID-19 infections in late 2020, leaving unclear whether apparent improvements in health behaviours and mental health were sustained through winter 2020/2021 or whether the recurrence of tightened physical distancing restrictions exacerbated negative effects on health and well-being.

Our study elaborates on existing survey evidence of the impact of the physical distancing restrictions on the physical and mental health and well-being of people in Scotland.<sup>1–19</sup> Our findings suggest that declines in health behaviours result from increased opportunities for unhealthy behaviours, for example, snacking, and lack of access to safe outdoor spaces for exercise. In line with some evidence that people have adapted health behaviours to physical distancing restrictions,<sup>2 4 16 18 19</sup> participants in our study seemed generally able to return to their healthy habits as restrictions lifted if they had them pre-pandemic. Similarly, evidence suggests that people with adaptive coping strategies may be better able to maintain health behaviours under physical distancing restrictions.<sup>24</sup> Our findings corroborate evidence of declining preventive healthcare use and help-seeking behaviours.<sup>5</sup> Reassuringly, most of our participants reported willingness to use healthcare services. Increasingly from May/June to August, however, participants reported reluctance to access healthcare from fear of COVID-19 infections. While previous research found younger people's mental health to be most impacted by physical distancing restrictions,<sup>8 14–17</sup> our findings suggest different population groups experienced different mental health impacts: for example, women, younger participants and those living in more deprived areas most often reported anxiety in



**Figure 1** Public health and policy recommendations. NHS, National Health Service.

line with international research<sup>25</sup>; while men, younger participants and those with health conditions, or from more deprived areas appeared to be most impacted psychologically by the continued limited choice of activities and reduced healthcare access. Qualitative evidence from older adults in the UK suggests that physical distancing restrictions may have led to fewer changes in their daily routines than in other age groups with fewer consequences for mental health.<sup>26</sup> At the same time, the mental well-being of participants younger than 30 years and those with mental health conditions appeared to benefit most from the lifting of restrictions in August. This is in line with international evidence linking poor mental health outcomes directly to adherence to physical distancing restrictions.<sup>25</sup>

This more detailed understanding of health and well-being impacts of physical distancing allows us to recommend public health strategies and policy recommendations to mitigate the long-term impacts of physical distancing (figure 1). In line with research priorities set out by UK and international experts in psychological science,<sup>20</sup> further research is required to assess the effectiveness of these interventions and their applicability beyond the Scottish context. In addition, research is needed to highlight challenges and appropriate mitigations particular to different ethnic groups in response to protective measures, as well as to assess the impact of a return to physical distancing and stricter protective measures on physical and mental health and well-being.

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### Supplementary Figures

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*“How has physical distancing impacted on health and well-being during the COVID-19 pandemic? A Scottish longitudinal qualitative study”*

