

Experiences of workers with post-COVID-19 symptoms can signpost suitable workplace accommodations

Purpose: The prevalence and multi-system nature of post-COVID-19 symptoms warrants clearer understanding of their work ability implications within the working age population. An exploratory survey was undertaken to provide empirical evidence of the work-relevant experiences of workers recovering from COVID-19.

Method: A bespoke online survey based on a biopsychosocial framework ran between December 2020 and February 2021. It collected quantitative ratings of work ability and return-to-work status, qualitative responses about return-to-work experiences, obstacles and recommendations, along with views on employer benefits for making accommodations. A sample of 145 U.K. workers recovering from COVID-19 was recruited via social media, professional networks and industry contacts. Qualitative data was subject to thematic analysis. Participants were mainly from health/social care (50%), or educational settings (14%).

Findings: Just over 90% indicated that they had experienced at least some post-COVID symptoms, notably fatigue and cognitive effects. For 55%, symptoms lasted longer than 6 months. Only 15% had managed a full return to work. Of the 88 who provided workability ratings, just 13% and 18% respectively rated their physical and mental workability as good or very good. Difficulties in resuming work were attributed to symptom unpredictability, their interaction with job demands, managing symptoms and demands in parallel, unhelpful attitudes and expectations. Manager and peer support was reported as variable.

Originality: Workplace health management characterised by flexible long-term collaborative return-to-work planning, supported by more COVID-centric absence policies and

organisational cultures, appear pivotal for sustaining the return-to-work of the large segments of the global workforce affected by post-COVID-19 symptoms.

250 words

Introduction

This paper reports on an initial analysis of a survey undertaken to explore the work-relevant experiences of workers recovering from COVID-19, and their implications for sustainably returning to/remaining at work. Work-relevance can be regarded as direct or indirect influences on ability to work, otherwise referred to as work ability (Burton and Lunt, 2017; Ebener and Hasselhorn, 2019; Kendall *et al*, 2016).

Current UK evidence indicates that one in five people that contract COVID-19 can have symptoms after 4 weeks, and one in ten have symptoms for 12 weeks or more (NIHR, 2021). Signs and symptoms extending from 4 to 12 weeks are referred to as “ongoing symptomatic COVID-19”; those manifesting beyond 12 weeks that are consistent with COVID-19 represent “post-COVID-19 syndrome” (NICE, 2020), or “long COVID” (Carfi *et al*, 2020; NICE, 2020). Associated symptom clusters can be fluctuating, unpredictable, involve multiple-physiological systems, and disproportionate to those experienced in the acute phase (NICE, 2020). Growing anecdotal evidence suggests that such symptoms can adversely affect the ease by which workers recovering from COVID-19 return-to-work (Spinney, 2020). Their apparent occurrence independent of age and pre-existing conditions means that they could be experienced by a substantially larger proportion of the working population than those at risk of COVID-19 hospitalisation or mortality (SOM, 2021; Spinney, 2020).

Previous respiratory-related pandemics could shed light on their work ability consequences within the working age population. Two flu pandemics stand out in modern times; the 1957-58 “Asian Flu” pandemic and the 1968 ‘Hong Kong flu’ pandemic. The deaths from both occurred predominantly in the non-working-age population. They were higher than the

expected winter death rate (Honigsbaum, 2020). While for the 1968 pandemic, UK sickness absence (measured by new claims for sickness benefit) was higher than some previous winters, it was not regarded as exceptional (Roden, 1969). A general increase in sickness absence was, however, reported for numerous European and Scandinavian countries, as well as the USA (Altman 1970). Some workplaces practiced good occupational hygiene, but there were no government restrictions (Honigsbaum 2020). Sickness absence, and associated symptoms, generally appears to have been short-lived, and without reporting of persistent post-infection symptoms. The present pandemic is due to a different virus operating in a different medical and societal culture, which makes it difficult to make direct comparisons. Absence of a clear parallel with previous influenza pandemics, and the higher prevalence of long COVID amongst working age as opposed to non-working age populations (ONS, 2021), warrants closer examination of work-relevant recovery experiences and workability of workers recovering from COVID-19 and implications for sustained resumption of work.

Evidence on good practice for vocational rehabilitation advocates a person-centred approach involving assessment of health needs and levels of work ability (VRA, 2021). The assessment should also identify obstacles that could hamper resumption of usual work activities. These obstacles can map onto the biopsychosocial model of health (Waddell and Burton, 2004) and can be differentiated according to whether they are health/symptom related, psychological (e.g. competency levels, confidence, expectations) or social (workplace, organisational, external). Previous empirical work exploring the return-to-work obstacles of workers with long term conditions is limited, but includes a recent qualitative study using in-depth interviews with workers with chronic pain and employers to explore obstacles (Grant *et al*, 2019). Attitudinal (being judged by employers), ability to fulfil job-requirements, implications for workplace relationships and concerns over disclosure featured amongst the non-pain specific obstacles

identified. Temporary workplace accommodations for overcoming these obstacles are then identified and documented within return-to-work plans for periodic review (Kendall *et al*, 2016). Accommodations can involve job role, task, working pattern and support changes designed to overcome the identified obstacles. Good work is generally recognised as good for wellbeing (Waddell and Burton, 2006). During the pandemic, being at work may have been better for wellbeing than working from home, which in turn appears more preferable for wellbeing than not-working (Schifano *et al*, 2021). By making such accommodations, wherever reasonable, earlier resumption of work at work or home could yield improved wellbeing outcomes for people recovering from COVID-19 than delayed return.

Understanding how fit-for-purpose current good practice concerning vocational rehabilitation is for COVID-recovery and the specific accommodations required has yet to be extensively investigated empirically. Evidence about relevant potential accommodations would be particularly pertinent for sections of the workforce that have incurred a high rate of COVID-19 infection, including those in healthcare and other essential public-facing industries (transport drivers and cleaners) (ONS, 2021). Relevant evidence could therefore inform solutions for helping these essential workers to resume their former roles more quickly, improve their wellbeing, and help restore staffing and skills levels within essential services.

The emerging findings reported here are intended to inform firstly, the work-relevant aspects of COVID-19 recovery and their effect on the return-to-work process, and secondly, how these can be accommodated to enable sustainable return to work. Work-relevance will be explored according to self-reported health effects, return-to-work status (whether attempted), return-to-work obstacles (anticipated or experienced) differentiated according to Waddell and Burton's (2004) biopsychosocial framework of rehabilitation, and enablers/recommendations. Workers

views on the benefits to employers of accommodating their return to work will also sought.

This exploratory work will therefore seek to answer the following:

What are the work-relevant recovery experiences of workers recovering from COVID-19 in terms of impact upon work ability and potential return-to-work obstacles?

What are the implications of work-relevant recovery experiences for the vocational rehabilitation of workers recovering from COVID-19?

Method

Design

A cross-sectional mixed methods online survey was conducted to explore self-reported work-relevant recovery experiences of workers that have had COVID-19. Use of an exploratory survey permitted some scoping of this largely untested domain of the COVID-19 pandemic's impact. Quantitative and qualitative exploration was therefore undertaken in parallel (Shorten and Smith, 2021) to quantify health effects, return-to-work status and work ability outcomes, and to qualitatively explore how the health effects of COVID-19 impacted the return-to-work process. Return-to-work suggestions, and views on the benefits to employers for facilitating the return-to-work process, were also qualitatively elicited.

Participants and Procedure

To allow for the limited COVID-19 testing towards the beginning of the pandemic, UK workers who had either tested positive for COVID-19 or suspected that they had had COVID-

19 were considered eligible. Those who indicated that they had not had COVID-19 were diverted to the end of the survey. Participants were recruited via weekly social media posts including COVID-19 and long COVID support groups. The survey was also disseminated via U.K based construction industry, occupational health, academic, professional, carer and organisational networks. A total of 145 eligible responses were received from across organisations. The survey was created using Qualtrics^{XM} (Qualtrics, 2021). Data was exported to IBM SPSS Statistics for Windows, version 26 for quantitative analysis (IBM, 2021).

Ethical approval for the survey was gained from the ethics committee of the University of Derby's College of Health, Psychology and Social Care. The emerging evidence on COVID-19 health effects, post viral symptoms, together with evidence biopsychosocial vocational rehabilitation frameworks, return-to-work obstacles, and work ability outcomes were used as an evidence source for drafting initial question sets, and refined in consultation with the research team. The electronic version of the survey was then piloted on members of the University of Derby Psychology Department and research team to test usability and acceptability, resulting in amendments to the health and work belief items. Online survey access was contingent on participants reading participant information and providing consent. Debrief pages could be accessed following survey completion. Anonymous responses were sought to minimise response bias. Following survey launch, weekly reminders were issued for social media distribution to facilitate response rate. Reminders were issued after one month for the industry networks. The online survey ran for two months between mid-December 2020 and mid-February 2021.

Materials

[INSERT TABLE I]

The demographic items included in the survey encompassed age, gender, marital status, job role, industry sector, seniority/employee level, key worker status and any pre-existing conditions. Through the question “*would you describe yourself a key worker*”, key worker status was determined by participant’s understanding of whether their area of work would be regarded as an essential public or provider service (NAHT, 2021). The categories by which demographic items were explored are captured in Table I. Pre-existing conditions encompassed physical and mental health conditions and were drawn from Public Health England’s long-term conditions list (PHE, 2020) and refined through team consensus. Demographic items permitted understanding of how applicable findings were of the general working population or to those at higher risk of contracting COVID-19 infection due to occupying key worker roles.

[INSERT TABLE II]

Health effects variables (Table II) comprised items about the duration of symptoms, and the severity of infection (at its worst) to help quantify the severity and duration of health effects. Items in respect of work-relevant recovery were grouped within the survey according to ‘health effects,’ ‘return-to-work’ status, ‘return-to-work obstacles’ and ‘return-to-work enablers’. Table III summarises their structure and format. Open ended health effects items were included to further explore the impact of COVID-19 on pre-existing conditions.

[INSERT TABLE III]

The quantitative return-to-work variables included working status, work ability, and beliefs about health and work. Work ability was assessed using the 2-item Work Ability Index 2

(WAI2) scale. This has separate indicators for physical and mental work demands. Ebener and Hasselhorn (2019) reported WA12 as having acceptable levels of predictive and concurrent validity. Items measuring beliefs about health and work were included because of their potential influence on return-to-work following sickness absence (Kendall *et al*, 2016). These included beliefs about, ability to work in less than perfect health, without 100% fitness and without worsening health. Other items included beliefs about the relationship between work and health, and whether participants felt that working for their organisation was good for their health. Open ended items were also included to identify obstacles to returning to work. These were separated into biological, psychological and social (job, work/managerial support, organisational and external) domains in keeping with Waddell and Burton's (2004) biopsychosocial vocational rehabilitation framework and to encourage consideration of proximate and more peripheral obstacles.

Open-ended items were included to obtain recommendations for enabling the return-to-work process. A final open-ended item sought to elicit views on the benefits employers would gain by supporting this process (*What do you think might be/are the benefits for the employer in supporting your recovery?*).

Analysis

Descriptive statistics were produced for quantitative demographic, health effects and return-to-work questions (see Table I). Between participants χ^2 contingency tests were conducted to determine whether resumption of work varied according to COVID-severity, duration, or time since onset. One-way between participant ANOVAs were conducted to determine whether physical and psychological work ability ratings and the separate health and work beliefs varied

according to COVID severity, symptom duration or time since first contracting COVID. Pre-existing conditions were excluded from comparisons given that most of the sample had pre-existing conditions of some form.

An initial thematic analysis (Braun and Clarke, 2006; Creswell and Creswell, 2018) was conducted on open ended responses provided about return-to-work obstacles, enablers and benefits for employers. Themes were derived deductively by two researchers independently reading and re-reading responses to open-ended items captured within online MS Excel tables and noting initial codes. Researchers then met to discuss observed codes, group codes into themes and agree labels that captured theme meaning. Coding templates were created for documenting themes, example quotes and frequencies by which themes were raised. The first researcher then revisited spreadsheets to add appropriate codes to each response entry, move text segments to other questions where it was a closer fit, and then count the frequency by which themes were represented for each in order to discern the relative salience of themes (Hsieh and Shannon, 2005). The second researcher then double-checked the theme coding for each question and counts, and note reasons for disagreement. Disagreements were resolved by the first researcher then checking the second researchers coding decisions, considering reasons for disagreement, then either accepting these or then meeting with the second researcher to discuss any outstanding unresolved issues. Final versions of the coding templates were then produced by the first researcher. Example quotes were also collected to illustrate quantitative findings for health effects and return-to-work status. Quotes sources are indicated in brackets. Themes were selected for inclusion in this paper where they helped explain the significant relationships between health effects and return-to-work outcomes or helped justify the return-to-work recommendations arising from this research. These are also summarised in Table IV.

Findings

Findings are differentiated according to a sample description, work-relevant recovery experiences, return-to-work recommendations.

Sample Description

Descriptive statistics are provided in Table I. The majority of the 145 participants who had, or suspected they had had, COVID-19 were female and either married or co-habiting. Ages ranged from 25 to 66 years. Most lived less than 20 miles from work. In terms of employment status, the majority described themselves as key workers. Managerial levels were less represented than other levels. Health care/social care, education and professional and scientific services were the industry sectors with the highest representation. The majority were in the public sector. Twenty-two participants described themselves as in nursing roles, 25 as in medical roles (including hospital consultants and GPs), 14 were from allied health professions (including occupational therapists and physiotherapists), 4 were social workers, 5 described themselves as in support worker roles, and 17 were teachers. Just over half of the sample had pre-existing health conditions.

Work-Relevant Recovery Experiences

Work-relevant recovery experiences were separated according to health effects, return-to-work/work ability status, and return-to-work obstacles anticipated or encountered. Descriptive statistics, significant relationships identified by the inferential analysis and supporting quotes

are used to explain the findings for health effects and return-to-work/work ability status. Qualitative themes are used to unpack return-to-work obstacles.

(a) Health Effects

Table II includes a summary of the reported health effects of COVID-19. Just over 11% had been hospitalised, two of whom had been in intensive care. The majority had experienced symptoms more than 6 months previously, implying that they had contracted COVID-19 in the pandemic's first wave within the UK. The majority (91%) reported post-viral symptoms of some sort.

Symptom patterns were described by some as "*difficult to predict*" (r72), and to have implications for self-identity; "*I went from fit young healthy person to being exhausted*" (r191). For those with pre-existing conditions, qualitative responses indicated that COVID-19 had either a worsening effect, by for example, "*exacerbating migraines, fibromyalgia and anxiety and worsening my mental health symptoms*" (r141), or a mixed effect, "*my diabetes has not worsened but my blood pressure is very high even on my medication*" (r122). In some instances, pre-existing conditions were described as improved, "*my colitis has calmed down*" (r63).

(b) Return-to-work and Workability Status

Return-to-work Status: Table II also provides summary statistics for the sample's 'return-to-work' status. While one person reported that they had continued working throughout, just under

15% had returned to work fully. Qualitative feedback indicated that a number had made multiple unsuccessful attempts:

“I returned to work a week after initial infection in March. I ended up off sick June, returned September and off sick again November” (r130)

“I tried to return to work 3 times” (r13)

Work ability: Of the 88 providing work ability ratings, 13% rated their physical workability as good or very good, and 18% rated their psychological work ability as moderately or very good. The majority, therefore, rated their ability to work as moderate, rather poor or poor. Mean values are shown in Table II.

Symptom duration was found to be significantly related to both physical [(F (3,84) = 3.46, $p < 0.05$, $\eta^2 = 0.1$] and psychological workability ratings [(F (3,84) = 4.30, $p < 0.01$, $\eta^2 = 0.13$]. These symptoms can be considered post-viral or long COVID given that most of the sample reported such symptoms (see Table II). However, COVID severity ratings were not significantly related to any of the return-to-work indicators. This may be because severity ratings were made with reference to COVID experiences at their most acute and according to where it occurred (at home or hospital). It is now apparent that post-viral symptoms are not necessarily related to severity of symptoms experienced during acute phases (Townsend *et al*, 2020).

Health and Work Beliefs: For the health and work belief statements, 62% (n=86) indicated that they somewhat or strongly agreed with the statement “I should not work if I’m not 100% fit,” and 72% (n=85) either strongly or somewhat agreed with the statement that “working would make my condition worse.” There were, however, significant differences according to return-to-work status. Those working in some way were generally more inclined to disagree with this statement than those not working, [$\chi^2(4, n=85)=32.36, p<.0.001$]. Fewer (42%, n=86) agreed that “it is not possible to be productive unless in perfect health.” However, responses to this statement also differed significantly according to whether respondents were or were not working, [$\chi^2(4, n=86)=13.33 p<0.01$]. Those working were more likely to disagree. Moreover, 85% (n=87) either strongly agreed or somewhat agreed that “health is good for work and work is good for health”, whereas 47% (n=85) agreed that working for their organisation was good for their health. This latter rating might reflect the level of risk of infection perceived by participants.

(c) Return-to-work Obstacles

Explanations for the reported difficulties in sustainably returning to work and poor work ability ratings could be derived from some of the reported return-to-work obstacles. Prominent obstacles appear to relate to having *post-viral symptoms*, their *interaction with job demands*, *control of symptoms alongside job demands*, *safety*, *personal expectations*, *managerial support*, *collective attitudes about health and work*, and *job security*.

Post Viral Symptoms: Qualitative feedback suggests post-viral symptoms (mental and psychological including cognitive) as having widely experienced (see Table III), prolonged, systemic effects on physical and psychological health with implications for workability.

“It’s been debilitating ...I have been unable to do most things due to breathlessness. [I have] leg and head pain, digestive issues, concentration and Fatigue.” (r181)

“It’s been completely life altering. [I] cannot work. I sleep a lot. Shortness of breath and low oxygen levels. I am in constant pain and often nauseous.” (r122)

Interactions with job demands: Concerns about the effect of physical and cognitive symptoms on ability to manage job demands were reported. This related to both the intensity and duration of physical demands of the job, with concerns about inability to work as usual.

“I am a very busy ward sister who needs to be physically well to meet the physical demands but also mentally sharp ... Right now, I wouldn’t be fit for an 8-12hour days on a demanding ward.” (r130)

“Having to walk any distance [would be a challenge], as would physical demands, such as standing, walking around the classroom, speaking for any length of time.” (r122)

These concerns also applied to more complex cognitive requirements, whereby “*working with IT systems*” (r178) was found to be “*difficult with brain fog and concentration*” (r178). Higher level cognitive abilities including “*ability to think strategically, organise, add up/maths and lead meeting*” (r77) was also reported as affected, as were more complex communication

requirements including “*difficulty in talking to patients*” (r93) due to “*cough and breathlessness*” (r.93).

Safety: Concerns were also expressed about an increased propensity to “*make mistakes*” (r154) and the knock-on effects this may have for personal and public safety. As one nurse reported, “*cognitive symptoms made nursing unsafe*” (r67).

Controlling symptoms alongside job demands: For those having attempted to return-to-work, the unpredictable nature of symptoms was often described as posing challenges for *controlling symptoms alongside job demands*:

“It was impossible to follow the incremental standard return to work programme set for me involving increasing hours each week. My illness is very variable so it’s difficult to predict day to day how I will feel and how able to work I would be.” (r13)

In some instances, the return-to-work was inferred as bringing about a relapse:

“Long COVID consultants suggested that maybe initially pushing to return to work aggregated and prolonged severity of symptoms.” (r117)

“I returned to work while still recovering from illness I realised I would no longer be able to cope with this level of workload, especially if not back to my normal health. I realised I would not have much chance of recovery if I returned to the normal pattern of work that my job relied on before I became ill.” (r194)

This could occur despite attempts at phased return:

“I worked fulltime before covid, was reduced to 25 hours when I returned then again reduced to 20 hours on the 4th week of returning, I struggled to even work 4 hours of a shift. The end of week 4 my body could not do anymore I was getting worse and setting my recovery back, I have been on sick since and have long covid and my symptoms have got worse.” (r20)

Personal Expectations: Any adverse effects of returning to work could be compounded by personal expectations, such as being a *“perfectionist and hating not being able to work at my usual high level”* (r13) and *“not wanting to be deficient in my role”* (r16).

Managerial support: Support from managers was portrayed as mixed. Reports ranged from managers having *“zero understanding”* (r77) with limited attempt to make allowances whereby *“my supervisor asked why I had not completed work when I had a full-time caseload on reduced hours”* (r69), to reports of experiencing line managers as *“very supportive, even more now diagnosed post-covid”* (r23).

Collective attitudes about health and work: Shared attitudes about the relationship between health and work at a more organisational level could help explain agreement with the statements concerning delaying working until 100% fit or beliefs that working might worsen health conditions. Experience of an *“ethos”* (r103) prescribing that *“once you are back, you are back fully or not at all”* (r103); *“worry about expectations of colleagues as it is so busy”* (r194); anticipated guilt at being able to *“meet those expectations ”* (r185), and perceptions that *“you cannot conscientiously give less than 100%”* (r99) because it is *“to the detriment of your client”* (r99) were portrayed as concerns. These imply that beliefs about delaying returning to

work until at least “80% of my pre-long Covid health,” (r13) as justified for some and grounded in experience. Conversely, those who managed to stay back at work appeared less likely to hold such views. Concerns about *financial and job security* could similarly motivate premature resumption of usual work:

“It would have been much harder if I was concerned for my job security as this would add to the emotional stress.” (r68)

Return-to-work Recommendations

[INSERT TABLE IV]

Practical suggestions made by participants for facilitating their return-to-work are provided as themes within Table IV. These are categorised into *workplace support, accommodating workplace, policies* and *COVID awareness and compassion programmes, and employer benefit* themes, each of which had sub-themes.

Workplace Support: For workplace support, practical recommendations were made for improving *manager and colleague support*. This included help from managers “to prioritise workload” (r16) and handle any “backlog” (r16) via a “prescriptive approach” (r13). Maintaining appropriate contact while a person is off-sick, in a way that “respects illness” (r97) was advocated. As part of workplace support, *means of support* refers to how that support is delivered, including recommendations for “having one person to be the point of contact,” (r121) “face-to-face support” (r69) where COVID-rules permit, “regular catch-ups” (r182),

“buddy support systems” (r14), and having “open discussions with colleagues” (r72), which could potentially help manage expectations.

Accommodating Workplace: Ways of creating a workplace better suited to *accommodating* COVID-19 recovery without further sickness absence comprised suggestions for *job/work modifications* including “changes to my workload, responsibilities and stress levels” (r20) “reduced workload” (r93), “amended duties” including deferring client contact “for a while” (r92). Suggested modification to the *ways of working* included “reduced hours” (r93), “more time to undertake the job” (r194), “pacing” and more “rest breaks” (r13).

Policies: Calls were also made for *modifying* sickness absence management *policies* “in relation to long Covid” (r115), to ensure “transparency about Covid-Related polices” (r126), to include “bullying and harassment” (r85) and to “discount Covid-related absences” (r67).

Flexible and collaborative return-to-work planning: Recommendations for flexible and collaborative return-to-work planning appeared pivotal for accommodating the apparent unpredictable nature of COVID-recovery, and encompassed suggestions for “more varied graded return to work that acknowledges that health may worsen at times” (r13), in a way that “has no time limits over return to work process” (r116). Capturing decisions within “return to work plans” (r73) as well as “in-work” (r14) plans, developed as a “partnership approach” (r13) with the employee, were suggested. Conducting “OH assessments,” (r69) and “cognitive function assessments” (r103) before and when back at work, and allowing some employee autonomy over working “whatever hours you like to achieve your objectives,” (r16) was also proposed as part of return-to-work planning process.

COVID-19 Awareness and Compassion Programmes: Recommendations were also produced that could form part of programmes for raising collective awareness about COVID-19 effects and upskilling managers and staff to become more “*compassionate*” (r20). This could include having “*conversations for health training,*” (r13), some “*myth-busting*” (r106) that “*fatigue is not the same as tiredness*” (r106), and ensuring that “*manager and work colleagues understand more about post-covid fatigue syndrome and support*” (r20). Such programmes could help manage expectations about viable workability levels on return-to-work.

Benefits for Employers: The benefits that participant’s thought employers would gain from investing in the return-to-work process for workers recovering from COVID included retention of specialist skills and experience that could be used for coaching:

“*My employer would have an experienced employee training other team members, and supporting other departments, rather than having to expend money, time and energy hiring someone new and training them in highly specialised areas*” (r194).

Other anticipated benefits concerned *productivity gains in which* “*More support might result in a quicker recovery and more productivity in the long run*” (r24) and greater commitment through:

“*Everyone knowing that they will be supported if unlucky enough to struggle with health. This would contribute to a positive workplace, job satisfaction and productivity*” (r72).

Supporting the rehabilitation process was also considered to provide the employer potential “*learning to know what to do when other staff face this*” (rr115). Given the numbers of workers recovering from COVID-19 this would seem a significant gain.

Conclusions

This initial analysis of an exploratory survey of the work-relevant recovery experiences of workers that have contracted COVID-19 has helped unpack novel characteristics of the recovery process that could pose serious obstacles for the return-to-work process. On the one hand it has confirmed previous reports of persisting symptoms, their wide range, and their impact following COVID-19, including concerns over the relapsing nature of symptoms (NHS, 2021), particularly in relation to work ability. On the other hand, it has helped to identify the types of workplace accommodations that those with post-COVID symptoms consider necessary for overcoming the obstacles and enabling sustainable return-to-work.

Key characteristics of workers’ COVID-recovery that need to be carefully considered within return-to-work planning and workplace health management firstly centre on the experience of COVID-19 related post-viral symptoms, and their anticipated or experienced effects on fulfilling physical and complex job demands. Knock-on-effects for worker and public safety also appears to be a concern that needs to be addressed. The unpredictable, flux nature of post-viral symptoms arising from COVID-19 infection appears to be a second substantial obstacle due to its implications for balancing job control and symptom management. Symptom cluster unpredictability would make fixed linear phased return planning less tenable. Unrealistic attitudes and expectations held by workers, colleagues and managers about the possible work

ability levels on return-to-work emerged as a third notable obstacle, given reports by some participants of its instrumental role in workers going off-sick again. Such attitudes and expectations were linked to a lack-of knowledge and compassion (Andersén *et al*, 2017) about COVID-19 recovery and may be stimulating the belief that returning to work will jeopardize recovery. However, this belief also runs counter to the current viewpoint within vocational rehabilitation that returning to work can contribute to the rehabilitative process on the basis that work can be good for wellbeing, assuming a person-environment fit (VRA 2021).

The potential for symptoms to be related to post-infection pathology, which itself is difficult to determine (Townsend *et al*, 2020), requires a carefully thought through return-to-work process, both in terms of timing and content. From amongst the return-to-work recommendations made by participants, a flexible collaboratively designed return-to-workplan with a clear pathway appears vital for allowing workers to manage the job-symptom balance. It would seem that return-to-work planning should be flexible yet positive, with a recognition that temporal goals may need to be reconsidered to accommodate potential resurfacing of work-relevant symptoms. As part of this, realistic expectations that workers can still play a useful role without full resumption of formal levels of functioning may also need to be created. Return-to-work plans may need to be reviewed on a frequent basis to afford this flexibility. Modifications to ways of working such as provision of more breaks, allowing more time to undertake tasks, pacing, scope to self-manage job requirements and deferring more complex job responsibilities until workers are readjusted to being back at work, would also seem to be highly appropriate for facilitating control. Providing workers scope to self-manage symptoms alongside job-demands as part of the planning process could further improve health and work-outcomes (Hemming *et al*, 2021). It is worth bearing in mind that not all post-COVID

symptoms will be work-relevant, and an undue focus on non-work-relevant symptoms could be counterproductive.

More COVID-centric sickness absence management policies including discounts for COVID related absences were called for. Moreover, work-based COVID-19 awareness raising programmes, and upskilling managers, particularly in compassion-based management styles, could help offset the apparently harmful effect of “back in full health assumptions” on sustained return to work. Finally, these findings imply that such accommodations make business sense: facilitating retention of valued skills and experience, allowing swifter resumption of productivity, and providing useful learning on what does and does not work in re-assimilating large numbers of workers recovering from COVID-19 back into the workplace.

The study findings have therefore reinforced previous research exploring return-to-work obstacles for long-term conditions (Grant *et al*, 2019; Waddell and Burton, 2004) by emphasising their multi-level basis, their fit within a biopsychosocial framework, and their effects being contingent upon the interaction between symptoms and the nature of the job. A fit within the biopsychosocial framework implies transferability across workplaces. These findings have built upon this evidence by drawing attention to the unpredictable attributes of COVID-19 recovery and need for workplaces, wherever reasonable, to take a long-term view on the workplace health management of long COVID. Since long COVID exists globally, accommodating the unpredictable trajectory of recovery long-term should similarly be a feature of workplace health management globally. This seems especially important if the large numbers of people affected by long COVID are to resume work sustainably.

The demographics of the present sample indicate a skew to essential workers in public-facing roles, particularly health care, social care and teaching professions. Consequently, these findings can be regarded as particularly informative for helping reintegration of workers to offset staff and skill shortages within pandemic-essential public services (ONS, 2021). Continued analysis of the data set will seek to quantify, via further content analysis, the relative influence of the return-to-work obstacles identified and the relative importance the return-to-work suggestions generated.

In conclusion, more extensive research is needed on return-to-work following recovery from COVID-19, but among the present sample, a focus on work-relevant symptoms, flexible collaborative work programmes, job modifications with scope to self-manage job requirements, more COVID-centric absence policies and work-based COVID-awareness programmes were advocated for ensuring that employers retain workers' specialist skills and experience. While the focus here was on the long COVID experience, the findings in terms of workplace accommodations could have implications for the management of long-term symptoms following influenza, which recently have been shown to mirror those following COVID-19 (Taquet et al 2021), and potentially other relapse-prone long-term conditions (Joosen *et al*, 2013).

References:

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3 key messages

A flexible, long-term, collaborative and regularly reviewed approach to workplace health management appears necessary for accommodating the unpredictable nature of post-COVID-19 symptoms and optimising the prospects of sustained return-to-work.

Realistic expectations held by workers and employers about the level of functioning required before resuming work, and that may be attained once back at work, coupled with appropriate management of any safety risks should help foster working conditions that allows workers to continue to make useful contribution to the workplace.

A workplace health management approach that permits effective management of workers affected by post-COVID-19 symptom should also read across to long-term conditions characterised by unpredictable symptom manifestation.

