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1 **The Impact of Covid-19 on the Employment of People with Multiple Sclerosis:**

2 **A multi-methods study**

3 **Blanca De Dios Perez**¹ (PhD), Charlotte Pritchard¹ (MSc), Katie Powers (MSc)¹, Roshan das
4 Nair^{2,3,4} (PhD), Nikos Evangelou² (PhD, MRCP), Helen Ford^{5,6} (MD, FRCP), Emma Tallantyre⁷
5 (PhD, FRCP), Ruth Dobson⁸ (PhD, FRCP), Kathryn Radford¹ (PhD)

6 **Affiliations:** ¹*Centre for Rehabilitation and Ageing Research, School of Medicine, University of*
7 *Nottingham;* ²*Mental Health & Clinical Neurosciences, School of Medicine, University of*
8 *Nottingham;* ³*Institute of Mental Health, Nottinghamshire Healthcare Trust;* ⁴*Health Division, SINTEF,*
9 *Trondheim, Norway;* ⁵*Leeds Teaching Hospital NHS Trust,* ⁶*University of Leeds;* ⁷*Cardiff University;*
10 ⁸*Preventive Neurology Unit, Queen Mary University London.*

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13 **Corresponding author:** Dr Blanca De Dios Perez Blanca.dediosperez@nottingham.ac.uk

14 **Address:** Room 1387, West Block, D Floor, School of Medicine, Queen’s Medical Centre,
15 University of Nottingham, Nottingham, NG7 2UH

16
17 **Keywords:** Multiple Sclerosis, Covid-19, employment, vocational rehabilitation, survey

18 **Practice Points**

- 19 • Prior to the Covid-19 pandemic, many employers rejected reasonable adjustments
20 such as allowing people to work from home because they considered it was not
21 compatible with a role. However, during the pandemic, most people were forced to
22 work from home and could still carry out their work.
- 23 • Flexibility at work, including being allowed to take breaks or working from home,
24 can help people self-manage their symptoms and feel better supported at work.
- 25 • People with MS should be offered advice on how to manage symptoms, how to
26 disclose their MS to their employers, and their legal rights at work.

27 **Abstract**

28 **Background:** The spread of the coronavirus disease (Covid-19) led to more than half of the
29 working population in the UK being unable to work. This study aims to understand the
30 employment needs and experiences of people with multiple sclerosis (pwMS) in the UK
31 during Covid-19.

32 **Methods:** Multiple methods involving an online survey and follow-up interviews with pwMS
33 who were employed before the pandemic (March 2020).

34 **Results:** 101 eligible participants completed the online survey, and 15 the follow-up
35 interview. Survey data indicated that the work experience of pwMS improved during the
36 pandemic because they were allowed to work from home. However, participants
37 experienced increased feelings of anxiety and loneliness. From the interviews, we extracted
38 five themes: 1) the benefits of working from home; 2) the challenges of working during
39 Covid-19; 3) the relevance of line managers; 4) returning to 'normality'; and 5) the need for
40 vocational support.

41 **Conclusions:** The pandemic showed that flexibility at work (e.g., home working, breaks,
42 flexible working hours) can improve workability and self-perceived productivity in pwMS by
43 facilitating symptom self-management. Future research should explore the support needs of
44 people working remotely and determine whether pandemic-influenced work
45 accommodations are sustained over time.

46 **Introduction**

47 In March 2020, in the initial stages of the Covid-19 pandemic, to reduce spread, global social
48 distancing rules were established to reduce the spread of the virus. "Lockdowns" prevented
49 people from leaving their homes unless strictly necessary (e.g., to buy food). In the UK,
50 these changes resulted in approximately half the working population being unable to work.
51 Only certain categories of workers, such as healthcare workers (known as "key workers"),
52 were permitted to travel to work¹. To avoid enormous job loss, the UK Government created
53 a Job Retention Scheme (known as "furlough") to support people who were unable to work
54 due to the lockdown². Throughout the pandemic, this scheme supported 11.6 million people
55 on temporary leave (furlough) and almost 1.3 million businesses³. From March 2020, a
56 group of approximately 1.8 million people who were considered at high risk for the virus
57 were advised by Chief Medical Officers across the UK to shield themselves for twelve
58 weeks⁴. This group included people with a weak immune system, such as people with
59 multiple sclerosis (MS) on high efficacy or immunosuppressive disease-modifying treatment.

60 With offices forced to close, the pandemic had a substantial impact on the labour market,
61 with people with disabilities being 1.5 times more likely to be unemployed compared to
62 non-disabled people⁵. Additionally, 71% of disabled workers reported either a loss of
63 income, being furloughed or being made redundant⁵.

64 Simultaneously, the social and environmental changes that arose because of the pandemic,
65 such as working from home, may have led to unintended benefits, such as improved
66 flexibility for workers with disabilities⁶. To date, there is no evidence of the impact of the
67 Covid-19 pandemic on the employment of people with MS in the UK. Understanding their
68 experiences can provide insight into the future vocational rehabilitation (VR) needs of this
69 group of workers. The British Society for Rehabilitation Medicine (BSRM) defines VR as "a
70 process whereby those disadvantaged by illness or disability can be enabled to access,
71 maintain or return to employment or other useful occupation" (BSRM, p.5)⁷.

72 This study aimed to explore the employment needs and experiences of people with MS in
73 the UK during the Covid-19 pandemic.

74 **Methods**

75 **Participants**

76 The survey was distributed through social media, blog posts written by the authors, local
77 networks, and newsletters for people with MS. The survey was also advertised in the
78 Neurology Clinics of four major hospitals in the UK (Nottingham, Leeds, London, and
79 Cardiff). Participants attending healthcare appointments at these hospitals were informed
80 about the study either during their appointment (conducted remotely because of the Covid-
81 19 pandemic) or were contacted by a member of their healthcare team about the study
82 during routine appointments.

83 Participants were included in the study if they were: 1) aged between 18 and 65 years, 2)
84 diagnosed with MS, 3) in paid employment before March 2020, 4) able to consent and
85 communicate in English, and 5) living in the UK.

86 **Study Design**

87 Multiple-methods study with an online survey followed by individual interviews. The online
88 survey included a participant information sheet, consent form and data collection
89 instrument.

90 The survey had one open question to explore the unintended benefits of working during the
91 Covid-19 pandemic and 28 closed questions regarding participants' clinical characteristics
92 (e.g., type of MS), demographics (e.g., age, gender), employment situation (e.g.,
93 organization size), impact of Covid-19 (e.g., shielding, financial impact), support received
94 pre-and post-pandemic (e.g., working from home, flexible working schedule), main
95 challenges working during the Covid-19, confidence and ability to work during the
96 pandemic, and future VR needs (e.g., legal knowledge, fatigue management). A self-
97 constructed questionnaire was developed, instead of using several standardized
98 questionnaires (with multiple items), to reduce participants' burden and to capture a wide
99 range of experiences arising from the frequent changes in the legislation and working
100 patterns that happened during the Covid-19 pandemic.

101 On completion of the survey, participants were asked to provide their contact details if they
102 wished to complete a follow-up interview. From those interested, we used purposive

103 sampling to select participants based on known predictors of unemployment for people
104 with MS (e.g., physical disability, age, education, etc.)⁸⁻¹¹. Selected candidates were
105 contacted via email to participate in an interview via Microsoft Teams. Participants
106 completed an interview-specific consent form before the interview.

107 The development of the survey and interview topic guide was underpinned by the
108 International Classification of Functioning Disability and Health (ICF)¹² and the Behavior
109 Change Wheel (BCW)¹³. These were selected because they have proven to be effective in
110 research mapping the employment needs of people with MS¹⁴. Research documents were
111 reviewed by a Patient and Public Involvement (PPI) advisor with MS. Examples of questions
112 from the survey and interview topic guide are presented in supplementary file A.

113 ***Data analysis***

114 Questions regarding demographic, clinical, employment characteristics, and future VR
115 needs, were summarized using descriptive statistics. Questions exploring support received
116 before and during the pandemic were analyzed using the McNemar test, suitable for
117 analysis of paired dichotomous data.

118 Data concerning the main challenges of working during the Covid-19 pandemic were
119 analyzed performing a series of univariate logistic regression analyzes to explore
120 relationships between respondents' clinical, demographic, and employment characteristics
121 on the likelihood that respondents would report challenges working during Covid-19. Likert
122 scale data were analyzed using descriptive statistics and we computed the associated
123 confidence intervals (CI) around the proportions selecting each answer using binomial exact.
124 Data were handled using SPSS and STATA.

125 A free-text question exploring the unintended benefits of working during covid-19 was
126 analyzed using content analysis¹⁵. Interviews, conducted by a Research Assistant (CP) with a
127 background in Health Psychology, were audio-recorded and transcribed verbatim. Data
128 were handled using Nvivo v.12¹⁶. Data were analyzed by two researchers (CP, BDP) using
129 Framework Analysis^{17,18} and informed by the ICF and BCW. The main findings and themes
130 from the interview were discussed with the wider research team. We used Yardley's
131 framework to maintain the quality of the data collected and analyzed¹⁹.

132 ***Ethical approval***

133 Ethical approval was obtained from the Bradford Leeds Research Ethics Committee
134 (20/YH/0312).

135 **Results**

136 One hundred and four participants completed the survey. Three participants were excluded
137 because they did not meet the inclusion criteria (e.g., unemployed before the pandemic).
138 Therefore, we analyzed data from 101 participants, and 15 completed the follow-up
139 interview. Interviews lasted between 30 to 60 minutes.

140 ***Sample Description***

141 Table 1 presents the demographic characteristics of the participants. Survey and interview
142 participants were aged on average 45.2 (SD10.3) and 47.1 (9.3), respectively, and had been
143 living with MS on average for 8.7 (7.8) and 10.9 (10.4) years, respectively.

144 Only 31.7% of participants were recommended to shield by the UK Government or a
145 healthcare professional during the first national lockdown; however, 43.6% of participants
146 chose to shield themselves for most of the pandemic.

147 Most participants (70.0%) were not receiving state benefit payments. For those in receipt of
148 benefits, the most common was personal independence payment (28.0%), a welfare benefit
149 to help working adults. Regarding the economic impact of the pandemic, roughly half of the
150 participants reported no impact or a positive impact. However, 17.8% of participants
151 reported a short-term negative impact, and 7.9% had a long-lasting negative impact.

152 Respondents reported a diverse range of employment arrangements during the pandemic,
153 the most common being working from home (67.3%), followed by going to the usual place
154 of work (15.8%). Up to 37.6% reported being key workers. Those participants who were
155 unable to work were either furloughed because they were shielding (3.0%), furloughed for
156 other reasons (i.e., the company stopped trading) (5.0%), were made redundant (4.0%), or
157 were self-employed but unable to work (2.0%).

158 **Survey Results**

159 Table S1 (available online) shows the support and work accommodations participants
160 received before and during the pandemic. Only one, the proportion of people allowed to
161 work from home, differed significantly. More people were permitted to work from home
162 during the pandemic than before ($p < .001$). Some items were excluded from the analysis
163 because they did not reach a minimum of 10 discordant pairs (see supplementary file B).

164 ***Confidence and ability to work during Covid-19***

165 Participants reported feeling less confident to meet clients/colleagues in person, and more
166 confident in using technology at work (e.g., having meetings remotely) during the Covid-19
167 pandemic (Table S2 available online).

168 Regarding the self-reported ability to work during the pandemic (Table S2 available online);
169 most participants reported no change in their ability compared to before the pandemic,
170 except in the ability to concentrate at work and the presence of fatigue, which were both
171 reduced compared to before the pandemic (in 40.4% and 39.58% of participants
172 respectively).

173 ***Unintended benefits***

174 The overall rates of unintended benefits of working during the pandemic were low in this
175 cohort (Table S3 available online). Participants cited reduced travel (19.8%), including
176 travelling without much traffic, as the most important unintended benefit, followed by
177 being allowed to work from home (12.8%).

178 ***Future VR needs***

179 Almost half of the participants (45%) reported having no VR needs (Figure S1 available
180 online), but a sizeable proportion of others identified the need for help with managing
181 anxiety and/or depression (30%), managing MS symptoms (25%), and support in managing
182 employers' expectations (19%).

183 ***Challenges Working During Covid-19***

184 Female gender (OR=4.27, 95% CI [1.44, 12.73]) and working in the public sector
185 (OR=10, 95% CI [1.08, 92.5]) were associated with an increase in the likelihood of reporting

186 feelings of anxiety or stress during the pandemic. Having more self-reported MS symptoms
187 (OR=1.31, 95% CI [1.05, 1.64]) was associated with an increased likelihood of reporting a
188 lack of support from line managers or colleagues. Higher education level was found to be
189 associated with an increase in the likelihood of reporting more changes to their workload
190 (OR=1.78, 95% CI [1.05, 3.03]) as well as a trend suggesting a decrease in the likelihood of
191 being rendered unable to work due to shielding (OR=0.33, 95% CI [0.12, 0.99] (see
192 *supplementary file C*).

193 **Interview Findings**

194 We identified five themes divided into nine sub-themes in the interviews. Table 2 presents
195 illustrative quotes for the interview findings.

196 **Theme 1: Benefits of working from home**

197 Twelve participants were working from home at some point during the pandemic. Unlike in
198 the survey, participants reported **fewer distractions**^{Q1} while working from home. Many
199 participants had worked in loud open-plan offices prior to Covid that hampered
200 concentration. The reduced noise levels at home improved their concentration and
201 increased their productivity.

202 Nearly all participants reported that **not having to travel to work**^{Q2} was the main positive
203 aspect of working from home. Reduced commuting meant fewer accessibility problems,
204 especially for wheelchair users. This led to increased energy levels, which were sometimes
205 channelled into leisure activities.

206 **Theme 2: Challenges working during Covid-19**

207 Participants experienced challenges when returning to their offices, mostly associated with
208 a **lack of support**^{Q3}, as their workplaces did not follow social distancing rules, potentially
209 increasing their chances of contracting Covid-19. Conversely, loneliness was reported as a
210 downside of working from home. Those who were self-employed, felt particularly
211 overlooked, because for some, their jobs did not allow the possibility to work from home,
212 and they could not afford to go on furlough.

213 A series of **barriers in receiving reasonable adjustments**^{Q4} were discussed. Not all
214 participants received the necessary tools to work from home. For example, one participant
215 who could not afford to pay for the internet was unable to work for months because the
216 employer did not provide her with further support. Others reported an increase in their
217 workload.

218 **Theme 3: Relevance of line manager**

219 Most participants reported **supportive line managers**^{Q5} as those who were understanding
220 of participants' MS and accommodated their requests for reasonable adjustments. These
221 positive relationships remained even during the pandemic and became stronger, because
222 they considered the needs of their employee with MS when planning the return to the
223 offices.

224 Some participants had difficult relationships with their line managers even before the
225 pandemic. This was either because the managers did not understand MS or because they
226 were not willing to provide their employee with reasonable adjustments. Those with a poor
227 relationship with their line manager felt isolated. This was mainly attributed to the
228 **disengagement of the line manager**^{Q6}, who had infrequent communication with their
229 employees.

230 Another challenge was having a new line manager during the pandemic. Two participants
231 had new line managers over the pandemic whom they had never met in person. This made
232 it difficult for them to develop a positive relationship and disclose their MS.

233 **Theme 4: Returning to 'Normality'**

234 As society began to re-open, nearly all of the participants intended to continue to work from
235 home in some capacity. Before the pandemic, only five out of the fifteen participants
236 interviewed had a hybrid working pattern, working from home at least one day a week.

237 Participants expressed a preference for a **continuation of working from home**^{Q7}, due to the
238 benefits previously discussed. Three participants managed to change their contracts to
239 permanently working from home. However, others were pushed to return to the office.

240 There were mixed feelings regarding how safe participants felt **returning to the office**^{Q8}.
241 The opinions seemed to vary according to their beliefs in the efficacy of the vaccines.
242 Understandably, many participants were anxious about how their MS treatment may reduce
243 their immune function and vaccine efficacy. This was paired with concerns about the
244 infection risk of office spaces.

245 **Theme 5: Vocational Needs**

246 This theme covers additional areas of support that the participants felt were needed to help
247 them remain at work for longer, even after the pandemic.

248 Most participants had received some information about mental health support from their
249 organizations, which was usually provided as virtual wellbeing sessions. However, this was
250 seen as a "box-ticking exercise" for employers. Furthermore, they received no information
251 considering the needs of those with disabilities. Additional **vocational needs**^{Q9} identified
252 included support requesting reasonable adjustments, and support understanding legal
253 rights at work.

254 **Discussion**

255 There were conflicting findings regarding the challenges and unintended benefits of working
256 with MS during the Covid-19 pandemic between the survey and interviews. According to the
257 survey, 40% of participants stated that they faced more difficulties in concentrating while
258 working during the pandemic than they did before the pandemic. In contrast, during the
259 interviews, participants reported improved work performance because working from home
260 meant that they had fewer distractions. These conflicting results may be explained by the
261 diverse demographic and employment characteristics of the participants recruited for the
262 interviews.

263 For example, the survey included a slightly larger proportion of women than the interview
264 study. Previous studies have found associations between women and unemployment, with
265 women being more likely to be unemployed than men¹⁰. Therefore, gender-related
266 differences in terms of responsibilities and workload may be responsible for the discrepancy
267 in our findings.

268 A similar study (n=69) conducted in the USA found high rates of job loss for the participants
269 in their sample²⁰. This was not the case for our sample, potentially because our participants
270 had relatively high levels of education and a high frequency of office-based jobs, which have
271 been shown to protect against job loss^{21,22}. Differences in the support schemes offered in
272 the UK and USA may have also been a reason for this discrepancy.

273 Most research has focused on understanding the barriers to job retention, but little
274 attention has been given to the support that could remove these barriers^{23,24}. Our study has
275 reported the types of support that people with MS find beneficial to improving work
276 experience. Having a flexible work schedule (e.g., being allowed to take breaks, flexible
277 working hours) or working from home are the adjustments most commonly requested by
278 people with MS^{14,25,26}. However, pre-pandemic, most employers rejected this kind of
279 support. Our findings and others²⁷ suggest employers may be reconsidering their views
280 about remote working. In an online survey of managers, before the pandemic, 57% believed
281 employees had to be present in the workplace to advance in their roles, this decreased to
282 48% during the pandemic²⁷. These findings suggest a cultural shift in work practices as
283 companies realised they can operate remotely. However, whether this shift and the
284 unintended benefit for people with MS can be sustained in the longer term, as things return
285 to 'normal', remains to be seen.

286 Our survey identified some unintended benefits to working during the Covid-19 pandemic
287 (e.g., reduced travel, working from home, etc). This finding aligns with a UK-based study,
288 which reported higher levels of satisfaction with work arrangements during the Covid-19
289 pandemic for people who were allowed to work from home versus those who were not
290 allowed²⁸.

291 However, some survey participants also reported a worse ability to manage fatigue than
292 before the pandemic. It is well known that a large proportion of people with MS report
293 fatigue as a reason for leaving the workforce in previous studies²⁹. However, having a
294 flexible working schedule can help manage fatigue within the context of work. This
295 variability in the participants response may have been caused due to increased caring
296 responsibilities, feelings of anxiety, social isolation, and changes in eating behaviours³⁰.

297 Research has shown that working from home can lead to higher job satisfaction and lower
298 levels of absenteeism in employees with disabilities³¹. Thus, employers should consider
299 providing flexibility to their employees with MS by allowing them to work from home where
300 possible. Unfortunately, there are also disadvantages of working from home, some of which
301 were discussed in the interviews, such as reduced communication with the team, not having
302 access to equipment (or internet), or not having a suitable working environment ³².
303 Additionally, not all jobs can be conducted from home, although these workers could still
304 benefit from flexibility at work by taking breaks and having somewhere to rest if they feel
305 fatigued during the day. Regardless of the type of employment (manual vs. office-based),
306 employers need to be supported to understand the needs of their employees with MS to
307 ensure the flexible working pattern allows the person to manage the disease-related and
308 environmental factors ³³.

309 The findings from the regression analyzes suggested that being a woman and working in the
310 public sector were associated with experiencing more feelings of anxiety or stress when
311 working during the Covid-19 pandemic. These participants may be at a higher risk of job loss
312 because increased feelings of anxiety or stress can worsen their MS symptoms³⁴, and
313 therefore they may choose to withdraw from the workforce to manage their MS better.

314 It is well known that people with higher levels of disability experience more problems
315 remaining employed ⁸⁻¹⁰. Unfortunately, participants who reported experiencing a larger
316 number of MS symptoms when working during the Covid-19 pandemic were less likely to
317 receive support from their managers. The lack of support to manage their disability at work
318 can put them at a higher risk of job loss.

319 In the interviews, participants reported that most employers offer generic mental health
320 support, which failed to consider other avenues of support that might better meet the
321 needs of people with disabilities. A recent report suggested that organizations tend to have
322 policies in place to help people with disabilities at work, but employers often lack the
323 knowledge and skills to implement them³⁵. These challenges in supporting people with
324 disabilities in the workplace may have been amplified during the pandemic. Thus, VR
325 services should include support for employers to facilitate the implementation of
326 reasonable adjustments.

327 Interestingly, almost half of the survey participants mentioned that they did not need any
328 additional support at work on account of their MS. However, the overall findings suggest
329 that participants could benefit from support in managing symptoms and relationships at
330 work. These findings align with previous research that suggests that people with MS may
331 not identify themselves as having work problems³⁶. This can be problematic, because it may
332 lead to people accessing employment services late, at a point when they are at an increased
333 risk of job loss. Thus, it is recommended that healthcare professionals ask about
334 employment and help people with MS to reflect on their employment situation to identify
335 those in need of support when attending healthcare appointments³⁶.

336 ***Strengths & Limitations***

337 Our study was underpinned by theoretical frameworks, which allowed for identifying the
338 biological (i.e., MS symptoms) and environmental (i.e., job characteristics) factors that were
339 easier or most challenging to manage at work during the pandemic.

340 The survey was shared online, which might lead to bias towards people who have internet
341 access and a better command of technology. However, the survey could have been
342 completed from a smartphone, as opposed to only from a computer, to facilitate
343 participation.

344 Regarding the limitations, due to the approach to recruitment (e.g., social media, posters on
345 clinical areas) we could not estimate the response rate for the survey. Another limitation is
346 that only three participants recruited for the survey were from a minority ethnic group.
347 Therefore, we did not capture in detail the experiences of these groups of the population.

348 Additionally, this study was conducted after the first national lockdown in the UK. There
349 were two more lockdowns, and the support offered to organizations varied considerably
350 throughout the pandemic. Nevertheless, this study provided valuable information about the
351 issues that people with MS experienced working during the Covid-19 pandemic in the UK.

352 **Conclusion**

353 The flexibility of working from home enabled people with MS to self-manage their condition
354 better, in part by removing the impact of travelling to work. However, people with MS also

355 experienced challenges managing their ability to concentrate when working and difficulty
356 managing fatigue levels.

357 Future research should explore the impact that flexible working arrangements (e.g., working
358 from home, breaks at work, modifying working hours, etc.) can have on the long-term
359 productivity, sickness absence and employment rates of people with MS and the associated
360 costs and benefits for employers. It should also explore whether organizational learning
361 regarding supporting employees with MS translates into the post-pandemic era remotely to
362 determine whether these pandemic-influenced work facilitators are or can be sustained.

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379 **References**

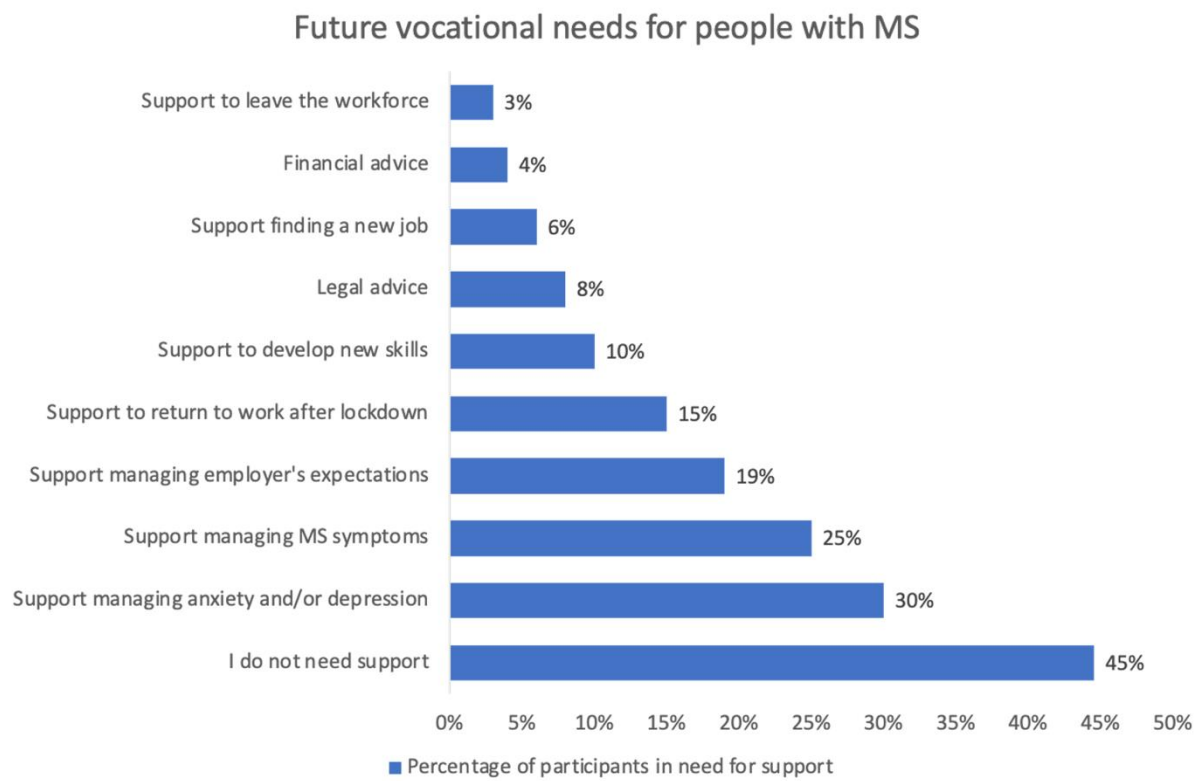
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471
472
473

474 **Figure Legend**

475 Figure S1 Future needs at work for people with MS.



476

478 Table 1 Participant's characteristics

Data Category	Survey (n=101)	Interviews (n=15)
Demographic Information		
Women	79 (78.2%)	9 (60.0%)
Men	22 (21.4%)	6 (40.0%)
Ethnicity	n=100	
White British	97 (97.0%)	14 (93.3%)
Black/African/Caribbean/Black British	1 (1.0%)	0
Asian/Asian British	2 (2.0%)	1 (6.6%)
Living Arrangements		
Living alone	15 (14.9%)	3 (20.0%)
Living with partner	46 (45.5%)	4 (26.6%)
Living with family	39 (38.6%)	8 (53.3%)
Living with friends	1 (1.0%)	0
Education		
GCSE	5 (4.9%)	1 (6.6%)
College	13 (12.9%)	4 (26.6%)
Degree	34 (33.7%)	4 (26.6%)
Postgraduate	45 (44.5%)	6 (40.0%)
Other	4 (3.9%)	0
MS Characteristics		
n=100		
Relapsing Remitting MS	86 (86.0%)	10 (66.6%)
Secondary Progressive MS	8 (8.0%)	4 (26.6%)
Primary Progressive MS	5 (5.0%)	1 (6.6%)
Not known	1 (1.0%)	0
EDSS		
n=44		
EDSS (0-3)	21 (47.9%)	3 (30.0%)
EDSS (3.5-6)	16 (36.9%)	2 (20.0%)
EDSS (6.5-9)	7 (15.2%)	5 (50.0%)
Employment characteristics [multiple choice]		
Employed full-time	58 (57.4%)	7 (46.6%)
Employed part-time	33 (32.6%)	5 (33.3%)
Self-employed full-time	4 (3.9%)	1 (6.6%)
Self-employed full-time	4 (3.9%)	1 (6.6%)
Student	3 (2.9%)	1 (6.6%)
Working and looking for work	2 (1.9%)	0
Medically retired	1 (0.9%)	0
Doing volunteer work	1 (0.9%)	0
Organization size*		
Large (>250 employees)	62 (61.4%)	6 (40.0%)
Medium (50-249)	20 (19.8%)	6 (40.0%)
Small (10-49)	11 (10.9%)	1 (6.6%)
Micro (>9)	8 (7.9%)	2 (13.3%)

Main Job Type+	n= 97	n= 15
Level 4 (Professional and managerial)	48 (49.5%)	7 (46.6%)
Level 3 (Associated professional and technical/ skilled trade)	27 (27.8%)	5 (33.3%)
Level 2 (Administrative, caring, leisure, sales, customer service, process, plant, and machinery operatives)	19 (19.6%)	1 (6.6%)
Level 1 (Elementary occupation)	3 (3.1%)	2 (13.3%)
Disclosed MS diagnosis to employer		
Yes	89 (88.1%)	14 (93.3%)
No	7 (6.9%)	0
Not applicable	5 (5.0%)	1 (6.7%)
MS: multiple sclerosis; EDSS: Expanded Disability Status Scale. *organization size obtained from UK Government guidelines. +Standard Occupational Classification (SOC 2020) ³⁷		

479

480

481 Table 2 Themes from interviews and illustrative quotes.

Theme	Sub-theme	Illustrative Quote
Benefits of working from home	Fewer distractions ^{Q1} (n=12)	'I'm more productive working on my own because there's no distraction... there are some really noisy people who sit near me in the office, and I find it really distracting like when I'm on a call I can't hear my client' (MS_02)
	Not having to travel to work ^{Q2} (n=10)	'The lockdown made it easier for me because I didn't have to spend time going to work. My productivity increased dramatically as a result of lockdown because I didn't need to go and get from my wheelchair into my car and go into the university.' (MS_06)
Challenges working during Covid-19	Lack of support ^{Q3} (n=8)	"I first went back in June last year I was very anxious, because of not being allowed to wear a face covering and getting close to these children. I was extremely anxious." (MS_03)
	Barriers receiving reasonable adjustments ^{Q4} (n=6)	"One of the things that I feel we battle with is... there are a lot of people with MS who know perfectly well the specific things that they would need to make them more productive. But there are some hardliners out there who are not willing to consider that. They just do not believe in it." (MS_13)
Relevance of Line Manager	Supportive line manager ^{Q5} (n=6)	'My line manager and the administration manager ... were quite happy to let me work from home. Even this year was waiting until I was fully vaccinated before they wanted to integrate me back into the school.' (MS_04)
	Disengagement of line manager ^{Q6} (n=3)	"I'd been off for five months. They didn't keep me up to speed with what was happening...My manager was lacking contact [with] me; so it was only through some of my colleagues that I found out what was going on." (MS_03)
Returning to 'normality'	Continuation of working from home ^{Q7} (n=6)	'I've just changed my contract to work permanently from home. I hadn't considered it, or I hadn't thought about it before.' (MS_07)
	Concerns returning to the office ^{Q8} (n=5)	'I have some anxiety about the vulnerability to infection because it is an enclosed space, it is recirculating air, and I am conscious that the medication I'm on for my MS will reduce the effectiveness of the vaccines' (MS_09)
Vocational Needs ^{Q9} (n=7)	-	'I phoned up [human resources] and asked for advice and they said, "Well, go and do some exercise," and I said, "I can't. I need you to actually take my circumstances into account." (MS_09)
Themes and/or sub-themes in the table and text are labelled with the letter Q (representing the word "quote") followed by a number to facilitate the reading.		
The number below the sub-themes reflects the number of interviewees contributing to each sub-theme.		

483 Table S1 Support received before and during the Covid-19 pandemic.

Before the Covid-19 pandemic, did your employer implement any modifications in your work schedule, duties, or environment to accommodate your MS?	n	Participants answering "Yes" before Pandemic n (%)	Participants answering "Yes" during Pandemic n (%)	Discordant Pairs*		p
				From no to yes	From yes to no	
I was allowed to work from home	64	20 (31.25%)	44 (68.75%)	30	8	.001
I was provided with equipment such as a work laptop, walking aid, special chair, etc.	28	16 (57.14%)	12 (42.86%)	6	10	.45
I was allowed to work flexible hours or allowed to take more breaks	39	21 (53.84%)	18 (46.16%)	7	10	.62
I reduced my working hours or responsibilities	18	12 (66.67%)	6 (33.33%)	4	10	.18
I did not need support at work	40	23 (57.5%)	17 (42.5%)	15	9	.30
I did not receive reasonable adjustments (e.g., changes in my work arrangements or duties to manage my MS)	78	43 (55.12%)	35 (44.87%)	18	10	.18
*Discordant pairs refer to participants who (1) were not receiving this support before the pandemic but started receiving the support during the pandemic [from no to yes], or (2) were receiving support before the pandemic but stopped receiving that support during the pandemic [from yes to no].						

484

485

486 Table S2 Self-reported confidence levels and workability during Covid-19

Confidence levels	Less confident than before n (%, CI)	No change n (%, CI)	More confident than before n (%, CI)	n
Going to work (if working outside of home)	40 (47.6%, .36 to .58)	39 (46.4%, .35 to .57)	5 (5.9%, .02 to .13)	84
Attend your usual workplace after the lockdown	43 (47.5%, .36 to .57)	40 (44.0%, .33 to .54)	8 (8.8%, .03 to .16)	91
Meeting in person with clients or customers	55 (61.1%, .50 to .71)	29 (32.2%, .22 to .42)	6 (6.66%, .02 to .13)	90
Having meetings via telephone or online platforms	8 (8.1%, .03 to .15)	28 (28.3%, .19 to .38)	63 (63.6%, .53 to .73)	99
Requesting support from your employer	14 (14.9%, .08 to .23)	59 (62.8%, .52 to .72)	21 (22.3%, .14 to .32)	94
Following social-distancing rules at work	28 (30.1%, .21 to .40)	39 (41.9%, .31 to .52)	26 (27.9%, .19 to .38)	93
Finding a new job	43 (48.3%, .35 to .56)	41 (46.1%, .35 to .56)	5 (5.61%, .01 to .12)	89
Work ability	Worse than before n (%, CI)	No change n (%, CI)	Better than before n (%, CI)	
Ability to concentrate when working	40 (40.4%, .30 to .50)	46 (46.5%, .36 to .56)	13 (13.1%, .07 to .21)	99
Ability to work outside the usual place of work (e.g., home)	22 (22.4%, .14 to .31)	44 (44.9%, .34 to .55)	32 (32.6%, .23 to .42)	98
Ability to work in the usual place of work (e.g., outside home)	29 (32.6%, .23 to .43)	50 (56.2%, .45 to .66)	10 (11.2%, .05 to .19)	89
Ability to take transport to and from work	17 (20.0%, .12 to .30)	65 (76.5%, .66 to .84)	3 (3.5%, .007 to .09)	85
Having access to the internet	11 (11.5%, .05 to .19)	80 (83.3%, .74 to .90)	5 (5.2%, .01 to .11)	96
Ability to managing work and home responsibilities	26 (26.8%, .18 to .36)	58 (59.8%, .43 to .69)	13 (13.4%, .07 to .21)	97
Support received from the employer	17 (18.3%, .11 to .27)	55 (59.1%, .48 to .69)	21 (22.6%, .14 to .32)	93
Ability to manage fatigue	38 (39.6%, .29 to .50)	43 (44.8%, .34 to .55)	15 (15.6%, .09 to .24)	96

Ability to manage difficulties walking or moving around	20 (21.0%, .13 to .30)	69 (72.7%, .62 to .81)	6 (6.3%, .02 to .13)	95
Presence of health problems other than MS	21 (21.6%, .13 to .31)	74 (76.3%, .66 to .84)	2 (2.1%, .002 to .07)	97
n: Number of participants included; CI: Confidence interval				

487

488 Table S3 Unintended benefits of working during Covid-19

Unintended Benefit	n (%)
Reduced travel	20 (19.8%)
Working from home	13 (12.8%)
Better work-life balance	8 (7.9%)
Reduced fatigue	8 (7.9%)
Employer/Colleagues understanding benefits of home working	8 (7.9%)
Increased productivity/concentration	6 (5.9%)
Flexible working	6 (5.9%)
Reduced anxiety	4 (3.9%)
Learning new skills	3 (2.9%)
More time with family	2 (1.9%)
Re-evaluate life values	2 (1.9%)
Save money	1 (0.9%)
<i>Multi answers allowed: Percentage of respondents who selected each answer option (e.g., 100% would represent that all this question's respondents chose that option)</i>	

489

490

491 **Supplementary File A: Interview topic guide.**

492

493 **Working during Covid-19:**

494 **1) Can you tell me about your current job?**

495 **2) Has Covid-19 impacted your ability to work? How?**

496

- Were you able to work from home during the lockdown?

497

- i. What work can you do from home?

498

- ii. Has there been any new work you have started to do from home that

499

- you would not normally be required to complete?

500

- iii. What work or part of your role you can't do from home? why?

501

- Was there anything that was stopping or preventing you from working from

502

- home/ at home?

503

- Did you have to shield during the lockdown?

504

- i. Did the shielding have an impact on your work?

505

- ii. Was your employer supportive?

506

507

- *If the person can work from home:* How has your employer enabled you to

508

- work from home?

509

- i. Have they made any adjustments for you?

510

- ii. Did you have all the resources to work from home?

511

- iii. What changes would have made it easier for you to work from home?

512

513

- If the person was furloughed ask the following question: What factors lead to

514

- your employer including you in the furlough scheme?

515

516 **3) Were there any unintended benefits (positive aspects) of working during the lockdown?**

517

518 **Relationship with Employer:**

519 **4) How is your relationship with your line manager?**

520

- Is he/she supportive of your MS at work?

521

- *If the person has not disclosed the MS:* Why have you not disclosed your MS to

522

- your line manager/ employer?

523

524 **Support received during Covid-19:**

525 **5)** Have you had any advice/support or help regarding your employment situation during
526 the lockdown?

527

- Did your employer provide you with any support?

528

- i. Have you maintained open communication with your employer during
529 the lockdown? If so, how?

530

- ii. Has your employer given you any advice about coping during the
531 lockdown? If so, how?

532

533

- Have you received any support from any other source?

534

535

536 **6)** If you **have not yet returned** to work or your normal place of work, has your employer
537 been in touch to make a plan for your return?

538

- If yes, what plans have been put in place?

539

- Have these been documented somewhere/ somehow?

540

- Do you have any concerns or fear regarding your return to your usual place of
541 work?

542 **7)** If **you have already returned to your normal place of work** or if you remained working
543 at your normal place of work, did your employer involve you in plans to implement
544 changes to your work?

545

- If yes, what plans have been put in place?

546

- Have these been documented somewhere/ somehow?

547

- Do you have any concerns or fear regarding your current work situation?

548

549 **Support needs during Covid-19:**

550 **8)** What support would you have liked to receive during the lockdown (or to return to the
551 workplace after the lockdown)?

552

- What would this support look like?

553 **9)** If there was a service that could provide you with advice/ support or help related to your
554 employment, how would you like to receive it?

555

- Who should provide the support?

556

557 **Other comments:**

558 **10)** Do you have any other comments that you would like to make about your employment
559 situation/ working with MS?
560

561 **Supplementary file B**

562

563 The items presented in Table S1 represent those that could not be included in the McNemar
 564 test because there were fewer than 10 discordant pairs.

565

566 Table S1 Support received before and during the Covid-19 pandemic.

567

Area of Support	N	Before Pandemic N (%)	During Pandemic N (%)	<i>From no to yes</i>	<i>From yes to no</i>
I have requested additional support, but it was declined	9	7 (77.78%)	2 (22.22%)	5	0
I was provided with assistive technology (e.g., text to speech software, digital recorders, etc.)	3	2 (66.67%)	1 (33.33%)	1	2
I was provided with more supervision or support	6	4 (66.67%)	2 (33.33%)	1	2
I moved to a different role within the organization	8	6 (75%)	2 (25%)	2	6
I received physical adaptations in my work environment/equipment to enable me to work from home	3	1 (33.33%)	2 (66.67%)	2	1
I applied for outside help (e.g., governmental schemes) and was successful	3	1 (33.33%)	2 (66.67%)	2	1
I applied for outside help (e.g., governmental schemes) and was not successful	0	0	0	-	-

From no to yes: Participants who were not receiving this support before the pandemic but started receiving the support during the pandemic.

From yes to no: Participants who were receiving support before the pandemic but stopped receiving that support during the pandemic.

568

569

570 **Supplementary file C**

571

572 The following tables present the results from a series of univariate logistic regression analyses
 573 to explore the relationship between respondents' demographic, clinical, and employment
 574 characteristics factors and the likelihood that respondents would report experiencing various
 575 challenges.

576

577 *Table S 1 Predictors of respondents reporting the presence of feelings of anxiety or stress.*

					95% Confidence Interval	
	Variable	B(SE)	p	OR	Lower	Upper
Demographic Factors	Gender					
	<i>Female</i>	1.45(0.56)	0.01*	4.27	1.44	12.73
	Age	-0.04(0.02)	0.1	0.97	0.93	1.01
	Education Level	0.09(0.23)	0.69	1.1	0.7	1.72
Clinical Factors						
	Type of MS	1.3(0.69)	0.06	3.66	0.94	14.22
	Years with MS	-0.01(0.26)	0.69	0.99	0.94	1.04
	Number of Symptoms	0.03(0.07)	0.72	1.03	0.89	1.18
Employment-Related Factors						
	Organization Size	0.18(0.21)	0.41	1.19	0.79	1.8
Organization sector						

	<i>Self-Employment</i>	-1.61(1.12)	0.15	0.2	0.02	1.78
	<i>Private</i>	0.96(1.15)	0.41	2.6	0.27	24.65
	<i>Public</i>	2.3(1.14)	0.04*	10	1.08	92.5
	Disclosure to employer					
	<i>No</i>	0.53(0.76)	0.48	1.71	0.38	7.57

578

579

580

581 *Table S 2 Predictors of respondents reporting the lack of a laptop or internet access.*

	Variable	B(SE)	p	OR	95% Confidence Interval	
					Lower	Upper
Demographic Factors	Gender					
	<i>Female</i>	0.35(1.12)	0.76	1.42	0.16	12.82
	Age	-0.004(0.04)	0.92	1	0.92	1.08
	Education Level	0.22(0.52)	0.68	1.24	0.45	3.43
Clinical Factors						
	Type of MS	-0.54(1.16)	0.64	0.59	0.06	5.69
	Years with MS	-0.09(0.1)	0.38	0.92	0.75	1.12
	Number of Symptoms	0.03(0.15)	0.87	1.03	0.76	1.38
Employment-Related Factors						
	Organization Size	0.49(0.61)	0.41	1.64	0.5	5.37

582

583

	Variable	B(SE)	p	OR	95% Confidence Interval	
					Lower	Upper
Demographic Factors	Gender					
	<i>Female</i>	0.48(0.68)	0.49	1.61	0.42	6.12
	Age	0.02(0.03)	0.4	1.02	0.97	1.08
	Education Level	0.53(0.35)	0.12	1.71	0.87	3.35
Clinical Factors						
	Type of MS	0.23(0.82)	0.78	1.26	0.25	6.24
	Years with MS	-0.01(0.03)	0.71	0.99	0.92	1.06
	Number of Symptoms	0.15(0.1)	0.12	1.16	0.96	1.4
Employment-Related Factors						
	Organization Size	0.47(0.34)	0.16	1.61	0.83	3.12
Organization sector						
	<i>Self-Employment</i>	-0.17(1.13)	0.66	0.84	0.09	7.68
	<i>Private</i>	-0.28(1.2)	0.82	0.76	0.07	7.9
	<i>Public</i>	0.43(1.14)	0.71	1.54	0.16	14.49
	<i>Voluntary</i>	0.51(1.59)	0.75	1.67	0.07	37.73

	Disclosure to employer (yes or no)	- 19.83(14210.36)	1	0	0	-
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586

587

Table S 4 Predictors of respondents reporting experiencing reduced energy levels or motivation to work.

	Variable	B(SE)	p	OR	95% Confidence Interval	
					Lower	Upper
Demographic Factors	Gender					
	<i>Female</i>	0.62(0.56)	0.27	1.87	0.62	5.6
	Age	-0.03(0.02)	0.19	0.97	0.93	1.01
	Education Level	0.43(0.27)	0.12	1.54	0.91	2.6
Clinical Factors						
	Type of MS	0.53(0.7)	0.45	1.7	0.43	6.64
	Years with MS	0.01(0.03)	0.86	1.01	0.95	1.06
	Number of Symptoms	0.03(0.08)	0.66	1.03	0.89	1.2
Employment-Related Factors						
	Organization Size	0.3(0.24)	0.22	1.3	0.84	2.16
	Disclosure to employer (yes or no)	-0.73(0.74)	0.33	0.48	0.11	2.07

Table S 5 Predictors of respondents reporting experiencing lack of support from line manager or colleagues.

					95% Confidence Interval	
	Variable	B(SE)	p	OR	Lower	Upper
Demographic Factors	Gender					
	<i>Female</i>	0.68	0.4	1.97	0.41	9.47
	Age	0.03(0.03)	0.3	1.03	0.97	1.09
	Education Level	-0.36(0.3)	0.23	0.7	0.39	1.26
Clinical Factors						
	Type of MS	-0.11(0.83)	0.89	0.89	0.18	4.53
	Years with MS	-0.03(0.04)	0.51	0.97	0.9	1.06
	Number of Symptoms	0.27(0.12)	0.02*	1.31	1.05	1.64
Employment-Related Factors						
	Organization Size	0.27(0.34)	0.42	1.31	0.68	2.53

592

593

Table S 6 Predictors of respondents reporting experiencing the fear of going to their normal place of work.

	Variable	B(SE)	p	OR	95% Confidence Interval	
					Lower	Upper
Demographic Factors	Gender					
	<i>Female</i>	0.85(0.6)	0.16	2.34	0.72	7.6
	Age	0.01(0.02)	0.73	1.01	0.97	1.05
	Education Level	-0.23(0.24)	0.35	0.8	0.5	1.28
Clinical Factors						
	Type of MS	0.42(0.7)	0.55	1.53	0.39	5.99
	Years with MS	-0.003(0.03)	0.93	1	0.94	1.05
	Number of Symptoms	0.03(0.08)	0.72	1.03	0.88	1.2
Employment-Related Factors						
	Organization Size	0.34(0.26)	0.17	1.42	0.86	2.35
Organization sector						
	<i>Self-Employment</i>	-0.8(1.12)	0.88	0.45	0.05	4.01
	<i>Private</i>	0.84(1.15)	0.47	2.31	0.24	21.97
	<i>Public</i>	0.92(1.14)	0.42	2.5	0.27	23.12
	Disclosure to employer (yes or no)	0.32(0.85)	0.71	1.38	0.26	7.25

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599 *Table S 7 Predictors of respondents reporting experiencing feelings of loneliness.*

					95% Confidence Interval	
	Variable	B(SE)	p	OR	Lower	Upper
Demographic Factors	Gender					
	<i>Female</i>	0.33(0.53)	0.54	1.39	0.49	3.95
	Age	-0.01(0.02)	0.59	0.99	0.95	1.03
	Education Level	0.3(0.26)	0.25	1.34	0.81	2.22
Clinical Factors						
	Type of MS	1.13(0.8)	0.16	3.1	0.65	14.9
	Years with MS	-0.03(0.03)	0.34	0.97	0.92	1.03
	Number of Symptoms	0.03(0.08)	0.72	1.03	0.88	1.2
Employment-Related Factors						
	Organization Size	0.3(0.24)	0.22	1.34	0.84	2.16
Organization sector						
	<i>Self-Employment</i>	0.76(0.85)	0.16	2.13	0.41	11.2
	<i>Private</i>	-1.32(0.91)	0.15	0.27	0.05	1.58
	<i>Public</i>	-0.28(0.86)	0.75	0.76	0.14	4.13

	Disclosure to employer (yes or no)	-0.22(0.77)	0.78	0.81	0.18	3.61
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603 *Table S 8 Predictors of respondents reporting experiencing changes to their workload.*

	Variable	B(SE)	p	OR	95% Confidence Interval	
					Lower	Upper
Demographic Factors	Gender					
	<i>Female</i>	-0.04(0.5)	0.94	0.96	0.36	2.57
	Age	-0.02(0.02)	0.48	0.99	0.95	1.03
	Education Level	0.58(0.27)	0.03*	1.78	1.05	3.03
Clinical Factors						
	Type of MS	0.19(0.64)	0.77	1.21	0.34	4.24
	Years with MS	-0.004(0.03)	0.88	1	0.94	1.05
	Number of Symptoms	-0.07(0.08)	0.36	0.93	0.8	1.08
Employment-Related Factors						
	Organization Size	0.33(0.24)	0.16	1.4	0.87	2.23
Organization sector						
	<i>Self-Employment</i>	-1.09(1.12)	0.62	0.34	0.04	3
	<i>Private</i>	0.84(1.15)	0.47	2.31	0.24	21.97
	<i>Public</i>	1.17(1.13)	0.35	3.23	0.35	29.68
	<i>Voluntary</i>	1.61(1.48)	0.28	5	0.27	91.52

	Disclosure to employer (yes or no)	1.47(1.09)	0.18	4.33	0.51	36.72
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606 Table S 9 Predictors of respondents reporting not being able to work due to shielding.

	Variable	B(SE)	p	OR	95% Confidence Interval	
					Lower	Upper
Demographic Factors	Gender					
	<i>Female</i>	-0.19(1.18)	0.87	0.83	0.08	8.39
	Age	0.04(2.58)	0.4	1.05	0.94	1.16
	Education Level	-1.07(0.54)	0.05*	0.33	0.12	0.99
Clinical Factors						
	Type of MS	-0.84(1.2)	0.49	0.43	0.04	4.52
	Years with MS	-0.02(0.07)	0.8	0.98	0.85	1.13
	Number of Symptoms	0.22(0.2)	0.28	1.24	0.84	1.84
Employment-Related Factors						
	Organization Size	-0.33(0.46)	0.47	0.72	0.29	1.76

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