Workplace accommodations during the COVID-19 pandemic: A scoping review of the impacts and implications for people with disabilities

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Abstract.
BACKGROUND: The COVID-19 pandemic has led to widespread changes in the way people work. Some of these changes represent the same kinds of work modifications or adjustments that have often been requested as workplace accommodations, and which may improve labour market and employment outcomes for people with disabilities.
OBJECTIVE: The aim of this scoping review was to examine the literature on workplace accommodations in the pandemic and their impacts and implications for people with disabilities.
METHODS: Following a search of six international databases, articles were selected by two reviewers, and data were abstracted in accordance with scoping review methodology. A thematic analysis was used to report the relevant findings.
RESULTS: Thirty-seven articles met the inclusion criteria, and three main themes were identified: positive impacts of pandemic-related workplace accommodations on people with disabilities (e.g., improved accessibility, reduced stigma around workplace accommodations, rapid implementation of workplace accommodations, opportunities for advocacy); negative impacts (e.g., worsened physical and mental health, new accommodation needs); and action needed and recommendations (e.g., revisit legislation and policy on accommodations, ensure representation of people with disabilities). Overall, our review identified a mixed assessment of the impacts of pandemic-related accommodations on people with disabilities. However, there was a broader consensus regarding the importance of learning from the experiences of the pandemic to improve workplace accommodation policies in the future.
CONCLUSIONS: The pandemic may present opportunities for improving workplace accommodation policies, but our review also highlights the need for more research examining how workplace changes due to the COVID-19 pandemic have impacted people with disabilities.

Keywords: Pandemics, disabled persons, employment, teleworking

1. Introduction

On March 11, 2020, the World Health Organization (WHO) declared coronavirus disease (COVID-19) as a global pandemic [1]. Since then, the pandemic has disrupted many aspects of society, including work life. Government policies designed to mitigate the spread of the virus have included

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lockdown orders and physical distancing measures, which have changed the way a typical workday looks for many individuals and organizations. There have been changes to existing workplaces—with spaces being reconfigured to adhere to physical distancing rules, and the establishment of new workplaces altogether—with many individuals switching to home or other remote forms of work [2, 3]. For many workers, their new workspaces were accompanied by the use of new equipment and digital technologies to facilitate remote work [4], and the traditional nine-to-five schedule in some sectors has been replaced by more variable (and in some cases flexible) work hours [5].

Notably, some of the changes to daily work routines that became commonplace during the COVID-19 pandemic represent the same types of workplace accommodations that were commonly requested by people with disabilities prior to the pandemic [6, 7]. A workplace accommodation refers to a change or modification to a job or workplace, which can be sought through either formal or informal channels, to enable qualified individuals to safely and effectively perform their job duties [8, 9]. A wide range of modifications fall under this umbrella term, but work from home arrangements, digital technologies, and flexible hours were among the most prevalent workplace accommodations sought by people with disabilities [10–13]. However, they have not always been successful; although the accommodation principle is a central component of antidiscrimination and equal opportunity laws in many countries [8], in practice, the process of seeking and receiving workplace accommodations can be complex and contested, and accommodation needs often go unmet [14, 15]. In Canada, for example, while employers have a legal duty to offer reasonable job accommodations for people with disabilities at all stages of the employment relationship to the point of undue hardship [16], national survey data from 2017 shows that only 59% of employees with disabilities who required accommodations had all of their needs met [14]. Other studies highlight that many people with disabilities do not disclose their condition to their employers, a prerequisite for receiving accommodations, with researchers identifying a range of individual, cultural and institutional barriers to disclosure [14, 17–20]. A systematic review on workplace disclosure among young people with disabilities, for example, found that such barriers included stigma, discrimination, and fear that disclosure would affect job performance [18].

There is growing research pointing to the importance of workplace accommodations for people with disabilities. For example, studies show that accommodations can improve labour force participation [21], inclusion and accessibility [14], productivity [13, 22], and extend working life [23] among people with disabilities. Workplace accommodations may help individuals with disabilities avoid or overcome workplace barriers; for example, work from home arrangements for people with physical disabilities to avoid inaccessible public transportation [24], or job coaches to create more supportive working environments for people with mental illness [25]. Moreover, workplace accommodations may be a factor in improving employment rates among people with disabilities [21, 26]. Employment is a well-known social determinant of health [27], and yet employment statistics point to persistent unemployment and underemployment rates among people with disabilities around the world [14, 17, 28–30]. Further efforts are needed to understand how policies and practices surrounding workplace accommodations can be improved.

This review examines workplace accommodations in the context of the COVID-19 pandemic, and in doing so it fills an important gap in the current literature. Two rapid reviews and one scoping review have examined pandemic-related changes to the world of work [2–4]. The rapid reviews focused on the health effects of working from home [2, 3]. One review identified only poor effects (such as reduced physical activity, poor sleep quality, increased anxiety, depression and fatigue, and less job satisfaction) [2], while the other reported mixed findings (positive effects included increased safety and happiness) [3]. The scoping review compared flexible work arrangements before and during the pandemic, and identified mixed effects, including increased 'technostress' and increased productivity during the pandemic [4]. However, none of these reviews examined these changes in relation to workplace accommodations, or the implications for people with disabilities. In fact, two reviews stated that they explicitly excluded studies focusing on workers with disabilities, and the third made no mention of workers with disabilities [2, 3].

The purpose of this scoping review was to synthesize the literature on workplace accommodations during the pandemic, focusing on their impact and implications for people with disabilities. Given the significance of workplace accommodation for labour market and employment outcomes for people with disabilities, it is important to understand whether and

how the practices and policies of workplace accommodation have changed during the pandemic, and to consider the impacts and implications for this population.

2. Methods

A scoping review was chosen because this type of review is best suited to addressing exploratory research questions on a novel topic or an emerging field [31]. The review followed the methodological guidance provided by Arksey and O'Malley [32], while also incorporating the updated guidance provided by the Joanna Briggs Institute [31]. We adopted the five-stage process outlined by Arksey and O'Malley and subsequently enhanced by Levac et al. [33]: (a) identifying the research question, (b) identifying relevant studies, (c) study selection, (d) charting the data, and (e) collating, summarizing and reporting the results [32]. We also used the Preferred Reporting Items for Systematic reviews and Meta-Analysis extension for Scoping Reviews (PRISMA-ScR) Checklist (see supplementary Table 1). This study did not require Institutional Review Board approval given that it is a review.

2.1. Identifying the research question

The following question guided our scoping review: What does the literature say about a) workplace accommodations during the COVID-19 pandemic, and b) their impacts and implications for people with disabilities?

2.2. Identifying the relevant studies

An electronic search for studies was conducted using a search strategy that was developed in consultation with a librarian with expertise in disability. The following databases were searched, covering December 2019 to December 2021: Medline, PsycINFO, Scopus, Applied Social Sciences Index and Abstracts, Sociological Abstracts and Google Scholar. The search strategy included a range of keywords to capture the different ways workplace accommodations are described in the literature, and to capture international variation in terminology (for example, in the UK the language used in legal and policy documents is workplace "adjustment"). The strategy also used medical subject headings and keywords related to disability (e.g., disabled, mental

health disability) and COVID-19 (e.g., SARS-CoV-2, coronavirus). An example of a full search strategy can be found in supplementary Table 2. A manual search of reference lists of all included articles was also conducted.

2.3. Study selection

The following inclusion criteria were applied: (i) article published in a peer-reviewed journal explicitly addressing both (ii) workplace accommodations (i.e., changes to a job or workplace through formal or informal channels [8, 9]), adjustments, or modifications during the pandemic; *and* (iii) the impact or implications for people with disabilities. We used the broad definition of disability offered by the World Health Organization (WHO) in the International Classification on Functioning, Disability and Health, which refers to disability as "an umbrella term for impairments, activity limitations and participation restrictions" [34] (p. 79). Given the exploratory nature of this review, and because the focus on the COVID-19 pandemic makes this a particularly novel and timely topic, we wanted to capture as wide a range of findings, ideas and perspectives as possible. We decided that in addition to primary and secondary research articles, any type of peer-reviewed publication should be included, such as commentaries, editorials and opinion papers.

We excluded non-peer-reviewed work (e.g., theses and dissertations, grey literature, conference abstracts), books and book chapters, and systematic reviews. However, the reference lists of relevant systematic reviews were manually examined to ensure that no relevant studies had been missed in the database searches. We had no geographic or language restrictions during the search or title/abstract screening stage; however, only articles in English, French or Spanish were included for full-text screening. Studies were excluded if they addressed both workplace accommodations and people with disabilities, but none of the findings were in the context of the COVID-19 pandemic.

A total of 1991 titles were identified through the search. After removing duplicates ($n = 48$) (see Fig. 1), both authors independently reviewed the titles and abstracts ($n = 1943$) for inclusion using *Covidence* software. A total of 1783 studies were excluded at the title and abstract screening stage because they were irrelevant and did not meet our inclusion criteria, after which we were left with 160 full texts to review. A further 125 studies were excluded dur-

Identification

- ASSIA (n=123)
- Google Scholar (n=123)
- Medline (n=22)
- PsycInfo (n=7)
- Scopus (n=1316)
- Sociological Abstracts (n=400)

Screening

(n= 1991)

Duplicates removed (n =48)

Records screened – Title and Abstract (n=1943)

Records excluded (n = 1783)

Eligibility

Full-text articles reviewed for eligibility (n = 160)

Full-text articles excluded (n = 125)
- Did not meet inclusion criteria (n=91)
- Not in peer-reviewed journal (n=27)
- Systematic review (n=4)
- Full text unavailable (n=2)
- Language other than English/French/Spanish (n=1)

Included

Records added via additional internet searches (n=2)
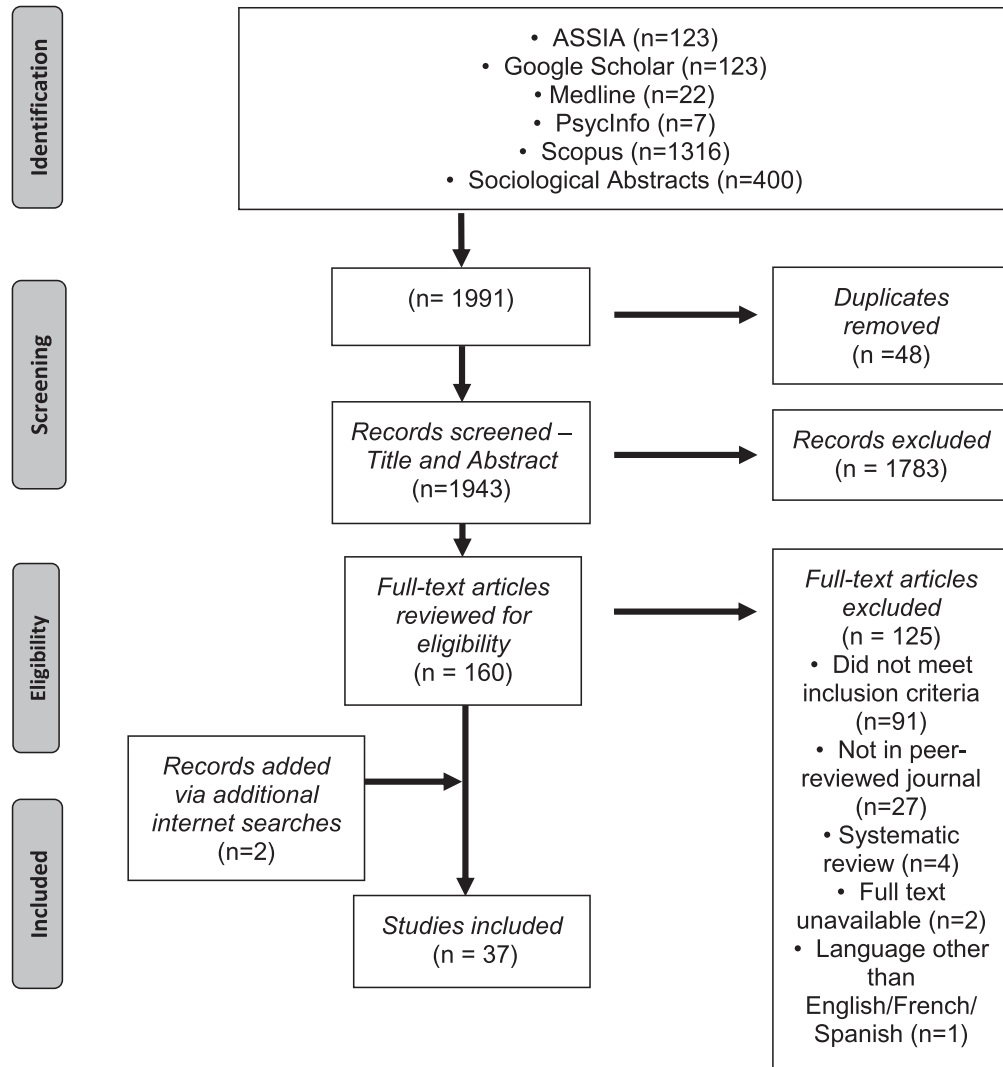
Studies included (n = 37)

Fig. 1. PRISMA flow chart (Adapted from Moher et al. 2009).

ing full-text screening, leaving 35 studies meeting the inclusion criteria. Two additional articles were identified through follow-up internet searches, giving us a total of 37 studies in our review.

2.4. Charting the data

Relevant data were extracted from the articles using a data abstraction form. The following information was recorded: (a) author(s) and country of publication; (b) sample characteristics; (c) objective; (d) methodology and theoretical perspective; and (e) findings (see Table 1). The second author checked the form to ensure completeness and accuracy.

2.5. Collating, summarizing, and reporting the results

A basic descriptive analysis of the studies was performed, in accordance with Arksey and O'Malley's [32] recommendation. Thematic analysis was then used, following the steps outlined by Braun and Clarke [35]: familiarization with the data (reading and re-reading the articles); generating codes (identifying and recording all relevant findings reported in the included articles and coding these findings); searching for themes (sorting all codes into common groups); reviewing themes (ensuring codes were properly assigned and grouped into themes that were relevant to the review ques-

Table 1
Overview of studies

Authors (country)*	Sample characteristics	Objective	Methodology (theoretical perspective)	Key findings and analysis†
Adams et al. 2021 (USA)	14 individuals (10 women, 4 men) with spinal cord injury (SCI), age: n/a; 11 employed	To understand how isolation related to COVID-19 has impacted the employment experiences for persons living with spinal cord injury	Virtual focus groups (theory: n/a)	-Remote work negatively affected physical health by changing normal work routines -Remote work presented new mental health challenges -Importance of having the right accommodations and working from home as an accommodation -Uncertainty about the future (ie., finding and keeping work, receiving ongoing workplace accommodations in later stages of the pandemic and post-pandemic)
Ahmed 2020 (UK)	1 disabled academic who uses a wheelchair	To consider how the use of virtual technology during the COVID-19 pandemic represents an opportunity for levelling the playing field between disabled and non-disabled academics	Personal commentary (theory: n/a)	-Switch to virtual online teaching has removed many of the physical barriers and challenges of teaching for academics with disabilities -Self-isolation and use of technology allowed academics with disabilities to avoid having to deal with administrators and colleagues without disabilities who often are a source of added stress and anxiety -The wide use of technology to facilitate remote teaching meant that academics with disabilities were no longer were singled out for using adaptive technologies, and thus no longer stigmatized for supposedly receiving favourable treatment
Aydos et al. 2021 (Brazil and USA)	5 individuals (3 men, 2 women) with various disabilities (muscular dystrophy, deaf, Larsen Syndrome, autism, low vision); occupations: academia ($n = 2$), software development, civil service, teaching (student teacher)	To explore how new technologies and practices implemented to enable remote work during the COVID-19 pandemic impacted people with disabilities	Analysis of personal narratives (crip theory)	-Academic with Larsen Syndrome had previously been denied request for remote work (online synchronous classes). During the pandemic, the request was granted by default (all classes were moved to online) and he was more productive -Two individuals had to implement their own accommodations -Wheelchair user with muscular dystrophy wanted to return to work part-time after the pandemic because he missed socializing at work, despite the barriers and lack of wheelchair accessibility at his worksite -Student teacher with autism could avoid bullying and discrimination experienced in the classroom once classes went online, but struggled with the constant exposure to home-life caused by always having cameras on for virtual classes

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Authors (country)*	Sample characteristics	Objective	Methodology (theoretical perspective)	Key findings and analysis†
Brooks & Bennett 2021 (Canada)	n/a	To consider how Canada's response to the COVID-19 pandemic reflects ableist attitudes at the governmental and societal levels	Commentary (critical disability lens)	-Rapid adaptations and adjustments to work arrangements in response to the pandemic showed the feasibility of accommodation requests that previously had been denied -The fact that employers had previously denied accommodation requests by people with disabilities and that governments had failed to enforce penalties highlights ableist attitudes among employers and government officials
Brown et al. 2021 (UK)	Six members of National Association of Disabled Staff Networks (age, gender condition: n/a)	To offer analysis and recommendations for post-COVID-19 lockdown workplace policies to ensure the safety and well-being of disabled workers	Opinion paper (social model of disability)	-The crisis has shown that reasonable adjustments such as remote work are easily implemented; this represents an opportunity for more inclusive policies post-pandemic -Reorganization of physical workspace for social distancing and sanitary purposes may lead to more accessible environment; however, some measures could create new barriers -Concern that the removal of COVID-19 lockdown restrictions will result in the loss of work arrangements, such as remote work, that disabled staff have been benefiting from, and which they may still require because of their increased vulnerability to COVID-19 related illness; remote work should continue to be available widely so that disabled staff who do not return to campus are not bullied or stigmatized for this -Working from home has been a positive experience for some disabled staff, but has been isolating and led to increased anxiety for others
Capuano 2022 (Australia)	n/a	To consider how the changing design of the post-pandemic workplace might affect workers with invisible disabilities	Secondary analysis of labour law and antidiscrimination legislation and research (critique of ableism)	-Pandemic-era surveys have consistently found that hybrid working is the preferred model among workers -Post-pandemic hybrid model will likely use hot-desks or hoteling, which will disadvantage workers with disabilities who need personalized workstations; it may also disincentivize workers with 'invisible' disabilities from seeking workspace-related accommodations since they might feel like more of a burden -Hybrid system might also exclude workers with disabilities who require adaptive technologies, because they cannot easily move these back and forth from home to on-site work

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Authors (country)*	Sample characteristics	Objective	Methodology (theoretical perspective)	Key findings and analysis†
Chan et al. 2021 (USA)	n/a	To examine litigation on accommodating teachers with disabilities	Case law review – Title I of the Americans with Disabilities Act (theory: n/a)	-Innovation was required during the pandemic for schools to shift to widespread remote instruction; this may be a catalyst for more creative ways of providing reasonable accommodations for teachers with disabilities -Arguments about remote instruction accommodation being unreasonable may no longer be accepted by courts due to the precedents set by the pandemic
Davila Moran 2021 (Peru)	n/a	To discuss the implications of returning to work in the context of the pandemic, which has created new potential accommodation needs	Letter to the editor (theory: n/a)	-The pandemic has brought new challenges related to bringing workers back to work. People with vulnerabilities to becoming very ill if infected with COVID-19, might now need to be considered as having a disability and requiring special considerations for their return to work -Long COVID may also require accommodations similar to those that exist for workers with other chronic illnesses
De Silva 2020 (Canada)	n/a	To compare the approaches taken to human rights during the COVID-19 crisis by the 13 different Canadian Human Rights Commissions	Content analysis of Human Rights Commissions' official statements regarding COVID-19 (theory: n/a)	-Six of the 13 Human Rights Commissions argued that COVID-19 could be considered a disability (and thus grounds for protection) and highlighted employers' duty to accommodate impacts of COVID-19 on employment -Seven Human Rights Commissions focused more on the perspective of the employers (the principle of undue hardship)
Dorfman 2021 (USA)	n/a	To discuss how societal beliefs and assumptions about disability-based privileges ("fear of the disability con") have surfaced over the course of the pandemic	Secondary analysis of news stories and social media (theory of "disability cons")	-Some people with certain disabilities were allowed to continue remote work when their colleagues were called back to the workplace, prompting accusations that they were being granted unwarranted privileges -Return-to-work issue was especially contentious in public schools; teachers with invisible disabilities were hesitant to return on-site due to ongoing risk of contracting COVID-19, but stories of fraudulent positive tests increased suspicion of "pandemic disability cons" -Teachers with chronic illness and other 'invisible disabilities' that made them high risk were accused in some media discourse of faking their status to receive accommodations to continue remote work

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Authors (country)*	Sample characteristics	Objective	Methodology (theoretical perspective)	Key findings and analysis†
Gignac et al. 2021 (Canada)	3066 workers (1960 with no disability, 45.6% women; 1,106 with physical and/or mental disability); 24 different job sectors represented in sample, including finance, education, sales and construction	To examine COVID-19 impacts (as of June 2020) based on perceptions among workers with disabilities compared to workers with no disabilities	Online survey (theory: n/a)	-Workplace accommodations and other forms of organizational support for workers were facilitated by federal government policies and approach to the pandemic in the early stages of the lockdown -Workers living with a disability were less willing to share their needs with a supervisor and reported more unmet accommodation needs than those without a disability -Workers with a physical disability reported more health concerns than those without a disability, and those with a mental health condition reported more financial concerns and less organizational support -Workers with both physical and mental health disabilities reported less perceived organizational support and more unmet accommodation needs than those with only one or the other type of disability
Goggin & Ellis 2020 (Singapore)	n/a	To explore why people with disabilities are excluded and oppressed during pandemic times	Media analysis (sociology of disability)	-Pandemic accommodations were rapidly implemented and required no bureaucratic or invasive procedures, unlike accommodations processes for people with disabilities pre-pandemic
Goldfarb et al. 2021 (Israel)	23 employees with autism (4 women), mean age: 29.4	To examine the effects of employment changes caused by COVID-19 on mental health and work-related psychological needs satisfaction	Interviews and longitudinal surveys (Self-determination theory)	-Data from longitudinal survey indicated that the mental health of workers who transitioned from on-site to remote work had deteriorated and that they experienced a significant decrease in work-related need satisfaction of autonomy and competence -Data from qualitative interviews showed that some employees who continued working on-site while their colleagues switched to remote work felt the atmosphere was calmer and more conducive to working -3/5 employees who transitioned to remote work saw it as a positive experience; they appreciated the increased sense of control over their environment due to sensory sensitivity; some reported a negative experience of loneliness, isolation -Employees with autism working from home did not feel a reduced sense of social relatedness while working from home, which may reflect the fact that remote work was widespread, not limited to people with disabilities -Some employees felt loss of control, blurred boundaries between work and leisure because of working from home -Increased flexibility and opportunities to work from home post-pandemic may benefit individuals with autism who previously were unemployed because they struggled with workplace environments, sensory sensitivity

Table 1
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Authors (country)*	Sample characteristics	Objective	Methodology (theoretical perspective)	Key findings and analysis†
Grote et al. 2021 (UK)	83 deaf healthcare professionals (18 doctors, 14 nurses, 51 members of other healthcare professions; gender: n/a)	To examine the impact of the lack of transparent masks and reasonable accommodations on deaf healthcare professionals during the pandemic	Online survey (theory n/a)	-The introduction of masks during the pandemic created a new requirement for accommodation (transparent masks) for deaf healthcare professionals; only 11 % had access to transparent masks -Three quarters reported anxiety, stress, and fear of making a mistake due to communication difficulties stemming from lack of reasonable accommodations -78% felt that the communication needs of deaf workers had not been met during the pandemic -31% were working wholly or partly from home -Less than a quarter of respondents were offered an occupational health assessment to discuss reasonable adjustments during the pandemic (19/83); only 39% of respondents agreed that they had the necessary equipment/reasonable adjustments -Some modifications were implemented but were not appropriate or reasonable adjustments; e.g., redeploying 17% of deaf staff to non-clinical roles so they would not have to face mask-wearing clients
Holland 2021 (UK)	n/a	To consider the post-pandemic implications of changes to workplace arrangements and the labour market for disabled workers	Commentary based on secondary statistical analysis (theory: n/a)	-While workers with disabilities have been hit hard by job losses during the pandemic, the switch to remote work may present an opportunity for a more inclusive labour market for disabled workers -The widespread shift to homeworking also reflects a potential shift in employer attitudes toward remote work; prior to the pandemic, many employers were reluctant to allow employees to work from home -Rapid and widescale shift to remote work showed that working from home arrangements are possible (through the use of technology) and sustainable in the future -In one UK-based study, homeworking was shown to increase from 5.2% in January 2020 to 43.1% in April 2020; 88.2% of workers indicated that they wanted to continue the arrangement post-pandemic -One reason working from home has been a positive experience for disabled workers is that they are receiving accommodations that are widely granted, so they are not singled out, and there is less stigma and discrimination -Making remote work permanently and universally available would reduce the need for some disabled workers to make individual accommodation requests

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Authors (country)*	Sample characteristics	Objective	Methodology (theoretical perspective)	Key findings and analysis†
Hoque & Bacon 2021 (UK)	1552 workplace managers, 14,312 employees representing all industry sectors except agriculture, hunting, forestry and fishing, and mining and quarrying; gender and disability type: n/a	To assess disabled employees' likelihood of working from home relative to non-disabled employees, and the implications of doing so for their experiences of work	Secondary analysis of 2011 British survey: Workplace employment relations study (theory: n/a)	-In April of 2020, 45% of British employees and more than half of US employees were working from home due to the pandemic -Pre-pandemic data shows that employees with disabilities report poorer experiences of working from home on several indicators than employees without disabilities; therefore it should not be automatically assumed that working from home is an advantage for workers with disabilities in the pandemic and post-pandemic eras -Disabled employees report poorer experiences of work than non-disabled employees regarding job control, job-related mental health, job satisfaction and work-life balance -The pandemic has demonstrated the feasibility and benefits of widespread working from home arrangements from both employer and employee perspectives
Humphrey-Carothers et al. 2021 (USA)	328 employees requesting accommodations (gender: n/a); disability type	To describe the accommodations review process during the pandemic from the perspective of the accommodation review committee	Organizational guideline from Johns Hopkins Medicine accommodation review committee (theory: n/a)	-Accommodations requests increased significantly during the pandemic -While most accommodation requests (82%) were submitted under the American Disabilities Act, nearly 18% ($n = 58$) requests were based solely on fear of being infected, with no underlying conditions
Jesus, Landry & Jacobs 2020 (Portugal)	n/a	To examine the changes wrought by COVID-19 and identify the challenges and opportunities for disability, telework and rehabilitation	Secondary analysis of empirical research on the pandemic (theory: systems thinking)	-COVID-19 crisis has led to changes in employment and economic policy including shift to telework, which may represent a 'new normal' -Increased availability of teleworking creates opportunities for increasing employment rates among people with disabilities
Koon et al. 2022 (USA)	39 individuals (24 women), mean age of 53 years, with mobility disabilities; 30.8% employed (industry type: n/a)	To explore the effects of the COVID-19 pandemic for people with mobility disabilities	Telephone and online survey (social model of disability)	-7 participants reported adverse effects related to employment and education, including challenges transitioning to remote work -1 participant reported improved accessibility in transportation because of the reduced demand for paratransit and free rides during the pandemic -Some were able to work from home, but remote work created new accommodation requirements (e.g. adapted technologies, accessible communication devices) -Pandemic shift to remote work has led some businesses to offer this as a permanent option to employees

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Authors (country)*	Sample characteristics	Objective	Methodology (theoretical perspective)	Key findings and analysis†
Kordsmeyer et al. 2021 (Germany)	14 employees with a severe disability (7 men) working in food and beverage service ($n = 11$) and building and landscape services ($n = 3$) and 16 supervisors	To examine personal and work-related impacts of the COVID-19 Pandemic on employees and supervisors in social firms	Interviews and focus groups (theory: n/a)	-Some supervisors reported reassigning some of their employees to different locations or job duties to minimize their risk of contracting COVID-19 -Some supervisors in social firms tried to re-engage employees according to their individual preferences after lockdown, especially if they had stress/anxiety disorders -Some employees struggled with implementation of hygiene and distance regulations
Maroto et al. 2021 (Canada)	1,027 Canadians (53% women, 46% men, 1% non-binary/other) with disability and/or chronic illness (mean age: 46 years); 47.71% employed in various industries and occupations	To examine the effects of COVID-19 on employment among people with disabilities and chronic health conditions	Online survey and virtual interviews – part of larger study (theory: n/a)	-56.3% of respondents worked completely or partly from home as of June 2020 -Women who had accommodations to work from home remotely prior to pandemic had reduced hours; others pointed out the advantages of being accustomed to remote work, but saw increase in hours and responsibilities -Temporary remote work arrangements necessitated by pandemic may become permanent options for some employees -Risk of losing pre-pandemic job accommodations when lockdowns necessitated change in work descriptions (e.g. shift from customer-facing sales work to lifting and other physical requirements for curbside pickup)
Martel et al. 2020 (Australia)	n/a	To consider how remote and flexible working arrangements that became widespread during the COVID-19 pandemic can be modeled for more inclusive work arrangements for people with disabilities	Secondary analysis of academic research, grey literature and media commentary (social model of disability)	-The shift to remote work during the pandemic has led to a rising appreciation of the benefits of flexible work hours and workspaces; this represents an opportunity to better match the person-environment fit for all -Current discussions of how the "new normal" work life should look post-pandemic have largely been led by think tanks, business groups and consulting firms; the perspectives of people with disabilities needs to be directly sought so that they are not left behind
McNamara & Mason Stanch 2021 (USA)	n/a	To highlight how technological advances utilized during the pandemic can be leveraged to accommodate workers with disabilities in the post-COVID world	Commentary (theory: n/a)	-The pandemic has accelerated the adoption of digital technologies and software to facilitate remote work -Many of these technologies represent adaptations (e.g. customized keyboards, recordings of conferences and meetings) that were previously viewed as 'special requests' but are now widespread

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Authors (country)*	Sample characteristics	Objective	Methodology (theoretical perspective)	Key findings and analysis†
				-Rapid adoption of technologies represents opportunity for industrial hygienists and others who are in charge of facilitating workplace accommodations; the accommodations that have been put in place for the workforce represent many of the same accommodations disabled workers frequently requested pre-pandemic -Employees with autism may benefit from the shift to videoconferencing, since it replaces in person interaction which can trigger social anxieties. Working remotely also allows more control over work environment -Negative impacts and implications include: workers with low vision may face barriers to full participation in zoom meetings; deaf and hearing-impaired workers have reported stress and fatigue due to having to focus and be hypervigilant to compensate for hearing loss -Pandemic itself may produce new population of workers with disabilities (due to long COVID), further necessitating more widespread accommodations
Merone & Whitehead 2021 (Australia)	n/a	To consider changes to working arrangements healthcare sectors during the COVID-19 pandemic and implications for the future	Commentary (theory: n/a)	-While healthcare work has been deemed essential, some healthcare workers have moved to remote work, adopting telehealth practices -Working from home may increase employment opportunities for people with disabilities -A recent survey via social media demonstrated a largely positive reception (73%) to working from home in the context of the pandemic -Working from home and flexible hours should remain an option post-pandemic; but making working arrangements more flexible in the long-term requires innovation and openness on the part of employers
Morris 2021 (Jamaica)	Business process outsourcing sector	To explore whether the rise in remote work due to the COVID-19 pandemic represents an opportunity for increasing employment among people with disabilities in developing countries	Case study (social constructionism)	-During the pandemic, 13,000 of the approximately 40,000 individuals employed in the business process outsourcing sector in Jamaica were working remotely -Successful use of technology to facilitate remote work during the pandemic is a vindication of disability activists who have long argued about the reasonableness of accommodations for remote work

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Authors (country)*	Sample characteristics	Objective	Methodology (theoretical perspective)	Key findings and analysis†
				-Business processing outsourcing sector is employing increasing number of people in developing countries and is particularly amenable to remote work as the pandemic has shown; it also relies on universal design technology which makes it inclusive for workers with disabilities -Pandemic has shown that making necessary adaptations (especially remote work) to employ people with disabilities is mostly a matter of will
Nath & Lockwood 2021 (UK)	n/a		Literature and case law review (theory: n/a)	-Rapid implementation of telework has been facilitated by technology -Remote coworking spaces have emerged as a potential post-pandemic alternative to on-site work -Trades Union Congress in the UK has recommended that "long COVID" be recognized as a disability under the UK Equality Act so they can request reasonable adjustments and gradual return to work -In some cases, teleworking has been exclusionary because disabled workers have not received the additional required equipment and digital tools -Long-term continuation of widespread remote work may help to "mainstream" this arrangement, which would benefit workers with disabilities who previously have sought and been denied accommodations
Ocean 2021 (USA)	1 woman with a disability working in academia	To describe the accommodations process in the US higher education system both before and during the COVID-19 pandemic	Personal commentary (critical disability theory)	- While serving as an ADA Coordinator in 2003 at a US public university, the two most commonly denied accommodations the author encountered were telework and flexibility in classroom attendance; during the pandemic, both have been rapidly and systematically implemented across higher education institutions -The fact that previously commonly denied accommodations for people with disabilities were implemented across the board when necessitated by the pandemic, highlights the ableism underpinning higher education rules and regulations
Okyere et al. 2021 (Global; USA)	318 individuals (211 women, 99 men, 6 other) aged 18-75 with self-reported disability who were employed in various industries prior to COVID-19	To explore the global impacts and experiences of the COVID-19 pandemic on the employment of people with disabilities	Online survey with both closed and open-ended questions (quantitative and qualitative analysis); part of larger dataset and study (theory: n/a)	-50.3% of respondents whose employment was impacted by the pandemic reported a shift to working from home; some reported positive effects (more control, more supportive environment) and some reported negative effects (isolation)

Table 1
(*Continued*)

Authors (country)*	Sample characteristics	Objective	Methodology (theoretical perspective)	Key findings and analysis†
				-23.6% experienced a change in work hours and/or income, 22.6% were laid off or dismissed from employment and 19.5% chose not to work due to personal or health reasons -Remote work sometimes created new accommodation requirements (e.g. needing adaptive devices/equipment for home) that were not always met -Remote work can create additional barriers for people with disabilities if internet access and technology literacy are not taken into account
Ralph et al. 2020 (Multiple countries; Canada)	2225 software developers (81% men, 18% women 1% non-binary), 8% with self-reported disability affecting their work	To examine the effects of the COVID-19 pandemic on software developers' wellbeing and productivity while working from home	Survey (theory: n/a)	-The shift to working from home during the pandemic was rapid and unexpected, so a lot of the additional adaptations needed (e.g., proper space, equipment for work) were not available -People with disabilities had less ergonomic offices at home
Rodgers 2021 (UK)	n/a	To review UK labour law and consider the future of workplace policy in light of the COVID-19 crisis	Secondary analysis of UK labour law (vulnerability theory)	-Work from home model adopted during pandemic may benefit employees with disabilities as it may now be more widely accepted as a reasonable accommodation; on the flip side, employers may have more difficulty arguing that their refusal to grant the accommodation is on permitted grounds -Ambiguity in the law about where the responsibility lies for providing equipment necessary for remote work
Rumrill et al. 2021 (USA)	Four workers (3 women) with neurological disabilities (post-concussion syndrome, stroke and multiple sclerosis)	To demonstrate the use of the Work Experience Survey (WES) and the Job Accommodation Network for workers with disabilities	Interviews (part of a larger project) (theory: n/a)	-At the time of the interview, all four participants were working on-site; however, the authors argue that making the pandemic-era working from home option a permanent one for all workers (regardless of disability status) represents a key manifestation of the universal design principle and would promote inclusivity
Saia et al. 2021 (USA)	n/a	To discuss ways in which health equity can be improved based on lessons from COVID-19 pandemic	Commentary (theory: n/a)	-Workplace adjustments in response to the pandemic represented the same accommodations that many disabled people requested but were denied prior -Adaptations and accommodations were for everyone, and for some workers with disabilities the effect was the removal of some barriers to inclusive work -Rapid systemic changes during pandemic suggests that workplace (and other) changes/adaptations for people with disabilities can be implemented widely; flexibility should define the 'new normal' -Universal design is the ideal solution moving forward

(*Continued*)

Table 1
(*Continued*)

Authors (country)*	Sample characteristics	Objective	Methodology (theoretical perspective)	Key findings and analysis†
Sarju 2021 (UK)	n/a	To consider the challenges opportunities emerging from the COVID-19 pandemic from the perspective of disabled scientists	Commentary (critical disability lens)	-Increase in disability disclosure among staff who need to continue working from home or who require additional accommodations to work in-person while the pandemic is still occurring -Scientific conferences and meetings have moved online, making them more accessible and inclusive for some disabled scientists (but excluding others) -Opportunity for a 'new normal' approach to higher education post-COVID that is more inclusive, based on lessons of pandemic accommodations; the pandemic has shown that productive remote work is possible, so this option should remain available to scientists with chronic conditions
Schur et al. 2020 (USA)	13,830,235 workers (810,897 with disabilities) for first data set; 40,793 workers (39,380 with disabilities) for second data set; 97,177 workers (3,896 with disabilities) (gender and disability types: n/a)	To consider pre-pandemic data on the work-from-home experience of people with disabilities and assess potential opportunities arising from pandemic-era changes to work	Secondary analysis of three pre-COVID American surveys conducted by the Census Bureau (intersectionality)	-Workers with disabilities are more likely than those without disabilities to work primarily from home and to do any work at home -Workers with disabilities face similar wage gaps in on-site and home-based work -There are potential long term benefits of the "new normal" (working from home) for many workers, especially workers with disabilities -Structural and systemic changes to the world of work during the pandemic shows the possibility of using innovation and creativity to meet employees' accommodation needs in the future -Potential downside to working from home is increased isolation, and social isolation is already a problem for many people with disabilities -Need to ensure that remote work does not become an easy way out for employers to avoid other reasonable accommodations -People with disabilities are overrepresented in sectors that were less likely to shift to remote work during pandemic; 34% are in occupations with high potential for home-based work, compared to 40% of workers without disabilities -Frustration among some workers with disabilities because widespread accommodations during the pandemic were rapidly implemented, in contrast to their experiences pre-pandemic -Increased policy interest in expanding work-at-home options for workers with disabilities post-pandemic

Table 1
(*Continued*)

Authors (country)*	Sample characteristics	Objective	Methodology (theoretical perspective)	Key findings and analysis†
Shaw et al. 2020 (USA)	n/a	To highlight key issues and recommendations for re-opening workplaces after COVID-19 related lockdown	Editorial (theory: n/a)	-Reopening the workplace during and after the pandemic requires consideration of workers' vulnerabilities to COVID-19 which may necessitate a variety of different accommodations for different workers -Employers' openness to workplace modification and accommodations will be key for safe workplace re-opening; what this looks like will vary depending on industry and occupation
Sheppard-Jones et al. 2021 (USA)	n/a	To explore the experience of disability in the workplace during the COVID-19 pandemic and consider the potential benefits of universal design for promoting workplace inclusivity	Opinion paper (theory: n/a)	-Pandemic provides new urgency and opportunity for universal design; employers need to find new ways to ensure workers are productive and motivated in their work, and universal design may be the answer -Universal design can help address new accommodations needs arising from pandemic accommodations (e.g. need for inclusive forms of technology to work from home) -Pandemic workplace arrangements have prompted considerations about new ways of working; people with disabilities should be included in discussions about the future of work post-pandemic
Umucu 2021 (USA)	219 employed individuals (59.8% men) with disabilities and chronic conditions (61% physical disabilities, 19.2% psychiatric disabilities, 11% neurocognitive disabilities, 6.4% sensory disabilities, 2.3 % intellectual disabilities); mean age: 37.8, industry type: n/a	To explore whether the level of functional limitations experienced by people with disabilities is associated with concern about job loss	Survey questionnaire (part of larger study) (theory: n/a)	-About 64% of participants reported receiving accommodations to allow them to work remotely during the pandemic -Switch to remote work may be problematic for individuals who have accommodations specific to their workplace; working from home may require a new set of accommodations -Concerns about being vulnerable to more severe symptoms of COVID-19 may lead individuals with disabilities and chronic illness to disclose their disabilities in order to receive accommodations for remote working -According to Global Disability Inclusion report, 38% of people with disabilities were laid off, furloughed or had to shut down their businesses due to the pandemic compared to 23% of individuals without disabilities; one factor could be difficulties in accessing remote work accommodations -People with disabilities are overrepresented in low-skilled occupations, where remote working options are not as easily implemented or available even during the pandemic

*Where the country of study differs from the country of the first author's institutional affiliation, both are noted, respectively. †We only report on the findings and analysis related to our research question.

tion); defining and naming the themes; and writing the report.

3. Results

3.1. Study characteristics

Thirty-seven studies met the inclusion criteria. There were 13 articles from the US, eight from the UK, four from Canada, three from Australia, three with a global or multiple-country focus, and one paper each from Germany, Israel, Jamaica, Peru, Portugal, and Singapore. Eighteen studies reported sample characteristics, and thirteen of these included various types of disabilities (i.e., muscular dystrophy, Larsen Syndrome, low vision, and intellectual disabilities) or did not specify the disability type. The other five studies focused on a single disability or disability type, including spinal cord injury [36], neurological disabilities [37], autism [38], deaf and hard of hearing [39], and mobility disabilities [40]. The studies employed a range of methodologies and approaches. Twenty-six articles were qualitative, six were quantitative and five used mixed methods. Thirteen articles were based on secondary analysis, and 12 were primary research studies. The rest ($n = 12$) were perspective papers such as commentaries ($n = 7$), opinions ($n = 2$), editorials ($n = 1$), letters to the editor ($n = 1$), and organizational guidelines ($n = 1$).

Our review identified three main themes including: positive (or potentially positive) impacts of pandemic-related workplace accommodations on people with disabilities (i.e., improved accessibility, reduced stigma around workplace accommodations, rapid implementation of workplace accommodations, opportunities for advocacy); negative (or potentially negative) impacts (i.e., worsened physical and mental health, new accommodation needs); and the need for action on accommodation issues in light of the experiences of the pandemic (i.e., revisiting legislation and policy on accommodations and ensuring representation of people with disabilities).

3.2. Theme 1: Positive impacts

Twenty-eight studies (11 secondary analysis, 9 perspective and 8 primary research) identified positive or potential positive impacts of pandemic-related workplace accommodations on people with disabilities, which included improved accessibility, reduced stigma around workplace accommodations, rapid implementation of workplace accommodations, and opportunities for advocacy.

3.2.1. Improved accessibility

Eight studies (four primary research [36, 38, 41, 42], three perspectives [43–45], and one secondary analysis [46]) reported that the switch to working from home and other forms of virtual work improved accessibility for some workers with disabilities, such as spinal cord injury, Larsen Syndrome, anxiety disorders and autism. In Okyere et al.'s global survey of people with disabilities, the positive effects of working from home included increased control over work settings and a more supportive environment [41]. The survey included open-ended responses and one participant, a 40-year-old female with diabetes and anxiety, explained "My emotional well-being has increased because I am able to be home (my sanctuary), with my family and pets (unconditional love and support). I want to remain a remote worker!" [41], (p.29). The increased sense of control over working environment was reported in three other studies as well [38, 45, 46]. Four studies highlighted how the transition to virtual workplaces had the effect of removing physical barriers associated with on-site work (such as congested workspaces that are difficult to maneuver with a wheelchair) [43, 44, 46] and transportation-related barriers [40, 46] for people with mobility impairments. Interestingly, Adams et al.'s study of individuals with spinal cord injuries found that some individuals, who had already been working remotely prior to the pandemic but who had requested additional accommodations, finally had their requests granted once the pandemic began; however they did not specify the precise reason(s) for why these needs were now being met [36]. In another study, a professor with Larsen Syndrome explained that before the pandemic, he had (unsuccessfully) sought accessibility accommodations to teach remotely, because "being physically in the classroom was not always an option due to his conditions at that time" [42], (para.20). When the opportunity for remote work became a reality due to the pandemic, this represented the "first time he experienced supported employment" [42], (para.20).

Two studies reported more accessible work environments for workers who remained onsite during the pandemic [38, 47]. For example, Goldfarb et al. reported that some employees with autism found that because workplaces were emptier during the pandemic, the quieter environment was more con-

ducive to working. One participant explained: "I control my physical environment's sensory stimulation, there is no noise, not too much light ... it's great, I don't have to compromise if someone else listens to music" [38], (p. 10). Notably, this study reported an increased sense of control over work schedule and physical environment among both employees working remotely and those who worked on site during the pandemic. One study from the UK found that the reorganization of the physical workspace, such as leaving hallway doors open to allow air circulation to comply with sanitation and physical distancing requirements, made these spaces easier to navigate for some people with mobility issues [47].

3.2.2. Reduced stigma around workplace accommodations

Seven studies (three secondary analysis [46, 48, 49], three perspectives [43, 45, 50], and one primary research [38]) highlighted how the widespread nature of certain pandemic-related accommodations, such as the shift to remote work, the provision of adaptive technologies to facilitate home-working, and the option of more flexible hours lessened some of the stigma that these accommodations had been associated with prior to the pandemic [38, 43, 45, 46, 48–50]. Holland [46], for example, observed that some workers with disabilities reported a positive experience of working from home during lockdown because their colleagues were also working remotely. As a result, they were no longer singled out and stigmatized for this accommodation. Similarly, Ahmed [43] explained how prior to the pandemic, academics with disabilities who were provided with adaptive technologies were accused of receiving favourable treatment, but this argument became obsolete when these same technologies became widely used during the pandemic for online teaching and conferences. An interesting finding reported in Goldfarb et al.'s study was that for employees with autism, working from home did not lead to a reduced feeling of social relatedness, which the authors suggest may be due in part to the fact that remote work was widespread, rather than unique to employees with disabilities [38]. It is worth noting that while these studies reported reduced stigma around accommodations, other studies in our review reported increased stigma (or potential stigma) for some people with disabilities as a result of new accommodation needs arising from the pandemic (discussed further below).

3.2.3. Rapid implementation of workplace accommodations

Twelve studies (five perspectives [45, 50–53], four secondary analysis [46, 48, 54, 55], and three primary research [38, 56, 57]) focused on how rapidly workplace accommodations, especially work from home arrangements, were implemented at the onset of the pandemic. Four studies highlighted (drawing from either their own or secondary data) how certain jobs tended to see the swift transition to remote work, particularly management positions and other white-collar, knowledge-based jobs such as business and finance, education, information technology, and the sciences [38, 46, 57, 58]. Notably, all but one [38] of these studies observed that people with disabilities are underrepresented in these occupations. Finally, ten studies focused on the role of technology in facilitating this rapid shift to remote work [40, 43–46, 48, 49, 55, 59, 60]. McNamara and Stanch, for example, observed that many businesses quickly turned to accessible technology tools such as Zoom in order to keep employees connected and maintain operations amidst the turmoil created by sudden and unexpected work from home orders due to the pandemic [45].

3.2.4. Opportunities for advocacy

Seventeen studies (10 secondary analysis [28, 46, 48, 49, 54, 55, 58, 60–62] and seven perspectives [43–45, 47, 50–52]) discussed how workplace accommodations implemented during the pandemic created new conditions and opportunities for accommodations-related advocacy by and for people with disabilities. While the process for obtaining accommodations before the pandemic had often been a long and bureaucratic one [52, 63] these studies argued that the pandemic demonstrated that some accommodations can be quickly and easily granted. For example, in the pre-pandemic era working from home arrangements represented one of the most requested and most denied accommodations for workers with disabilities [45–47, 52, 63]. Yet during the pandemic, "because *everyone* needed these changes, the historical 'hard no's' quickly turned into 'we could make that happen,' a sentiment disabled people have been waiting to hear most of their lives" [50] (p. 2). As seven studies observed, disability advocates therefore now have the pandemic as a historical precedent to draw from, particularly when coming up against arguments about workplace accommodation being unfeasible [14, 46, 49–51, 61, 62].

Four studies argued that the reliance on certain technologies to facilitate remote work provided real-

world evidence of the benefits of the principle of universal design, wherein technology is designed to be usable by as many people as possible, with a diverse range of needs in mind [50, 55, 59, 60]. Sheppard-Jones et al. [59] observed that universal design may help reduce the need for individualized accommodation requests relating to technology, and the experiences of the pandemic may have provided an opportune environment for advocates to push for its implementation on a larger and more permanent scale.

One study explored how the issue of workplace accommodations in the pandemic was framed through a human rights discourse [64]. Some of the studies suggested that the experiences of the pandemic may affect the way that future courts rule on the issue of 'reasonable accommodations' when it comes to remote work [8, 48, 62] or remote teaching [61]. Rodgers [62] suggests that the pandemic may have also created an opportune moment for advocating for a more collective-oriented approach to home-working accommodations, rather than the individual-based approach underpinning existing labour laws in the UK. Six papers argued that home-working or other remote working arrangements have become so ubiquitous since the pandemic began that they may represent a "new normal" moving forward [44, 49, 50, 53, 55].

3.3. Theme 2: Negative impacts

Twenty studies (eight primary research [15, 36, 38, 40–42, 56, 65], six secondary analysis [28, 46, 48, 55, 66, 67], and six perspectives [44, 45, 47, 68–70]) reported negative or potential negative impacts of workplace accommodations during the pandemic, including worsened physical and mental health and new accommodation needs.

3.3.1. Worsened physical and mental health due to working from home

Thirteen studies in our review (seven primary research [15, 36, 38, 40–42, 56], three secondary analysis [48, 55, 67], and three perspectives [44, 45, 47]) reported negative impacts for workers with disabilities, including worsened mental and/or physical health, resulting from work from home orders. Seven of these were primary research studies. The most reported negative mental health impact on workers with disabilities was increased isolation and/or loneliness, including for those with autism, mobility disabilities, anxiety, depression, and spinal cord

injury [36, 38, 40–42]. Increased isolation was also highlighted in four of the secondary analysis articles [45, 48, 55, 67] and two perspective papers [44, 47]. Another negative mental health impact was the increased feeling of sadness [41]. One paper discussed the negative impact that digital technologies such as Zoom can have on deaf and hearing-impaired workers, who may experience stress and fatigue from having to be hypervigilant to not miss anything during meetings; the paper also discussed how Zoom can be exclusionary towards workers with vision impairments [45]. Two primary research studies [36, 56] and one secondary analysis [48] reported on negative physical impacts of working from home during the pandemic. Adams et al., for example, found that workers with spinal cord injury who switched from on-site to remote work experienced worsened physical health early in the pandemic, due to the loss of daily physical activity (e.g., pushing a manual wheelchair) associated with travelling to, from, and within the workplace [36].

3.3.2. New accommodation needs

Seventeen studies described new (and sometimes unmet) accommodation needs for workers with disabilities that emerged during the pandemic [15, 28, 36, 40–42, 44, 46–48, 56, 65–70]. One study comparing the impact of COVID-19 on workers with and without disabilities found that in the early days of the pandemic, individuals with a disability were less willing to share their health needs with a supervisor; moreover, workers with both a mental and physical health disability reported more unmet accommodation needs than those with only one or no type of disability [15]. Several studies identified additional accommodation needs among workers who, due to their condition(s), were at an increased risk of serious illness if infected with COVID-19. Specifically, six studies noted that even when lockdowns or other policies requiring remote work came to an end, some workers with disabilities would need to continue to work from home as long as the pandemic was ongoing, due to their high-risk status [36, 44, 47, 65, 68, 69]. One study found that 17.7% of accommodation requests during the peak period of requests (in April 2020) were due to the fear of contracting COVID-19, although the authors did not specify what percentage of these were from individuals with disabilities [66]. Another new accommodation requirement resulting from the pandemic was the need for transparent masks among those who are deaf and hard of hearing; notably, Grote et al. [39] found that 87% of the

deaf healthcare professionals in their study had not received these.

Four studies in our review discussed the potentially stigmatizing or other negative consequences of requesting extended remote work accommodations [36, 47, 67, 70]. For example, one study [36] found that some workers with spinal cord injury felt guilty about requesting ongoing remote work, especially if that meant their coworkers would need to take on additional on-site duties. A secondary analysis of labour and anti-discrimination law in Australia discussed the implications of businesses likely moving to a hybrid model of work with hoteling rather than permanent desks/offices post pandemic. In particular, this model could lead to the singling out and stigmatization of workers with disabilities who may need to request more permanent workspaces [67]. Staff with physical or mobility disabilities may, for example, require special equipment that cannot be transported back-and-forth between home and the workplace (or from one workspace to another); additionally, people with neurodiversity may struggle to cope with shared working spaces that are not adapted to accommodate their sensory sensitivities [67].

A common finding was that the pandemic-specific workplace changes created new accommodation needs for workers with disabilities. Twelve studies discussed additional accommodations that were required due to the transition to remote work [28, 36, 40–42, 46–48, 56, 65, 67, 70]. Five studies identified the types of additional accommodations needed, including adaptive technologies [40], ergonomic office furniture [56], adaptive office equipment [36, 41] and accessible communication devices [40, 42]. Three studies observed that for some workers with disabilities, these additional requirements were not met, which negatively impacted their work productivity [41, 48, 65].

3.4. Theme 3: Action needed and recommendations

The third main theme, which we identified in twenty-three studies (eight primary research [15, 36, 39, 40, 42, 57, 65, 71], eight secondary analysis [28, 46, 48, 49, 55, 58, 60, 62], and seven perspectives [44, 45, 47, 50, 53, 59, 68]) was regarding the need to take action on workplace accommodation issues. This theme was evident across all types of papers, regardless of whether they emphasized the positive or negative impacts of pandemic-related accommodations.

3.4.1. Revisit legislation and policy on accommodations

Twenty-two articles (eight primary research [15, 36, 39, 40, 42, 57, 65, 71], seven secondary analysis [28, 46, 48, 55, 58, 60, 62], and seven perspectives [44, 45, 47, 50, 53, 59, 68]) highlighted the need for revisiting current legislation and policies on workplace accommodations, due to the experiences of the pandemic. For example, six studies referred to the WHO's recommendation that employers implement policies allowing for flexible work options for workers with disabilities because of their high-risk status in relation to coronavirus infection [40, 44, 47, 55, 58, 65]. Sixteen articles emphasized the importance of more permanent legislative and policy changes related to workplace accommodation [28, 36, 40, 42, 44, 46–48, 50, 53, 55, 58–60, 62, 68]. For example, Hoque and Bacon [28] caution that although the shift to working from home may have convinced many employers and employees (both with and without disabilities) of its benefits, legislation may be necessary to ensure this option remains available post-pandemic. They recommend that governments consider legislation such as Finland's *Working Hours Act 2020,* which makes working from home a legal right for all employees. They also point to the UK's *Employment Bill 2019-2020,* which contains a proposal for making flexible working a default for all jobs [28]. Holland [46] argues that new legislation making remote work permanently and universally available would reduce the barriers that people with disabilities face when requesting work from home as an individual accommodation. Some studies focused on the need to revise existing legislation that covers workplace accommodation, such as the Americans with Disabilities Act [50] and the UK Equality Act [39, 48, 62].

Twelve studies included a specific focus on the role of employers in improving policies on workplace accommodations based on the experiences of the pandemic [15, 39, 45–48, 53, 55, 57, 59, 68, 71]. Merone and Whitehead [53], for example, suggest that employers need to be more open to flexible working modalities, both in terms of hours and location, and Brown et al. urge employers to engage closely with their staff to "reimagine the workplace" in the post-pandemic world [47] (p. 265).

3.4.2. Ensure representation of people with disabilities

Among the studies that highlighted the need for action to improve workplace accommodation poli-

cies in the post-pandemic world, a key sub-theme was the importance of the perspectives and experiences of workers with disabilities. Martel et al. [49] observed that current discussions have primarily been led by think tanks, business groups and consulting firms, and the authors caution against leaving out the perspectives of people with disabilities regarding how the 'new normal' workplace should look in the post-pandemic world. Saia et al. [50] remark that, "To remain consistent with the mantra *nothing about us without us*, the voices and experiences of disabled people should be prioritized." This sentiment was echoed in five other articles in our review [47, 49, 58, 59, 68]. Jesus et al., for example, argue that because people with disabilities have been disproportionately affected by the pandemic in terms of its negative health and economic consequences, this lends to the urgency of including them in discussions about formulating post-pandemic policies [58].

4. Discussion

This review explored workplace accommodations in the context of the COVID-19 pandemic, and their impacts and implications for people with disabilities. The pandemic has upended economies and labour markets around the world and led to significant changes to the world of work [2, 3, 5, 72, 73]. Such changes included working from home, the adoption of digital technologies, and more flexible hours, all of which had been among the most commonly requested workplace accommodations by people with disabilities prior to the pandemic. As the findings of this review demonstrate, however, the impact of pandemic-related work arrangements on people with disabilities has been mixed. On the one hand, some studies reported positive impacts on workers with disabilities, including increased accessibility due to new (at home) or altered (on-site) working environments. Another positive impact that was reported was the reduction in stigma, or potential for reduced stigma, surrounding workplace accommodations now that modified work arrangements had become the norm in many sectors. On the other hand, our review found that for many workers with disabilities, the disruption in traditional work arrangements was not always (or entirely) a positive experience. Indeed, the fact that many of the included studies reported negative impacts of pandemic-related accommodations on people with disabilities must not be overlooked. It is consistent with other research that has found that the

pandemic has negatively impacted people with disabilities, not just in terms of employment but also their health and overall well-being [74–76].

While the reporting on direct impacts of pandemic-related accommodations on people with disabilities was mixed, the message about their political and policy implications was more uniform across the reviewed studies. Overall, there was optimism that the experience of the pandemic has presented an opportunity for advocacy for people with disabilities with respect to workplace accommodations. Some of the studies argued that the swift implementation of accommodations like flexible location and hours at the onset of the pandemic serves as evidence of underlying ableist attitudes among employers and governments, who previously refused to provide these same accommodations on the basis of "undue hardship" [51, 52]. This argument is consistent with earlier studies that have suggested a link between ableism and the denial of workplace accommodations [77]. However, one of the long-term consequences of the pandemic may be that employers could have a harder time claiming 'undue hardship' [61, 62]. Furthermore, it may be that employers themselves will change their attitude about providing certain accommodations after having experienced that they are less costly, less time-consuming, and less detrimental to worker productivity than they perhaps previously thought.

While accommodations such as remote work became widespread in the pandemic, they were not universal. As some of the studies in our review pointed out, certain sectors did not see this broad shift to remote work or related modifications, and many people with disabilities worked in those jobs—particularly in the service and blue-collar sectors [55, 57, 65]. These findings were consistent with pre-pandemic research showing that people with disabilities tend to be overrepresented in low-skilled occupations and underrepresented in high-skilled occupations [78, 79]. Therefore, while some observers have referred to the switch to remote work as a "mass movement" [53] or a "global experiment" [49], these statements need to be qualified.

One potential way to address the inequities in the availability of work from home options would be to implement more permanent legislation explicitly making the option a right for all workers, as a few of the studies in our review observed [28, 37, 47, 62]. Rumrill et al. suggest that permanently allowing pandemic-era remote work for all, regardless of disability status, would be one way to implement the

universal design principle in employment legislation [37]. Such legislation could potentially eliminate the need for disclosure among workers with disabilities who require remote work, thus removing one of the common barriers to receiving workplace accommodation that has been identified in previous studies and reviews [18, 19]. As several studies in our review also observed, making these accommodations, such as working from home, universally available could potentially help improve employment opportunities for people with disabilities; jobs that were previously seen to be out of reach (e.g., due to inaccessible public transport systems) might now be viewed as attainable [38, 53, 55, 58]. However, this still leaves open the question of how to address jobs in which working from home is not feasible because of the nature of the role [55].

Our review also highlighted the importance of considering the lived experiences of people with disabilities [80]. The pandemic has sparked interest in reassessing how, where, and when we work, and as many studies in our review urged, people with disabilities must not be left out of these discussions. The experience of this pandemic has demonstrated that certain ways of working that were previously assumed by many to be impractical or unfeasible, may be practical and could become part of the "new normal"; since some people with disabilities have long been arguing for these reasonable accommodations, their perspectives and experiences would be valuable in informing employers and governments about how these changes can be implemented.

4.1. Limitations and future research

This scoping review has several limitations worth noting. First, it included studies from ten different countries, each of which had distinct pandemic policies and timelines and had different policies related to disability discrimination in employment. It is also important to note that the included studies varied in their degree of relevance and contributions to the findings. Additionally, this review excluded articles that did not explicitly address people with disabilities, and therefore we may have missed some findings regarding pandemic-related workplace changes that have relevance to people with disabilities, even if they were not part of the study population. It is notable that there have been three separate reviews on the impact of workplace changes in the pandemic on the general population, whereas the present review is the first to examine the impacts on people with dis-

abilities. Given the limited amount of empirical data on the experiences and impact of pandemic-related workplace accommodations on people with disabilities, there is a clear need for further research in this area.

Importantly, the pandemic only affected certain aspects of work, and there are many kinds of workplace accommodations that were not implemented widely and were not affected by pandemic policies. While some of the studies in our review identified a possibility for new policies and approaches to workplace accommodations because of the pandemic, it is important to recognize that the practice of requesting and receiving accommodations may not have changed for many people with disabilities, especially those who require modifications or adjustments not related to flexible work arrangements. Future research should examine not only how pandemic-related accommodations take shape moving forward, but also whether these changes impact accommodation policies and court cases related to other types of work modifications and adjustments.

It is important to acknowledge that the COVID-19 pandemic is ongoing and that its full effects remain to be seen. The long-term physical and mental health impacts of working from home are not yet fully understood [81]. Notably, one recent longitudinal study based on pre-COVID data reported several benefits of virtual work over conventional office work, including less physical and mental stress and higher work performance [82]. On the other hand, it is also important to recognize that in some countries and jurisdictions, the easing of COVID-19 restrictions has also led to changes and even reversals of pandemic-related work policies, including the return to on-site work requirements in some cases. Future research should explore and compare the different practices that emerge over time, since it is likely that the evolving workplace will not look the same in all settings post-pandemic. Another particularly interesting phenomenon that would be worth following is the presence among the working population of 'long COVID', which may potentially become categorized as a disability [45, 48, 69, 70]. Efforts are already underway in some countries to draw attention to the need for workers experiencing long COVID to receive special accommodations, and future research could explore whether the new potential opportunities for advocacy identified in this review materialize and have any effects in this regard.

Finally, it is worth noting that the studies in our review had very little to say about the specific expe-

riences of youth with disabilities. Other research on employment has found that young people with disabilities were disproportionately affected by the pandemic [74, 83]. Future research should explore how pandemic-related workplace changes affected youth and young adults, since few studies focused on this age group. More generally, additional empirical research is needed to understand how workplace changes during the pandemic have impacted people of all ages with disabilities, so that professionals in the field of rehabilitation can be better equipped to support those who have struggled with these changes and help those who have benefited make the most of their new working arrangements. Such information, coupled with advice and insight from people with lived experience with disability, will also be crucial for policy- and other decision-makers who seek to ensure that the "new normal" in the post-pandemic workplace is more equitable and inclusive for people with disabilities.

5. Conclusions

Several of the workplace changes that were implemented at the onset of the COVID-19 pandemic, including working from home, flexible hours and the use of digital technologies, were the same workplace accommodations that many people with disabilities had long requested, and often been denied. Our review found that when these changes were implemented during the pandemic, they had mixed results in terms of their impacts on people with disabilities. However, the amount of empirical research exploring the impact of these pandemic-related work changes on employees with disabilities is currently quite limited, and more research is needed in this area. The pandemic necessitated unprecedented experimentation with new ways and places of working, and there is an opportunity for clinicians, service providers and policy makers to learn what worked well and what did not work well for people with different disabilities, and to use these lessons to inform their practice in the "new normal" world of work.

Acknowledgments

Ethics approval

This study, as a literature review, is exempt from Institutional Review Board approval.

Informed Consent

Not applicable.

Conflict of interest

The authors declare that they have no conflict of interest.

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