Digital inclusion and participation of people with intellectual disabilities during COVID-19?: A rapid review and international bricolage

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Abstract

Introduction: The COVID-19 pandemic has meant a rapid transfer of everyday activities to the online world. Information and communication technologies (ICT) have become more embedded than ever in people's lives. This investigation addresses how this change has affected the lives of people with intellectual disabilities.

Method: A two-step design was used. A rapid review was conducted of empirical studies published between Jan 2019 and June 2021. Search terms related to intellectual disability, ICT use and COVID-19. A qualitative international bricolage was also conducted corresponding to author nationalities. Data gathered from the review and bricolage were analysed separately using thematic analysis and relationally synthesised.

Findings: Digital solutions to provide access to COVID-19 information and guidance seemed inadequate but were seldom empirically studied. Digital poverty, literacy and exclusion remain significant issues for people with intellectual disabilities internationally. People and their carers experienced reduced and removed service provision, loneliness and impoverished daily lives during the pandemic; amelioration of which was facilitated by digital solutions. One solution often used was video-conferencing. Prior experience of digital participation, adequate finances, connection, support and digital literacy mentoring for both people with intellectual disabilities and those providing services and support facilitated digital inclusion. Digital exclusion during COVID-19 was exacerbated by socio-political, structural, individual and support related barriers. Though awareness of digital exclusion appears to have been raised, the extent this has led to action and change remains unclear.

Conclusions: Despite digital exclusion and digital participation benefitting continuation of life, social and emotional wellbeing and autonomy, COVID-19 has not provided the impetus to eradicate digital poverty for people with intellectual disabilities. Governmental support, digital education, creativity and problem solving are required to enable people with intellectual disabilities the human right to be included in the digital world at this essential time and into the future.

Digital inclusion and participation of people with intellectual disabilities during COVID-19?: A rapid review and international bricolage

Information and communication technologies (ICT) have become more embedded than ever in people's lives. Nearly all areas of everyday life are becoming digitised (Larsson-Lund & Nyman, 2019). Digital skills are necessary in order to gain access to the labour market, higher education, to take part in society or benefit from various services (Carretero Gomez et al., 2017). Unfortunately, a digital divide negatively affects people who suffer the consequences of a lack of technology availability, accessibility and usability (Sachdeva et al., 2015; Scheerder et al., 2017; Seah, 2020).

Although the United Nations' Convention on the Rights of Persons with Disabilities (CRDP) defines access to the internet as a human right (UN, 2006), people with an intellectual disability are especially at risk of being left behind, and digitally excluded (Chadwick et al., 2013). Recent research has revealed an increased use of devices and the internet (Chiner et al., 2017), however a digital divide still exists compared with the younger typically developing population (Alfredsson Ågren et al., 2019). This cannot be explained by impairment alone, but from a number of personal, environmental and socio-political determinants interconnecting, thereby creating barriers or facilitators to digital participation (Caton & Chapman, 2016; Chadwick et al., 2019; Heitplatz et al., 2021; Johansson et al., 2021; Lussier-Desrochers et al., 2017).

Since March 2020, when the WHO declared the COVID-19 a global pandemic (WHO, 2020), use of digital devices has increased exponentially and extremely rapidly. All over the globe, to various degrees, restrictions in social contact were prescribed by health authorities. This has led to much greater utilisation of remote

digital technology for all aspects of life, as a rapid transfer of everyday life activities to the online world was made. Indeed, the number of internet users increased by nearly 10% worldwide during this past year (Statista, 2021). However, it is unclear whether people with disabilities, and intellectual disability specifically, are included in this trend. In line with previous research, people with intellectual disability, especially those with other risk factors for digital exclusion e.g. higher support needs, older age, lower socio-economic status, may have experienced further digital exclusion and digital poverty (Seah, 2020). Alternatively, the lockdown may have acted as a catalyst, pushing individuals with an intellectual disability, and carers and services providing support (Embregts et al., 2020; Willner et al., 2020) to embrace the use of digital devices and commence or increase digital participation (Lancioni et al., 2020a, 2020b).

This investigation addresses how the rapid transfer to online communication, activities and services during the COVID-19 pandemic has affected the lives of people with intellectual disabilities. More specifically, our objectives are to identify:

- The current state of knowledge regarding how people with intellectual disabilities have been given information via ICT regarding COVID-19.
- The impact of digital inclusion/exclusion on the lives and wellbeing of people with intellectual disabilities during the pandemic.
- The barriers and facilitators of digital inclusion amongst people with intellectual disabilities during the pandemic.
- What we have learned and how this information can be leveraged to improve digital inclusion in future similar global circumstances.

These objectives have been investigated by synthesising findings from a two-step study design starting with a rapid review of the most recent literature, presented in

part 1 of this paper. Concurrently an international pragmatic bricolage, presented in part 2, which used multiple sources to explore the objectives in order to gather the most up to date non-published findings during this time of COVID-19 related rapid change. The international perspective for the bricolage was based on the network of authors who came together to work for this paper, based on the countries they resided in. Findings from these two parts are synthesised in the discussion.

Part 1: Rapid Review of Research Evidence Regarding the Digital Inclusion of People With Intellectual Disabilities During the COVID-19 Pandemic

A rapid review was conducted to synthesise existing global knowledge surrounding digital inclusion during the COVID-19 pandemic (Khangura et al., 2012). The review was conducted over a short time frame between March and June 2021. Processes typically conducted within a systematic review were simplified by compressing title and abstract search, and omitting risk of bias and article quality evaluation checks. Nonetheless, PRISMA and AMSTAR reporting processes were incorporated in line with recommendations (Kelly et al., 2016). No funding supported the conduct of this review. For full details of the Search Strategy employed in the rapid review see supplemental materials. Figure 1 details the flowchart for article selection and review.

Data Extraction and Synthesis

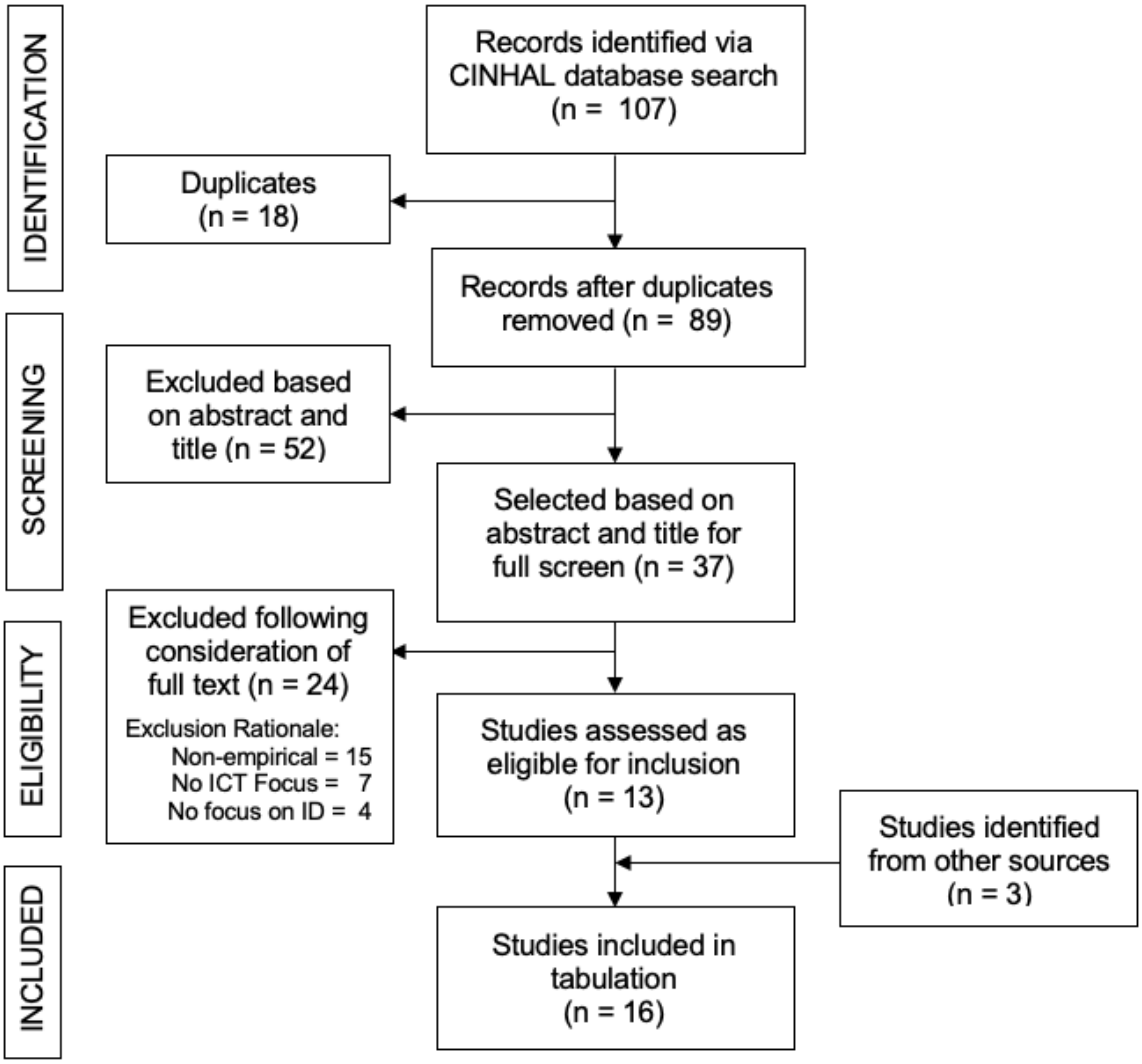
Data synthesis involved reading and tabulating articles extracting findings germane to the review focus (See Supplemental File 1 for summary table of articles). A preliminary framework was developed based on initial meetings by authors to support accelerated organisation of the findings from the studies during data extraction and summary. Article summaries were developed and tabulated by two

authors and reviewed by at least two other authors. Once summarised, groups of two authors collaborated to extract and summarise key descriptive and interpretive themes from the findings across the selected studies and drafted findings for inclusion in the paper. For parsimony of presentation a convention of emboldened italics to indicate subthemes and italics to indicate basic themes which sit under these subthemes was adopted. Drafts were then reviewed and further cross checked with the tabulated summaries and article details by two co-authors.

Figure 1.

Prisma Flowchart of Study Identification

Figure 1. Prisma Flowchart of Study Identification



Summary of Included Articles

A total of sixteen full-text articles were included in the rapid review. Four studies were from the UK (Datlen & Pandolfi, 2020; Power et al, 2021; Rawlings et al, 2021; Rothman, 2021); two from Canada (Lake et al, 2021; Lunsky et al 2021); two from Spain (Amor et al, 2021; Navas et al, 2021), two from the Netherlands (Scheffers et al, 2021; Zaagsma et al, 2020); one from Australia (Masi et al, 2021); one from Ireland (McCausland et al., in Early View) and one from the USA (Spencer et al, 2021). One study was carried out in Ireland and the Netherlands (Burke et al., 2021); another was carried out mainly in the USA (Jeste et al., 2020.) and one was entirely online and therefore not country specific (Araten-Bergman & Shpigelman, 2021). Settings included: education (Burke et al., 2021; Spencer et al, 2021); independent residences and residential services (McCausland et al., in Early View; Zaagsma et al., 2020); health care (Lunsky et al., 2021; Masi et al., 2021); education and health services (Jeste et al., 2020); therapeutic settings (Datlen & Pandolfi, 2020; Lake et al., 2021; Power et al., 2021; Rawlings et al., 2021; Rothman, 2021); and finally a combination of various settings due to surveys being sent out through large organisations (Amor et al., 2021; Navas et al., 2021; Scheffers et al., 2021) or on the internet (Araten-Bergman & Shpigelman, 2021)

Study Design and Methods Used

A variation of study designs were used in the 16 papers included in the rapid review. Of all 16 papers reviewed, ten were descriptive (Amor et al., 2021; Araten-Bergman & Shpigelman, 2021; Burke et al., 2021; Jeste et al., 2020, Lunsky et al., 2021; Masi et al., 2021; McCausland et al., in Early View; Navas et al., 2021; Rawlings et al., 2021; Scheffer et al., 2021) and had a cross-sectional design, of

which three used mixed methods (Lunsky et al., 2021; Navas et al., 2021; Rawlings et al., 2021). All three included open-ended questions that were analysed mainly through qualitative content analysis.

Additionally, of the above ten, one employed a co-creation study design (Burke et al., 2021) and another was a quantitative longitudinal study comparing pre- and post-COVID-19 survey responses (McCausland et al., In Early View).

All but one of the cross-sectional studies (Rawlings et al., 2021) used online surveys. Use of on online surveys is likely to exclude those participants without online access. Therefore, only part of the perspectives of the population under study may have been reflected.

One paper gathered retrospective service data about digital service provision (Zaagsm et al., 2021). Qualitative study designs were used in three of the papers (Lake et al., 2021; Power et al., 2021; Spencer et al., 2021), of which, two employed thematic analysis (Lake et al., 2021; Power et al., 2021). Finally, two papers employed case-study methodologies (Datlen & Pandolfi, 2020; Rothman et al., 2021).

Study Participants

The majority of the studies (n=11) focused on adults with an intellectual disability with ages ranging from 18 to 65+ years old, and three of these included both children and adults (age range: 3-83 years old). In four papers, family members participated to help answer the survey. Numerous additional support needs or diagnoses were identified in five studies (e.g. developmental delay, ASD, Down syndrome, psychiatric diagnosis, sensory impairments, cerebral palsy). The sample size varied from a case study with only one participant to 982 participants. Female participation represented between 44.9% and 85% of the sample in the different

studies. Only five studies provided additional demographic background with regard to the housing (i.e. family, own home, residential settings) and one study regarding participants' occupation. Three papers recruited support workers or therapists as the primary participants (N range = 105 to 942), while three studies focused on family caregivers of children and adults with intellectual disabilities.

Findings from the Articles in the Rapid Review

Findings are presented in five themes relating to the first three objectives of the paper. Objective 4 is addressed partially in the bricolage and in the discussion and recommendation sections of the paper. Theme 1.1 addresses objective 1, Themes 1.2 and 1.3 objective 2 and 1.4 and 1.5 objective 3.

Theme 1.1 - Use of ICT to Gain Information About COVID-19

Only three of the included studies investigated how ICT was used by people with intellectual disabilities or those providing support to access information about COVID-19 (e.g. national rates of infection, reducing risk via sanitary measures or vaccination). Navas et al. (2021) presented empirical data on ICT being used to provide information to people with intellectual disability. Few had accessed ***COVID-19 information from the internet and social media*** (only 4% living in service homes and 12% living in family care). Power et al. (2021) reported that ***telephone calls*** were used to check on people's wellbeing and provide guidance during COVID-19. Lake et al. (2021) reported on people's feelings of anxiety due to an ***inability to access updated and easily understandable COVID-19 information***.

Theme 1.2 - ICT integration in Everyday Life During COVID-19

Fourteen papers explored ***how ICT had been integrated into the lives of people with intellectual disabilities during the COVID-19 pandemic***. Technology

access and use increased during lockdown (McCausland et al., Early View), particularly the use of videoconferencing software in *education* (Amor et al., 2021; Jeste et al., 2021; Rawlings et al., 2021; Spencer et al., 2021), in *therapy* (Datlen & Pandolfi, 2020; Navas et al., 2021; Power et al., 2021; Rothman, 2021) or to maintain visual *social contact* (Araten-Bergman & Shpigelman, 2021; McCausland et al., Early View; Scheffers et al., 2021).

Professional carers used diverse and distal means to *provide services and supports* to stay in touch with people with intellectual disabilities. Participants reported using technology to connect with mental health care providers (e.g., therapists, counsellors) (Lake et al., 2021; Rawlings et al., 2021), or attend at least one video-based medical appointment (Lunsky et al., 2021). Family carers used telehealth services for their child (Masi et al., 2021). Video-conferencing and online whiteboards were also used to provide body movement and dance therapy (Rothman, 2021), as well as art therapy (Navas et al., 2021; Power et al., 2021).

As part of their *employment* some people with intellectual disabilities (11.3%) had to adapt to working remotely with others. However, employment challenges were also evident with work disruption (67.5%), restricted working (11.9%) and lay-off (4.2%) reported, though the reasons for these challenges are not elaborated in the paper (Amor et al., 2021).

Integration of ICT into *education* was investigated in three studies. Tele-education (i.e. video and/or e-mail) provided continued services, and only a small proportion of participants did not find tele-education helpful (Jeste et al., 2020). Adaptation to online learning varied considerably across people with intellectual disabilities, some reporting no difficulty, others claimed that they had not received the necessary support for online education (Amor et al., 2021; Spencer et al., 2021).

Younger people with intellectual disabilities (under 21 years) received more support (79.4%) than did adults (38.7%), from their family caregivers rather than from the education system (Amor et al., 2021).

In addition to global Government guidelines, additional ***reasons reported for increased contact and provision via ICT*** included increased anxiety and worry at the beginning of the pandemic due to the sudden rapid transfer to online provision (Zaagsma et al., 2020), the ease of using ICT to contact services, the (un)availability of services and the influence support staff could exert on the use of services (Scheffers et al., 2021).

With regard to the ***efficacy of ICT provision of support and services***, most people with intellectual disabilities could not engage within video-conference therapy (Rawlings et al., 2021). There was acknowledgment that online was not the first choice with numerous logistical issues (Rothman, 2021), and telehealth was not always viewed by carers as ideal (Masi et al., 2021). The quality of contact was rated as significantly diminished following COVID-19 (Scheffers et al., 2021). Nonetheless, positives of online provision were also noted in terms of allowing more space and time for progress/ development and building of the therapeutic relationship (Rothman, 2021) and many family carers viewed online videoconferencing as helpful during COVID-19 (Araten-Bergman & Shpigelman, 2021).

Theme 1.3 - The Influence of Digital Inclusion on Wellbeing during the COVID-19 Pandemic

The relationship between well-being and digital inclusion for people with intellectual disabilities was often not considered in the papers reviewed. Seven of the papers in the review considered the effects of digital inclusion and ICT use during COVID-19 on people with intellectual disabilities. The definitional frameworks

of wellbeing as balance, homeostasis and equilibrium (Dodge et al., 2012) and the domains of quality of life as outlined by Schalock et al. (2002) were utilised to identify themes to address the impact on wellbeing within objective 2.

The primary aspect of wellbeing considered was ***social and interpersonal wellbeing***, manifest as acknowledgement of greater need for online contacts so that people were less likely to feel isolated during the pandemic. Maintenance of interpersonal relationships and social inclusion with friends, family and others through digital inclusion use were subjectively reported in interviews, observations and surveys by people with intellectual disabilities and staff more often than influences on other dimensions of well-being (Lake et al., 2021; McCausland et al., in Early View; Navas et al., 2021; Rothman, 2021; Scheffers, 2021). Such contact was linked with greater ***life satisfaction*** *and* ***happiness*** (Navas et al., 2021).

Other aspects of wellbeing enhanced by digital inclusion during COVID-19 included ***emotional wellbeing*** and ***choice and power***. Benefits to ***emotional wellbeing*** were reported, in qualitative interviews and a cases studies, for people whilst they were engaging with online therapeutic, social and leisure activities through the opportunity to discuss and express feelings and via increased structure and routine (Datlen & Pandolfi, 2020; Lake et al., 2021). The opportunity for increased ***agency, power and choice*** afforded by digital inclusion was highlighted. For example, online therapy to enhance wellbeing may ***increase autonomy and accessibility*** for people with intellectual disabilities (by allowing people to have therapy whilst doing other activities and whilst eating) (Power et al., 2021). ***Confidence*** was reported to have increased in a case study, during online dance therapy (Rothman, 2021).

In addition to the domains of quality of life, wellbeing as the ***maintenance of balance*** in life during COVID-19 related life challenges, was evident in the prioritisation of finding ways technology could facilitate life continuing as usual. Where an activity was lost or reduced in quality due to the lack of a digital alternative the negative impact on the general wellbeing of the person with intellectual disabilities was inferred but not evaluated in the studies reviewed, few of which directly addressed wellbeing as their primary aim.

Theme 1.4 - Challenges and Barriers to Digital Inclusion and Participation During COVID-19

Of the 16 papers included, 14 papers reported on challenges and barriers related to digital use during the pandemic. Evidence is shared from perspectives of children and adults with intellectual disabilities, healthcare staff, support staff and family members. Digital poverty during COVID-19 was exacerbated by being ***dependent on support for access*** (Lake et al., 2021) and ***protection and security concerns*** being prioritized over online opportunities (Power et al., 2021; Rawlings et al., 2021).

As with many other aspects of their lives, ***dependence on carers to proxy access technology*** from home (Datlen & Pandolfi, 2020) especially for people with intellectual disabilities who were non-verbal or could not use digital devices was also reported (Power et al., 2021).

Lack of ***digital literacy skills and confidence*** in prior use of ICT also reduced social participation (Lake et al., 2021; McCausland et al, 2021). ***Lack of prior support and training*** for both people with intellectual disabilities, support staff as well as health care staff was both a barrier and a challenge to pivot in person meetings and support to online meetings (Jeste et al., 2020; Lake et al., 2021;

Lunsky et al., 2021; Masi et al., 2021). For some, ***loss of autonomy*** and an increased need for support were drawbacks of digital opportunities (Datlen & Pandolfi, 2020; Power et al., 2021; Lunsky et al., 2021).

Other structural barriers for ICT use for people with intellectual disabilities were health care using ***different tools and platforms*** within telehealth (Lunsky et al., 2021; Rawlings et al., 2021), the ***cost of digital devices*** (Lake et al., 2021) and ***no internet connection*** (Power et al. 2021). ***Sensory impairments*** were mentioned to interfere with successful digital communication (Rothman et al., 2021). ***Dependence on carers*** to proxy access technology from home (Datlen & Pandolfi, 2020) especially for people with intellectual disabilities who were non-verbal or could not use digital devices was also reported (Power et al., 2021).

With regard to children with intellectual disabilities' experiences of digital exclusion almost half of students had difficulties in remote learning and reported receiving no support to access online education (Amor et al., 2021). Masi et al. (2021) report that parents' reported an ***inaccessibility of telehealth services*** and that telehealth therapy was not working well for their children. Older adults were reported to experience higher levels of poor access and use of ICT (McCausland et al., in Early View).

Theme 1.5 - Facilitators of Digital Inclusion during the Pandemic

Eleven papers mentioned facilitators to using ICT during COVID-19. Having ***prior experience*** made it easier to pursue educational activities (Amor et al., 2021; Jeste et al., 2021; Rawlings et al, 2021), receive services (e.g. art therapy) (Datlen & Pandolfi, 2020; Navas et al., 2021; Power et al., 2021; Rothman, 2021), or virtual visits from family members (Araten-Bergman & Shpigelman, 2021; McCausland et al., in Early View; Scheffers et al., 2021) through videocalls. This relied on ***financial***

resources for procuring ICT devices and an ***internet connection*** being available and accessible (Burke et al., 2021; McCausland et al., in press). Other personal characteristics, measured among older people with intellectual disabilities, that were associated with greater ICT access and use were mild or moderate levels of intellectual disability, and being under age 65 (McCausland et al., in Early View). As for searching information online, people with intellectual disabilities wished for more ***cognitive accessibility*** (Lake et al., 2021). Most often, ***technical support*** was reported as a prerequisite often needed to profit from online social participation and services (Amor et al., 2021; Burke et al., 2021; McCausland et al., in press). Caregivers or one's personal support network were the most likely persons to provide technical support to service users (Power et al., 2021; Rawlings et al., 2021), especially for students under the age of 21 (Amor et al., 2021).

The support in ICT use received varied according to ***living context***. Persons living in supported accommodation received less according to one study (Navas et al., 2021), but in another study, elderly persons living independently reported less access and less use of ICT (McCausland et al., in Early View). This highlights the importance of ***training and support*** in ICT use ***for and by service providers and caregivers***, who also benefit from ***peer technical support and mentoring*** (Power et al., 2021; Scheffers et al., 2021.) Among strategies shared by professionals to make teletherapy successful, establishing a contract or ***netiquette guidelines*** for online interactions were offered by art therapists (Power et al., 2021) and could be generalized to other settings (e.g. dress appropriately, log in on time, keep device still.) Having met in person first or having an ***established relationship*** (Burke et al., 2021; Power et al., 2021) between service user and provider was also mentioned as a facilitator to personal meetings going online during the lockdown.

Part 2: International Bricolage Exploring Digital Inclusion and Participation of People with Intellectual Disabilities during COVID-19

Bricolage is a methodological approach that allows bite-size chunks of research to be pieced together to create a more meaningful whole (Wibberley, 2012). A methodological bricolage (Denzin and Lincoln 2000) employs numerous data-gathering strategies which respect the complexity of the lived world whereby researchers actively construct research methods from the tools at hand (Kincheloe, 2005; Transken, 2005). Here, a pragmatic bricolage design was employed to enable the inclusion of the richer, unpublished contemporary information about digital inclusion from multiple sources. Human-rights, interdisciplinary, socio-ecological and cross-cultural contextual perspectives informed our selection, collation and synthesis of information from the various sources (Table 1). This enabled the research team to use what was 'to hand', a common approach in bricolage (Transken, 2005), to provide information about digital inclusion of people with intellectual disabilities during COVID-19. All data for the bricolage was gathered between March and June 2021 but spanned the duration of the pandemic.

Data Collection and Sources

In pairs or individually, authors from each country gathered relevant information for the bricolage. Multiple data sources (Table 1) were used to gather salient information by authors for their respective home countries. These were collated using MIRO™, an online whiteboard programme. Data sources were not limited by rigour and quality related criteria, instead authors focused on the relevance of articles to answering the research questions. Having an international team allowed the bricolage to gather common perspectives from different countries

and include media and news accounts from those countries, in languages other than English. Countries included were Australia, Canada, Germany, Ireland, Poland, Spain, Sweden, UK.

Table 1.

Bricolage data sources / collection approaches for each of the participating countries

Country **Data Source**	Sweden	Ireland	UK	Poland	Spain	Germany	Canada	Australia
Primary Empirical Data^								
Interviews / Focus Groups with people with intellectual disabilities or other Stakeholders^	✓	✓	✓	×	×	✓	✓	✓
Survey / Questionnaire with people with intellectual disabilities or other Stakeholders^	✓	✓	×	✓	×	✓	×	×
Direct observations of people with intellectual disabilities or other Stakeholders^	✓	×	×	×	×	×	×	×
Anecdote / Personal Communications from / Emails & Conversations^	✓	✓	✓	✓	✓	✓	✓	✓
Secondary Data								
Grey Literature & Online sources	✓	✓	✓	✓	✓	×	✓	✓
Governmental Guidance, Information & Policy Documents	✓	✓	✓	✓	×	✓	✓	✓
Offline and Online News & Media articles	✓	✓	✓	✓	✓	✓	✓	✓
Blogs, websites, campaigns, etc.	✓	✓	✓	✓	✓	✓	✓	✓

^Note: Preliminary analysis of empirical data incorporated into the bricolage was only done for data collected as part of projects which had received full ethical approval, in the relevant countries, from University and Governmental ethical approval panels. All other secondary source data utilised were publicly available.

Data synthesis / analysis

One to three authors thematically analysed the bricolage sources for their respective countries to identify key interpretive and descriptive themes which addressed the research questions. Sources and themes were integrated into MIRO™ and grouped for each country for each theme. Links and similarities in sources and explanatory relationships were identified. Following this, a series of four cross-country coding and discussion sessions were held to identify key findings common across the participating countries. These descriptive and interpretive themes were iteratively checked with the original sources for each country. Each theme was written into the bricolage findings by two authors. Examples from the bricolage data were grouped in MIRO™ by authors alongside each theme. Finally, written accounts of each theme were checked to corroborate that they adequately represented the bricolage data. As in the review, emboldened italics indicate subthemes in the findings.

Findings from the International Bricolage

Eight themes common across the eight countries were inductively derived from the thematic analysis of the bricolage information. As a result themes were less mutually exclusively aligned with the objectives with some themes providing insights for more than one of the objectives. Nonetheless, theme 2.1 provided insights to address objective 1. Themes 2.2, 2.3 and 2.4 provided insights to inform objective 2. Themes 2.2 and 2.4 also gave additional information regarding objective 3 alongside themes 2.5 and 2.6. Finally, themes 2.7 and 2.8 highlighted societal level issues which informed both objectives 3 and 4.

Theme 2.1 – Inadequacy in the Provision of Accessible COVID-19 Information Online and Offline

Information about COVID-19 and associated action strategies have relied on the media and ICT during social distancing. Easy to read information often seems to have been produced after alarm from NGOs that there was a ***lack of accessible COVID-19 information***. Across a number of countries NGOs stepped up to produce such information, filling a gap not covered by governmental crisis management. When this material was published online, people with intellectual disabilities often had trouble finding it or could not access it without support. While the general public information was updated daily, easy to read material was rarely updated and often did not provide detailed necessary information (e.g. how to be tested or vaccinated).

Conversely, some people with intellectual disabilities experienced a surplus of easy to read information and general information that created ***confusion about which sources to use or trust and information overload.*** Support was needed to select and parse the easy read information. This lack of accessible information has persisted throughout the crisis. It appears in parallel to the health crisis a parallel communication and information crisis has occurred for people with intellectual disabilities during the pandemic.

Theme 2.2 - The Persistence of Digital Exclusion of People with Intellectual Disabilities Throughout the Pandemic

Despite increases in the use of technology globally, digital exclusion remained a challenge during COVID-19 for people with intellectual disabilities. ***People did not have the necessary devices or connection*** and those providing support did not always have ***sufficient knowledge and skills to support*** them to use it.

Theme 2.3 – Technology has alleviated loneliness but is not equivalent to offline social contact

People with intellectual disabilities have faced increased ***isolation during the pandemic*** and ICT has been a route to ***maintain contact, alleviate loneliness and to maintain daily activities and occupation benefitting wellbeing***. Again this mirrors the rapid review findings.

Some community organisations were quick to transform their group activities into an online mode within weeks of lockdown beginning. Jobs were created or amended to train others and provide technical support to run these activities. ***Videoconferencing was the main route to remaining connected*** with some carers, supporters and service providers being surprised at how quickly service users with intellectual disabilities were able to learn how to use video calling applications. In some instances, the move to online video communication led to people who had previously not been involved in activities attending, in others it led to people withdrawing from previous occupation and leisure.

Despite this move online being viewed as extremely beneficial during lockdown, accounts of parental carers, professionals and people with intellectual disabilities indicated that ***meeting online was 'not the same' as offline*** with eagerness to return to in-person meetings sometimes evident.

Theme 2.4 – Changes and challenges in online provision of services and supports

The bricolage mirrored the rapid review finding that there were attempts to ***swiftly move to online provision by some*** with varying degrees of success and commitment evident. ***Some services carried on, some stopped, some adapted, some worked in a reduced way, some struggled to get online, some carried on***

for people without intellectual disabilities but not for people with intellectual disabilities. For services to be successful online, they needed to make a significant and rapid effort to adapt their services with a commitment from key stakeholders. Having tech-savvy employees and support facilitated the transfer. There is evidence of ***innovative strategies*** with some new services and activities having emerged. There were also examples where no attempt had been made to move online with offline services continuing, arguably putting people with intellectual disabilities at greater risk of getting COVID-19. For the future, there appeared an interest and appetite for a hybrid model of both online and offline provision.

Theme 2.5 – Gatekeeping can exacerbate digital exclusion for people with Intellectual Disabilities

Several layers of gatekeeping issues emerged during the COVID-19 pandemic. Due to the switch to remote education during the pandemic, ***parents were advised to control the time*** their offspring (children and adults with intellectual disabilities) spent online, and ***use settings to restrict access*** to certain online content. Though implicit in the data ***the digital risks prompting gatekeeping, monitoring and restrictive activities were seldom mentioned*** in the bricolage representing a gap in the empirical and non-empirical data. Consideration of increased digital risks concurrent with increased digital participation and the supports people needed in relation to this were notable in their absence.

When residents with intellectual disabilities were provided with digital devices, direct ***support workers in residential care also controlled access and use*** of digital devices among residents, or ***failed to use the devices due to their lack of competence or confidence*** using ICT. Sometimes, they were ***unwilling to provide***

services online or associated technical support that would allow video contact between family members. Phone calls were preferred.

Theme 2.6 - Prior Experience Facilitated Digital Inclusion and Extensions in Digital Participation During COVID-19

People with ***prior experience using digital tools had an advantage with the rapid online transfer***. Few people who were digitally excluded have subsequently become digitally included, despite government efforts in some countries to provide tablets and an internet connection. Digital inclusion relied on technical support from family or service providers, a finding from the rapid review corroborated in the bricolage.

Whether previous and current technical support was given depended on both ***attitudes and digital competence among service providers***. These findings accord with those in the rapid review.

Theme 2.7 – Awareness of Digital Exclusion and Poverty Were Raised During the COVID-19 Pandemic

COVID-19 has led to an ***awareness raising*** in areas of society that have previously ignored the issue of digital inclusion and online provision. Professionals working with people with intellectual disabilities have been surprised at how easily it was possible and how many barriers (notably transportation) were removed by online connections. ICT use allowed for more frequent but more time efficient appointments. There has been significant interest amongst professionals in raising their own skills around remote work as well as an awareness about the vital need of digital skills training for people with intellectual disabilities.

Despite this, many people with intellectual disabilities faced challenges in the rapid transfer to online support. Other than a few media representations of individual

accounts, there has been a relative ***silence on how many people were left behind in digital poverty*** during the pandemic and how the pandemic has affected their wellbeing and daily lives.

Theme 2.8 – Digital inclusion & Participation as a Human Right during the COVID-19 Global Pandemic & The Inadequacy of Governmental & State Response

Article 11 of the United Nations Convention on the Rights of Persons with Disabilities states that nations must look after people with disabilities in 'situations of risk and humanitarian emergencies'. During the time of unprecedented global pandemic people with intellectual disabilities and families/carers informational, support and associated digital needs have been an afterthought with many experiences of ***inequity of access to online supports across all age groups in all areas of life.*** Considerable burden both financially and to wellbeing has been placed on people with intellectual disabilities and family carers. Evident in the bricolage were ***calls for Governments to increase financial support to enable better digital connectedness to critical services***, to value the lives of people with intellectual disabilities, carers/families to ensure equity of access and opportunities.

The ***digital divide continues to disproportionately affect people with intellectual disabilities*** compared with the non-disabled who are not part of other at risk groups of digital exclusion. Although the pandemic has raised awareness of this with ***the best NGO organisations (e.g. Community groups and Advocacy Organisations) responding quickly to promote and enhance digital inclusion*** to incorporate video-conferencing. Whether this has reduced the digital divide for those with intellectual disabilities overall remains to be determined but looks unlikely.

Article 21 of the UNCRPD (2006) outlines the necessity for information to be made available in accessible formats. Bricolage findings indicate this did not happen, with people ***left without accessible information about many aspects of the global pandemic.*** Linked with this is the lack of infrastructure developed to upskill those providing support to become more digitally literate so that they can better facilitate the digital inclusion of those with intellectual disabilities.

Consequently, the digital needs and rights of the intellectual disability community and their supporters have been unprotected. In sum, ***inadequacy of Governmental and state responses*** have compromised the human rights of people with intellectual disabilities and their families during COVID-19.

Discussion

Key findings from the rapid review and bricolage are discussed together and presented below in relation to the objectives, followed by recommendations from the findings, gaps identified in the research and study limitations.

Objective 1. Digital Inclusion and Access to COVID Information

Despite being at greater risk of negative outcomes from COVID-19 (Walker et al., 2021) the support for digital access and accessible information to keep abreast of the latest guidance and information was internationally inadequate. Accessible material on prevention of the spread of COVID-19, testing and how to get a vaccine have been produced in some countries. However there has been little coordination, challenges accessing the accessible information online, few updates to help people keep abreast of changes and, for some, an overwhelming volume making processing the information almost impossible. Some countries provide limited or no accessible material about COVID-19 at all. The need to provide accessible information directly

to people with intellectual disabilities with support of ICT seems to have been, thus far, largely ignored.

Objective 2. The impact of digital inclusion/exclusion on the lives and wellbeing of people with intellectual disabilities during the pandemic.

This international investigation provides insights into how the rapid transfer to online communication, activities and services during the COVID-19 pandemic has affected the lives of people with intellectual disabilities. The rapid online transfer has affected the lives of people with intellectual disabilities in various ways. Nonetheless, the pandemic has highlighted that the benefits of digital inclusion far outweigh the cost to society of providing support in ICT use for people with intellectual disabilities for increased inclusion, not only in digital life but in life overall. Increased use of videoconferencing software was evident across both the rapid review and bricolage findings in many areas of people's lives.

ICT Use & the Impact on wellbeing

Positive differences digital solutions have made to the lives of people with intellectual disabilities during the pandemic were evident, examples have been found in both service provision, education and therapeutic services, for example providing art therapy. Benefits to psychological wellbeing (i.e. emotional wellbeing, life satisfaction and happiness, autonomy, choice and power and confidence) was also apparent similar to prior research findings (Chadwick & Fullwood, 2018). Although technology cannot replace offline social contact, in-person social contact alone cannot replace/ compensate for online social participation. Full citizenship now includes having an online presence and participation.

Negative effects on wellbeing were also evident due to isolation, loss of leisure and social contacts and reduction or absence of services and support, all

exacerbated by a lack of access and provision of digital alternatives. This is attributable to a pre-existing digital divide and lack of digital participation for people with intellectual disabilities, which has been identified previously (Alfredsson Ågren et al., 2019; Chadwick et al., 2019) and found not to have been overcome during the COVID-19 pandemic despite the rapid transfer online for most parts of society. .

Objective 3. Identifying the barriers and facilitators of digital inclusion amongst people with intellectual disabilities during the pandemic.

Challenges to digital inclusion

The use of technology to maintain aspects of everyday life was impeded by various barriers; individual (lack of digital literacy, sensory impairments, confidence), support (lack of support and training, carer dependence and restriction of access), technological (internet connection challenges of using multiple platforms, lack of hardware linked with poorer finances) and socio-political (lack of adequate Governmental action to promote digital inclusion) barriers. This mirrors prior research findings relating to online inclusion challenges (Chadwick et al., 2013; 2019; Alfredsson Ågren et al., 2019).

Challenges in Online Service Provision during COVID-19

As noted, service providers, educational, health and social care professionals and caregivers, despite feeling pressure to move online, often failed to rise to the challenge of implementing digital solutions during Government sanctioned lockdowns and social distancing imperatives. Though awareness of digital exclusion was raised these stakeholder groups: underestimated people's ability to use ICT; were unwilling to provide the effort to train and support ICT use; and were often not adequately trained (digitally competent/literate) themselves. Despite awareness

being raised, the extent to which this has led to action and actual change in the lives of people with intellectual disabilities remains unclear.

Facilitators of Digital Inclusion

The increase in ICT access and use in everyday life applied primarily to those with prior digital skills and internet use experience. Additional facilitators of digital inclusion were; established relationships, adequate finances and technological resources and supports. However, it is identified that with sufficient assistance, people with intellectual disabilities could adjust and benefit from online service provision and social contact via videoconferencing.

Objective 4. Lessons learned and how the findings can be leveraged to improve digital inclusion in future similar global circumstances.

Despite increased awareness and use of video-conferencing, there is little evidence that a significant proportion of those with intellectual disabilities who were digitally excluded pre pandemic were now digitally included.

A common finding to all countries in the bricolage was the role of NGO´s in providing direct support for digital inclusion and COVID-19 information (rather than service providers or Governmental bodies) who took up the challenge of maintaining everyday life, services and supports for people with intellectual disabilities online. Some NGOs successfully moved to online provision of communication, activities and services. There were attempts by some Governments to provide financial support to support digital inclusion, though without a support infrastructure alongside this it appeared unlikely this would enable many digitally excluded people to get online. The work of the NGOs in providing accessible information and supporting digital inclusion demonstrated a lack of readiness in Governmental and crisis organisations

who should already have contingencies for how they would communicate important information to all groups within society.

Table 2.

Recommendations Regarding the Digital Inclusion & Participation of People with Intellectual Disabilities.

Based on the findings from the rapid review, bricolage and prior research literature regarding the digital inclusion and participation of people with intellectual disabilities the following recommendations are made:

Supporting ICT Access & Infrastructure

(i) Governments need to ensure adequate infrastructure for digital connections is available for people with intellectual disabilities and those providing them with services. Financial support and how to access this for ICT connection, hardware and software is essential.

(ii) Governments need to provide financial support to service providers to enable them to upskill those working with people with intellectual disabilities to better enable them to embed opportunities for digital inclusion in the everyday lives of people with intellectual disabilities.

(iii) Governments need to fund respite to enable family carers to access free digital literacy training for family carers to better equip them to support the digital inclusion of their family members.

Providing Essential Information to people with intellectual disabilities

(iv) Governments need to commission NGOs to provide unified, simple, accessible information on an ongoing basis throughout any national crisis that is co-created by people with intellectual disabilities but also details the support needed to access information.

(v) Service providers and family carers need to provide support to people with intellectual disabilities based on their knowledge of their comprehension and literacy. Easy-read often does not always convey information without additional support.

(vi) People with intellectual disabilities need to be provided with regularly updated information about the state of the nation and information about what they should do during a pandemic / national crisis.

(vii) People with intellectual disabilities need information about how to access the support they require both to access the information via ICT and the support needed to understand and enact the information and guidance provided.

Service Provision via ICT

(viii) As a hybrid model of both online and offline service provision is expected, and in some quarters recommended moving into the future, Governments need to take steps to ensure that people with intellectual disabilities are not digitally left behind and excluded or delayed in receiving ALL services, due to a lack of offline alternative service provision.

(ix) Service providers need to think creatively to ensure that in the move to hybrid provision people with intellectual disabilities are not overlooked and also need to provide a supportive environment for ICT use by people with intellectual disabilities and their carers incorporating guidance and support to access their services online.

Table 2 (cont.)…

Increasing Digital Literacy & Facilitating Digital Inclusion of people with intellectual disabilities

(x) Government and service providers need to commission and develop programmes to enhance digital access, literacy and safety of people with intellectual disabilities and caregivers. These need to be co-created and rolled out at no charge to people with intellectual disabilities and those providing them with support.

(xi) Carers need to provide sufficient support to enable digital inclusion, enhancement of digital literacy and opportunity for online lives and service access by people with intellectual disabilities.

(xii) Where appropriate, people with intellectual disabilities should form networks of support for digital inclusion and participation to enable greater access to ICT supports, leisure and services where desired and required.

(xiii) Governments need to prioritise digital inclusion of people with intellectual disabilities during national crises as they often have more restricted social and support networks and are often at increased risk of negative outcome and digital inclusion during this crisis has benefitted emotional, social, psychological wellbeing and people's human rights.

(xiv) Governments to penalise and sanction providers of ICT who fail to consider the inclusion of people with intellectual disabilities in their design processes.

(xv) Societal attitudinal change programmes are required to raise awareness of digital inclusion as a human right and of the potential of people with intellectual disabilities to be digitally included and enhance digital literacy expectations and opportunities.

(xvi) Further research and practice work is needed to identify how best to facilitate the digital inclusion of those with intellectual disabilities who remain digitally excluded.

Despite awareness being raised societally regarding digital exclusion and the work of these NGOs, there is little evidence that pandemic lockdown measures created an impetus to eliminate digital poverty or initiate digital inclusion of people with ID without prior experience of ICT use. Digital inclusion and participation are human rights. People with intellectual disabilities still appear to be considered implicitly within society to have lower social value. Their right to access and use digital technology has not been respected during the pandemic. They are left behind and neglected in times of need and emergency.

Recommendations from the findings of both the rapid review and bricolage are presented in Table 2.

Gaps in the current evidence base

The rapid review and bricolage also highlighted a number of omissions and absence in the evidence base currently. Few papers discussed how technology facilitated access to COVID-19 information. This may be illustrative of how embedded and 'taken for granted' the digital is amongst academic authors who do not face digital exclusion. Often only when digital access raised challenges was it recognised in papers where digital inclusion was not the primary focus. Although there was evidence of benefits to social inclusion, self-determination and emotional wellbeing, little information was evident regarding the effect on quality of life of digital exclusion, especially those people who did not gain access to digital solutions to enable them to have a continuity of services, leisure, daily activities and educational and day provision. As most data has been gathered online during COVID-19 (Doody & Keenan, 2021), it is likely that the experiences of these people with intellectual disabilities and carers and the impact of COVID-19 and digital exclusion on their wellbeing has not yet been sufficiently explored. It may be politic for future studies to use validated wellbeing instruments and observational methods to consolidate qualitative findings regarding the benefits of ICT use. Future studies may also wish to explore the important question of whether proxy accounts produce different findings to those directly taken from people with intellectual disabilities.

Despite the increase in use of digital technology by people with intellectual disabilities already using technology, and those supporting them, little empirical evidence considered digital risks and their management. No studies were evident focussing on whether online harms increased and how they affected people with intellectual disabilities and those providing them with support during COVID-19 rather security concerns were only identified as a barrier to digital inclusion (Power et

al 2021; Rawling et al 2021). This is a considerable oversight considering the increasing sophistication and prevalence of cybercrime. Seldom did papers incorporate details of the hardware and software or the design of the interfaces used in relation to findings about ICT use by people with intellectual disabilities during COVID-19. These are clearly areas where greater future interdisciplinary research focus is needed.

Limitations

In some of the sources included in the rapid review and bricolage ICT was not the key focus, though salient findings regarding ICT arose. Hence we cannot be certain we have fully captured all of the incidental findings regarding ICT use and digital participation for people with intellectual disabilities during the COVID-19 pandemic from those papers where it was not an identified and highlighted aspect of the study. This could again be emblematic of the 'taken for granted' nature of ICT use within everyday life.

Findings here must be viewed tentatively for the bricolage as they only incorporate perspectives of the member countries and those in the rapid review. No studies were explicitly conducted in global south countries representing a persistent and pervasive gap in the literature, not particular to digital inclusion research. Nonetheless there is representation from an international authorship which is a strength of this paper in allowing the bricolage to identify common themes across included countries adding a breadth of perspective. However, the limited number of authors from each country and pragmatic space limitations of a journal article meant this paper was unable to offer exhaustive coverage or comparison of policy, activity or experience around digital inclusion and exclusion of people with intellectual disabilities during the COVID pandemic.

Conclusion

There has been a rapid transfer to online life and reliance on ICT use during the COVID-19 pandemic. Nonetheless barriers to digital inclusion and participation persist and digital access to COVID-19 information appears lacking. Findings show that with proper support and motivation to engage with digital solutions, they can offer a positive adjunct to offline information and supports provided to people with intellectual disabilities. This may lead to increased digital inclusion for people with intellectual disabilities so they can experience full participation and inclusion in both the offline and online world. Recommendations (Table 2) to enable this to happen both globally and in future international crises are provided.

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Supplemental File 1. Search Strategy for Rapid Review (Search Strategy & Terms, Databases Searched & Inclusion/Exclusion Criteria)

Search Strategy

Review methods were established prior to the conduct of the review. Due to the rapid nature of the review no deviations from the protocol occurred. Review questions, search strategy and inclusion and exclusion criteria were developed prior to conduct of the review (Appendix 1). A CINAHL search using EBSCOHOST of 27 databases was conducted using search terms relating to: (i) intellectual and developmental disabilities; (ii) digital inclusion & ICT; and (iii) COVID-19. A broad selection of databases was justified to cover all potential aspects of people's lives where ICT may have been integrated (e.g. education, health, leisure etc.). Results were deduplicated and exported to Rayyan™ (collaborative systematic review software) and blind screened for inclusion/exclusion by at least two authors. For disagreements during the original Rayyan review process articles with >75% of content expert raters indicating include or maybe include were taken forward for full screen. Due to the exploratory nature of the review all study types containing empirical data were included. Figure 1 details the flowchart for article selection and review.

Search terms

1. **Information and Communication Technology Search Terms**

((MH "digital* inclu*") OR TI digital* inclu* OR AB digital* inclu* OR TI tech* OR AB tech* OR TI "social media*" OR AB "social media*" OR TI online* OR AB online* OR TI internet OR AB internet OR OR TI WiFi OR AB WiFi OR TI Broadband OR AB Broadband OR TI ICT OR AB ICT OR TI "Information and communication* technology" OR AB "Information and communication* technology" OR TI digital inclusion OR AB digital inclusion OR TI digital exclusion OR AB digital exclusion OR TI digital *nequal* OR TI digital* poverty OR TI digital* divi* OR TI digital* litera* OR AB digital *nequal* OR AB digital* poverty OR AB digital* divi* OR AB digital* litera* OR TI electronic OR AB electronic OR TI "Screen time" OR AB "Screen time" OR TI "Text messaging" OR AB "Text messaging" OR TI SMS OR AB SMS OR TI "instant messag*" AB "instant messag*" OR TI "web 2.0" OR AB "web 2.0" OR TI virtual OR AB virtual OR TI "mobile phone" OR AB "mobile phone" OR TI "smartphone" OR AB "smartphone" OR TI Tablet* OR AB Tablet* OR TI laptop* OR AB laptop* OR TI computer* OR AB computer* OR TI iphone* OR AB iphone* OR TI ipad* OR AB ipad* OR TI android OR AB android OR TI Playstation OR AB Playstation OR TI Nintendo OR AB Nintendo OR TI Xbox OR AB Xbox OR TI "mobile phone" OR AB "mobile phone" OR TI "smartphone" OR AB "smartphone" OR TI Tablet* OR AB Tablet* OR TI laptop* OR AB laptop* OR TI computer* OR AB computer* OR TI iphone* OR AB iphone* OR TI ipad* OR AB ipad* OR TI android OR AB android OR TI Playstation OR AB Playstation OR TI Nintendo OR AB Nintendo OR TI Xbox OR AB Xbox OR TI "app" OR AB "app" OR TI "social networking" or TI "social-networking" or TI "social network* site*" OR AB "social networking" or AB "social-networking" or AB "social network* site*" OR TI Facebook OR AB Facebook OR TI internet OR AB internet OR TI videoconference OR AB videoconference OR TI Zoom OR AB Zoom OR TI "Face Time" OR AB "Face Time" OR TI "Google meet" OR AB "Google meet" OR TI Skype OR AB Skype OR TI "Microsoft*" OR AB "Microsoft*" OR TI Youtube OR AB Youtube OR TI Whatsapp OR AB Whatsapp OR TI Instagram OR AB Instagram OR TI Amazon OR AB Amazon OR TI Snapchat OR AB Snapchat OR TI Spotify OR AB Spotify OR TI Discord OR AB Discord OR TI TikTok OR AB TikTok OR TI WeChat OR AB WeChat OR TI Twitter OR AB Twitter OR TI Pinterest OR AB Pinterest OR TI Telegram OR AB Telegram OR TI Reddit OR AB Reddit OR TI Wikipedia OR TI "Google Docs" OR AB wikipedia OR AB "Google Docs" OR TI Vlog OR AB Vlog OR TI Blog OR AB Blog OR TI LiveJournal OR TI Wordpress OR AB LiveJournal OR AB Wordpress TI "online stream*" OR TI Netflix OR TI Amazon Prime OR TI Sky OR TI Disney OR TI HBO OR AB "online stream*" OR AB Netflix OR AB Sky OR AB Disney OR AB HBO OR "Online Shop*" OR "Online Shop*" OR TI Tinder OR AB Tinder OR TI MMO OR AB MMO OR TI "online gaming" OR TI "video* gam*" OR TI videogam* OR TI "internet gam*" OR TI twitch OR TI "digital* game*" OR TI "Live streaming" OR AB "online gaming" OR AB "video* gam*" OR AB videogam* OR AB "internet gam*" OR AB twitch OR AB "digital* game*" OR AB "Live streaming" OR TI "online social gaming" OR AB "online social gaming" OR TI Podcast* OR AB Podcast* OR TI Tumblr OR AB Tumblr OR TI Quora OR AB Quora OR TI Linkedin OR AB Linkedin OR TI Vimeo OR AB Vimeo OR TI Myspace OR AB Myspace OR TI QQ OR AB QQ OR TI meetup OR AB meetup)

AND

2. **Intellectual Disability Search terms**

((TI (learning N1 (disab* or difficult* or handicap*)) OR TI (mental* N1 (retard* or disab* or deficien* or handicap*)) OR TI (intellectual* N1 (disab* or impair* or handicap*)) OR TI development* N1 disab* OR TI (multipl* N1 (handicap* or disab*)) OR TI "Down* syndrome" OR (MH "Developmental Disabilities") OR (MH "Intellectual Disability+") OR (MH "mentally disabled persons")) OR (AB (learning N1 (disab* or difficult* or handicap*)) OR AB (mental* N1 (retard* or disab* or deficien* or handicap*)) OR AB (intellectual* N1 (disab* or impair* or handicap*)) OR AB development* N1 disab* OR AB (multipl* N1 (handicap* or disab*)) OR AB "Down* syndrome"))

AND

3. **COVID-19 Pandemic Search Terms**

Pandemic OR Coronavirus OR COVID* OR 2019-ncov OR coronavirus OR nCoV* OR 2019-nCoV OR SARS-CoV* OR SRAS-CoV-2 OR Lockdown

Databases Searched

Due to interest in the way ICT had been integrated into all aspects of people's lives during COVID-19 a broad selection of databases were included: Academic Search Complete; Arts & Architecture Complete; Business Source Complete; Entrepreneurial Studies Source; Environment Complete; ERIC; Greenfile; Health Source – consumer edition; Health Source: Nursing / Academic Edition; Library, Information Sciences & Technology Abstracts with full text; Library Reference Centre Plus; Military & Government Collection; Newswire; Newspaper Source Plus; Omnifile Full Text Mega; APA Psychinfo; Regional Business News; Teacher Reference Centre; Web News; AHFS Consumer Medication Information; Mental Measurements Yearbook with Texts in Print; CINAHL Complete; Cochrane Methodology Register; Cochrane Clinical Answers; CINAHL Plus with full text; MasterFILE Reference eBook Collection; Points of View Reference Centre.

Inclusion & Exclusion Criteria

Inclusion Criteria	**Exclusion Criteria**
Empirical Peer-reviewed Research	Non-empirical research
Conducted during the COVID Pandemic (Date range: 01 November 2019 to 12 May 2021)	Conducted prior to pandemic
Involving people with intellectual disabilities, their paid or family carers or other professionals working with people with intellectual disabilities as participants or analyses secondary data focussing on people with intellectual disabilities or service provision for people with intellectual disabilities	Not involving any of these groups as participants
Focusses on digital inclusion, exclusion or participation during COVID-19 OR an aspect of ICT use or technology use being integrated into, or absent in, the lives of people with intellectual disabilities during COVID	Does not focus on ICT or ICT is only tangentially related to the study focus
Articles written in the following languages were included in the rapid review: English, Spanish, Portugese, French, German, Swedish, Polish.	Articles written in other languages.

Supplemental Table 1. Summary of Studies included in Rapid Review.

Authors (year)	Country	Setting	Study design	Respondents (Sr = Self report; FA = Family)	Number of Participants	Participants (Sex & Age in years where detailed)	Residence	Areas of ICT use / introduction	Barriers to digital inclusion	Facilitators of digital inclusion	Effects of digital inclusion on well-being	Recommendations
Amor et al. (2021)	Spain	Multiple settings	Quantitative, cross-sectional, online survey	SR or proxy	982	Adults with ID; 3-83 (M = 35.6, SD = 14.1)	N/A	Online Education Employment (remotely) Unspecified ICT device	Insufficient or lack of support	N/A	N/A	N/A
Araten-Bergman & Shpigelman (2021)	N/S	Multiple settings	Quantitative, cross-sectional, online survey	SR or proxy	108	Adults with ID 44.9 % F; 18-61 +	Group home (n = 464, 64.8%) Supported community living (n = 108, 35.2%)	Social contact Phone calls Video calls (WhatsApp, Skype, or Zoom) Text messaging Voice messaging	Insufficient or lack of support Dependence on staff	Access to digital device Technical support Prior experience in ICT use	N/A	Allow time for planning, training and organising for social activities delivered online
Burke et al. (2021)	Ireland & Netherlands	Education	Quantitative, cross-sectional, online survey	SR	37	Adults with ID	N/A	Education Unspecified ICT device	Dependence on staff Lack of internet connection	Access to digital device Access to internet connection Prior experience in ICT use	N/A	N/A
Datlen & Pandolfi (2020)	UK	Therapeutic	Multiple case study	SR	5	Adults with ID 60 % F; 23-27	N/A	Art therapy Unspecified device Internet connection WhatsApp (text, sound, image video, emojis)	Loss of autonomy Loss of privacy Cost of device and connection Discomfort with videocalls Increased frequency of contact	N/A	Emotional well-being	N/A

Jeste et al. (2020)	Mainly USA	Education and Health services	Quantitative, cross-sectional, online survey	FA	818	Children and young adults with ID 57.6 % F; <22	N/A	Online education Telehealth services Unspecified ICT device Videoconferencing Video tutorials	Lack of support and training No access to health or education services due to negative attitude from professionals to moving online and contingent reluctance to adapt or provide services online.	N/A	N/A	Shorter but more frequent contact with professionals
Lake et al. (2021)	Canada	Therapeutic	Qualitative, Interviews	SR	9	Adults with ID77.8 % F; 29-42	Own home (n = 5, 55.6%)Family (n = 3, 33.3) Home share (n = 1, 11.1%)	Health and social servicesSocial contactLeisurePhone callsE-mailVideoconferencing (WebEx, Zoom)Social media	Lack of digital literacy Lack of confidence in prior use of ICT Lack of support and training Cost of device and connection	Financial resources. Access to digital device. Prior experience with ICT use.	Maintaining interpersonal relationships and social contacts Emotional well-being	More informal virtual peer support group meetingsMore mental health support from professionals
Lunsky et al 2021	Canada	Health care	Mixed method, cross-sectional, online survey	Paid staff	942	Support professionals of adults with ID 85 % F; 45 + (N = 420; 44.5%)	N/A	Health and social services Unspecified ICT device Phone calls Videoconferencing (Zoom or other)	Different systems and tools used by medical service providers Only one e-mail address for many service users Poor quality internet connection Lack of support and training Discomfort with videocalls	Digital literacy of direct support workers	N/A	More mental health support from professionals

Masi et al. (2021)	Australia	Health care	Quantitative, cross-sectional, online survey	FA	302	Children with ID 33.1 % F; 2-17 (M = 9.7, SD = 3.8)	N/A	Telehealth services for child Leisure Computer (Netflix, YouTube, web surfing) Internet connection	Lack of digital literacy by telehealth service providers Lack of support by and training for service providers Telehealth inappropriate for child's needs	Digital literacy of service providers	N/A	N/A
McCausland et al. (2021)	Ireland	Independent homes	Quantitative, cross-sectional, online survey	SR or proxy	62	Adults with ID45.2 % F; 50-54 yrs N = 53 (85.5%) 65+ yrs N = 9 (14.5%)	Independent/family (n = 34, 16.1%)Community group home (n = 34, 54.8%)Residential care (n = 18, 29%)	Social contactComputer, laptop, tablet or smartphonePhone callsText messagingE-mailFacebook	Being over age 65 More severe/profound level of intellectual disability Living independently Lack of digital literacy due to no prior experience with ICT	Being under age 65 Prior experience in ICT use Technical support from caretakers or staff Mild or moderate level of intellectual disability	Maintaining interpersonal relationships and social contact with family	N/A

Navas et al. (2021)	Spain	Multiple settings	Mixed method, cross-sectional, online survey (2/3) or by interview (1/3)	SR or proxy	582	Children and adults with ID 52.1 % F; 3-83 years (M = 35.6, SD = 14.1)	Family/own home (n = 464, 79.7%) Disability-related services (n = 106, 18.2%) Other (n = 12, 2.1%)	Social contact Employment or online training Leisure Professional support services Phone calls Videoconferencing Listening to music	N/A	N/A	Maintaining interpersonal relationships and social contacts Life satisfaction Happiness	Adapt work, education and social activities to online setting to maintain wellbeing
Power et al. (2021)	UK	Therapeutic	Qualitative, written narratives	Paid staff	105	Support professionals of adults with ID	N/A	Art therapy Unspecified device Internet connection Videoconferencing (Zoom)	Lack or insufficient technical support Lack of internet connection Loss of autonomy Lack of digital literacy by service users and service providers Protection and security concerns Loss of privacy Difficulty aiming camera appropriately	Prior experience with ICT by persons with ID Technical support by caregivers Established relationship between service user and service provider Assessment of digital skills and readiness Training and support for and by service providers and caregivers Digital literacy of service providers Netiquette guidelines	Increased agency, power and choice	Assess digital skills Ensure technical support is available in person's home Educate on netiquette
Rawlings et al. (2021)	UK	Therapeutic	Mixed method, cross-sectional, questionnaire	SR	7	Adults with ID85 % F ; 19-57	Own home (n = 4, 57.1%)Family (n = 3, 42.9%)	PsychotherapyMobile phone, computer or tabletPhone callsVideoconferencing (WhatsApp, Microsoft Teams)E-mail	Data security and personal/ professional boundaries restrict use of familiar application (WhatsApp) Loss of privacy/confiden	Assessment of prior experience with ICT Technical support by caregivers Established relationship between	N/A	N/A

									tiality if require support from caretaker Insufficient experience or digital literacy for videocalls	service user and service provider		
Rothman (2021)	UK	Therapeutic	Case study, Observation	Paid staff	1	Adult with ID 100 % F; 20	N/A	Dance therapy Computer Internet connection Phone calls Videoconferencing (Zoom)	Difficulty understanding or hearing through remote communication Difficulty aiming camera appropriately Deficient devices or internet connection Inappropriate context for therapy Loss of privacy Distractions in home environment	Preparedness Positive attitude toward tele-practice Digital literacy of health practitioner	Maintaining interpersonal relationships and social contacts Increased self-confidence	Ensure technical support is available in person's home Educate on netiquette
Scheffers et al. (2021)	Netherlands	Multiple settings	Quantitative, cross-sectional, online survey	Paid staff	290	Support professionals of young adults and adults with ID 74.8 % F; 23-64 (M = 43, SD 11.31)	N/A	Social contact Computer Internet connection Mobile phone Phone calls Text Messaging Video calls E-mail WhatsApp	N/A	N/A	Maintaining interpersonal relationships and social contacts	Adapt work, education and social activities to online setting to maintain structure and routine

Spencer et al. (2021)	USA	Education	Qualitative, Interviews	SR FA	10 10	Young adult children with ID 60 % F	Family home	Education Social contact Computer (Nearpod, Flipgrid) Internet connection Smartphone Videoconferencing (Zoom) Online assessments Video recording of answers Text messaging Online video games	N/A	Prior experience with ICT Established relationship between service user and service provider	N/A	N/A
Zaagsma et al. (2020)	Netherlands	Independent homes	Quantitative, Retrospective data analysis	Retrospective service data	982	Adults with ID		Online support service Computer, laptop, tablet, or smartphone Phone calls Videoconferencing	N/A	N/A	N/A	N/A