

# A Scoping Review of Formal Care to Children with Special Needs during the Covid-19 Pandemic

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## ABSTRACT:

The Covid-19 pandemic caused an unprecedented closure of direct service for children with special needs (CSNs), which shifted service to remote mode. This scoping review analyzed the strategies adopted by different formal care services for CSNs, their strengths and weaknesses, and the challenges faced by the formal care providers (FCPs). This study identified relevant articles through academic databases and Google searches using appropriate search strings and keywords. It included ten journal articles (n=10) and eight pieces (n=8) of grey literature through a meticulous selection process and extracted data. This review drew results by collating the descriptive numerical data analysis and qualitative thematic analysis and interpreting them. Reporting incorporated all the possible items recommended by the PRISMA-ScR guidelines. This review demonstrated that pediatric rehabilitation adopted the telehealth approach and that special education changed to remote learning. When childcare programs in the USA functioned according to specific guidelines, residential care in South Asian countries faced a financial crunch. FCPs faced personal and professional challenges that required systematic training to deal with pandemic situations. This scoping review made suggestions for relevant policy formulations for equitable and effective service delivery to CSNs during pandemic situations, and it exposed new avenues for research.

**Keywords:** pediatric rehabilitation, special education, residential care, childcare programs, formal care providers

## INTRODUCTION

Special needs can range from developmental delays to complex medical conditions (McGrane et al., 2021). Therefore, children with special needs (CSNs) can be the ones with impairments such as locomotor disabilities, visual impairment, mild to moderate hearing impairment, and the mentally handicapped educable group (IQ 50-70) (Karalam et al., 2021). They are limited or unable to do what most children of the same age can do because of behavioral, developmental, emotional, or medical problems (Goudie et al., 2014).

Other than family care, CSNs receive care from rehabilitation settings, special schools, respite care, therapy centers, clinics, and social support groups and organizations. However, the Covid mandate temporarily discontinued all professional services for CSNs, increasing the burden on family caregivers. The lack of formal training for various responsibilities, including care and coordination of care, affected family caregivers' emotional and physical well-being (Pilapil et al., 2017). Besides, the pandemic challenged the caregivers to meet the requirements of the new normal to contain the virus spread and increased stress and depression in family caregivers (Dhiman et al., 2020). The pandemic-induced challenges to caring for CSNs drew the attention of researchers globally, so they researched the area and published a set of scholarly articles. A considerable number of researches, including scoping reviews (Lateef et al., 2021; Lee et al., 2021; Shorey et al., 2021), explored the issues of family caregivers to CSNs.

When the World Health Organisation (WHO) announced the outbreak of Covid-19, a Public Health Emergency of International Concern (PHIEC) on January 30, 2020, (WHO, 2020a), it called for unprecedented measures such as lockdown and home quarantine to curb the virus spread which resulted in the closure of service centers, the disintegration of support networks, and disruption of carefully developed routines, for CSNs (Asbury et al., 2021; Provenzi et al., 2020). Cessation of regular activities escalated their behavioral conflicts and temper tantrums (Ben-Pazi et al., 2020; Juneja & Gupta, 2020) which warranted new strategies such as telehealth interventions and telerehabilitation for formal care to CSNs. A sudden shift from the traditional service to a pandemic-specific mode equally changed the organizations and the personnel working with them. Researchers studied the strengths and challenges of the pandemic-specific strategies adopted by the formal care programs such as childcare institutions, special schools, pediatric

rehabilitation, and formal care providers. Therefore, a scoping review of the research carried out so far is essential to identify the knowledge gap for further studies to generate relevant knowledge on the status of formal care to CSNs, and its implications on formal care providers during the pandemic.

## METHOD

This study adopted scoping review as a technique to map the relevant literature (Arksey & O'Malley, 2005; Colquhoun et al., 2014; Levac et al., 2010; Peters et al., 2015; Peters et al., 2020) on the formal care (FC) to CSNs and the challenges faced by formal care providers (FCP) during Covid-19 pandemic. Before starting the process, we developed an a priori protocol to guide the scoping review, according to Joanna Briggs Institute (JBI, 2020) reviewer's manual, which pre-defined the objectives, search strategy, search approach, and selection process, draft charting, and report presentation. The Institutional Ethical Clearance Committee at CHRIST (Deemed to be University) approved the protocol. We prepared a checklist based on the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018).

The purpose of this review was to investigate the research conducted during the Covid 19 pandemic on FC to CSNs, the challenges faced by FCP, understand the key concepts, and identify the research gap. For achieving in-depth and broad results, we incorporated Levac and others' (2010) recommendations into the original framework of a scoping review proposed by Arksey and O'Malley (2005). Figure 1 shows the scoping review framework.

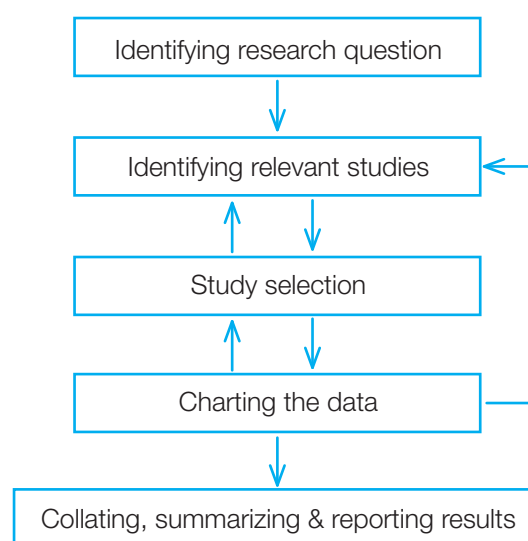


Fig. 1. Scoping Review Framework.

### Research questions

The review began by identifying the research questions using the Participant-Concept-Context (PCC) framework so that the questions can guide the reviewing process. After detailed discussions, the researchers articulated three research questions: 1) What are the pandemic-specific strategies for formal care for CSNs? Their strengths, weaknesses, and implications. 2) What are the professional challenges faced by FCP to CSNs during the Covid-19 pandemic? 3) What are the personal challenges faced by FCP to CSNs during the Covid-19 pandemic?

### Database search

In the second stage, we identified relevant studies by searching electronic databases such as Google Scholar, PubMed, Research Gate, and JSTOR. The search string used for the initial search was: ("Special needs children" OR "children with special needs") AND care AND (COVID-19 OR pandemic). The search was customized to the range from 2020 to 2021, and papers in the English language only. We repeated the search replacing the keyword "care" with "institutional care" and "formal care", "daycare", "special school", and "therapy center". We searched first in Google Scholar, and the search for relevant studies in the remaining databases was conducted after selecting studies from Google Scholar.

### Screening for selection of articles

The study selection was conducted through three steps; a) Title screening, b) Abstract screening, and c) Full-text screening. The screening excluded articles on parents or primary caregivers and children. It included original research papers, reviews, theoretical papers, and short communications on FC and FCP to CSNs, such as caregivers, care managers, special educators, therapists, psychologists, and other care experts. Title screenings excluded duplicates and papers with clear titles about parents, primary caregivers, and children. Abstract screening further excluded articles not related to FC or FCP to CSNs. Two researchers independently reviewed the abstracts and full texts and consulted the research guide to resolve disagreements in the discussions on the inclusion of papers in the scoping study. The agreement between the researchers was 100% during the abstract screening, which was reduced to 90% while screening the full text. Consultations with external experts helped refine our decisions on the inclusion of Journal articles. We further checked similar papers suggested by the database and the bibliographies of selected studies, ensuring their inclusion in this scoping exercise.

### Critical appraisal

The researchers independently carried out a critical appraisal of the studies selected, using the Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018) to assess their methodological, ethical, and theoretical quality (David et al., 2021). We checked each criterion for qualitative, quantitative, and mixed-method studies in detail and rated included studies 1-5. This scoping review included studies ranging from low to high methodological rigor.

### Risk bias appraisal

We have chosen to include grey literature since it is likely to contribute additional information. Grey literature promotes a balanced picture of the available evidence, increasing the timeliness and comprehensiveness of the review and reducing publication bias (Paez, 2017). Therefore, we conducted a Google search using the exact keywords for database search and extracted government guidelines, conference papers, webinars, magazine articles, newspaper reports, TV news reports, thesis, and dissertations. However, grey literature is not peer-reviewed. Based on the pandemic-induced delay in peer-reviewed articles reaching publication, another type of information is justified.

### Charting the data

The review process was iterative and we moved back and forth through the stages of identifying relevant studies, study selection, and charting data. For charting data, we developed two different templates for journal articles and grey literature in Microsoft excel. Article code was assigned to all the selected articles; for journal articles (JA1-JA10) and grey literature (GL1-GL8) to facilitate the data analysis. Chart for journal articles included author(s), year of publication, country, journal name, article type, research design, study setting, participants, and MMAT rating. Grey literature chart tabulated author(s), year and date, country of origin, type of literature, title, target service, target personnel, and website name. We conducted the descriptive numerical summary analysis using the data from these two charts.

### Qualitative data extraction and analysis

We extracted sterling concepts from the journal articles and grey literature to analyze them against the research questions, adopting a qualitative thematic analysis method. Then, we created the third chart for snippets from the excerpts, which displayed the pandemic-specific strategies for FC of CSNs, their strengths, weaknesses, and

implications on FCP, and recommendations explained in each selected article. In the next step of the analysis, we developed codes from the snippets, which both the researchers did independently. Then, we sorted the codes and grouped them into subthemes and themes after removing the repeated ones.

## SYNTHESIS OF RESULTS

The researchers drew answers precisely to the research questions by synthesizing the results. The results of descriptive numerical summary analysis and qualitative thematic analysis were combined, compared, and interpreted the results considering the context of the study or report. The agreement between researchers at this stage was 80% at this stage. However, discussions with the research guide and subject matter experts resolved the disagreements in interpreting results.

### Reporting the review

The researchers were cognizant of avoiding discrepancies between the protocol and the process. Therefore, we meticulously included all the key items recommended by PRISMA-ScR (Tricco et al., 2018) in reporting this

scoping review. We ticked off all items included in the checklist developed based on PRISMA-ScR and submitted with the review protocol.

## RESULTS

The initial search in Google Scholar gave out 2900, 62, 19, 220, 239, and 14 results, respectively, with each string we used. As shown in figure 2, title screening excluded 3,007 articles from a list of 3,254 articles identified. This first-level screening omitted duplicates and titles, explicitly mentioning that the study was on primary care, parents or children. The 209 articles were excluded through the second level screening, abstract screening, the study area was not FC, or the participants were not FCPs. Of the 38 articles that underwent full-text screening, 22 were excluded owing to the wrong population, four wrong contexts, and two because of the incongruence of ideas presented in the article. Search in other databases such as PubMed, Research Gate, and JSTOR did not add any new articles to the list of ten journal articles selected. Four were excluded from the 12 pieces of grey literature identified through Google search, considering replication of information.

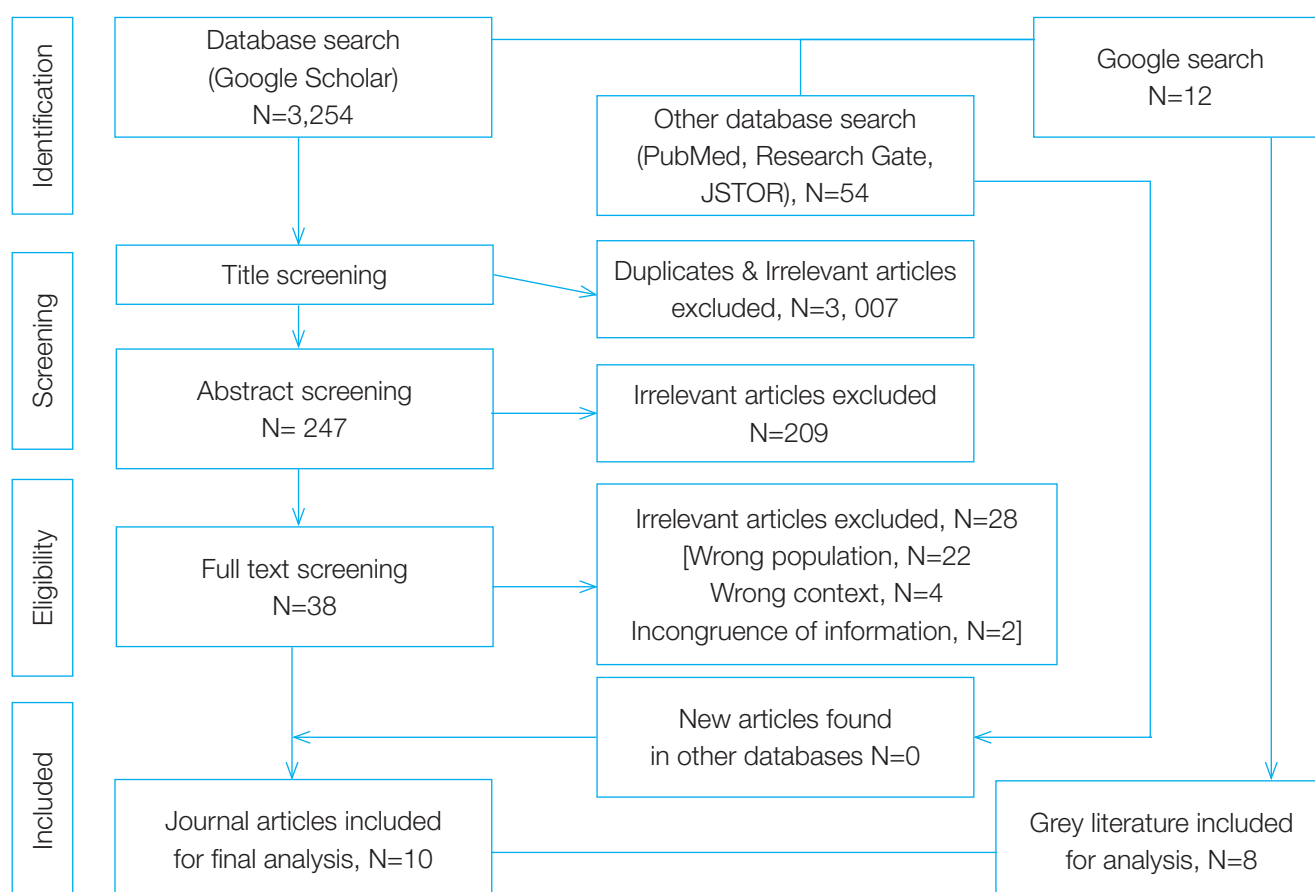


Fig. 2. PRISMA-ScR Flow Chart.

Table 1. Descriptions of journal articles (n=10)

Article Code	Author(s)	Year of publication	Country	Journal	Article type	Study design	Study area	Setting/Service	Participants	MMAT rating
JA1	Camden & Silva	2021	NA	Physical & Occupational Therapy in Paediatrics	Theoretical paper	NA	NA	Pediatric rehabilitation	NA	NA
JA2	Chen et al.	2021	USA	American Journal of Physical Medicine & Rehabilitation	Theoretical paper	NA	NA	Pediatric rehabilitation	NA	NA
JA3	Frederick et al.	2020	USA	Behavior analysis in practice	Theoretical paper	NA	NA	Special education	NA	NA
JA4	Karalam et al.	2021	India	Turkish Journal of Physiotherapy and Rehabilitation	Research paper	Qualitative case study	Caretaker challenges	Residential care homes	Institutional caretakers, N=14	1
JA5	Modi et al.	2021	South Asian countries, including Afghanistan, Bangladesh, India, Maldives, Nepal, Pakistan, and Sri Lanka.	Institutionalized Children Explorations and Beyond	Research paper	Quantitative survey	Caregiver mental health	Child care institutions	Institutional caregivers, N=86	3
JA6	Nulle & Nelson	2020	USA	Journal of Paediatric Rehabilitation Medicine	Short Communication	NA	NA	Pediatric rehabilitation	NA	NA
JA7	Simó-Pinatella et al.	2021	Spain	European Journal of Special Needs Education	Research paper	Qualitative focus group study	Special educator experiences	Special school	Special teachers, N=22	4
JA8	Priyadarsini & Chiang	2020	Singapore	World Federation of Occupational Therapists Bulletin	Theoretical paper	NA	NA	Pediatric outpatient service	NA	NA
JA9	Steed et al.	2021	USA	Journal of Early Intervention	Research paper	Concurrent equal status fully mixed method	Remote delivery of services	Special school	Special school personnel, N=221 (Early Childhood Special Educators n= 160, speech-language pathologists n=29, occupational therapists n=15, Behaviour specialist n=13, Physical therapist n=3, school psychologist n=1)	5
JA10	Tremmel et al.	2020	USA	Rural special education quarterly	Theoretical paper	NA	NA	Special school	NA	NA

**Abbreviations:** NA-not applicable, USA-United States of America

Table 2. Descriptions of Grey literature (n=8)

Article code	Author(s)	Year & Date of publication	Country	Type of literature	Title	Targeted Service	Targeted Personnel	Website
GL1	WHO	2020, March 26	NA	Technical document	Disability considerations during the COVID-19 outbreak	Key stakeholders in caring for people with disability	Family & personnel caring for people with disability	who.int
GL2	CDC	2021, November 10	USA	Government guidelines	COVID-19 Guidance for Operating Early Care and Education/Child Care Programs	Childcare programs	Personal care attendants, care managers, early intervention specialists	cdc.gov
GL3	CDC	2021, September 13	USA	Government guidelines	Guidance for Direct Service Providers	Service providers for people with disabilities	Personal care attendants, para-professionals, therapists, early intervention specialists, mental health, and health care consultants.	cdc.gov
GL4	Foster, J.	2020, May 27	USA	Webinar	Caring for Children with Special Healthcare Needs During COVID-19	Early childhood learning and knowledge centers	Childcare personnel	ECLKC (hhs.gov)
GL5	Redenius, T.	2021, April 18	USA	Master's thesis	Serving Students with Special Needs during the COVID-19 Pandemic	Special education	Special educators	nwciowa.edu
GL6	Hill, F.	2020, April 18	USA	Magazine article	The Pandemic Is a Crisis for Students with Special Needs	Special education	Special educators	theatlantic.com
GL7	Kalgotra, R.	2021, July 30	India	Newspaper article	Education of Children with Disabilities during Covid-19 pandemic	Special education	Special educators	dailyexcelsior.com
GL8	Starrantino, A.	2020, April 30	USA	TV News report	Teletherapy helping children with special needs during the COVID-19 pandemic	pediatric rehabilitation	Therapists	wrtv.com

**Abbreviations:** NA-not applicable, USA-United States of America.



Table 3. **Characteristics of the articles selected**

Journal articles (n=10)		
Article type		Number
	Research paper	4
	Theoretical paper	5
	Short communication	1
Country		
	International	1
	USA	5
	Spain	1
	Singapore	1
	India	1
	South Asian countries	1
Research design		
	Quantitative	1
	Qualitative	2
	Mixed methodology	1
Study area		
	Pediatric rehabilitation	4
	Special education	4
	Institutional care	2
Grey literature (n=8)		
Article type		
	Official guidelines	3
	Webinar	1
	Dissertation	1
	Magazine article	1
	Newspaper report	1
	TV news report	1
Country		
	General	1
	USA	6
	India	1
Area		
	Guidelines	3
	Special education	3
	Teletherapy	1
	Early learning centers	1

The selection process included ten Journal articles (Table 1) and eight pieces of grey literature (Table 2) in the scoping review. Of the 10 Journal articles, 4 were research papers, 5 were theoretical papers, and one was a short communication. The study designs were quantitative survey, qualitative case study, qualitative focus group study, and concurrent equal status fully mixed method. These articles discussed the pandemic-specific FC services for CSNs globally, in the United States of America

(USA), Spain, Singapore, India, and South Asian countries (Afghanistan, Bangladesh, India, Maldives, Nepal, Pakistan, and Sri Lanka).

Grey literature included a WHO document, government guidelines, master's dissertation, webinar, magazine article, newspaper report, and a TV news report. The first three documents were guidelines for service providers and institutions. Of the remaining five, three discussed special education, one reported teletherapy, and the other explained new protocols to childcare officials. While six of them portrayed the American scenario, one explained the Indian scenario. Table 3 shows the characteristics of the journals included in the study.

### Pandemic-specific strategies for formal care to CSNs

The formal care programs for CSNs identified in this scoping review are pediatric rehabilitation, special education, residential care, and early childhood learning and knowledge program. Institutional care/ residential care was the avenue of research from Asian countries, while reports from the West focused on special education and pediatric rehabilitation.

### Pediatric rehabilitation

The given word cloud (Figure 3) shows the different strategies that pediatric rehabilitation programs and child development units adopted during the Covid-19 pandemic.



Fig. 2. Covid-specific strategies for pediatric rehabilitation.

Three theoretical papers, one with an international perspective (Camden & Silva, 2021), the second one from the USA (Chen et al., 2021), and the other from Singapore (Priyadharsini & Chiang, 2020), discussed the alternative services adopted by pediatric rehabilitation out-patient settings for CSNs during the pandemic. In addition, a short communication (Nulle & Nelson, 2020) and a grey article from the USA (Starrantino,

2020) shared information on physical and occupational therapy delivered to CSNs in the Covid context.

Presenting reflections from the eHealth Summit for therapists in pediatrics, Camden & Silva (2021) proved telehealth is the strategy adopted by the physical and occupational therapists for CSNs globally during the Covid crisis. Experience of an institution located in Bronx, New York, which transitioned its services to telehealth, demonstrated that pediatric physiatry clinics could successfully use telemedicine in rehabilitation via tele-visits (Chen et al., 2021). Similarly, the experience of a tertiary level academic institution at the National University Hospital, Singapore, confirmed the effectiveness of telehealth-based occupational therapy to CSNs during the national 'Circuit-Breaker' period (Priyadharsini & Chiang, 2020). Since telehealth transferred rehabilitation services to the home environment, these two institutions leveraged their tele-resources for family education or parent training (Chen et al., 2021; Priyadharsini & Chiang, 2020).

The most apparent benefit of the tele-visit modality was that it increased access to rehabilitation care, especially for those who live in remote or rural areas (Chen et al., 2021; Nulle & Nelson, 2020; Priyadharsini & Chiang, 2020). Additionally, it saved on transportation costs, absence from work (Chen et al., 2021), travel time, and waiting time in the clinic (Nulle & Nelson, 2020). Moreover, home-based services came with the advantages of intervention in the natural environment of the child (Nulle & Nelson, 2020; Priyadharsini & Chiang, 2020), increased parental engagement (Nulle & Nelson, 2020; Starrantino, 2020), and better therapist-parent rapport (Priyadharsini & Chiang, 2020). Thus, telehealth offered opportunities to broaden access, increase cost-effectiveness, and strengthen family-centered therapy for CSNs (Camden & Silva, 2021). Teletherapy was identified as a collaborative method where therapists and parents collaborate to help children progress (Starrantino, 2020). During the Covid-19 crisis, relaxation of regulatory requirements for health privacy and protection while accessing technology in service delivery and reimbursement accelerated telehealth in pediatric rehabilitation (Chen et al., 2021; Camden & Silva, 2021).

On the contrary, telerehabilitation faced potential challenges with its dependence on the caregiver's ability to understand instructions and observe and describe the findings during a telephone encounter (Chen et al., 2021). Caregivers without a high health literacy (Nulle & Nelson, 2020) and technological literacy (Chen et al., 2021; Priyadharsini & Chiang, 2020) faced challenges

following the instructions of a physiatrist or therapist, which affected the outcome of teleservices. In addition, telehealth services were inaccessible to households that did not have adequate devices and home internet connections (Nulle & Nelson, 2021; Chen et al., 2021). While the negative perception of therapists, families and the community about teletherapy played a role in its implementation (Camden & Silva, 2021), poor audio and video quality adversely affected the outcome of telehealth services (Chen et al., 2021; Priyadharsini & Chiang, 2020).

### Special education

Students with special needs need various support services, including specialized academic guidance, specialized personal support, behavioral intervention, counseling, and various therapies. The WHO (2020b) recommended that schools and other educational facilities take appropriate action to ensure that students with disabilities receive further education at home. This scoping review analyzed two research papers (Simó-Pinatella et al., 2021; Steed et al., 2021), two conceptual papers (Frederick et al., 2020; Tremmel et al., 2020), and three pieces of grey literature (Hill, 2020; Kalgotra, 2021; Redenius, 2021) for generating knowledge on special education strategies during the Covid-19 pandemic. Frederick et al. (2020) developed the Distance Support Model for special education, providing certified behavior analyst supervision and parent support. In this model, the behavior analyst guides the communication between parents, teachers, case managers, behavior interventionists, and special service providers. Another Distance Learning Model from Commerce Independent School District continued special education services through learning packets, online instructions, virtual meetings, communication with parents, counseling, and teleservice (Tremmel et al., 2020).

A national-level mixed-method study in the USA revealed that the method for remote delivery of services to CSNs is coaching families by shifting school goals to home goals and creating distance learning plans (Steed et al., 2021). Realizing that instructing their students from afar is impossible, teachers were teaching parents to teach (Hill, 2020). A qualitative study from Spain also reported home-school collaboration by empowering families to support their children's learning and delivering study materials (Simó-Pinatella et al., 2021). Although special educators could build better relationships with families, children were not getting the same quality of services (Steed et al., 2021), and behavior interventions remained



hard to implement in the home context (Simó-Pinatella et al., 2021). The absence of evidence-based strategies made the goals of online special education hard to accomplish, regardless of the partnership between stakeholders (Redenius, 2021).

The brighter side is that students with difficulty looking directly at people's faces found it much easier to do so through the computer screen (Hill, 2020). However, CSNs use assistive technology; for example, a student with visual impairments uses a screen-reader software or a braille reader, making online training and home-based learning ineffective (Hill, 2020). A newspaper report from India resonated with this concern that the absence of sign language interpreters in webinars left them useless for CSNs (Kalgotra, 2021). In the Indian scenario, lack of internet access, smart devices, and necessary support to pursue their online school education denied learning to CSNs during the pandemic (Kalgotra, 2021). In general, special educators were concerned about the learning curve and predicted a major backslide in learning (Hill, 2020; Steed et al., 2021).

### **Institutional/Residential care**

Two studies from Asian countries (Modi et al., 2021; Karalam et al., 2021) explored the functioning of child care institutions/ residential care homes during the Covid-19 contagion. After the outbreak of Covid-19, some parents chose to keep their CSNs at home, so care homes had to develop two different strategies for serving their enrollees at the care center and at home (Karalam et al., 2021). Care homes in Bangalore, a South Indian city, developed a creative calendar for engaging CSNs indoors, and they provided telephonic care guidance to parents to manage their CSNs at home, which strengthened the caretaker-parent relationship (Karalam et al.,

2021). Child care institutions (CCI) in South Asian countries offered counseling sessions to children, relieving the pandemic-induced anxiety and stress, although the sessions were handled by caregivers who were not professionally trained (Modi et al., 2021). CCIs in India conducted Covid awareness programs at a moderate level, but the other countries studied were not at par in awareness creation among the inmates of CCIs (Modi et al., 2021). Due to the pandemic-driven financial crisis in government and private funding agencies, these institutions faced inadequate funding (Modi et al., 2021; Karalam et al., 2021).

### **Childcare programs**

Centers for Disease Control and Prevention (CDC) updated guidelines for operating childcare programs/ Early Care and Education programs in the USA. The guidance was intended for all types of childcare programs. Table 4 shows the types of Childcare programs and recommended Covid prevention strategies.

Childcare programs were instructed to work with families to understand the individual needs of CSNs better and facilitate access to direct service providers such as paraprofessionals, therapists, early intervention specialists, and health care and mental health consultants (CDC 2021a). Additionally, they had to maintain an adequate staff-to-child ratio, screening procedures at the arrival of children, and update care plans (Foster, 2020). Physical distancing and wearing masks were found difficult for CSNs. Therefore, to help them adjust to transitions in routine, childcare programs were instructed to use behavioral techniques such as modeling and reinforcing desired behaviors using timers, visual indicators, picture schedules, and positive reinforcement (CDC, 2021b; Foster, 2020).

Table 4. Guidelines for Early Care and Education programs

Child care programs	Covid prevention strategies to implement
Child care centers	Promoting vaccination
Home-based programs	Consistent and correct mask use
Family child care homes	Physical distancing and cohorting
Head Start programs	Screening Testing for COVID-19
Other pre-kindergarten programs	Ventilation
	Handwashing and respiratory etiquette
	Staying home when sick and getting tested
	Contact tracing in combination with isolation and quarantine
	Cleaning and disinfecting

Source: cdc.gov

### **Implications of pandemic-specific strategies on formal care providers to CSNs**

This review recognized a set of FCPs to CSNs, such as personal care attendants, institutional caregivers/caretakers, special educators, paraprofessionals, therapists (behavioral, occupational, physical), speech and language pathologists, behavior analysts, early intervention specialists, and mental health and healthcare consultants. WHO (2020b) identified a potential workforce shortage and recommended governments undertake targeted measures for disability service providers. This study reviewed articles against the research questions and extracted the challenges faced by FCPs to CSNs during the Covid-19 pandemic.

### **Personal challenges**

Childcare program workers faced risks, including essential workers, parents, home school teachers, short-order cooks, and financial stress (Foster, 2020). Teachers worked extraordinarily hard for their students with special needs, gaining creativity, spending time, and finding ways to move forward (Hill, 2020). In addition, they faced financial concerns, pandemic-induced stress, investment in equipment, and caring for their children. Heavy workload and non-payment made their lives miserable (Steed et al., 2021).

With the implementation of telehealth, the reduction in reimbursement rates and the elimination of co-pay have reduced the income of service providers (Chen et al., 2021). Meanwhile, residential caregivers burnt out with the workload and were stressed to keep children safe (Karalam et al., 2021; Modi et al., 2021). Covid infection and fear of getting infected made them distressed. Their meeting with family was reduced due to Covid restrictions, and their financial commitment increased as their family members lost their jobs in the Covid crisis (Modi et al., 2021). Moreover, institutional caregivers in India and Bangladesh faced salary cuts (Modi et al., 2021).

### **Professional challenges**

Teachers lacked ICT skills and knowledge for teaching online, yet they had to provide lessons for children and training for families (Kalgotra, 2021; Simó-Pinatella et al., 2021; Steed et al., 2021). They had to develop learning programs based on the learning materials available at home and the strategies for learning in the home environment (Redenius, 2021; Simó-Pinatella et al., 2021). In addition, inadequate teaching-learning content (Kalgotra, 2021) and lack of guidance and resources challenged special school teachers (Steed et al., 2021).

Due to the technological illiteracy of caregivers, practitioners faced difficulty in instructing them to download the necessary platforms for teleconsultation (Chen et al., 2021). Therapists had to provide caregivers with technical guidance and clarify their strategies (Priyadharsini & Chiang, 2020). They had to guide the family verbally throughout sessions (Nulle & Nelson, 2020). In addition, telehealth providers had to create and implement new procedures and processes, from getting scheduled by support staff to educating parents on the process. Developing new proficiencies in obtaining informed consent for virtual visits, navigating the online platform, manipulating audio/video visits, and ensuring patient privacy became necessary for telehealth providers in pediatric rehabilitation (Chen et al., 2021). In Singapore, therapists had to manage teletherapy with limited internet and hardware access due to the government's internet separation policy to protect data (Priyadharsini & Chiang, 2020).

Institutional caregivers in South Asian countries found their job at stake, and they were forced to provide counseling to children, although untrained (Modi et al., 2021). In addition, developing new programs to engage children indoors and train them in the changed routine challenged the residential caregivers (Karalam et al., 2021).

## **DISCUSSION**

The Covid-19 pandemic transformed formal care for CSNs into a virtual model, and telehealth strategies have been widely used in pediatric rehabilitation. Therefore, Chen et al. (2021) recommended integrating telemedicine into the health care system that provides insurance coverage. Online services, like face-to-face services, must be reimbursed (Camden & Silva, 2021). Nulle & Nelson (2020) also argued for the continuation of relaxation on insurance coverage for telemedicine. In addition, it was recommended that an IT support staff be included in the rehabilitation team and that telehealth be included in the curriculum for therapy students (Camden & Silva, 2021). However, to ensure health equity, the digital divide must end before integrating telemedicine completely into pediatric rehabilitation (Priyadharsini & Chiang, 2020). Policies and provisions that offer virtual resources to the broader community are required to incorporate therapy into the child's natural environment.

This scoping review substantiates an excerpt from Simó-Pinatella (2021: 9) "as special education schools, we have felt abandoned. All the protocols that have

been sent were for the mainstream schools, and nothing was said about special schools". Frederick et al. (2020) also shared that special schools did not have manuals or guidelines to support students and parents in times of crisis. Studies suggested that special education should be considered an essential service and that unique guidance should be given to special schools and teachers to work during health emergencies (Kalgotra, 2021; Simó-Pinatella, 2021). Disability-specific e-learning programs (Kalgotra, 2021) and online platforms compatible with assistive technology (Hill, 2020) are essential for effective learning online. For practical interventions for CSNs in the home environment, a multidisciplinary approach is also recommended (Simó-Pinatella, 2021). In addition, provisions for technical infrastructure (Redenius, 2021; Steed et al., 2021), training for teachers on basic technology (Kalgotra, 2021; Steed et al., 2021), and professional development training on relationship building, family coaching, and problem-solving also required in making remote learning effective for CSNs (Steed et al., 2021).

There is an undeniable need for restructuring institutional care for children (Roy, 2021), in general, and for establishing separate institutional care for CSNs (Wanglar, 2021), in particular. In the Covid context, childcare institutions require financial packages for procuring food items and safety products such as face masks, gloves, PPE kits, and sanitizer (Karalam et al., 2021; Modi et al., 2021). Other than financial packages, there must be provisions for deploying more staff (Karalam et al., 2021). In addition, there need policies to provide technology infrastructure with the required equipment and internet connection for accessing online classes for children (Modi et al., 2021). Professional counseling services and Covid awareness programs are vital in helping them handle stress and keeping safe.

Institutional caretakers need significant training in psychosocial support mechanisms, stress management, and communication with special-needs children (Modi et al., 2021). Organization-focused and individual-focused interventions are needed to support caregivers during a pandemic situation. Formulating policies is essential for the systematic training and capacity building of caregivers (Roy, 2021). However, home-centered care strategies and parental training are essential for caring for special-needs children (Karalam et al., 2021).

### **New avenues for research**

In telehealth, Chen et al. (2021) recommended studying data algorithms for validating tools, advancing treatment, and improving the efficacy of tele-education. In

addition, the role of teletherapy in routine care needs further exploration (Nulle & Nelson, 2020). Telehealth requires collaborative work between researchers, therapists, and families to find out what strategy is best to use in which context (Camden & Silva, 2021).

In special education, the impact of online instruction during pandemic situations requires further inquiry (Tremmel et al., 2020). Evidence-based strategies are essential in special education (Redenius, 2021), so research is needed on specific strategies that are appropriate for each category. Training support for special educators opens another area for inquiry. Moreover, the rarity of research in special education and negligence from governments call for studies to inform policy.

This scoping review demonstrated that institutional care is an under-researched and underdeveloped model for childcare. This scenario requires studies from the individual level to the policy level for the proper reorganization of the care system to ensure the well-being of children and caregivers. Modi et al. (2021) recommended studies in real-world settings on caregivers' coping strategies. However, the need to develop better strategies to support the training and well-being of institutional caregivers for CSNs highlights further avenues for research.

### **Limitations**

Formal care and service providers for CSNs have received relatively little attention from researchers, which has limited the number of studies in this review. In addition, theoretical papers and grey literature were mainly from the USA, as literature on CSNs was scarce in other parts of the world, limiting the generalizability of findings.

### **CONCLUSION**

The Covid-19 pandemic and the subsequent stay-at-home orders marked a significant paradigm shift in delivering special needs child care globally. Disciplines caring CSNs developed home-centered programs and adopted online modalities for delivery. Parents became the key players in all services for CSNs. When pediatric rehabilitation in the developed countries completely transitioned to telehealth, institutional caregivers in Asian countries were exhausted with workload and distressed with multiple stressors. However, the digital divide was prevalent in developed countries too. Special schools and teachers worldwide have struggled with the lack of guidelines and platforms with assistive technology.

On the other hand, childcare programs in the USA received guideline updates. Lack of technological savviness equally troubled service providers and recipients. Although a backslide is predicted, formal care providers could engage CSNs, in collaboration with families. However, this scoping review illuminated many new avenues for research in the domain of formal care to special needs children in a pandemic context.

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