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International response of Occupational Therapy to the COVID-19 pandemic: A report from the Global Occupational Therapy Think Tank (GOTTT)

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October 16, 2023**

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About the Global Occupational Therapy Think Tank (GOTTT)

The GOTTT is a group of occupational therapy scholars and practitioners dedicated to educating and advancing the profession of occupational therapy throughout the world. The Think Tank facilitates innovative thinking to identify and evaluate national and global trends and issues in occupational therapy. The goal of the GOTTT is to promote deeper thought and offer suggestions to improve the future of occupational therapy through open discussion of the significant issues facing occupational therapy. The result of the consensus-building discussion is the creation and dissemination of evidence-based materials that explore and clarify issues and recommend solutions.

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Introduction

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The Concept of Occupational Therapy

Occupational therapy originated in the frameworks of humanism i.e., treating patients with compassion and respect for their rights, medical care i.e., using scientific medicine, evidence-based practice, and the social sciences based on the research from sociology and psychology. Prior to the development of occupational therapy as a profession, activities were used in hospital settings as a humane way to treat individuals with mental illness. Humane activities were the foundation of the moral treatment movement in the 19th century (Trent, n.d.). Subsequently, the goal of occupational therapy has become to empower people of all ages and functional abilities to realize their potential to participate in occupations they want, need, or are expected to do as possible through the use of occupations.

Occupational Therapy in the 21st Century

Occupational therapy celebrated its 100th anniversary in 2017 in the United States. According to the World Federation of Occupational Therapists (WFOT; n.d.), there are now over 580,000 occupational therapists in 90 countries. Occupational therapy is a rapidly growing health care profession with emerging roles in occupational justice, inclusion and advocacy. With the evolution and expansion of the profession, there are extraordinary changes in professional practice and educational preparation. The growth of the profession has led to a need for performing an in-depth examination of the changes that are occurring in occupational therapy practice and of its expansion globally. Based on

identified trends, broader questions are emerging about the future role of the occupational therapy professional globally. To what extent is the profession developed systematically? What are the differences among countries in the practice of occupational therapy? Is there a gap between research evidence and professional practice? Is there a need for an international group of experts and scholars to monitor the international growth of the profession? Can we impact practice through position papers based on empirical evidence and analysis?

Recently, a group of international scholars formed the Global Occupational Therapy Think Tank (GOTTT) to examine the aforementioned questions and relevant issues affecting occupational therapy worldwide. As a first deliberation, the group intended to understand the role of occupational therapy globally in the COVID-19 pandemic. As COVID-19 has been a worldwide challenge, it was crucial to include global occupational therapy perspectives in the analysis and collect data from a worldwide scope on the evaluations and interventions that have been used in addressing client COVID-19 symptoms, impairments, and disabilities that affected the occupational participation, health and wellbeing during the pandemic and thereafter.

Occupational Therapy During Global Health Disasters

Since the foundation of the profession in 1917, occupational therapists have been part of the health care response to worldwide disasters. Just one year after occupational therapy started, the Spanish flu pandemic occurred, as the H1N1 virus spread quickly around the world. It is estimated to have caused over 50 million deaths (Jester et al., 2018). Today, one century since the birth of OT, the world has been impacted by another global health crisis: COVID-19. Fortunately, occupational therapy has evolved significantly since the Spanish flu pandemic, and the growth and expansion of the profession over the last century contributed to the substantial impact that occupational therapists from around the world have had during the COVID-19 pandemic.

At the beginning of the COVID-19 pandemic, health care professionals began developing interventions to address COVID-19 symptoms (Watters et al., 2021). Although initial efforts focused on managing acute symptoms of COVID-19, there is now an increased emphasis on implementing interventions for people experiencing chronic symptoms from COVID-19 (Watters et al., 2021). Symptoms enduring past 12 weeks from the initial onset of COVID-19 are known as post-acute sequelae of COVID-19, post-COVID syndrome, or simply, long COVID (Wilcox & Frank, 2021). These chronic symptoms have become an important challenge for health care professionals because they affect various aspects of people's lives including their mental and physical health, cognition, sleep, and subsequently, their quality of life (Wilcox & Frank, 2021). Consequently, these symptoms can limit people's ability to participate and engage in their daily activities and valued social roles (Malcolm, 2021; Wilcox & Frank, 2021). As all healthcare professionals have been addressing, researching, and trying to find out the best care to provide clients with complex symptoms and signs of long COVID, the role of occupational therapy has become paramount to enable the clients to achieve maximum functional status as they return to their community.

Internationally, occupational therapists have responded to COVID-19 in ways that accelerate the recovery of patients, maximize patients' functioning, reduce rehospitalization, and facilitate a person's transfer to post-acute care (Malcolm, 2021). Although the research is not mature enough for randomized controlled trials or quasi-experimental studies, scholars in the GOTTT decided to gather significant information from stories, case studies, reviews, and the small but growing number of group studies. A review of the literature suggests, to the best of our knowledge, that currently, there are no or limited resources available that merge international stories from occupational therapists, global case studies, and recent research performed by occupational therapists around the world to exhibit how occupational therapists have addressed COVID-19 internationally. To fill the gap, the GOTTT examined the role of occupational therapy globally in improving the lives of people with

COVID-19 or long COVID symptoms by collecting, critiquing, and analyzing current accounts, case studies, and other empirical research. In the following pages we will summarize our findings and hope that the effort will usher in a new era of global understanding of occupational therapy in providing care in a global health disaster.

Research Overview

Review of COVID-19 and Occupational Therapy Research

Authors:

Farrukh A. Chishtie, Moses Ikiugu, Regi Robnett, and Siska Vandemaele

The following segment of the GOTTT report summarizes the research on occupational therapy practice and the occupational science research on changing human behavior during the COVID-19 pandemic, specifically the first two years after the outbreak of the disease. Various topics have been examined, including the pivoting of face-to-face intervention largely to telehealth, the effect of the pandemic on occupational balance and wellbeing, and the impact of occupational disruption on the physical and mental health of both practitioners, patients/clients, and members of the public. Finally, we tackle the evolving concern of long COVID. We believe that the profession of occupational therapy has a significant role in assessing and assisting those experiencing both the acute and the long-term effects of COVID-19.

Occupational Therapy Service Provision During the Pandemic

Not unsurprisingly, high-level research on telehealth and other potential means of offering occupational therapy services during the COVID-19 pandemic is scant, presumably for two reasons: 1) in the sudden and drastic change in world health conditions scholars would need time to design and initiate research on the outcomes of the pandemic, and 2) having to adapt from one day to the next to incorporate new ways of practicing the art and science of occupational therapy for example, switching to remote learning, education, and practice would need additional workload and stress (Gustafsson, 2020). At the onset of

COVID-19, telehealth became a salient feature of professional practice, and occupational therapists adapted accordingly. Telehealth can be described as “the application of evaluative, consultative, preventative, and therapeutic services delivered through information and communication technology (ICT)” (American Occupational Therapy Association [AOTA], 2018, p. 1). Online devices for conducting telehealth include computers, cell phones, and tablets. During the initial phase of the COVID-19 pandemic, telehealth was used extensively to deliver allied health services when “social distancing” and “stay at home orders” were mandated. Health policies were changed to include expanded reimbursement for telehealth rehabilitation services provided by occupational therapy, speech therapy, and physical therapy practitioners (Sprianu et al., 2022).

Early in the pandemic, Dahl-Popolizio and colleagues (2020) conducted a cross-sectional online survey of U.S. occupational therapy practitioners on their attitudes about the use of telehealth during the COVID-19 pandemic. Of a total of 230 respondents, over 75% supported telehealth as a substitute for face-to-face therapy, and almost the same number viewed it as a permanent option for the delivery of occupational therapy services. While 84% of practitioners saw telehealth as effective for offering therapy to the pediatric population, only 9% viewed it as appropriate for use with the geriatric population.

Sprianu et al. (2022) also conducted an anonymous electronic five-minute, 19-item survey for rehabilitation therapists (physical therapists, occupational therapists, and speech-language pathologists; N =152, including 64 occupational therapy practitioners) in the U.S. to explore their experiences with telehealth, the impact of COVID-19 on their professional roles, and their perceptions of the effectiveness of telehealth as a means for providing therapy. The majority of respondents provided therapy over video links (51%) or the phone (3%), while many still provided face-to-face interventions (58%). Relatively few (18%) viewed telehealth to be as effective as face-to-face interventions, although

during the pandemic it was seen as a solution to limitations in access to care (38%), travel time (53%), and scheduling issues (49%). Telehealth offered the advantages of avoiding the spread of the virus and freeing hospital beds (Hoffman, 2020). Most therapists (77%) had not used telehealth before the current pandemic, and only 5% had previously used it regularly. As stated by survey respondents, the disadvantages of telehealth included technological challenges for both the therapist (41%; with higher levels reported by speech therapy and physical therapy, compared to occupational therapy) and the client/patient (70%). Forty-two percent of the respondents felt they did not have adequate technology training to be able to provide therapy online. Twenty-six percent listed the lack of additional support staff as a challenge. One benefit of telehealth was the increased involvement of the family. One respondent stated, “Telehealth has forced parents to be more involved with their children's care versus dropping them off for an in-person appointment and leaving” (Sprianu et al., 2022, p. 4).

In a related study from Australia, Malliaras et al. (2021) conducted a broad-based international survey of allied health professionals (N= 827; mostly physical therapists in Australia; with only 11 occupational therapists responding). All participants were recruited through social media and worked with people who had musculoskeletal conditions during the pandemic. The authors were interested in the practitioners' views and attitudes about telehealth services. The survey confirmed the rapid adoption of teletherapy during the pandemic. Respondents generally viewed telehealth as an important component of their professional role. They also felt that telehealth allowed continuity of care that would have been lost during the pandemic. However, a smaller proportion (24-28%) felt confident conducting effective telehealth sessions. They indicated perceived inadequate training (only 21% felt adequately trained; one mentioned the “steep learning curve”) and the frustration due to a feeling that they were providing inadequate therapeutic interventions. Similarly to Sprianu et al. (2022), practitioners preferred face-to-face therapy. A large portion (71%) reported a decrease in revenue since the start of the pandemic, and nearly two-thirds (66%) had not previously engaged in

telehealth, but were forced to adopt its use rapidly. Telehealth barriers that were mentioned included the concern about safety (e.g., by not being close to the patient physically, the therapist could not protect the person from a fall), the lack of the reliability of the internet (seems to be a universal problem), the difficulty performing objective tests remotely, the lack of privacy in the home, a lack of equipment and supplies, a greater challenge building rapport, and the lack of patients' ability to use technology. Hands-on therapy tended to be preferred when feasible. Only 42% of the respondents viewed telehealth as effective as face-to-face therapy, and only 58% felt they had adequate resources to provide effective telehealth care.

Sarsak (2020) provided a comprehensive literature review on the use of teletherapy in occupational therapy, but most of the articles cited pre-date the pandemic. The profession of occupational therapy has used ICT for two decades, but the onset of the pandemic provided the impetus to increase its use significantly. Sarsak (2020) recommended conducting high-level research on telehealth in occupational therapy to evaluate its efficacy and effectiveness in producing desired outcomes using a variety of accepted measures. The research should include longitudinal studies, randomized clinical trials, and cost-effectiveness analysis (Sarsak, 2020). To the current authors' knowledge, systematic research in the use of telehealth by occupational therapy practitioners during COVID-19 has not been published. However, given that telehealth is no longer essential as we return to a semblance of "normal" practice, this would be a good time to conduct randomized control trials comparing in-person and online therapy's impact on patient outcomes. Physical therapy has already started the research process in this realm of inquiry. For example, Fritz et al. (2022) examined the feasibility of a physical therapy telehealth program (adapted from in-person due to the pandemic) for adults with chronic low back pain through a prospective longitudinal study. They found that most of the 126 patients (76%) were satisfied with the telehealth sessions, but just under 40% found them to be as effective as in-person therapy. Another physical therapy study (Middleton et al., 2020)

used an arm of an existing study to explore the feasibility and cost of developing a telehealth exercise program during the pandemic for older adults with functional impairments. The findings aimed to inform further development of a cost-effective telehealth program. To our knowledge no one in the occupational therapy profession has conducted a similar study.

To date, the studies investigating occupational therapy provision during the pandemic have largely focused on telehealth. Surveys have been used to determine the level of comfort and satisfaction with this mode of therapy delivery from the perspective of the therapists and the patients/clients. Surveys do not typically establish causation among variables, but they do provide valuable descriptive data. The profession would be well served by more rigorous, causation-focused studies on the effectiveness of occupational therapy provided via telehealth.

Effects of COVID-19 on Occupational Balance and Wellbeing

A number of studies, mostly in occupational science, have investigated the impact of COVID-19 on occupational routines and balance. The clear consensus in these studies is that, as a result of pandemic restrictions, there were disruptions in occupational routines which resulted in adverse health consequences (Rodríguez-Fernández et al., 2021; Sangster Jokić & Jokić-Begić, 2022; Segev-Jacobovski & Fogel, 2022; Stanley & Prodingler, 2022; To-Miles et al., 2022). Many participants in the studies mentioned above had reduced work activities and occupations related to club attendance and shopping. At the same time, they increased “community news” type of activities for staying informed. Their day-to-day task involvement in the home increased, including sleep, rest, and recreation. Other new COVID-19-related activities included sewing masks and home-schooling. Surprisingly, there was more perceived occupational balance but also more stress (To-Miles et al., 2022). Also, while significant occupational disruptions as a result of isolation due to the pandemic occurred, people adapted to the changes and often found new occupations in which to be engaged (Stanley & Prodingler, 2022). However, the income level mediated the attitude toward these changes,

with people with a lower socio-economic status indicating less optimism (Segev-Jacobovski & Fogel, 2022).

For young adults, those who did not receive enough information about COVID-19 tended to experience more decline in occupational balance (Rodríguez-Fernández et al., 2021). Further, university students tended to have more decline in occupational balance than post-university young adults, primarily due to differences in employment status. Being a student was associated with less variation in occupations. Older young adults tended to have better occupational balance than younger ones. According to Rodríguez-Fernández et al. (2021), other mediating factors for occupational balance in this population included health status, insufficient information about COVID-19, and the length of confinement at home. For example, older young adults who perceived themselves as healthy tended to have better occupational balance. On the other hand, low perceived health, insufficient information about COVID-19, being a student, and home confinement were significant predictors of disruption in occupational balance (Rodríguez-Fernández et al., 2021).

Effects of Occupational Disruptions on Physical and Mental Health

Sangster Jokić and Jokić-Begić (2022) found that Croatian women who experienced a decline in the quality of participation in all domains of occupation tended to demonstrate higher levels of anxiety, depression, and stress. Further, in a qualitative study, Rotenberg et al. (2021) found that older adults experienced abrupt occupational changes with the increased shift to online and in-home activities. These older adults' mood was impacted negatively by enhanced awareness of their advancing age and vulnerability to infections. Performing out-of-home and/or in-person activities was important for their social connectedness. Therefore, they often met with family members and friends for activities outdoors while maintaining social distancing. Nevertheless, boredom and low energy levels due to the global pandemic were prevalent themes among these older adults. These negative health consequences permeated entire

families as well. Significant changes in family occupational routines led to decreased quality of life especially related to family emotional and physical wellbeing (Hen-Herbst & Fogel, 2021, 2022). Several studies have addressed the mental health symptoms of COVID-19. In a descriptive study by Vanichkachorn et al. (2021), COVID-19 patients reported fatigue and shortness of breath, and subjective mood changes, such as sleep fragmentation, perceived cognitive difficulties, and poor quality of life. Moreover, non-pulmonary symptoms such as headaches, anxiety, depression, and myalgias persisted (Vanichkachorn et al., 2021). A review of the literature by Lindert et al. (2021) indicated that the effects of COVID-19 are likely to be manifested in three different ways, the development of symptoms in previously healthy individuals, new episodes affecting mental health in those with already a predisposition to mental disorders, and also the development of symptoms that do not meet diagnostic criteria.

The degree of mental health problems has varied depending on the pandemic stage, the country, the population group, the gender, and the types of conditions (Lindert et al., 2021). According to current research evidence, depression can be a complication of the virus (e.g., Araghi et al., 2022). Even two years post-acute COVID-19, Post Traumatic Stress Disorder (PTSD), depression, and general anxiety were prevalent (Sheehy, 2022). COVID-19 survivors also report experiencing psychological distress (Fradelos et al., 2022).

Although only a few studies have investigated this phenomenon to date, it appears that limited measures have been taken to prevent and treat emotional–psychological complications of COVID-19 (Araghi et al., 2022). Both physical and mental symptoms often have resulted in a severe negative impact on the resumption of occupational activities post COVID-19. Fatigue and cognitive dysfunction especially hindered engagement in activities of daily living (ADLs) and ability to work. In a cross-sectional survey by Nielsen et al. (2022), COVID-19 was described as affecting core identity activities such as parenting, providing care for others as care

partners, and work as employees. The result was taking full or part-time sick leave and a decreased ability to handle regular work tasks, sometimes for many months after the acute phase of COVID-19.

Different types of treatment for residual mental health concerns following a bout of COVID-19 have been proposed for inpatients, out-patients, or through home-based rehabilitation. The interventions often involve a multidisciplinary approach to provide holistic care. The World Health Organization (WHO) has not (yet) offered rehabilitation guidelines for patients post-COVID-19 (Sheehy, 2022). The COVID-19 Activity Rehabilitation program described by Vanichkachorn et al. (2021) aims to facilitate improvement in function for former COVID-19 patients. The program involves occupational therapy and physical therapy as part of the rehabilitation program, individualizing therapy, and incorporating a stepwise graded activity approach. This approach has been based on research about therapy for SARS patients and patients having myalgic encephalomyelitis or chronic fatigue syndrome. The program begins with assessment, which guides the initial activity recommendations. Specifically, the focus on establishing self-care routines, for example, sleep hygiene, daily structure, grading efforts to do activities, stress management, and breathing and relaxation techniques, has been the role of occupational therapists (Vanichkachorn et al., 2021).

Occupational therapy is almost always mentioned as an important discipline in the COVID-19 treatment process, particularly focusing on helping individuals improve ADL and instrumental ADL (IADL) performance to facilitate functional independence and prepare patients for discharge (Sheehy, 2022). The role of occupational therapy is to reestablish self-care routines, and emphasizes individualized activity thresholds (Vanichkachorn et al., 2021). Occupational therapy should address cognitive change in this process (Sheehy, 2022).

Psychosocial-based occupational therapy aims to identify and remove unique barriers to recovery and to help reformulate preconceived notions

of illness and disability (Vanichkachorn et al., 2021). For instance, instruction on diaphragmatic breathing and relaxation techniques can reduce labored breathing and muscle tension and assist in stress management. Especially for patients with depression, anxiety, or PTSD, occupational therapy can provide classic psychological occupational therapy interventions (Sheehy, 2022). Job-specific testing and simulations can be used to help guide how work restrictions are prescribed, which are managed, for the most part, by occupational medicine specialists.

Araghi et al. (2022) evaluated online cognitive behavioral therapy (CBT) for depressive symptoms in recovering COVID-19 patients. During the CBT the therapist is working with the patient to achieve treatment goals, focusing on identifying, reviewing, and producing more rational and practical approaches to personal experiences in order to have behavioral changes and changed cognitive processes. They found that this online CBT resulted in a significant decrease in Beck Depression Inventory scores after the intervention.

Chinese medicine techniques such as tai chi, the Qigong 6-character mnemonic, guided breathing, and Baduanjin qigong have been suggested by the Chinese occupational therapists. Education on the importance of a healthy lifestyle and participation in family and social activities, should also be included in the occupational therapy for COVID-19 patients (Sheehy, 2022).

The Impact of COVID-19 on Occupational Therapy Practitioners and Practice

Most of the research conducted on the impact of COVID-19 on the profession of occupational therapy has been in the form of surveys. For example, Ganesan et al. (2021) completed a cross sectional survey of international occupational therapists (84% from India) to explore the impact of COVID-19 (including the need to use telerehabilitation) on

occupational therapists' work positions, practice, and their mental health. The survey was conducted in 2020, and 114 OTs participated. The majority (53%) felt anxious and stressed due to the pandemic. The use of telehealth increased from 36% before the pandemic to 61% during the pandemic. Ten percent of the OTs had lost their positions, and over three-fourths (76%) experienced a negative impact on their income.

Similarly, Hoel et al. (2021) conducted a comprehensive, large-scale global online survey consisting of 30 questions in five different languages for the WFOT. The purpose was to determine the impact of the pandemic and identify the current needs of occupational therapists, including for resources and support. A total of 2750 practitioners from 100 countries responded to the survey. The researchers found that providing access to occupational therapy services during the early pandemic period was challenging, with over half of the respondents experiencing full lock-down and the continuation of only essential services. Only one percent of respondents did not experience restrictions. Several factors impacted the profession, including feeling ill prepared, service access restrictions, new demands at work and frequently changing work conditions, new technologies, and limited resources (such as insufficient additional space for physical distancing and lack of enough personal protective equipment). Concerns over safety and decreased morale were both mentioned. Receiving training related to the pandemic and having resources available in a high-income country was associated with an increased sense of competence, improved effectiveness, and a higher level of (perceived) safety. Being in a clinical role was associated with lower safety and effectiveness; thus, these respondents felt less positive in the pandemic environment. The authors stated that the pandemic “has thrown modern society into unfamiliar territory, requiring the re-invention of established routines and interventions during rapidly changing conditions” (Hoel et al., 2021, p. 75). The pandemic has had “tumultuous effects” on the quality of occupational therapy services. The authors contended that collaborative efforts are needed to provide practitioners with the necessary resources and training. We need to advocate for the

profession, especially to promote access, address occupational injustice, and promote quality occupational therapy services (Hoel et al., 2021).

Kuhl et al. (2021) also examined the initial impact of COVID-19 on occupational therapy practitioners in the United States. This mixed-methods study used a Qualtrics survey (of 22 quantitative questions and two qualitative, open-ended questions) designed for currently practicing occupational therapy practitioners. Eighty practitioners responded, with 79 qualifying for the survey. The majority of respondents were treating people who had COVID-19. The findings indicated that burnout was a key issue, with nearly half of the respondents reporting feeling tired most of the time and experiencing a decline in job satisfaction or feeling useless. About 40% reported changes in appetite and sleep patterns, feelings of helplessness or hopelessness, and loss of motivation. Approximately the same percentage felt they could not access appropriate personal protective equipment to do their jobs safely. Fewer, but still a significant number (32%) used drugs, alcohol, and/or food as a coping mechanism. Limited personal protective equipment, a lack of preparedness, and inadequate communication were themes that dominated the qualitative responses. The authors concurred with other researchers that COVID-19 profoundly affected occupational therapy practice and practitioners early in the pandemic.

Others explored the experiences of occupational therapy practitioners, specifically in mental health and pediatrics. Culleton (2022) explored the professional lived experiences of mental health occupational therapists during the pandemic. This qualitative study looked at how occupational therapists' day-to-day practice in mental health was disrupted during the pandemic. Ten mental health occupational therapists were interviewed to gather their experiences and reflections. The results were analyzed using reflexive thematic analysis, and three themes were identified: "holding on to what we do" (frequent loss of face-to-face intervention and the addition of telecommunication), "technology: friend and foe" (lack of technology resources and inadequate technology infrastructure), and

“COVID as a catalyst to clarify the occupational therapy role” (lack of clarity of changing occupational therapy role; clarifying other team members’ perceptions). COVID-19 disrupted the lives of almost all the respondents. Occupational therapy practitioners continued to strive to provide excellent mental health services by adapting to the context (e.g., starting a large community garden to be able to work outside), but faced many challenges and frustrations as they tried to adapt.

Duffy (2022) also completed a qualitative study to explore mental health occupational therapists’ experiences as they transitioned to telehealth during the pandemic. This study took place in Ireland. Four participants were interviewed using semi-structured interviews. Three themes evolved: “responding to disruption” (telehealth was viewed as a disruption in practice), “reconsidering practice with technology” (incorporating telehealth and acknowledging the unique value of face-to-face intervention), and “therapeutic use of ‘virtual self’” (impacting the building of rapport and difficulties with technology). They determined that both communication style and space needed to be adapted when therapy was conducted remotely. Telehealth, which is likely to play a role in occupational therapy practice moving forward, may present the opportunity to reconfigure mental health occupational therapy services.

Although both occupational therapists and physical therapists were underrepresented, Grant et al. (2022) conducted a systematic review of 14 articles exploring the perspectives of rehabilitation therapists (speech pathologists, occupational therapists, and physiotherapists) on using telehealth videoconferencing for service delivery to children with developmental delays. They found the following themes (all of which presented barriers as well as opportunities): “technology, self-efficacy, replacement of face-to-face services, time management, relationships, access, and family-centered care.” The authors concluded that more research was needed.

From a different perspective, Güney Yılmaz et al. (2021) conducted a

mixed methods study to examine how the pandemic impacted the occupational balance of occupational therapy practitioners. They used the Turkish Occupational Balance Questionnaire (OBQ11-T) and qualitative semi-structured interviews to explore occupational balance and related issues. They found that occupational balance was significantly lower in occupational therapists who actively worked with COVID-19 patients (n = 105), compared to those who had minimal contact with such patients (n= 101). Qualitative data revealed disruptions in self-care, productivity, recreational, and personal and environmental activities. ADLs/IADLS were impacted among about one-third of the active respondents. Problems in self-care activities included sleep disruption, depression, stress, and fatigue. Self-care activities included personal care (feeding, sleeping), functional mobility (transfers, indoor and outdoor mobility), and community management (e.g., shopping). Occupational imbalance was mentioned by over 40% of the active group due to an increase in workload.

In contrast, recreational disruptions (such as engaging in sports, spending time with friends and family, and going out into the community for dining, movies or plays) were experienced by over half of the respondents. Impacted personal factors included restrictions on going out because of the need to protect self and others from COVID-19. Environmental factors included spending too much time at work. Wearing a mask and personal protective equipment was viewed as tiresome and caused fear. Devoted occupational therapists have faced significant occupational balance disruption brought on by the COVID-19 pandemic.

To summarize, although it appears that occupational therapy practitioners are a resilient and devoted group of health care professionals, the COVID-19 pandemic has changed major aspects of the profession, including where and how interventions take place. The changes have been stressful and sometimes have led to unhealthy coping mechanisms. Telehealth has emerged as both a solution to this problem as well as an uncomfortable means of providing therapeutic intervention. Most professionals agree

that telehealth is here to stay, even if it loses its dominance as we move beyond the acute stage of the pandemic. Although the studies discussed above involved various types of participants, it is apparent that the pandemic changed essential components of intervention and overall caused disruption in job performance and occupational balance. Noteworthy is the finding that the pandemic has resulted in at least a few positive outcomes. For the most part, occupational therapy practitioners were able to adapt quickly, learned to move occupational therapy practice online almost overnight, and the pandemic has forced the profession to reassess and clarify our role in the health care system. Of course, higher level research is needed, perhaps especially to examine the efficacy of these new methods of practice, such as telehealth.

Long COVID

Long COVID, also known as post-acute sequelae of SARS-CoV-2 infection (PASC), is a condition that affects some individuals after they have recovered from the acute phase of COVID-19 (Nalbandian et al, 2021). Hanson et al. (2022) found dominant symptoms of PASC to be fatigue, muscle weakness, cognitive impairment, and mental health problems such as depression and anxiety from studies that collected data from 18 countries. They found that the estimated global proportion of individuals with persistent fatigue following COVID-19 was 58% in 2020 and 52% in 2021. The estimated global proportion of individuals with persistent cognitive symptoms was 32% in 2020 and 37% in 2021. The estimated global proportion of individuals with persistent respiratory symptoms was 22% in 2020 and 24% in 2021. Another study by Lopez-Leon et al. (2021) found that the most common long-term effects reported were fatigue (58%), headache (44%), attention disorder (27%), hair loss (25%), and dyspnea (24%). Other symptoms identified included palpitations, chest pain, joint pain, and anosmia. The authors noted that the high prevalence of long-term effects of COVID-19 highlights the need for ongoing monitoring and treatment for individuals who have recovered from the disease. The study also underscores the importance of public

health measures to prevent COVID-19 infections, given the potential long-term health consequences of the disease.

Rehabilitation sciences, including physical therapy, occupational therapy, and speech therapy, have emerged as important in providing services for managing COVID-19 and long COVID symptoms (Goodwin et al, 2021, Fugazzaro et al, 2022). A rapid systematic review by Ceravolo et al. (2021) highlighted the need for personalized and multidisciplinary rehabilitation interventions that considered the complexity of the COVID-19 disease and the diverse needs of patients. The authors also emphasized the importance of including patient perspectives in the development of rehabilitation interventions and the need for further research to identify the most effective rehabilitation interventions for COVID-19 patients. A systematic review by de Oliveira Almeida et al. (2023) highlights that COVID-19 survivors often experience diminished physical function, reduced ability to perform daily activities, and a lower health-related quality of life.

Hanson et al. (2022) found that individuals with long COVID may experience a range of physical impairments, including reduced exercise capacity, muscle weakness, and fatigue. These impairments can affect their ability to perform ADLs, and negatively impact their health-related quality of life (HRQoL). The study also found that older age, preexisting comorbidities, and the severity of the acute COVID-19 illness were associated with worse physical function, deficiency in ADL performance, and low HRQoL in survivors. However, the duration of hospitalization and the need for mechanical ventilation were not consistently associated with these outcomes. The study highlighted the need for comprehensive rehabilitation programs that include physical therapy, exercise training, and occupational therapy to improve physical function, ADL performance, and HRQoL for COVID-19 survivors. The authors also suggested that multidisciplinary care models that involve various health care professionals, including primary care physicians, specialists, and allied health professionals, were needed to manage the diverse and complex

needs of COVID-19 survivors. Negrini et al. (2022) provided a summary of the recommendations from Cochrane reviews of studies, highlighting interventions such as physical exercise, occupational therapy, respiratory physiotherapy, and cognitive rehabilitation for individuals with long COVID. The article highlighted the importance of evidence-based rehabilitation interventions for individuals with post-COVID-19 conditions and the role of Cochrane reviews in informing clinical practice guidelines.

Aiyegbusi et al. (2021) found that patients with long COVID were at risk for developing various complications, including pulmonary fibrosis, cardiac dysfunction, and thromboembolic events. The risk of these complications could be increased in patients with preexisting comorbidities and those who experienced severe COVID-19 illness. The study highlighted the need for multidisciplinary care models that involved various health care professionals, including primary care physicians, specialists, and allied health professionals, to manage the diverse and complex symptoms of long COVID. The authors suggested that the management of long COVID should be individualized based on the patient's symptoms, complications, and comorbidities. The management of the condition could include pharmacological treatment, rehabilitation, and psychological support. The study emphasized the need for further research to better understand the mechanisms of long COVID, develop effective management strategies, and improve patient outcomes.

Occupational therapy can help individuals with long COVID regain their ability to perform ADLs that are essential to their daily functioning and independence. Demeco et al. (2021) identified several rehabilitation interventions that have been used to address long COVID symptoms, including exercise, respiratory therapy, occupational therapy, and cognitive rehabilitation. The authors noted that these interventions could be delivered in various settings, including inpatient and outpatient rehabilitation programs, and could be tailored to each patient's individual needs. The study highlighted the importance of developing and implementing rehabilitation programs for patients who had recovered from

COVID-19 to address the wide range of symptoms they experienced. The authors suggested that multidisciplinary rehabilitation teams could be beneficial in providing comprehensive care to these patients. However, they noted that more research was needed to determine the optimal rehabilitation strategies and to evaluate their long-term effectiveness.

Overall, existing research suggests that rehabilitation sciences and occupational therapy can play an important role in the management of long COVID. By focusing on patients' individual needs and goals, occupational therapy practitioners can help them regain their functional independence and improve their quality of life. However, more research is needed to better understand the specific components of occupational therapy interventions that are most effective for different types of long COVID symptoms and the optimal timing and duration of occupational therapy intervention.

Case Studies

Authors:

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Background

Case study methodology is a useful approach to study phenomena occurring in a variety of contexts (Hercegovac et al., 2020). It facilitates an understanding of the perspectives of individuals, groups, and systems. The present case study project explored how occupational therapy services were delivered to persons with COVID-19. Five members of the Global Occupational Therapy Think Tank (GOTTT) sought international representation of case studies describing occupational therapy services to persons with COVID-19. Despite attempts to use a multitude of search processes, there was a lack of studies found in most regions of the world, perhaps due to language limitations as well as a disproportionate number of peer-reviewed journal articles in occupational therapy coming from the global north and west.

A total of 13 studies meeting the criteria for review were found at the time of the project, 11 from 2021 and 2 from 2022. There was over-representation of cases from the U.S. as several were from a special issue of the *American Journal of Occupational Therapy*. Of the 13 studies, 7 were from the U.S., 5 from Japan (including conference proceedings) and 1 from Denmark. A total of 27 individuals with COVID-19 were described in the articles (one 14 year-old, 6 of working age, and 20 elderly, including a 93 year-old). Settings represented the continuum of care from Intensive Care Unit (ICU; 4), hospital inpatient (2), outpatient (1), skilled nursing facility (SNF; 1), primary care/home (2), ICU/Pediatric ICU-step down unit (2), and ICU-inpatient-home (1).

Members of the Case Study group of GOTTT developed a template (See Appendix) to compare and then analyze the 13 case studies. Items on the template included introductory information on the source (e.g., article or conference proceeding), the country of the study, the health care setting, composition of the treatment team, type of occupational therapy offered, description of evaluations used, intervention methods, and client outcomes. Two members of the Case Study group piloted the form with two articles and in collaboration with the other three group members revised the form to include information on strengths, client occupational patterns, and additional information pertinent to the case. The five members of the group then each reviewed 5 to 6 articles resulting in each article having two reviews. This approach was to provide triangulation and improve the reliability of the data extraction. The data was then transferred to a master spreadsheet and comparisons discussed by the Case Study group in order to detect common topics and themes that emerged. The sections below expand on the data analysis and provide unique insights into the occupational therapy process for persons with COVID-19.

Evaluations

Among the 13 case studies a total of 51 standardized evaluations or approaches were reported being used, measuring the spectrum of health from client factors to performance skills to occupations (American Occupational Therapy Association, 2020, Occupational Therapy Practice Framework-4 [OTPF-4]). Across the six distinct settings where the cases were seen, the number of different evaluations used in each setting type ranged from 4 in a primary care/home setting and in a skilled nursing facility, to 35 used in the Intensive Care Unit (ICU; see Table 1 and 2).

The expected trend was observed, in that in the ICU the large majority of evaluations pertained to physiological, neuro-muscular, or cognitive factors, whereas in the primary care/home setting the evaluations focused on environmental and occupational realms. In the four settings between

Table 1: Evaluations Reported in 13 Occupational Therapy Case Studies of Clients with COVID-19

Acute Hospital <i>(Hierarchical)</i>	Long-Term Acute Hospital <i>(Hierarchical)</i>	Skilled Nursing Facility <i>(Alphabetical)</i>	Outpatient <i>(Alphabetical)</i>	Primary Care/Home <i>(Alphabetical)</i>
<ul style="list-style-type: none"> • Heart Rate • Grip Strength • Bed Positioning • Bed Mobility • Short Blessed Test (SBT) for Cognition • Interview • Dressing • Person-Environment-Occupation-Performance Model 	<ul style="list-style-type: none"> • Grip Strength • 9-Hole Peg (Hand Dexterity Test) • AM-PAC Daily Activities Short Form • Occupational Profile 	<ul style="list-style-type: none"> • Barthel Index • Continuity Assessment Record Evaluation (CARE) Item Set (Medical, Functional, Cognitive, Social Support Status) • Minimum Data Set (MDS) Section GG (Functional Abilities and Goals) • Occupational Profile 	<ul style="list-style-type: none"> • 1-Min Sit-to-Stand • AM-PAC Short Form: 6 Clicks • Cardiopulmonary Function • CARE Item Set • Functional Cognition • Lawton Instrumental Activities of Daily Living Scale • Role Checklist • Time/Routine Analysis 	<ul style="list-style-type: none"> • Canadian Occupational Performance Measure • Environmental Assessment • Interview • Occupational Profile

the ICU and home settings, a variety of evaluation types were also used.

Evaluations addressed client factors (including strength and cardiopulmonary function, indicating the persistent effects of this severe respiratory viral infection) to ADLs and IADLs. In outpatient settings, a role checklist and a time/routine analysis were included among the evaluations. In four of the six settings, the occupational profile was explicitly reported. Likewise, therapists in four of six settings employed a variety of instruments for assessing cognition and functional cognition. The ICU was the only setting where an evaluation of mental health was reported, via quality of life and post-traumatic stress disorder evaluations, as well as through a “survey” of mental health function. Across all six practice settings there were a total of 36 uses of standardized instruments and 27 uses of non-standardized instruments (albeit some with standard protocols, such as measuring grip strength).

Table 2: ICU Evaluations Reported in 13 Occupational Therapy Case Studies of Clients with COVID-19

Intensive Care Unit (ICU)			
Physio-Neuro-Muscular Factors <i>(Hierarchical)</i>	Cognitive <i>(Alphabetical)</i>	Mental Health <i>(Alphabetical)</i>	Occupational <i>(Alphabetical)</i>
<ul style="list-style-type: none"> • Range-of-Motion (ROM) • Passive ROM • Medical Research Council Scale for Muscle Strength • Bed Positioning • Bed Mobility • Timed Sitting Balance • ICU Mobility Scale • Gait • Functional Status Score for the ICU (FSS-ICU; Bed Mobility, Sitting Balance, Transfers, Gait) • Assessment of Motor and Process Skills (AMPS) • Survey of Physical Function • Post-Intensive Care Syndrome (PICS) at Discharge 	<ul style="list-style-type: none"> • Activity Measure for Post-Acute Care (AM-PAC) Confusion Assessment for ICU • Assessment of Motor and Process Skills (AMPS) • Confusion Assessment Method in the ICU • Cornell Assessment of Pediatric Delirium (CAPD) • Glasgow Coma Score (GCS) • Mini-Mental Status Examination (MMSE) • Montreal Cognitive Assessment (MOCA) • Richmond Agitation Sedation Scale (RASS) • Short Memory Questionnaire (SMQ-40) • Survey of Cognitive Function 	<ul style="list-style-type: none"> • EuroQOL- 5 Dimensions (EQ-5D) • *Health-Related Quality of Life (HR-QOL) • Hospital Anxiety and Depression Scale (HADS) • Impact of Event Scale- Revised (IES-R) • Survey of mental health function • Activities of Daily Living (alphabetical) • Activity Measure for Post-Acute Care Daily Activities Short Form • Activities of Daily Living (ADL) unspecified • Barthel Index • Functional Independence Measure (FIM) • Medical Research Council Scale for Functional Status 	<ul style="list-style-type: none"> • Occupational Profile • Home Evaluation • Return-to-Work

Taken as a whole, on the basis of these 13 case studies, it is reasonable to conclude that occupational therapists were evaluating clients holistically, and in accordance with comprehensive practice descriptions such as the U.S. OTPF-4 (AOTA, 2020). One possible exception to this comprehensiveness may be the relative lack of evaluation of mental health concerns.

Occupational Therapy Goals

Occupational therapy goals were comprehensive across different settings.

Table 3 presents the results found in the literature review as to intervention goals. Interventions ranged from impairment focused goals such as stress, anxiety, pain, and fatigue management, to occupation-focused goals, such as returning to ADLs, work, and leisure.

Occupational Therapy Interventions: Acute Care

Manion and Sullivan (2021) reported a five-week intervention with a Hispanic-American male patient in a long-term acute-care hospital (LTACH) setting in the U.S. The intervention had restorative, compensatory, and educational approaches as evidenced by the focus on hand strength and endurance, ROM, coordination, and fine motor skills, but remained occupation-centered, since the aim of these motor function interventions was promoting independence in ADLs, returning to play the violin, and returning to work as a landscaper. Occupational therapy intervention also focused on the emotional dimension by organizing electronic remote meetings with the caregiver and by providing advice. Authors used a combination of conceptual models of practice, such as Person-Environment-Occupation (PEO), to capture the client's dynamic interaction with his meaningful occupations and thus guide intervention. The Model of Human Occupation (MOHO), was used to construct a holistic approach to therapy and to promote understanding of how occupations were incorporated into daily life. The Dynamic Interactional Model of Cognitive Rehabilitation was used to explore issues in cognition.

Another case study from the U.S. reported intervention in a pediatric intensive care unit (PICU) and occupational therapy with a 14-year-old male adolescent. The 5x/week intervention comprised of a restorative approach, education (of the family), prevention (contractures), PROM to AROM, strengthening exercises, ADLs, energy conservation strategies during ADLs, functional cognition through sequencing activities and games, simulated IADLs, resting hand splints, pressure-relief ankle-foot-orthoses, gait belt, and adaptive equipment. Later, a cell phone for family communication, a whiteboard and marker, and familiar items (e.g., blanket

Table 3: Occupational Therapy Intervention Goals

Authors	Setting	Occupational Therapy Goals
Rich et al., 2022	Veterans Administration hospital	<ul style="list-style-type: none"> • Activity tolerance, participation in occupations, and discharge planning • Improve independence in ADL and IADL • Home adaptation
Wilcox & Frank, 2021	Outpatient occupational therapy	<ul style="list-style-type: none"> • Activity tolerance • Modified fitness routine (including yoga) • Sleep hygiene • Fatigue self-management • Anxiety/depression coping mechanisms • Return to work
Kusano et al., 2021	ICU- corona unit (negative pressure room)	<ul style="list-style-type: none"> • Wiping out sputum and rinsing the mouth to keep the oral cavity clean • Oral ingestion • ADL including walker use, toilet activity, and stair climbing (after ICU discharge)
Sudo et al., 2021	ICU- hospital	<ul style="list-style-type: none"> • Range of Movement (ROM); prevention of contractures, bed mobility, sitting balance at edge of bed • ADL performance with wheelchair • Adaptive equipment, and gait training • Education
Smiley & Reynolds, 2021	Skilled nurse facility	<ul style="list-style-type: none"> • Facilitate independence in ADL's (compensatory techniques, adaptation techniques and safety awareness) • Environmental modifications • Improve strength, endurance, balance, and consider falls prevention • ADL (dressing and bathing) • Pain management in preparation for video visits with family

Slarsky & Kumar, 2021	Community-based primary care	<ul style="list-style-type: none"> • Telehealth identified ADL's (personal care, functional mobility, cooking) • Falls prevention • Leisure • Productivity
Yamamoto et al., 2021	ICU- hospital	<ul style="list-style-type: none"> • PROM • Independence in ADL (gait) • Home assessment
Walter et al., 2021	Long-term acute-care hospital (LTACH)	<ul style="list-style-type: none"> • ADL independence (transfers, bed mobility) • Return to school and sports
Christensen et al., 2022	ICU- Acute Care	<ul style="list-style-type: none"> • ADL performance • Improve cognitive skills
Manion & Sullivan, 2021	Long-term acute-care hospital (LTACH)	<ul style="list-style-type: none"> • ADL • Grip strength • Dexterity
Wilcox, et al., 2021	Hospital, including ICU and Step-Down unit	<ul style="list-style-type: none"> • Energy conservation • Early rehab (13 days at ICU): preparatory activities, early engagement in occupation, and mobilization due to pronounced • Step-Down Unit: activity tolerance, activity prescription, energy conservation, ADL and mobility retraining

from home, photos of family and friends; Walter et al., 2021) were introduced. This study did not report the use of any conceptual models of practice.

Christensen et al. (2022) conducted a study in Denmark and reported the ADL performance and cognitive status in patients with COVID-19 at time of discharge and three months post discharge. The multiple case study described 11 participants with a diagnosis of COVID-19. The median age was 68, 64% were male, 55% were independent in ADLs prior to admission, 55% were retired, and 27% were employed full time. They had a median of 24 days in the ICU. Although the study concluded that patients showed improved cognitive skills and ADLs over 3 months post-discharge, there is no description of the intervention approach(es) used (Christensen et al., 2022).

A case study from Japan described the occupational therapy intervention with a male patient, age 50, who presented with trunk stiffness, lack of ROM, and difficulty with ADLs, given his respiratory deficits (Yamamoto et al., 2021). Occupational therapy was provided for 67 days. The occupational therapy program was impairment-based and restorative and included stretching to expand the thorax and improve flexibility, gait training using a walker, and occupation-based practice of ADLs. The patient was discharged home 188 days after disease onset, and he resumed unassisted living (Yamamoto et al., 2021). No frequency or session-duration information was given. A second study from Japan also had similar interventions with a 60 year old male diagnosed with COVID-19. The intervention focused on improving ROM, upper and lower extremity function, respiration (breathing training), reducing fatigue, getting the client out of bed for mental stimulation, and reducing depression (Saito et al., 2021). Occupational therapy began at day 30 when the client was medically stable. Authors also reported working on ADL training and psychosocial issues (Saito et al., 2021). A third study from Japan presented an intervention with a male patient in his 60's (Sudo et al., 2021). Intervention focused on ROM, education, exercises with

rolling over, sitting up and edge of bed. Once the patient could use the wheelchair, ADLs, adaptive equipment, and gait training were used. At the discharge, the patient improved independence with ADLs, except dressing and bathing (Sudo et al., 2021).

Rich et al. (2022) presented three cases from the Veterans Administration Hospital in the U.S. The intervention approach was based on the Person-Environment-Occupational Performance (PEOP) model. Case 1 described a 69 year-old African-American male living in an accessible home. Case 2 was a 73 year-old Caucasian male living in an accessible home with his daughter. Case 3 described a 78 year-old African-American male living in an accessible home with his family. The focus of the intervention was primarily restorative, compensatory recommendations for the home environment, and educational interventions using assistive technology to re-engage clients in occupations and to prepare them for discharge.

Wilcox et al. (2021) reported the case of a 74 year-old, white, cisgender man with COVID-19 at a hospital including time in the ICU and step-down unit. Interventions were impairment based involving energy conservation and early rehabilitation (13 days in the ICU). Preparatory activities, early mobilization, and participating in occupation were the focus due to pronounced ICU-acquired weakness, severe activity intolerance, limited postural control, anxiety, and neurocognitive impairments. At the step-down unit the focus was activity tolerance, activity prescription, energy conservation, ADLs, and mobility retraining. The therapist using an iPad for video calls as means of emotional support for the client's family played an important role in the client's psychological function.

Post Hospital Discharge: Skilled Nurse Facility, Outpatient, and Community-Based Primary Care

A U.S. case report described a telehealth intervention 2-3x/week for 60 minutes over 30 days with a 89 year-old community-dwelling woman in community-based primary care (Slarsky & Kumar, 2021). The intervention

had priorities such as personal care, functional mobility, productivity, and leisure. Emphasis was given to family-oriented education with suggestions for interventions in priority areas. Compared to other studies, the interventions were predominantly occupation-centered, -based, and -focused (Slarsky & Kumar, 2021).

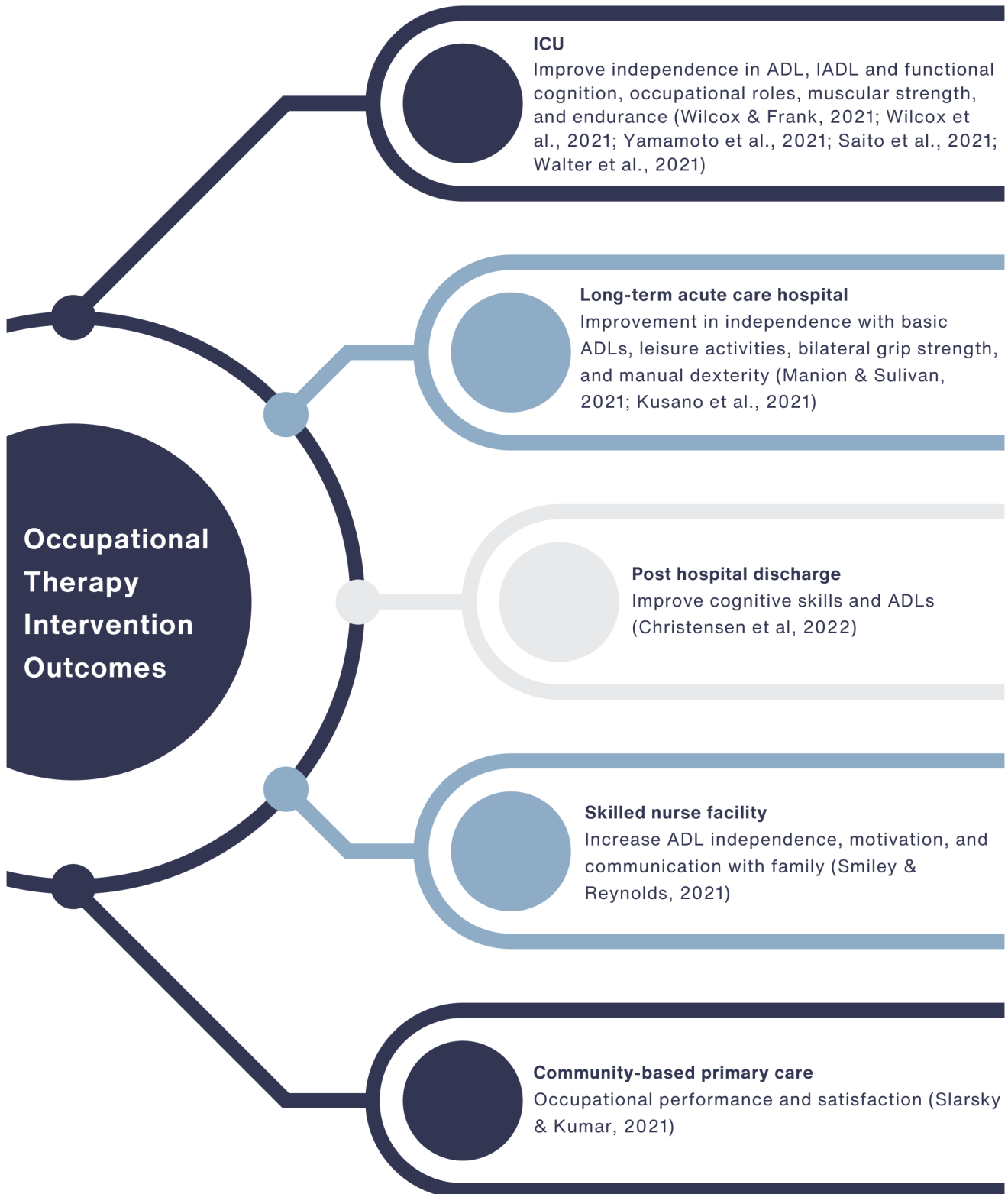
Wilcox and Frank (2021) described a U.S. case with a 32-year-old Hispanic woman in an outpatient setting. The intervention was comprised of one occupational therapy visit weekly for 12 weeks, alternating in-person and via telehealth, providing combined restorative and occupation-centered interventions. The restorative approach involved pursed-lip breathing (PLB), graded preparatory exercise, and exercise. A compensatory approach to IADLs task-specific training used work simplification and energy conservation strategies, PLB during yoga, and multi-contextual metacognitive strategies (Wilcox & Frank, 2021).

Smiley and Reynolds (2021) presented a case study of a 93 year-old male resident of a U.S. skilled nursing facility. The intervention was carried on 5x/week for 10 weeks with an interdisciplinary approach: occupational therapy, physical therapy, and speech therapy working collaboratively. The occupational therapy intervention consisted of graded upper extremity exercises 3x/ week, including weight-bearing activities. The occupational therapist worked with a nurse to establish a pain medication routine. During ADL facilitation, vitals were monitored. The client progressed slowly due to his orthostatic hypotension during activities such as bathing, dressing, or grooming. Finally, the therapist facilitated virtual calls to the family (Smiley & Reynolds, 2021).

Occupational Therapy Outcomes

Figure 1 presents the desired outcomes of occupational therapy intervention during COVID-19.

Figure 1: Occupational Therapy Outcomes



Discussion and Conclusion

Through examination of the case studies presented from a variety of settings it is clear that COVID-19 impacted all facets of not only the patients' lives but also the practitioners involved. Clients were limited in their functioning in all areas including ADLs, IADLs, work, leisure, and cognition. Many studies described the isolation clients faced in clinical settings, being separated from their families, colleagues, and homes as well as from the disruption in their occupational roles as partners, parents, friends, family members, and workers.

Only two case studies provided a rationale using conceptual models of practice. The MOHO, the Person-Environment-Occupational Performance model (PEOP) and the PEO model informed their occupation-centered interventions (Rich et al., 2021; Walter et al., 2021). These two examples illustrate that it is possible to remain genuinely occupation-centered, despite an institutional organization and work culture under the traditional medical model.

Therapists had to quickly change their practices from total in-person to at least partly telehealth, especially in acute care settings. This change forced an isolation on the therapists from their clients, limiting their ability to interact. Yet therapists still had to function as team members. This isolation has furthermore forced many practitioners to face the challenges of burnout and isolation from their own family members as they treated their clients.

Of note throughout the articles was the limited identification of cultural/ethnic backgrounds in clients with the exception of Hispanic-Americans and African-Americans. Age seemed to be the predominant identifier, especially for older clients.

The initial focus in acute care settings was the survival of the client. In some cases, the therapist brought the client into regular family contact by

electronic means. Only one article briefly mentioned mental health as a potential challenge. From cases further along in the continuum of care, for example, for those clients now in rehabilitation, the focus of therapy was increased independence in self-care. Occupational therapists employed activity adaptation, assistive technology, fatigue management, and routine analysis to guide clients to manage their lingering activity difficulties. In each of the case studies, clients on the path of recovery regained functional skills, in some cases regaining the independence they showed prior to their illness. There was less mention of long-term mental health challenges or even issues of long-term isolation from family and friends that might have impacted the clients' ongoing mental health.

The five case studies from Japan, along with the seven from the U.S., offered some possibilities for cross-cultural comparison. Given that the Japanese cases described were mostly treatments in the ICU, it may still be said that there was more overlap between the occupational therapy provided in the Japanese cases and that in the U.S. cases than detectable differences. A comparison with occupational therapy provided to clients with COVID-19 in developing countries must await a future study.

Topics yet to be explored are the long-term effects of having COVID-19 on mental and physical health as well as on social skills (long COVID, post-COVID), and the impact of COVID-19 on occupations in society at large. One example may be a basic change in the use of handshakes in greeting people. Will such changes become a permanent part of world culture?

Limitations

The lack of consistency in case study presentation limited an understanding of the complexity of interventions and outcomes. It is recommended that future case studies follow the CARE guidelines (Riley et al., 2017) for comprehensive reporting of the evaluations, interventions, and client contexts, as addressed by occupational therapists. Several studies did not clearly present the goals of therapy. Future studies should

seek to clearly describe goals, for example, using the terminology of SMART goals. Detailed information such as number and frequency of sessions, type of interventions, models of practice utilized would give a clear representation of occupational therapy practice during COVID-19, and provide guidelines for future practice. Ultimately, uniform and comprehensive reporting could allow for the comparison of interventions across countries and regions of the world. Such a comparison could highlight the universal aspects of occupational therapy, as well as how the local culture, economy, and health care systems influence the provision of care.

Austrian Experiences

Post COVID – Austrian experiences: Developing Occupational Therapy related evidence and expertise for clients post viral infection with SARS-COV-2

Authors:

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Keywords: PRECISE Project; register study; post COVID; rehabilitation, occupational therapy

Our intention with this publication is to contribute to the international intra- and interdisciplinary discourse, and to shed light on recent developments and research-based insights related to occupational therapy interventions “post-COVID” from an international perspective. Sharing experiences may foster further professional and research-related international exchange for the sake of people affected by symptoms post viral infection with SARS-CoV-2.

Context and History in Austria

In February 2020, first persons infected by SARS-COV-2 were admitted to the Medical University Hospital of Innsbruck, Tyrol, Austria, Department of Internal Medicine. University-Professor Dr. Judith Löffler-Ragg, specialist in internal medicine and pulmonology and chief physician, was engaged from the very first day in offering the best possible medical care to this client group; in response to a health condition thus far neither experienced nor researched. She initiated an interdisciplinary, interprofessional register and intervention study - the so called PRECISE project - mainly focusing on Tyrol (Austria) and South Tyrol (Northern Italy), intending to register and monitor people affected by COVID-19 and

its subsequent symptoms (Sahanic et al., 2022; https://inneremed2.tirol-kliniken.at/data.cfm?vpath=teaserbilder/dokumente/study_protocol_translated_combined-north_south-tyrol_version_29_04_2021).

While the “first wave” in early 2020 brought foremost critical respiratory health problems, other symptoms such as fatigue, pain, neurocognitive and sleep problems were predominant in post-viral infections with SARS-COV-2, even for patients with less severe illness during the pandemic.

In June 2021, Prof. Dr. Löffler-Ragg offered an open online lecture on first insights related to the health condition evoked by SARS-CoV-2. After the discussion session, which included questions relevant to occupational therapy referral and clinical reasoning, she, as project lead, invited Prof. Ursula Costa, PhD, MA to join the interdisciplinary project team. This was the beginning of an intense phase of designing, offering, evaluating and scientifically studying occupational therapy intervention for people affected by health problems post viral infection with SARS-COV-2 (“long/post COVID”) (Costa et al., 2022), as one part of a larger interprofessional and interdisciplinary study (see <https://www.liv.tirol/page.cfm?vpath=index>).

Occupational Therapy Intervention for Persons Affected with Health Problems Post Viral Infection with SARS-COV-2

The starting point in 2021 was 10 clients referred by the Medical University Hospital of Innsbruck (Prof. Dr. J. Löffler-Ragg, Priv.-Doz. Dr. K. Kurz) to the Occupational Therapy and Occupational Science Department at the Health University of Applied Sciences Tyrol, Austria (Prof. Dr. U. Costa & team).

In the joint ethics approval, we had – based on the first international publications and best occupational therapy practice theoretical guidelines – different occupational therapy assessment tools listed. In a pre- and

post-intervention study design, we intended to use the Canadian Occupational Performance Measure (COPM), Fatigue assessment scales (FAS), WHOQOL-BREF (for assessing health-related quality of life; WHO, 1996), grip strength, and work with occupational profiles. When meeting our first client for an in-person occupational therapy evaluation, we immediately realized that a conventional diagnostic and therapeutic approach was neither scientifically nor ethically appropriate. We had to adjust our expectations and modify our procedures when gathering occupational therapy-relevant information on the current and mostly unforeseeable, neurobehavioral, cognitive, and energetic fatigue-related condition of the client. Most importantly, providing information and collecting data through assessments had to be done so as not to risk an aggravation of the client's overall health condition. Avoiding so called "post exertional malaise" (PEM) – the worsening of symptoms even after minor physical, cognitive, or emotional demand, called "crash" by the clients themselves - was and is key when working with this client group.

Moreover, it appeared to be key to adjust the intervention setting to the individual and actual health condition of the clients to that of a flexible, conventional setting not usually practiced by outpatient occupational therapy services. With some clients, we started and had to stop after seven minutes of telephone counseling (in order to avoid PEMs and contribute to energy conservation), while with others, we could begin with 20 minutes of occupational therapy intervention in person. A third group benefited most by tele-coaching and tele-consultation using Zoom with or without video transmission. The clients' tolerance concerning duration, frequency, and "location" of the occupational therapy intervention varied and was an issue throughout the therapeutic process. The client's tolerance has differed greatly, so that therapists need(ed) to be most flexible in their approach, including finding the most suitable individualized setting. Consequently, future challenges will be to create new flexible reimbursement models in order to best serve clients' resilience and recovery within the health care system.

Occupational Therapy Research and Practice, Exchanging Knowledge

Since November 2021, the occupational therapy intervention and research-team at the Health University of Applied Sciences Tyrol has followed up almost 50 clients, 19 – 59 years of age. Since May 2023, a few affected youth have also been admitted to our university research and health service delivery affiliated occupational therapy/occupational science department. The youngest was 13 years of age.

One of the first author's research interests and focus over the past decades has been efficacy factors and best practice in occupational therapy. The insights generated thereby have greatly supported the intervention approach for clients suffering from "post-COVID." Our occupational therapy team was in essence following the KRAH®-model (Costa, 2014), which suggests a combination of top-down and bottom-up interventions within a participatory, resilience-strengthening, and shaping of the occupational therapy process with some key criteria: client-centeredness, resource-orientation, relevance for the corresponding person's daily life, and enabling a meaningful dimension in occupation and participation. Another asset was the synchronous work on a research project on the use of occupational profiles in the occupational therapy process. This became a main tool for assessment, goal setting, intervention, self-reflection and self-actualization, and evaluation for and with this client group as they searched to develop new occupational routines, patterns, interests, and identity.

Our first findings and insights were presented in March 2022 at the national occupational therapy conference in Innsbruck. Lisa Sperl, at that time a masters student, and member of the research team of Prof. Dr. Tanja Stamm, PhD (Medical University of Vienna, Outcomes Research) presented their findings about an adapted version of the Yorkshire assessment in the context of long COVID. This led to one of the first (joint) papers in the Austrian occupational therapy journal on this topic (Costa, 2022; Sperl & Costa, 2022). In 2021, the team around Tanja

Stamm had already highlighted the need for evidence-based guidelines in the treatment by health professionals of patients with COVID-19 (Stamm et al., 2021). At that time, Stamm et al. also found that there were only four guidelines covering non-physicians and no guideline concerning occupational therapy interventions.

In 2022, several “long/post-COVID”-relevant German language papers were published in occupational therapy journals (Austria, Germany, Switzerland). Most of them were based on practice evidence. Additionally, the online professional exchange group on “OT and long COVID”, hosted by Elisabeth Semotan-Rigler, became active and supported intraprofessional exchange on experiences, findings, and discussions of the few international and German language publications related to this new and highly varied health condition. The work and publication of A. Weise and R. Herrsche in Switzerland brought some further valuable insights (Herrsche & Weise, 2022).

An Austrian S1-Guideline for Persons Affected by Post-COVID Symptoms

In summer 2022, thanks to Prof. Dr. Löffler-Ragg, Dr. Kurz and our cooperation within the PRECISE project, the first author was invited to join a national interdisciplinary team for updating the so-called S1 guideline for primary care physicians. As a supplement, Dr. Susanne Rabady from the Austrian National Public Health Institute (Gesundheit Österreich GmbH [GÖG]), offered to co-author a specific occupational therapy guideline for persons with health problems post viral infection with SARS-COV-2. Besides being involved in this essential and enriching interdisciplinary discourse of physicians and scientists from many medical fields relevant to SARS-COV-2 and other subsequent health issues, this opened up the opportunity to synthesize occupational therapy-relevant evidence and recommendations as far as available, in order to suggest the best intervention (i.e., evaluation, counseling, coaching, designing of environments, advocating for other health-relevant services). Both Austrian S1 guidelines for health conditions post COVID-19 were published

in summer 2023, after approval by all relevant professional associations, and are intended to disseminate current knowledge for best interprofessional primary health care provision (Costa, 2023; Rabady et al., 2023; see also Royal College of Occupational Therapists, n.d.).

Insights, Relevant for this Health Condition and Beyond

When systematically examining the findings of our exploratory study, combined with the provision of occupational therapy services for clients with symptoms post-COVID, we noticed that some clients needed to be considered for other health conditions as well. Nevertheless, the following principles have been shown to be helpful for this defined client group:

- The reported symptoms are highly diverse and vary over time;
- occupational roles, occupational identity, and occupational balance were highly compromised in this client group;
- clients felt misunderstood when their somatic issues were explained as primary, not secondary mental health problems;
- occupational deprivation mostly had an impact on occupational identity – therefore, addressing and re-shaping the client’s occupational history is essential in a holistic occupational therapy approach;
- occupational therapy has to be highly individualized in terms of frequency, duration, and overall setting; this may lead to new flexible, across-the-intervention-process individualized health insurance/reimbursement-models;
- using tele-intervention was important especially in the beginning of the intervention process when symptoms were severe (coming to the outpatient clinic for occupational therapy treatment would have been too stressful for the client);
- KRAH®-based intervention, combining a top-down AND bottom-up-approach, building on occupation- and participation-relevant resources of the person, environment, and meaningful activity, fosters resilience and rehabilitation;

- the occupational profile has shown to be a promising tool for occupational therapy intervention which focuses on daily life, occupational patterns, occupational balance, biopsychosocial and spiritual health related to meaningful occupation;
- to analyze the sensory environment together with the client (and/or significant other) was essential as many clients experienced sensory intolerances (eventually sensory processing issues); thus the role of the occupational therapist also consisted of coaching and consulting related to environmental design and assistive devices (e.g., using dark sunglasses, adapting/reducing light and noise in rooms);
- working together on an interprofessional team, including case- and care-management, is key in providing timely, sustainable services and avoiding or reducing the poverty which is a possible consequence of prolonged health problems, causing an inability to pursue one's job responsibilities.

Ongoing Concerns

An important question for our post-COVID-related research and intervention team in Tyrol is how to transfer the interventions to remote areas. Currently, we are embedding existing evidence including the lessons learned into the education of occupational therapy students. Offering continuing education for practicing colleagues in more remote areas is also planned.

Some other concerns:

- Many clients are facing poverty and existential issues due to long-term illness (many are suffering long-term resistant symptoms 5 months and longer).
- Nutrition, pain, and sleep management are furthermore relevant aspects when working with this client group.

- An important aspect of the interventions is to include the social environment, working with next of kin and caregivers, which needs consideration and corresponding reimbursement. Having close contact or caring for small children, joining family gatherings or even coping with noise in daily life oftentimes is overwhelming for this client group and may impact their social relationships. Few who are heavily impaired can fulfill their occupational roles.
- The PRECISE-project is financed until 2023. This year, we are offering and evaluating a short-term OT-intervention focusing on coaching and case-management, with optional follow-up of 10 additional occupational therapy intervention sessions, mostly in individual settings. Offering group treatment is highly complex and requires careful composition of the group for people living with post-COVID symptoms.

Summarizing, this new health condition calls for flexible, responsive occupational therapy intervention within a highly specialized interprofessional team. The condition affects every policy sector, as implications can be identified in all aspects of human participation. As occupational therapists, it is an honor and responsibility to add our professional perspective to an interdisciplinary team on micro-, meso-, and macro-levels. After our experience in these processes, we would like to bring together what made this entire project and learning possible. We wish to encourage others to be open to new challenges in health care, by joining open lectures, contributing with your professional viewpoint or with your questions in open (plenary) discussions; by identifying occupational therapy indications and referring to them in your discourse; by engaging in joint research adventures; by offering your expertise in designing intervention projects; and by being, staying, and continuing to be flexible, even while working in a structured way.

This publication is based on the empirical and research-related engagement with and for clients affected by “post-COVID health conditions” in Tyrol, Austria (Prof. Dr. J. Löffler-Ragg; Prof. Dr. U. Costa &

team), and is realized through the GOTTT, thanks to the initiative and networking activities of Dr. V. Tatzler. The updated S1-guideline, coordinated by Rabady et al. (2023), as well as the occupational therapy guideline are published and available.

Conclusion

According to the WHO (2023), as of August 2023, there have been almost 770 million confirmed cases worldwide of COVID-19 and almost 7 million deaths. Persons over 65 years old are the most vulnerable to having severe symptoms and deaths. In addition to age as a significant risk for mortality, those individuals with diagnoses of diabetes, coronary-vascular diseases, cancer, pulmonary and dementia were most susceptible to the disease.

In the comprehensive monograph by the GOTTT that scanned research, case studies, and experiences, and reflection, we found that occupational therapy's role and response to the pandemic are as follows:

- The prominent symptoms of acute and long COVID include respiratory disorders, fatigue, muscle weakness, cognitive impairment, mental health problems including depression and anxiety, headaches, chest pain and joint pain.
- The prevention and treatment of COVID-19 is a multidisciplinary effort of health care workers including physicians, nurses, respiratory therapists, medical technologists and rehabilitation practitioners. Each of these healthcare professionals have an important role to play in a comprehensive approach.
- Occupational therapy has a specific role in treating individuals with COVID-19 with the overall goal of helping the individual through a holistic approach to regain function and independence in activities of daily living, work, and leisure occupation.
- Occupational therapists intervened with patients in various settings including hospitals, ICUs, outpatient clinics, skilled nursing facilities, and telehealth.
- Telehealth through video links and telephone was used in interacting with patients. There was a high satisfaction rate from both the practitioner and patient in using this approach.

- Occupational therapy interventions included education in improving the patients self-care routines, sleep hygiene, breathing and relaxation techniques, fatigue management and energy conservation, cognitive exercises, hand strengthening activities, adaptation equipment, and ergonomics in the home environment.

The findings of our robust study strongly urges a global solidarity of occupational therapists in research and other studies to establish a solid footing of the profession in health care delivery during global pandemic and disaster.

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* Indicates a case study used in the analysis

Appendix

Outline of Data to Extract from Case Studies (18 Oct 2022)	
Reference to the article [Please provide the complete/ full reference of the article analyzed]	
Type of source: peer-reviewed journal, newsletter publication, conference proceedings, authors, country of the study	
Research design (one case/>1 case; therapist as author, etc.)	
Objectives of the study and the intervention goals	
Participant age, gender, diagnosis (COVID or long-COVID), previous health conditions, occupational profile	
Setting: hospital, rehab, long term care, home	
Person treating: OT w/ or w/o other team members	
Physician referral?	
Evaluations/assessments used	

Initial issues	
<p>OT intervention principles/approaches: acquisitional, restorative, compensatory and educational (using AOTA Framework terminology).</p> <p>Approach: Occupation-based, Occupation-focused.</p> <p>Type of resources utilized. For example, specific technology utilized, for example, alternative communication, virtual reality, assistive devices, etc.</p>	
Length of time, frequency, number of sessions (30 mins, 3X/week, for 6 weeks)	
Results over the course of the intervention (mid-intervention adjustments?)	
Re-assessment/performance/outcomes at discharge	
Author conclusions: including limitations and future studies.	
Other pertinent info (role of OT, health system issues)	

***Numbers/letters to index these categories for ease of later comparisons