



ORIGINAL ARTICLE / ОРИГИНАЛНИ РАД

Pediatric rehabilitation services during COVID-19 pandemic in the United Arab Emirates

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SUMMARY

Introduction/Objective COVID-19 pandemic has changed the rehabilitation practice across the globe. A sudden transition from in-person therapy at the center to remote therapy challenged the managers and multi-disciplinary team members providing pediatric rehabilitation. The main objective of this research was to assess the provision of services for children with disabilities during COVID-19 in the United Arab Emirates.

Methods Two surveys were developed by the research team, one for the managers and the others for multidisciplinary team members. Both surveys were validated through experts followed by a pilot study. The final versions of the survey were sent to all the pediatric rehabilitation centers within the United Arab Emirates in September 2020. A total of 44 managers and 434 multidisciplinary team members completed the survey.

Results The accessibility of the pediatric rehabilitation services was reported to be very high with 77%. Regarding the cost for running the services, almost half (46%) of managers reported them to be costlier than normal. Telerehabilitation was the most common approach utilized with synchronized live video calls (86%), YouTube video clips (88%), and created own videos (65%).

Conclusion Telerehabilitation appeared to be the most efficient model used for pediatric rehabilitation during the pandemic. The future investments for the continued use of telerehabilitation require planning, budgeting, investing, and creating supportive environments for parents, children, and multidisciplinary team members. There is a need for sharing platforms for educational and therapeutic resources created during the pandemic, with ongoing research on telerehabilitation.

Keywords: COVID-19; pediatric rehabilitation; telerehabilitation; pandemic

INTRODUCTION

COVID-19 pandemic has seen changes in professional practice across the globe. Most healthcare services that provided non-emergency, long-term care were closed in early 2020 in several countries [1]. But within a span of fortnight to a month, the healthcare sectors considered alternate ways of providing services in several countries including the United Arab Emirates (UAE).

British Broadcasting Corporation (BBC) in one of their articles published on May 1, 2020 titled *Coronavirus: Disabled people 'forgotten' by governmental strategy* highlighted the importance of continued care for those with long-term disability. They emphasized providing better funding and resources during the pandemic. They also raised concerns about the vulnerability of the disabled and that confining them at home without proper therapy could seriously impact physical and mental health [2, 3, 4]. The other main concern during the lockdown was deterioration in a child's physical and mental health as there was alarmingly high percentage of children who lost access to

one or more multidisciplinary team (MDT) members [5].

An MDT-approach for pediatric rehabilitation is crucial [6]. During COVID-19, it became imperative to provide services from all MDT members mirroring the one that would run physically in the center. With little or no prior experience, many MDT members were challenged to use remote services for their patients. It was crucial to adopt a biopsychosocial model in rehabilitation, thus strengthening the role of families during COVID-19 [7].

One of the popular options during the pandemic for receiving special education, behavioral therapies, and therapeutic intervention was through telerehabilitation (TR) [8–11]. Camden et al. [6] in their systematic review prior to COVID-19 found that TR was used for children but more as a blended approach mainly by psychologists for coaching the families and addressing behavioral issues. Some studies reported on TR for musculoskeletal disorders [12, 13], but very seldom for neurological conditions particularly for children with disabilities [14].

This sudden need for transition from in-person pediatric rehabilitation services to

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remote therapy became very challenging for organizations and MDT members. There were growing concerns about preparedness of centers and MDT members working in pediatric rehabilitation centers. Given the lack of studies in this area, this research was undertaken with an intention of exploring the provision of rehabilitation services for children with disabilities during COVID-19 in the UAE. The goals of the study were to determine the following: 1) what approaches were taken by managers and MDT members to continue pediatric rehabilitation services within the UAE during COVID-19; 2) what support has been received by the organizations in terms of funding, resources, and training since pandemic in the UAE; are these resources sustainable if the pandemic continues; 3) what barriers were faced by the MDT in continuing services during the pandemic; 4) what the plans for utilization of these approaches post-pandemic are.

To accomplish these goals, a survey method was employed with subsequent descriptive analysis that included quantitative and qualitative analysis of the data.

METHODS

The study was conducted as collaborative research between an academic institution and rehabilitation center in the early stages of pandemic during the lockdown period in the UAE. During the lockdown period, only essential services were open, and the rest of the services were offered online and remotely to all residents. The survey was developed by the research team in May–June 2020 based on the concepts of remote therapy and considering the lockdown situation during the COVID-19 pandemic. Ethical approval for the study was obtained from the Fatima College of Health Sciences (INTSTF013PHY20) by September 2020. This study employed survey methods using an online survey tool, which was sent to pediatric rehabilitation centers in the UAE that provided short- and long-term care. The survey was open for a total of six weeks from September to November 2020 to acquire the maximum response.

The survey questions were in English and were validated using a two-step process – face validity and pilot study. The survey questions were sent to eight professionals who had experience in pediatric rehabilitation and research. Once the expert feedback was received, the survey questions were revised, and a pilot study was conducted with two managers and 10 MDT members. The final version of the survey was then updated. The survey had questions that were both open and with choices. Those hospitals providing emergency pediatrics care were excluded from the study. Two different surveys were sent through the Abu Dhabi Statistical Center in September 2020, one for the managers and another one for the therapists were opened for three weeks to get maximum responses. All those professionals (special educators and allied health professionals) working in rehabilitation centers for children with disabilities were included in the study.

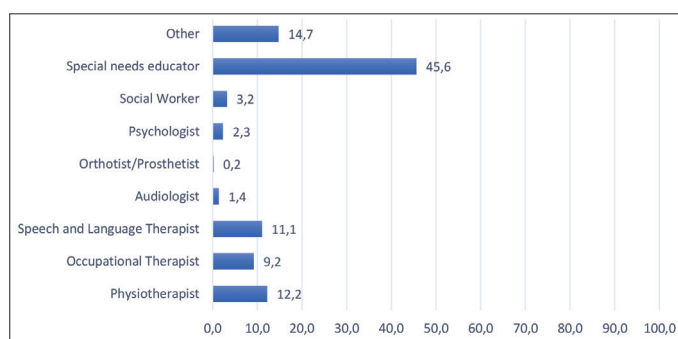


Figure 1. Disciplinary background of a multidisciplinary team, in %

The survey for managers contained questions related to demographic data, if their organization was operational fully or partially, if the support provided for service users, employees will continue services during the pandemic, and if there was a post-pandemic plan for utilizing these modes. The questionnaire for MDT members included demographic data, type of approaches utilized during the pandemic to provide therapy or education, the challenges and barriers they faced in using the new means.

The survey was analyzed using descriptive statistics. Numbers and percentages were used to present the data. Since the participants were allowed to choose more than one option, the percentages in most questions went beyond 100.

RESULTS

The responses were received by all seven emirates of the UAE from 44 therapy managers and 434 MDT members. Of the 44 managers (12 males and 32 females) responded to our survey, eight were managing over 50 members of staff, 20 were managing 20–50 members of staff, and 16 were managing up to 20 members of staff.

A total of 434 MDT members (122 male and 312 female) responded to our survey, of which 382 were working full time. The healthcare professionals completing the survey were special educators (197), nurses and doctors (64), physiotherapists (54), speech and language therapists (48), occupational therapists (40), social workers (14), psychologists (10), audiologist (6), orthotists (1) (Figure 1). Responses were received from a variety of centers, including governmental (58.5%), semi-governmental (15.5%), private (15%), non-profitable and charitable institutions (11%) providing one or more of the following services for disabled children – school-based rehabilitation centers; long-term outpatient departments; acute rehabilitation centers; home care services; long-term in-patient services.

The responses from the managers showed that about 50% of the centers were fully open during the pandemic, about 30% were opened partially, and 20% were closed. The accessibility of services for children with disabilities during the pandemic was reported to be very high (77%). During the pandemic, the managers reported major organizational adaptations, such as reorganization of their team, crisis management, organizing staff training,

reallocation and planning of the new budget. Regarding the cost for running the services, almost half of the managers (46%) reported them to be costlier than normal, 32% reported less than normal, and 22% reported a similar cost.

TR for pediatrics during COVID-19 as reported by MDT members

Most of the institutions used multimodal approach during the COVID-19 pandemic. TR (86.2%), followed by phone consultations (41.5%), institution-based therapy (6%), no therapy provided (4.8%), mobile clinic (3%), home visits (3%), were mainly utilized for providing therapy for children during the pandemic (Figure 2). Only 22% of the participants (95) reported to have used TR before the pandemic for pediatric services. During the pandemic, MDT members reported to have utilized TR in mild (90%), moderate cases (63%), and severe disabilities (13%). It was also reported to have been used in patients with multiple disabilities (11%).

Two main methods of TR were pre-recorded video clips (88%), and live video-calls synchronized with the sessions (86%), found to be utilized either on their own or in combination (Table 1). About 77% of the participants reported using videos from YouTube for therapy sessions; 65% of them reported to have additionally created their own videos. The videos created during the pandemic were filmed by participants themselves and/or by their peers (72%). Only 12% of them managed to obtain professional videographer services. The quality check before releasing the videos were reported by only 28% but it was not clear how this was done. Other platforms such as Physio Tool or Rehab My Patient were reported to have been utilized by a small percentage of participants (13%).

Several barriers in providing continued care through TR for the clients during the pandemic were mentioned in the survey. The participants felt that the parents appeared to be busy at work or engaged in other tasks (75.1%), had network issues or technical difficulties of using online programs (61.5%), reported parents' unresponsiveness and poor commitment (59.4%) and parents' anxiety about providing therapy (43%). The participants were asked to provide the positive and the negative effects of working remotely during the pandemic using TR. The positives were flexible hours (67.3%) and better family and personal time (32.7%). Some of the negative aspects were as follows: therapy sessions consumed longer hours than usual (67.5%), anxiety (44.9%), lack of teamwork (44.2%), increased tiredness (38.2%), lack of personal time (34.1), lack of sleep (22.8), and lack of working efficiency (18%).

The participants expressed the importance of continued TR at home during the pandemic (88%). They were concerned about the consequences of discontinuing therapy and its impact on impairments, function, and the quality of life (58%). Hotline numbers to reach different members of MDT were arranged by the centers (37%). The therapists scheduled online sessions well in advance with the parents (78%), centers provided electronic devices for home use (43%), educated parents on how to use video-calling

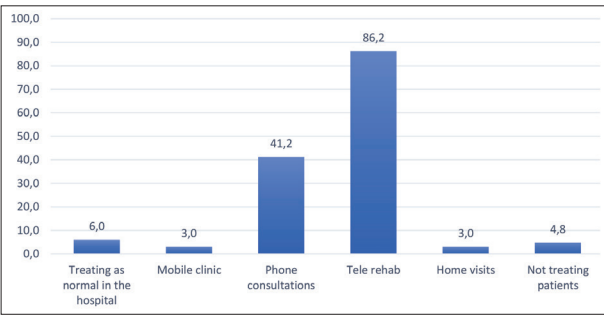


Figure 2. Type of approach provided by a multidisciplinary team, in %

Table 1. Telerehabilitation methods during the COVID-19 pandemic

Methods	% of therapists utilizing the method
Pre-recorded video clips	88
Live video call synchronized with the sessions	86
Created own videos	65

application (59%), provided therapeutic equipment for home use (42%), encouraged parents to maintain therapy logs (35%), and ensured the supervision of parents during TR sessions (74%).

Utilization of TR post pandemic

Both managers (75%) and MDT members (69%) felt that the utilization of TR post-pandemic would be minimal and would only be used in exceptional circumstances once the services return to normal post pandemic. It was also acknowledged by both sets of participants (68.7%) that TR would be an additional method of providing therapy only in exceptional circumstances.

Both managers and MDT members (70%) reported that the response of children to TR was good to excellent.

With the ongoing pandemic situation, the managers reported to have been budgeting for both short- and medium-term plans for continuing services and investing in TR (81.1%), opening new ways through artificial intelligence (54.5%), plans for home visits (34.1) and mobile clinics (25%).

The managers felt that during the pandemic it was crucial to provide backing to the therapists and clients in terms of psychological support, managing infection control, reassurance and financial support. They further felt that there should be far more financial support from the government for research and subsidies for healthcare. The insurance companies did not recognize and pay for the TR services for those clients that depended on the insurance for the payments, and this could be one of the reasons for the decline in patient numbers.

Similarly, the therapists identified the areas in which investments must be carried out if TR was to continue during the pandemic and the main requirements were investing in servers (72.8%) and developing mobile applications (67.1%), building websites (62.7%) with an opportunity share common resources between the centers (70.5), printing educational leaflets (44.5%) and producing marketing

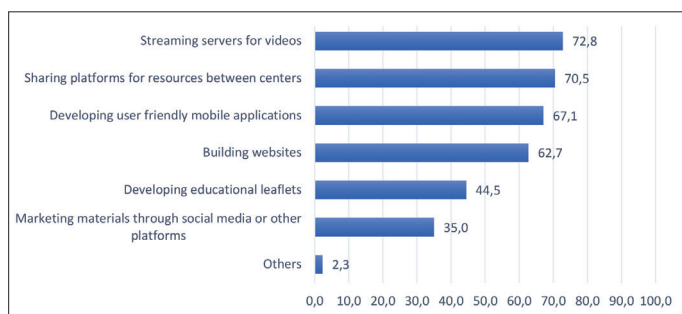


Figure 3. Investment for future telerehabilitation by a multidisciplinary team

material through social media and other platforms (35%) (Figure 3).

DISCUSSION

The primary aim of this research was to assess the provision of rehabilitation services with associated opportunities and challenges for children with disabilities in the UAE. Abu Dhabi and Dubai have multiple centers that provide pediatric rehabilitation, which is in contrast to the other emirates; hence, the response rate was higher in the former. Most rehabilitation centers in the UAE are large and public, providing school-based rehabilitation services that employ many special educators; hence, the responses from special educators were higher when compared to health-care professionals.

It was important to attain the perspectives of the special educators as they were posed with unique challenges during the COVID-19 pandemic. The preparedness of these educators was of great importance for the continuation of education for autistic, visually, and hearing-impaired students [15]. It was required of them to be as innovative and creative as possible to rapidly respond to the needs of the family and child [16].

Our findings showed that most centers were functioning during the COVID-19 pandemic and the accessibility of rehabilitation services was very high. The centers were aware of the negative impact of discontinuing the services and the best alternative method had to be considered. Our study showed that TR was utilized during the lockdown of the COVID-19 pandemic.

Telemedicine or telehealth is not a new concept, but the popularity grew during the pandemic for most aspects of healthcare delivery. Its use in pediatric rehabilitation had been very limited prior to the pandemic. Our results show that only 22% of participants had used TR prior to the COVID-19 pandemic, but it is not clear for what type of services it was used. Previous research showed that psychologists utilized the approach for coaching, in order to improve parents' approach and children's behavior [6]. This could not be confirmed from our study due to the number of responses received from psychologists.

With regard to the modes of TR, our study showed both synchronized video-sessions and pre-recorded videos were equally utilized. It was found that the participants spent long hours in searching for suitable videos on social

platforms but due to the limited resources they reported to have created videos. Invested time and resources in creating these videos demand a suitable platform for sharing these resources for wider use. This calls for creating more sharing space and the need for policies to protect intellectual property.

The sudden shift from in-person service to TR posed challenges for MDT members, parents, and organizations. The lack of prior experience in using TR by physiotherapist and occupational therapists working on motor skills is also reported by Kaur et al. [11]. The limited use of TR in pediatrics to improve motor skills was found by Camden et al.

[6], who reported that it had effect on only a few outcomes. TR in our study was mainly used for mild to moderate cases of disability. This could be because it was employed only by those requiring simple hands-on therapies that could be safely applied by parents, as opposed to those with moderate and severe cases of disability [9].

Although TR sessions were scheduled well in advance with the parents, they found it difficult to manage their daily schedule during the lockdown. This could be because most families in the UAE live in extended families, usually with three or more children, and during the lockdown, they had to give attention to other members of the family working or studying at home. Parents who would normally accompany the child to the rehabilitation center got much busier during the lockdown as most of them also had to support online learning of their other children. Parental distraction and non-engagement were also reported in other studies and with the ongoing situation regarding the COVID-19 pandemic, it is suggested to consider individual family circumstances prior to arranging TR sessions, which could lead to better collaboration between the MDT and parents [1]. Pellicano and Stears [17] highlighted similar issues faced by families of disabled children and increased vulnerability during the COVID-19 pandemic.

The effectiveness of TR depended on the availability of equipment and technical support to run the sessions. Although our study indicated that some centers provided the needed devices to the families, other technical issues were reported, such as an unstable internet connection and difficulties in using online programs and equipment. Considering that the UAE is a high-income country with a developed infrastructure, it was easier to overcome the barriers by improving internet connections, developing user-friendly apps, and employing other telehealth solutions [18]. The importance of digital literacy is emphasized in Scott Kruse et al. [19]. Similar barriers to an effective implementation were identified in other studies done within the Gulf region [9, 20]. This could be easier for people living in urban areas and for high-income families, but might always be a challenge for families with low income and in rural areas [4, 21].

Although our study indicates that the post-pandemic use of TR for pediatric patients is minimal, we believe that there can be a continued employment of TR, used only in exceptional circumstances – due to the fact that there are several advantages of using it in situations such as when

the child is unable to physically be present at the center, for short consultations, for clarification of any doubts, and infection control. Concurring with Albahrouh and Buabbas [9] and Kaur et al. [11], we too suggest investing, drawing policies and practice guidelines to facilitate the effective use of TR for its ongoing use.

Maintaining child interest during the TR sessions is challenging. Engagement during TR is much lower compared to face-to-face sessions due to attention deficit, screen fatigue, inadequate supervision from parents and the presence of other siblings [11, 14]. The authors suggest using interactive play-based therapy, creating virtual community and support groups for parents.

Fear and anxiety of parents therapeutically handling the child was reported by the therapists in our study. Parents who were not previously involved in handling some of the motor impairments had to engage, and this could pose issues related to parents' confidence and low satisfaction in therapeutically handling the child [22]. With the uncertainty based around COVID-19, it was difficult to determine the timeline to return to therapy centers. Parental burnout during the COVID-19 pandemic is discussed by Griffith [21], who highlighted child abuse or neglect. High caregiver engagement is emphasized by Hall et al. [23].

The COVID-19 pandemic has accelerated the implementation of TR in clinical care, and it is becoming a new norm in clinical practice both during and beyond the pandemic [24]. Concurring with previous research, we too believe that TR as an important alternate method that provides novel opportunities due to its cost-effectiveness, remote accessibility, time saving, flexible scheduling for families, and the ability to overcome geographical barriers [14, 25, 26]. We further believe that it is a means of empowering parents and a way of being actively involved in decision making [27, 28]. We acknowledge the need for technological support, standardization of teleassessment, TR delivery guidelines, and effective strategies to increase motivation and enhance cooperation of child and parents [11, 23]. The post-pandemic use of TR is, according to our study, still questionable – whether it would be used in situations in which the child is unable to attend therapy in person at the center. There is a need for planning, budgeting, investing, and creating supportive environments for parents, children, and MDT members to effectively apply TR services for pediatric rehabilitation.

One of the bigger strengths of our study is that it included managers and diverse MDT members covering all the major pediatric rehabilitation centers from the seven

emirates of the UAE. The collective perspectives as presented in our study could serve to draw guidelines for the provision of remote pediatric rehabilitation within and beyond the UAE.

There are several limitations of this study. The data for the study were collected during the early phases of the COVID-19 pandemic, at the time when alternative services, such as TR, were just being considered, with no clear policies and procedures. As it has been over two years since the beginning of the pandemic, there is a need for a follow-up study to examine how well TR has been engaged with throughout the lockdown period and if policies or practices for its ongoing use have been developed. Another limitation of our survey was the opportunity to choose more than one option – we had some mixed or missed responses and this could be due to misinterpretation of the questions or to not paying attention to all the options. This could have been overcome by an in-depth interview and future research should consider the option. Our study had disproportional representation of MDT members and we might have missed the opportunities to obtain the balanced view from all professionals involved in providing services.

CONCLUSION

The main goal of our study was to explore the methods utilized for providing services by pediatric rehabilitation centers during the COVID-19 pandemic. TR was the most common method that enabled the continuation of the services followed by phone consultations. However, commitment and engagement of parents, technical issues, and fear/anxiety of parents were some of the challenges of using TR. Future research can focus on understanding the journey of TR throughout the COVID-19 pandemic, which could assist in developing best practice guidelines for pediatric rehabilitation.

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Педијатријска рехабилитација током ковида 19 у Уједињеним Арапским Емиратима

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⁴Рехабилитациони центар организације за особе са посебним потребама „Зајед“, Абу Даби, УАЕ

САЖЕТАК

Увод/Циљ Пандемија вируса корона променила је организацију рехабилитације болесника у целом свету. Стандардни третман у рехабилитационим установама је замењен рехабилитацијом на даљину и представљао је изазов како за менаџере тако и за чланове мултидисциплинарног тима у педијатријској рехабилитацији.

Главни циљ овог рада је био да истражи како су организовани рехабилитациони сервиси деце са посебним потребама током пандемије ковида 19 у Уједињеним Арапским Емиратима.

Метод Истраживачки тим је креирао два упитника, један за менаџере и други за чланове мултидисциплинарног рехабилитационог тима. Оба упитника су валидирана и урађена је пилот студија. Финална верзија упитника је послата у септембру 2020. рехабилитационим установама. Четрдесет четири менаџера и 434 стручњака су попунили упитник.

Резултат Доступност деље рехабилитације током ковида 19 је висока и представљена је са 77%. Скоро половина

менаџера (46%) сматра да је организација рехабилитације финансијски захтевнија у односу на период пре пандемије. Телерехабилитација је најчешће коришћен приступ терапије; синхронизоване видео позиве је примењивало 86% испитаника, *YouTube* видео-снимке 88% испитаника и креирање сопствених видеа 65% испитаника.

Закључак Телерехабилитација је била најчешће коришћени метод рехабилитације током пандемије. Уколико би се убудуће користила телерехабилитација, потребно је планирање буџета, инвестирање у виртуално окружење које би било пријатно за децу, родитеље и чланове рехабилитационог тима. Испитаници сматрају да је повезивање деље установа и упознавање са едукативним материјалом, виртуалним платформама које би се користиле, као и упознавање са резултатима спроведених истраживања у области телерехабилитације педијатријске популације неопходан корак улагања уколико би се телерехабилитација наставила.

Кључне речи: ковид 19; педијатријска рехабилитација; телерехабилитација; пандемија