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

Педијатријска рехабилитација током ковида 19 у Уједињеним Арапским Емиратима

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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 mangers 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 UAE.

Methods Two surveys were developed by the research team, one for the center 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 to be costlier than the normal. Telerehabilitation was the most common approach utilized with synchronized live video calls (86%), YouTube video clips (88%) and created own video (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

САЖЕТАК

Увод/Циљ Пандемија вирусом ковида 19 променила је организацију рехабилитације пацијената 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.

Методе Истраживачки тим је креирао два упитника, један за менаџере и други за чланове мултидисциплинарног рехабилитационог тима. Оба упитника су валидирана у 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 дечје 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, примена *YouTube* видеа је била заступљена са 88% и креирање сопствених видеа са 65%.

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 дечјих 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

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 1st May 2020 titled Coronavirus: Disabled people 'forgotten' by governmental strategy highlighted the importance of continued care for those with long term disability. They emphasized on the providing better funding and resources during the pandemic. They also raised concerns about the vulnerability of disabled and confining one at home without proper therapy could impact seriously on physical and mental health [2, 3, 4]. The other main concern during the lockdown was deterioration in 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].

Multidisciplinary team (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 reporting TR for musculoskeletal disorders [12, 13] but very limited for neurological conditions particularly for children with disabilities [14].

This sudden need for transition from in-person pediatric rehabilitation services to remote therapy became very challenging for organizations and MDT members. There was 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 United Arab Emirates (UAE). The goals of the study were to determine: 1. What approaches were taken by managers and MDT members to continue pediatric rehabilitation services within the UAE during COVID-19? 2. What support have been received by the organizations in terms of funding, resources, and training since pandemic in the UAE? Are these resources sustainable if pandemic continues? 3.What barriers were faced by the MDT in continuing services during the pandemic? 4. What are the plans for utilization of these approaches post pandemic?

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 opened, 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 COVID-19 pandemic. Ethical approval for the study was gained from Fatima College of Health Sciences (INTSTF013PHY20) was obtained by September 2029. 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 opened for a total of 6 weeks from September to November 2020 to get the maximum response.

The survey questions were in English and was validated using 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 2 managers and 10 MDT members. The final version of the survey was then updated. The survey had questions that were open and with choices. Those hospitals providing emergency pediatrics care was excluded from the study. Two different surveys were sent through the Abu Dhabi Statistical Center in September 2020., one for the managers and the another for the therapists was opened for three weeks to get maximum responses. All those professionals (special educators & allied health

professionals) working in the rehabilitation centers for the children with disability were included in the study.

The survey for managers had questions related to demographic data, if their organization was operational fully or partially, the support provided for service users, employees to continue services during the pandemic & the plan for post pandemic to utilize 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. Number 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 the 7 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 of which 8 were managing over 50 staff, 20 were managing between 20 to 50 staffs and 16 were managing staffs up to 20.

A total of n=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 (n=197), nurses and doctors (n=64) physiotherapists (n=54), speech & language therapists (n=48), occupational therapists (n=40), social workers (n=14), psychologists (n=10), audiologist (n=6), orthotists (n=1) (Fig.1). Responses were received from 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 during the pandemic. About 30% were opened partially and 20% 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 adaptation such as reorganization of

their team, crisis management, arranging for staff training, reallocation and planning new budget. Regarding the cost for running the services, almost half of the managers (46%) reported to be costlier than the 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 Covid-19 pandemic. TR (86.2%) followed by phone consultations (41.5%), institution-based therapy (6%) and no therapy provided (4.8%) mobile clinic (3%), home visits (3%), were mainly utilized for providing therapy for children during the pandemic (Fig.2). Only 22% of the participants (n = 95) reported to have used TR before the pandemic for pediatric services. During the pandemic, MDT members reported to have utilized the TR in mild (90%), moderate (63%) cases and severe disabilities (13%). It was also reported to have been used severe 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%) were found to be utilised either on its own or in combination (Table 1). About 77% of the participants reported using videos from the You Tube for therapy sessions. 65% of them reported to have additionally creating their own videos. The videos created during the pandemic were filmed by participants themselves and/or with their peers (72%). Only 12% of them managed to get professional videographers. The quality check before releasing the videos were reported by only 28% but was not clear how this was done. Other platforms as *Physio tool* or *Rehab my patient was* 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%), parent's 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%), better family and personal time (32.7%). Some of the negative aspects were that the 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 importance of continued TR at home during the pandemic (88%). They were concerned about the consequences of discontinuity of therapy and its impact on impairments, function and quality of life (58%). Hotline numbers to reach different members of MDT were arranged by the centers (37%). The therapist scheduled online sessions well in advance with the parents (78%), centers provided electronic devices for home use (43%), educated parents how to use video calling application (59%), provided therapeutic equipment for home use (42%), parents were encouraged 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 will only be used in exceptional circumstances once the services return to normal post pandemic. It was also acknowledged both by both set 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 the children from TR to institution-based therapy was good to excellent.

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

The managers felt that during the pandemic it is crucial to provide support to the therapist and clients in terms psychological, manage infection control, reassurance and financial. They further felt that there should be far more support from the government finance 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 number.

Similarly, the therapists identified the areas in which investments must be done if the tele rehabilitation was to continue TR during the pandemic situation and the main requirements was investing on servers (72.8%) and development of mobile applications (67.1%), building websites (62.7%) with an opportunity to sharing common resources between the centers (70.5), educational leaflets (44.5%) and marketing materials 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 providing pediatric rehabilitation when compared to the other emirates, hence the response rate was higher from these emirates. Most rehabilitation centers in the UAE are large public providing school-based rehabilitation services who employ many special educators, hence the responses from special educators were higher when compared to healthcare professionals.

It was important to get the perspectives of the special educators as they were posed with unique challenges during COVID-19. The preparedness of these educators was of a big concern in continuing education for autistic, visual and hearing-impaired students [15]. It was required for them to be as innovative and creative to rapidly respond to the needs of the family and child [16].

Our findings showed that most centers were operating during COVID-19 pandemic and the accessibility for rehabilitation services were very high. The centers were aware of the negative impact of discontinuing services and the best alternative method had to be considered. Our study showed that telerehabilitation (TR) was opted during the lockdown of 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 was very limited prior to the pandemic. Our results showed that only 22% of participants used TR prior to COVID-19 pandemic but was not clear the type of services it was used for. Previous research showed that psychologists utilized the approach for coaching to improve parent's approach and

child's behavior [6]. This could not be confirmed from our study due to number of responses received from psychologists.

With regards 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 longer hours in searching for the suitable videos on social platform but due to the limited resources they reported to have created videos. Having invested time and resources on creating these videos, there must be suitable platform for sharing these resources for wider use. This calls for creating more sharing spaces 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. 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 to have effect on only a few outcomes. TR in our study mainly used for mild to moderate cases of disability. This could be because only those requiring simple hands-on therapies that could be safely applied by parents but not for moderate and severe cases [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 3 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 of covid-19 pandemic, it is suggested to consider individual family circumstances prior to arranging TR sessions leading to better collaboration between the MDT and parents [1]. Pellicano and Stears [17] highlighted similar issues faced by the families of disabled child 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 devices to the families, other technical issues were reported such as unstable internet connection, difficulties of using online programs and equipment. The UAE being high income country with good infrastructure, it was easier to overcome the barriers by improving internet connections, developing user friendly apps and other telehealth solutions [18]. The importance of digital

literacy is emphasized in Scott Kruse et al. [19] Similar barriers to 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 those families with low income and rural areas [4, 21].

Although our study indicated that the use of TR post pandemic for pediatric is minimal and, only used in exceptional circumstances, we believe that there would be continued use of TR. This is because there are several advantages of using in situations such when the child is unable to physically present in the center, for short consultations, clarify any doubts and infection control. Concurring with Albahrouh and Buabbas [9] and Hall [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 are challengeable and there are barriers for engaging the child in TR. Engagement during the TR were much less when compared to face-to-face sessions due to attentional deficits, screen fatigue, inadequate supervision from parents [11] and presence of other siblings [14]. The authors suggest using interactive play-based therapy, creating virtual community and support group for parents.

Fear and anxiety of parents in therapeutically handling the child was reported by the therapist 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 COVID-19 pandemic is discussed by Griffith [21] that highlighted child abuse or neglect. High caregiver engagement is emphasized by Hall et al. [23].

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 pandemic [24]. Concurring with previous research, we believe too 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 overcome geographical barriers [14, 25, 26]. We further believe that it is a means of empowering parents and a way of actively involving in decision making [27]. 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 use of TR post pandemic was still questionable according to

our study, where it would it used in situations where the child is unable to attend physically in the center. There is a need for planning, budgeting, investing, and creating supportive environments for parents, children and multidisciplinary team 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 7 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 were several limitations of this study. The data collected for this study was during the early phases of Covid-19 pandemic where the alternative services such as TR were just being considered with no clear policies and procedures. As we are now over two years since the pandemic, there is a need for a follow up study to examine how well they engaged with the TR throughout the lockdown period and if they have developed policies or practices for its ongoing use. 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 questions or not paying attention to all the options. This could have been overcome by in-depth interview and the future research should consider the option. Our study had disproportional representation of MDT members and we might have missed the opportunities to get 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 made possible to continue 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 Covid-19 pandemic which could assist in developing best practice guidelines for pediatric rehabilitation.

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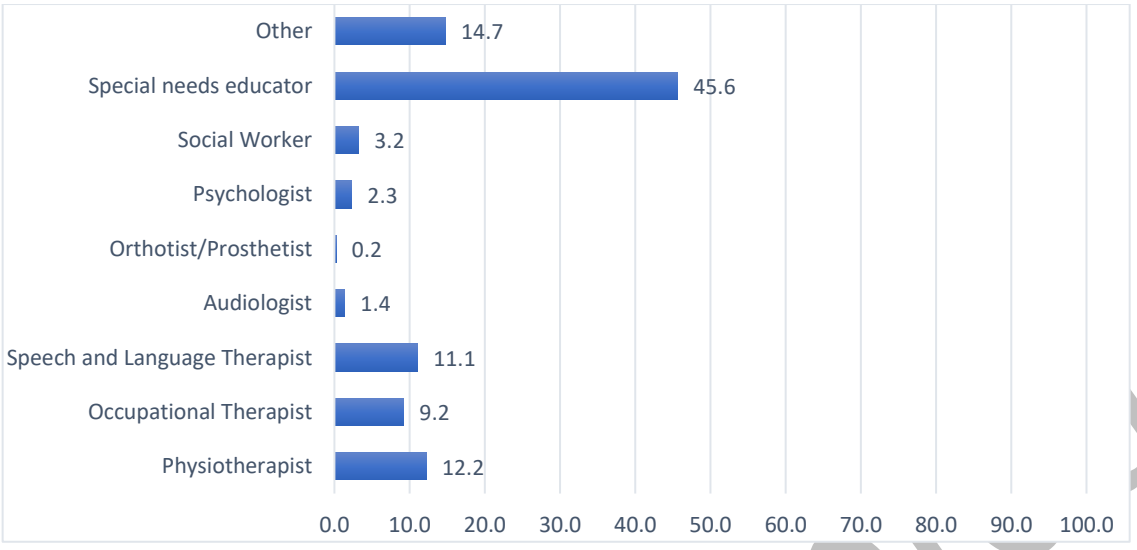

Figure 1. Disciplinary background of multidisciplinary team in %

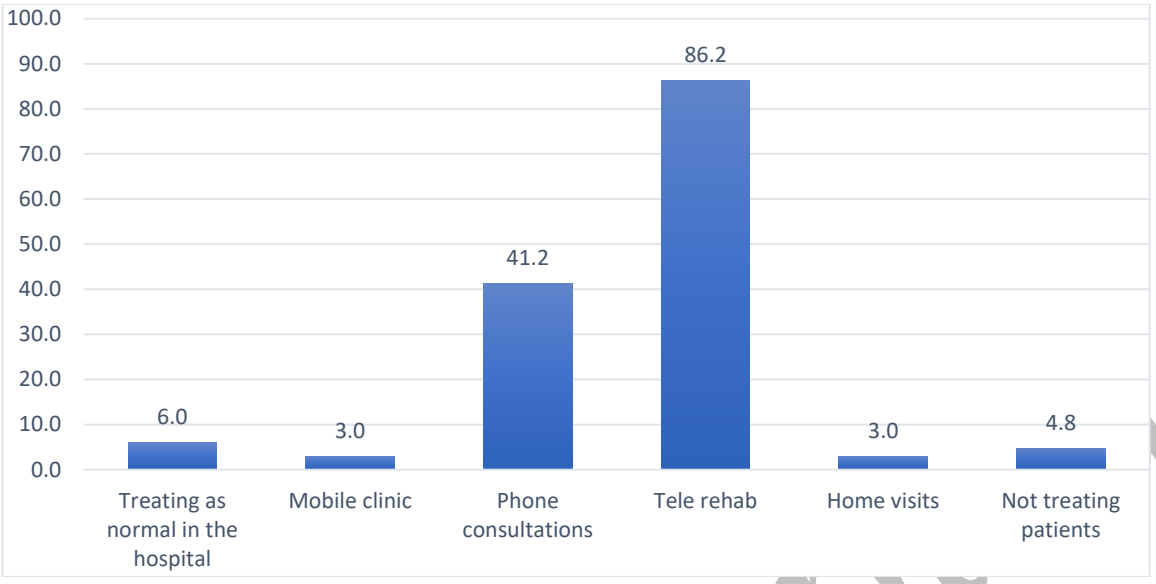

Figure 2. Type of approaches provided by multidisciplinary team in %

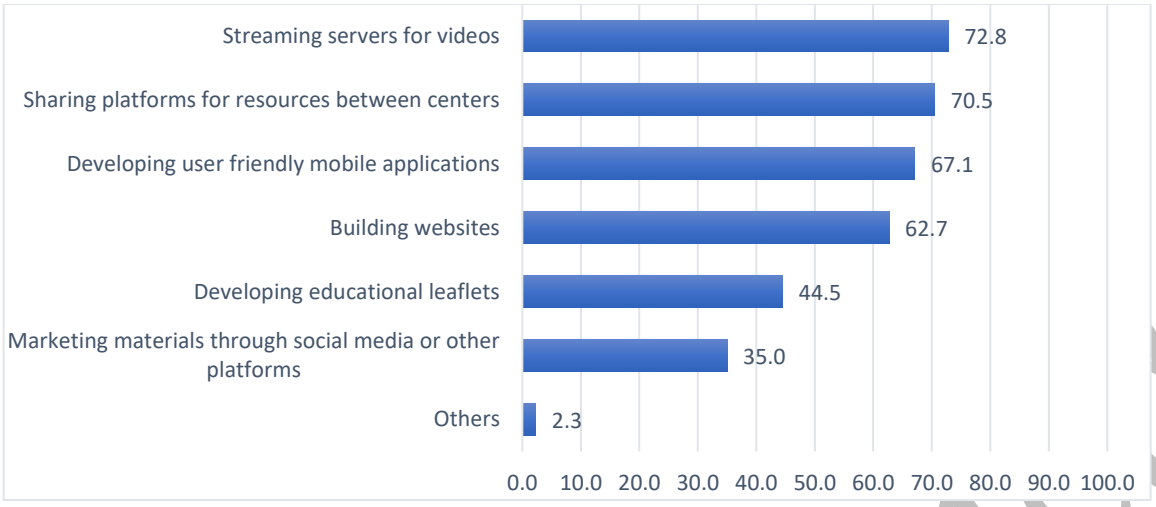

Figure 3. Investment for future telerehabilitation by multidisciplinary team

Table 1. Telerehabilitation's methods during 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

