TELEREHABILITATION EXPERIENCES WHILE DELIVERING PHYSICAL THERAPY IN ADULT NEUROLOGICAL CONDITIONS DURING THE PANDEMIC

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Abstract- Coronavirus disease (Covid-19) pandemic has led to dramatic changes in the human life and has presented with many unprecedented challenges. After a nation-wide lockdown, the patients visiting our OPD suffering from different neurological symptoms could not come for daily treatment. It was difficult for us to schedule their visit to a hospital like ours which is involved in Covid care. The pandemic scenario thus jeopardized the rehabilitation of these non-covid patients posing a big challenge for us to provide our services to them. Hence a dire need arose for finding out different methods of rehabilitation which allowed continuation of treatment with COVID norms. We therefore started looking at telerehabilitation as a ray of hope. Telerehabilitation has brought about a paradigm shift in the behavior of physical therapists by changing in modifying our assessment and treatment strategies from sensory proprioceptive approach (with touch) to an observational audiovisual approach (no touch). Using technology and social media history could be taken, patients could be examined, investigations reviewed, functional diagnosis made and Physical therapy treatment could be executed with the therapist and the patient physically separated. Initially, accepting this concept was difficult for our patients too but with good patient education regarding its benefits and its imperative need, made things easier. Telerehab also gave us an opportunity to know the home environment, hence modifications could be suggested to suit the individual needs, effectively. Telerehabilitation is a very effective tool in the present scenario where we have to adapt to the new challenges posed upon us by the pandemic.

Keywords- Telerehabilitation, Technology, COVID-19, Neuro-physiotherapy

Coronavirus disease (Covid-19) pandemic has led to dramatic changes in the human life and has presented with many unprecedented challenges. In India, the second largest population of the world, a nationwide lockdown was announced by the Indian government in order to control the transmission of the Severe Acute Respiratory Infection (SARS) Covid -19 amongst the Indian population of more than 1.34 billion. (1)

Thus, Government implemented many restrictions for travelling in public transport. Our institute being one of the famous tertiary care centers in Mumbai, is visited by patients from local and distant places to avail the free physical therapy services. The Patients visiting our OPD for Neurorehabilitation suffer from impairments due to Stroke, Parkinson's Disease, Fredrich's Ataxia, Adults with Cerebral palsy, Gullian Barre' Syndrome, Cerebellar ataxia, Spinal cord injuries, Facial palsy, Motor Neuron Disease, Multiple Sclerosis, Head injuries etc. They also suffer from various comorbidities and fall under high-risk category for exposure to Covid 19. This made it difficult for us to schedule their visit to a hospital like ours which is involved in Covid care. With COVID-19, these same patients could be at high-risk for exposure if they leave their homes to go to any other clinic for therapy. Also due to lockdown and fear of contacting the disease in a densely populated city, many of our patients travelled back to their hometown.

Physical therapy sessions in adult neurological conditions require long term follow ups and continuity in order to enhance motor learning, functional reeducation and to avoid unwanted secondary complications like shortening of musculotendinous units. Discontinuation of neurorehabilitation could have a negative impact on the prognosis and compromise functional independence due the COVID-19 pandemic. The pandemic scenario was jeopardizing the rehabilitation of these non-covid, patients posing a big challenge for us to provide our services to them.

Touch is a fundamental necessity for palpation, examination, provision of assistance while rehab, facilitation techniques and Sensory feedback. Use of touch for non-verbal communication, which is the most essential characteristic of physiotherapy treatments and distinguishes physiotherapists from other medical professionals, was contraindicated due to the pandemic. A dire need arose for the finding different rehabilitation options, other than the in-person contact. (2)

Hence, we started looking at telerehabilitation as a ray of hope for our patients. Telerehabilitation is a branch of Telemedicine which means dispenses rehabilitation services over telecommunication networks and the internet. [3]

It was the need of the hour since it allows the patients to interact with the Therapist remotely and can be used to assess and deliver treatment. In response to this new landscape of medical practice, The World Confederation for Physical Therapy published a position statement on the use of telerehabilitation, or telerehab, in order to improve accessibility to care, and offered physical therapists an opportunity to deliver care in accordance with a new model of delivery.[3] Other national organizations, such as the American Physical Therapy Association, Australian Physiotherapy Association, and Italian Physiotherapy Association, have expanded resources and advice for the implementation of telerehab services.[4] In stroke patients, the literature supports the utilization of telemedicine-based rehabilitation as compared to traditional face-to-face therapy [4]. Several systematic reviews conclude that telerehabilitation is effective for patients with musculoskeletal conditions, multiple sclerosis, osteoarthritis, and recovery of motor function. [3] Some studies suggest that telerehabilitation can also reduce health care costs, improve treatment adherence, improve physical and mental function and quality of life, and be delivered in a manner that is satisfactory to patients. [3] Using technology, history could be taken, patients could be physically examined, investigations reviewed and Physical therapy functional diagnosis made with the therapist and the patient physically separated. [5]

SARS COV 2 is making us look at how PHYSICAL THERAPY services can be delivered now, following the "NEW NORMAL" and how we can modify patient care by the use of tele medicine technology in this radically changing era of Covid 19. Telerehabilitation solved some of our major concerns of physical therapy care with which we were able to address our patients remotely, from the safety and comfort of their home environment.

Telerehabilitation has brought about a paradigm shift in the behavior of physical therapists. As Charles Darwin said, "It is not the strongest of the species that survives, not the most intelligent, but the one most adaptable to change". The change had to begin with us physical therapists in modifying our assessment and treatment strategies from sensory proprioceptive approach (with touch) to an observational audiovisual approach (no touch). Assessment strategies were also required to be modified since assessment of Sensations, Tone which were a part of routine assessments was not possible. Therapist's observation skills were to be sharpened and the

ability to teach the relatives to perform feasible evaluation techniques and use of patient reported outcome measures were emphasized.

The next challenge we faced was to convince our patients for telerehabilitation. Initially, accepting this concept was difficult for our patients too but with good patient education regarding its benefits and its imperative need, made things easier. Patient compliance started improving with time.

Availability of technology like a computer/ smart phone and good internet connectivity also posed some challenges among the patients who belonged to low socio-economic group. Hence those meeting with the requirements of technology could be easily recruited early for the telerehab. Social media platforms like Zoom, Google Meet, WhatsApp were used for communication. Presence of one or two relatives of the patients was required for those patients who were unable to use technology. This could happen easily due to the availability of the relatives at home due to work from home facilities. Handling the smart phone camera angles also required adjustments and modifications depending on the view needed for therapy. Hence presence of relatives during the therapy sessions was valuable. Relatives played an important role to apply appropriate techniques required to facilitate desired movements to be carried out on patients, for applying sensory reeducation techniques, prevention of falls during balance training. Relatives were also of great help to treat patients with perceptuo-cognitive disorders. This also helped improve the interaction between the patient and their relatives. However, many patients mastered the skill of handling the technology well after a few sessions. But the challenges continued for patients with higher function affections. Network issues like disconnection, buffering was handled by asynchronous sessions where videos created by us were shared for the missed sessions. Text messages, photographs and emails were used to communicate as and when required for providing solutions to the issues faced by the patients during asynchronous sessions. Thus, time management could be done efficiently in spite of the network issues. Yet, synchronous sessions were definitely preferred by both the therapists and the patients.

The next challenge we faced was the lack of equipment for rehab since therapy was home based. This was overcome by making use of household materials to suit the nearest possible basic therapy equipment. For example, stack of newspapers, pillows were used as dynamic surface to treat balance instead of foam/tilt boards/wobble boards. Grocery packets were used as weight cuffs secured to the arms and legs with the help of cloth bands/straps. Large cylindrical containers were used instead of vestibular balls to train balance and

strengthen core muscles, under the supervision of relatives. Wheat Dough balls, mixed cereals, pulses and beads of various sizes were used to train fine motor activities. Suitable walkways were identified for gait training within or in close proximity to their homes. During, the initial planning of the rehabilitation program we enlisted the tools needed for engaging in therapeutic exercise so that they can be arranged at patient's home and kept ready before the session began.

Telerehabilitation was augmented with other contextual factors, including specific elements like verbal communication e.g., paraphrase and language reciprocity, clear instructions with adequate repetitions, expressions of support, motivating statements, feedbacks during and after the sessions. Nonverbal communication e.g., affirmative head nodding, eye contact, open body posture, demonstration of movements was tailored to the individual patient's needs. Telerehab also gave us an opportunity to know the home environment, hence modifications could be suggested to suit the individual needs, effectively. Eventually the compliance of the patients also improved and thus effective Telerehab could be delivered with optimal Patient and Therapist satisfaction. Once the lockdown restrictions were eased, new patients were evaluated physically on their first visit and subsequently, they were scheduled for telerehab. This made things easier for us during telerehab sessions. Till day the telerehab sessions are happening relentlessly enriching our experiences of patient care with newer dimensions.

The success of Telerehabilitation depends on the severity of the disease, its stage of healing and its judicious use. In person treatment should be advised whenever required as per the necessity since certain emergencies or acute conditions may require immediate attention.

Here are some of the experiences of our Patients who receive Telerehabilitation facilities regularly.

1) A 26-year-old Cerebral Palsied girl had the following to say:

"I have been benefited by Telerehab since I have received valuable guidance from it. I have improved in my performances of Kneel Walking and Abdominal strengthening exercises. I was very upset because lockdown had affected my regular the therapy sessions, for whatever said and done, Regular and consistent Physical Therapy for a person like me with CP, is as important as a log of wood for someone who is drowning. Hence, I am very interested in Telerehab sessions. Though virtually, but I have the satisfaction that your attention is there on me and I am very thankful from the bottom of my heart for giving me your valuable time for Physical

Therapy. My salutations to you for continuing your patient care services even during these tough Pandemic times"

2) A 66year old male diagnosed with Parkinson's Disease since 11 years underwent Deep Brain Stimulation 2yrs ago, said the following:

"I had been regularly attending Physiotherapy sessions since a long time and practised it at home.

Thereafter there was a long break in my PT exercises due to the pandemic.

This caused restrictions on movements of upper limbs, shoulders and neck.

Then we met on telephone and started doing video call sessions. It was very good experience giving me lot of relief from pain. You guided me precisely for my spinal movements which I continue to practice even today.

The Advantages of Telerehab are:

1. Time, energy and cost on Transport/conveyance is avoided.

2.Risk of traveling among elderly PD patients n present Pandemic is also avoided

3.Instant communication wherever wanted.

4.No overcrowding.

Some Disadvantages are:

1. Totally dependent on network connectivity.

2.Patients' ability to handle the technology

However, I think we should continue the joint sessions in future too, on regular basis."

With Telerehabilitation technology, Distance no longer matters, making world a smaller place, in fact, geography has become history [(5)]. Telerehabilitation is a very effective tool in the present scenario where we have to adapt to the new challenges posed upon us by the pandemic and the constant environmental damage caused by the most intelligent human species on the planet. Physical Therapy by using Telerehabilitation is an environment friendly option. Use and Disposal of Personal Protective Equipment, masks are not required since it provides a safe environment for Therapist and Patient. It also prevents the unintentional spread of this highly communicable disease.

To quote Charles Darwin again "In the long history of humankind, those who learned to collaborate and improvise most effectively have prevailed".

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