COVID 19 and Role of Physiotherapy

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Physical therapy or Physiotherapy is an internationally recognized autonomous health care profession concerned with movement science and aims at maximising quality of life by optimizing function and movement potential. Its therapeutic approach encompasses all domains of health i.e. physical, psychological, emotional, and social wellbeing and uses the framework of International classification of functioning (ICF); a bi-psycho-social model for goal setting and rehabilitation. Physiotherapy services are an integral part of collaborative care in prevention, restoration and rehabilitation pathways.

COVID 19 and Need of Physiotherapy

COVID 19, a complex multisystem dysfunction presented with a varied clinical spectrum and a challenge to all health care professionals including physiotherapist. Increased morbidity and mortality was seen in patients with pre-existing co-morbidities, those with greater disease severity, and with increased need of oxygen and ventilatory support. Physiotherapy services in patients admitted with COVID 19 aimed at reducing associated morbidity, gaining function and improving survival with the workforce essentially involved at all levels of COVID 19 trajectory. Experiences from across the world and India have found it to play a vital role in acute care setup to improve mobility, reduce complications and facilitate discharge.

Mobilizing patients to attain activity and towards recovery is a slow and challenging process. With improved recovery rate of patients with COVID 19 comes the aftermath of under recognized sequelae of “Post COVID-19” with reports of covid 19 survivors presenting with symptoms of breathlessness, fatigue and inability to continue daily activities. The months from September 2020 saw the setting up of multiple post covid rehabilitation centres and Tele rehabilitation units at various districts, zones and hospitals in India as an urgent response for multidisciplinary team involving rehabilitation efforts to effectively establish and deliver protocols for ensuring good quality of life.

In our experience the most common presentation of patients post COVID-19 were: 1) Respiratory and cardiovascular impairment with breathlessness and continued need of oxygen support 2) Excessive fatigue and activity intolerance 3) Musculoskeletal impairment with deconditioning, loss of weight, muscle and joint pains 4) Neurocognitive dysfunction with impaired memory, concentration and loss of sleep 5) Psychological disturbance due to social isolation, fear of illness and insecurity with an impaired post covid functional status. Impaired score in all domains of the quality of life using SF-36 three months after a severe COVID-19 episode and severe disability has been observed after discharge indicating need for further rehabilitation to recover to prior functional status. Physiotherapy forms a part of multidisciplinary approach based on personalized evaluation and treatment intervention not limited to exercise training.

Similarity in symptoms exists between severe acute respiratory syndrome corona virus (SARS-CoV), Middle East respiratory syndrome corona virus (MERS-CoV) and COVID 19. SARS survivors showed a significant health burden even after a year with reduced 6MWT, QoL scores and persistent functional disability which persisted up to 5 years. They showed improvements following rehabilitation in musculoskeletal performance, cardiovascular recovery and in SARS-induced pulmonary lesions following a 6-week physical rehabilitation. Present experiences and lessons from the past have paved way to formulate rehabilitation protocols to minimize dysfunction post COVID 19.

Evidence on Rehabilitation

Published case reports from India and west, evidence from countries such as China and Italy and expert opinions of rehabilitation healthcare professionals have highlighted the importance of patient tailored rehabilitation physiotherapy in improving quality of life and Physical performance, reducing fatigue, improving respiratory function and depression. Guidelines published in Indian context in the earlier issue of this Journal highlights the importance of screening by physician before enrolling into rehabilitation in view of associated complications of myocarditis and thromboembolism with COVID 19. It also provides the assessment and rehabilitation interventions that can be carried out in context with severity of involvement.

Physiotherapy plays a crucial role through use of neuro-modulatory techniques, patient education and counselling, respiratory rehabilitation, energy conservation, peripheral conditioning building strength and endurance and Relaxation using guided imagery and auto suggestion. A support system is built involving family members with physical activity and exercise as a key component.

Exercise as Medicine

Exercise not only changes cardio pulmonary, muscle, metabolic and neurocognitive dynamics but also has ubiquitous effects on systemic endothelial function and inflammation. It favours regeneration and re-endothelialisation of injured endothelium by increasing the number of circulating endothelial progenitor cells, which would be beneficial in COVID-19, mediated endothelial apoptosis and endothelial cell membrane disruption.

The anti-pathogenic activity of macrophages along with elevations in the circulation of immune

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cells, immunoglobulin’s and anti-inflammatory cytokines with exercises modulates and improves the immune response. This reduces the influx of inflammatory cells and hence the risk of lung damage. Redistribution of effector lymphocytes during dynamic exercises increases immune surveillance and antiviral response.

The anti-inflammatory, antioxidant and endothelial activation inhibitor benefits may also be linked to the reduction in hypercoagulability related to COVID-19.

Exercise Considerations

Training principles, applied to patients with chronic lung diseases and concepts of pulmonary rehabilitation can be applied in post-COVID-19 patients. Exercise prescription focuses on the treatment goals based on current patient needs, their physical functions and activity levels. Exercise training begins with simple low intensity graded functional and strengthening exercises, along with respiratory rehabilitation progressively increasing based on subjective symptoms of fatigue and breathlessness and objective parameters of heart rate, saturation response and need of oxygen titration.

In view of reduced cardiac and lung function post Covid, a maximum score of 4/10 on Borg Scale CR10 for shortness of breath and fatigue during the post-acute rehabilitation phase is recommended. Also strenuous activities can cause immune suppression and are better avoided. Pacing is considered to prevent post exertional malaise. Detailed assessment for musculoskeletal and neurological impairments also form a part of evaluative protocols for decision making of rehabilitative pathways. Based on muscle performance, functional capacity, fatigue and cardiorespiratory response physiotherapy also helps in discharge planning and readiness to return to work.

Telehealth systems have gained importance in the pandemic to meet rehabilitation needs of those in isolation and when face to face is not possible in view of infection control. Telerehabilitation has been a boon for clinically stable patients with good connectivity and available technology.

Conclusion

Physiotherapy interventions are tailored toward holistic rehabilitation to address all system impairments and play a crucial role in facilitating functional recovery, resumption to work and social normalcy. Post clinical stabilization it helps to support and empower patients as they lack insights in their own difficulty. As a key strategy Physiotherapy can help minimize the negative impact of COVID-19 on the health and functionality. A timely referral is signalled to other health care providers of the team as needed. A large number of covid 19 patients need rehabilitation services and there will be more number of these being seen by the physicians. Huge resources are spent in saving lives and the challenge of reducing debility in survivors has to be met with strategic approach of remodelling of hospital rehabilitation services, telerehabilitation and community outreach programmes.

References