

Bridging the Gap in Multiple Sclerosis Rehabilitation During Covid-19

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In March 2020 the WHO declared that COVID-19 had reached pandemic state. To date the primary focus internationally has been on the preservation of life. For those with pre-existing neurological disease, there is an additional concern with early evidence suggesting this group could be predisposed to adverse outcomes. Multiple sclerosis (MS) patients are a particularly vulnerable group during this pandemic. The combination of an auto-immune neurodegenerative disorder and the immunosuppression caused by the typically prescribed pharmacological agents augments the risk of complications in this group [1]. As a public health precaution, international governmental bodies recommended that people with multiple sclerosis (pwMS) self-isolate as much as possible to reduce their risk of contracting the virus.

While it is imperative to protect people with multiple sclerosis (pwMS) from the threat this virus poses, it may come at the price of their physical and mental wellbeing. Literature reports that, pwMS are often less active than their age-related healthy controls, so a public health induced mass restriction on physical inactivity may re-enforce this health behaviour.

While reduced activity is attributed to the irreversible neurological deficits of the disease process itself, it is often the instilled fear avoidance behaviours arising from these impairments that drives this inactivity. Inactivity has been shown to impede pwMS's capacity to maintain a high quality of life. This can be due to a cyclic propensity towards maladaptive thoughts and feelings centred on the inability to effectively manage disease-related symptoms [2]. This pushes individuals to reduce their exposure to potentially stressful and precarious activities. Activity curtailment has been found to have a detrimental physiological effect on individual's physical condition with increased rates of fatigue, muscle atrophy and weakness, and postural instability which exacerbates functional limitations. Inactivity also increases the risk of developing preventable comorbid conditions including hypercholesterolemia, hypertension, obesity, type 2 diabetes, cancer, arthritis, and osteoporosis [3]. Physical activity is the means by which pwMS can break this cycle of inactivity, compromised quality of life and comorbidity development [4].

The combination of enforced institutionalisation and resultant physical deconditioning similarly impacts pwMS's psychological well-being and long-term quality of life. Isolation and social exclusion are associated with reduced Health Related Quality of Life (HRQoL) in up to 70% of pwMS [5].

Non-pharmacological approaches represent the primary strategies to improve impairments resulting from deconditioning among pwMS [4]. While impairments related to the disease process itself are irreversible, impairments that occur secondary to deconditioning are modifiable by exercise intervention. Numerous MS support organisations provide evidence based standardised resources on remaining active at home. However, the effectiveness of these resources in decision making and health promotion have yielded inconclusive results to date [6]. The "best" intervention is one that combines clinical

reasoning with evidence-based practice in addressing the individualized symptoms of the person and assists in meeting their specific goals [7]. So how do clinicians address these physical impairments while overcoming a loss of physical contact with our patient cohort?

Telerehabilitation is an emerging cost-effective method of bridging the gap of standard face-to-face clinician-patient care by enabling service delivery in their home environment. In the case of neurological conditions, the best rehabilitative strategies aim to stimulate the brain through interactions with the environment. Telerehabilitation grants allied health professionals the opportunity to deliver tailored interventions based on the individual's needs and interactions with their native environment. This has been shown to not only improve quality of life but also decrease the duration of treatment required to achieve pre-specified goals [8]. Furthermore, telerehabilitation allows for the continual monitoring, evaluation of need and progress. For pwMS, telerehabilitation has been shown to be a feasible, convenient and effective means of improving and/or maintaining function with similar levels of patient satisfaction as face to face consultations [9,10]. However, this is a growing field and further research is required due the low methodological quality of studies to date and insufficient evidence as to what types of telerehabilitation are effective.

High physical (HRQoL) is associated with social participation highlighting the importance of enhancing participation. Further literature supports that regular physical activity and weight maintenance can maintain immune health and slow down MS disease progression [11]. As pwMS begin to emerge from the cocooning phase, it is imperative that they do not become overzealous with reintroducing physical activity. Halabchi et al. provides exercise prescription guidelines for pwMS with recommendations that are safe and well tolerated. However, it is important that allied health professionals, physiotherapists in particular develop a graded reintroduction to physical activity that accounts for and individualised to patient's function, preference, and goals. This will be most effective as it will limit drop out, allow the body to adapt to the training effect and create an increased sense of control of one's which may translate to enhanced participation and independence.

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