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Editorial

Telephysiotherapy: time to get online

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The science and practice of telehealth have undergone rapid growth in recent years. A search of the Web of Science for the term 'telehealth' would have returned only two papers in 1995, compared with 104 papers in 2000, and 5069 papers in June 2017. This exponential growth is also evident in the number of randomised, controlled trials and systematic reviews indexed in the Physiotherapy Evidence Database with 'telehealth' in the title, rising from 10 records in 2008 to 70 records in 2017. These papers span the breadth of physiotherapy practice, with particularly strong representation from musculoskeletal and cardiorespiratory physiotherapy (Figure 1). High-quality randomised, controlled trials that support the benefits of telehealth interventions in many physiotherapy subdisciplines have been published over recent years. These have included telephysiotherapy interventions for chronic knee pain,[1] non-specific low back pain,[2] chronic obstructive pulmonary disease (COPD),[3] heart disease,[4] breast cancer,[5] joint arthroplasty,[6] and urinary incontinence.[7] Many of these studies have demonstrated significantly better clinical outcomes than usual care that did not include physiotherapy, including improved exercise capacity, better physical function, reduced symptoms and enhanced health-related quality of life.

Telephysiotherapy can take many different forms, with the components driven by the goals of treatment. Videoconferencing provides direct contact between patients and physiotherapists, either one-to-one[1] or in a virtual group setting.[3] For some telephysiotherapy programs (eg, pulmonary rehabilitation, stroke rehabilitation) it may be necessary to perform a limited number of home visits, in order to perform assessments or provide instruction in the use of equipment.[3,8] However, some telephysiotherapy programs are delivered entirely from a distance, without ever meeting the patient in person, including notable examples of successful treatment of stress urinary incontinence using email support[7] and a mobile app.[9] Telephysiotherapy programs may include remote monitoring of physiological signals, such as pulse rate, oxygen saturation, electrocardiograms (ECG), and joint range of movement, in specific populations such as cardiorespiratory or orthopaedic disease.[4,10,11] Whilst some telephysiotherapy models require specially designed equipment,[6,11] others have achieved similarly successful outcomes with off-the-shelf consumer devices and software.[1,3] The ubiquitous nature of the smartphone provides new opportunities for telephysiotherapy, including: physical activity monitoring; sound and light cues to set exercise intensity and duration; real-time feedback on exercise performance; and text messaging to provide exercise advice or progression.[10,12] Simple web-based diaries can be used to record exercise and provide feedback.[12] Didactic or interactive education programs can also be provided.[1] In some populations it may be possible to automate aspects of a telephysiotherapy program to provide efficient and effective care to large patient populations, for instance using internet platforms that provide automated goal setting and feedback in conjunction with a pedometer for patients with non-specific low back pain.[2]

The increase in our capacity to deliver physiotherapy at a distance using telehealth has occurred at the same time that 'hands-on' physiotherapy techniques have become less important for some health conditions. For example, electrotherapy is no longer recommended for routine treatment of low back pain,[13] whereas exercise therapy is an important component of care.[14] Interventions designed to increase physical activity and physical fitness now have an important role in physiotherapy management for numerous clinical groups and across the lifespan, recognising the critical impact of these factors on long-term health outcomes.[15] Many of these interventions, which typically involve goal setting, exercise prescription and self-management training, do not require hands-on therapy and are highly amenable to telephysiotherapy.

Despite the potential for telehealth to increase the capacity of the health system and deliver better health outcomes, there has been relatively slow uptake in practice. Enthusiasm has been tempered by the lack of clinically relevant benefits seen in some large-scale randomised trials involving people with chronic diseases such as heart failure and COPD;[16–18] however, these trials relied heavily on telemonitoring of physiology and symptoms, rather than on delivery of therapy. Remote monitoring has not delivered consistent benefits over usual care, perhaps because it is difficult to maintain long-term adherence with monitoring, or the difficulty in identifying meaningful changes in monitored variables. Trials in telephysiotherapy, which typically involve delivering a treatment from a remote location, have generally been more successful, producing similar results to interventions that are delivered face to face. For instance, in 205 patients who had undergone knee arthroplasty, in-home rehabilitation delivered by videoconference demonstrated equivalent outcomes for pain, stiffness and function when compared with face-to-face rehabilitation.[6] Similarly, in 152 people with heart failure, cardiac rehabilitation with exercise prompts and ECG monitoring transmitted via a mobile phone produced similar benefits to a traditional outpatient cardiac rehabilitation program.[10] A key feature of these successful telephysiotherapy interventions is that they delivered treatments of known effectiveness in a different way, using technology to reach patients who are located away from healthcare facilities.

As for all physiotherapy interventions, effective telephysiotherapy requires clinicians to understand the essential components of their treatments and ensure that these are included in the care package. For instance, some treatments may require real-time interactions between physiotherapist and patient, in which case videoconferencing will be a better choice than a web portal with automated messaging. The group environment is a key component

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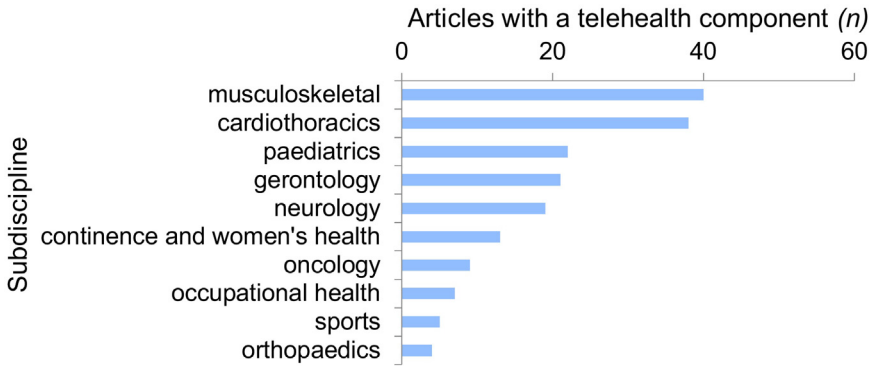

Figure 1. Number of randomised trials and systematic reviews indexed on the Physiotherapy Evidence Database (PEDro) that have a telehealth element, categorised by subdiscipline. Articles were identified using the search terms *tele* or *internet*, with screening by title and abstract to confirm a telehealth element. Subdiscipline categorisations are those on the PEDro website, with some articles categorised under more than one subdiscipline.

of many modern physiotherapy-led rehabilitation interventions and provides peer support; telephysiotherapy can deliver this using multi-participant videoconferencing[3,19] or an online patient community.[2] In some cases, to ensure safety, physiotherapists may wish to specify that a carer be present during telephysiotherapy sessions.[19,20] Successful skills development has been demonstrated using internet-based packages, such as a recent trial that delivered pain coping skills to those with chronic knee pain.[1] Self-management training is a key component of many rehabilitation interventions in chronic disease; this can be delivered using online diaries to prompt symptom monitoring and self-treatment of disease exacerbations.[12] Goal setting, motivational messages and feedback are often core components of face-to-face physiotherapy sessions and may be particularly amenable to delivery via electronic methods using web platforms and text messaging.[2,12] Although the nature of telephysiotherapy interventions often means that there is a substantial physical distance between the clinician and the patient, and direct contact may be limited, the physiotherapist's expertise will remain critical to ensure that the components of the telephysiotherapy package are well aligned with the aims and expected outcomes of treatment.

The growing evidence base for telephysiotherapy provides new impetus to address the 'valley of death' that prevents many new treatments being used in clinical practice. A critical link in this area will be reimbursement mechanisms, including public and private providers and insurers. For instance, government funding of telehealth services in Australia seldom extends to allied health practitioners, although it is available to medical practitioners, nurse practitioners and Aboriginal health workers. A notable exception is the New South Wales Workers' Compensation Scheme, where video consultations may be reimbursed if pre-approved by the worker, physiotherapist and insurer. Some private health insurers offer telephone coaching services for people with chronic disease, but generally do not subsidise more advanced digital delivery of physiotherapy services. Telephysiotherapy has many potential advantages for health funders, including: broader access to evidence-based care and downstream reduction in healthcare utilisation (eg, pulmonary and cardiac rehabilitation); provision of more cost-effective care, particularly for patients who live further away from major centres;[21,22] more timely delivery of interventions due to removal of barriers (transport, travel, parking, waiting lists) and flexible scheduling; and increased patient choice, resulting in a more patient-centred approach to care. Whilst longer term data on the cost effectiveness of telephysiotherapy are currently available in only a few areas (eg, joint replacement, management of urinary incontinence),[21,22] clinical efficacy data are available across a wide range of clinical areas, and development of a funding model is essential to drive further research into long-term health, financial and societal benefits.

Those who lead the way in funding and provision of telephysiotherapy services are likely to have a competitive advantage. They will attract the 'digital native', younger generation of health consumers who are accustomed to accessing health and medical resources online.[23] There is increasing evidence that older people are also connected. In Australia in 2014/2015, 51% of adults aged >65 years accessed the internet in a typical week, which was increased from 46% in 2012/2013.[24] Older people with chronic health conditions are reported to be more likely than their healthy peers to use the internet for health-related tasks.[25] A recent study in this journal showed that of 254 older people (mean age 73 years) undertaking pulmonary rehabilitation or maintenance programs, 85% regularly used a mobile phone, 70% regularly used a computer or tablet, and 60% were willing to use telerehabilitation.[26] Leaders in telephysiotherapy will also offer broader and more attractive treatment options for: people in regional and rural areas; people in full-time employment who are currently excluded from chronic disease rehabilitation programs that are run during working hours; and the wide range of individuals with limited mobility, distressing symptoms, and inability to access centre-based programs.[27]

The science underpinning telephysiotherapy is advancing rapidly. This provides physiotherapists with new ways to deliver treatments of known effectiveness, as well as innovative treatment strategies underpinned by modern technologies. Patients are digitally connected and ready to adopt telephysiotherapy. The increasing number of older people in developed societies, many of whom are living with one or more chronic diseases, means there will be growth in demand for physiotherapy services, along with the expectation that it is delivered in a flexible and patient-centred manner. Telephysiotherapy provides opportunities to improve access to effective care, reduce disability and enhance wellness. We now need modern funding models that can realise this potential.

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