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- Implementation of telerehabilitation: Lessons learnt
- Complementary and alternative medicine survey of physiotherapists
- Shoulder pain and/or stiffness in Parkinson's disease
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PHYSIOTHERAPY NEW ZEALAND
Kōmiri Aotearoa

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Finding the Positives From COVID-19 Within the "New Normal"

As I write this, I hope that the content will still be relevant by the time it goes to print. Pre-COVID this would not have been too much of a challenge, but such are COVID times that we find ourselves in a dynamic, ever changing and evolving state. I am sure many of you have found yourselves constantly planning and then replanning, as the unknown becomes known, and then changes again as we progress through 2020.

Looking towards the end of the year, I think it is important that we keep being kind to ourselves and others while acknowledging that we are living through extraordinary times. There is really no doubt that the COVID-19 pandemic is likely to be the most significant global event in our lifetimes.

Physiotherapists working across the healthcare system, whether frontline workers, researchers, advisors, policy makers, business owners, or those within professional associations or regulatory bodies, will have to continue to react quickly to significant, ongoing change at both macro and micro levels. This for the foreseeable future is the "new normal" rhythm to our world.

Thankfully, New Zealand's cases remain low and, for the most part, under control. But I am sure the ongoing uncertainty makes many of us feel at times depleted and a little overwhelmed. We have all experienced loss and many of us will hold on going concerns about the potential for ongoing losses as we continue to move through the pandemic. I would encourage everyone to keep checking in with each other and supporting colleagues, friends, and family.

Already, resources are available that provide guidance on how to process these uncertain times as well as provide helpful insights on how to take the lead through these events. I have found J. Maybin's *Leading through Covid-19: Managing our anxiety about loss* (Maybin, 2020) helpful, as it lends a wider perspective on how I have been feeling.

Whilst acknowledging the challenges COVID-19 has posed for all physiotherapists, I would also like to draw attention to some of the positives that are emerging from this situation. Health care is often criticised for its slow pace of change and inability to be innovative. However, crises create a necessity for change, and previously unsurmountable barriers are quickly overcome in addressing health emergencies. In my long professional healthcare career, I have never before witnessed the speed and degree that health care has had to change and adapt as it has during the COVID-19 pandemic.

There is no better example of this than the rapid enablement and implementation of telehealth through the New Zealand COVID lockdowns (Health Informatics New Zealand, 2020). In fact, lessons have been learnt, and it looks like future healthcare design will feature telehealth on a scale that could not have been conceived prior to the Level 4 lockdown.

The pandemic has not just demonstrated the potential to accelerate solutions. It has also forced health care to rapidly learn, test, and implement new ways of working, and this has included how we share research findings. The pandemic has created a need to rapidly explore, translate, and implement research findings in the treatment and rehabilitation of COVID-19 patients. This wide sharing of information has created greater inclusion across health care as we learn from each other. It reminds us that we are part of a wider global workforce. I think that knowledge sharing has been a positive way of supporting each other to stay safe and helping our patients get the best possible care with limited resources across the world.

The value of sharing research and learning from each other has been seen in the utilisation of established digital platforms, which have been able to quickly respond. Examples of this are the development of rapid guidelines from Cochrane (Cochrane, 2020) and the easily accessible online e-learning modules through Physiopedia (Physiopedia, 2020). Organisations, such as World Physiotherapy, have been helpful in leveraging their global reach to the team of 670,000 physiotherapists across 122 countries by setting up information hubs (World Physiotherapy, 2020).

We have all been launched into using technology in new ways to compensate for physical distancing and the inability to travel. Communication methods, such as webinars, virtual conferences, and mobile apps, have been harnessed by the necessity to rapidly communicate information and stay connected. Boundaries, both professional and geographical, have loosened in the collaborative fight against COVID-19.

I am excited to see physiotherapy widely recognised in the international media as a profession that has been at the forefront of the treatment and rehabilitation of COVID-19 patients. COVID-19 has thrust a valuable spotlight on the everyday work of cardiorespiratory physiotherapy, which is sometimes not well-known or recognised by the general public (Ochagavia et al., 2020). It is encouraging to see the number of published physiotherapy articles on rehabilitation post-COVID-19 that involve collaboration across the world (Thomas et al., 2020).

As we continue to see pressure on healthcare and economic systems from the pandemic, I am convinced that physiotherapy will continue to demonstrate its value in supporting all patients within the healthcare system. I believe the physiotherapy profession is well placed to be at the centre of the delivery of value-based health care into the future. The challenge for us all is to stay resilient and embrace and implement the positive learnings and innovation that come from the COVID-19 pandemic.

"Tawhiti rawa tau harenga ake te kore haere tonu" – Sir James Henare.

We have come too far not to go further. We have done too much not to do more.

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Annie works as a clinical partner at the Accident Compensation Corporation (ACC). She is involved in providing subject matter expertise in rehabilitation across healthcare design projects and assists ACC to align with the health sector through external relationship management across allied health organisations. Prior to this, she worked as the physiotherapy lead at Burwood Spinal Unit, Canterbury District Health Board. Annie is a board member of the New Zealand Rehabilitation Association. The opinions expressed in this editorial are the author's own.

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"At Risk" and "Vulnerable"! Reflections on Inequities and the Impact of COVID-19 on Disabled People

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ABSTRACT

This professional perspective provides background knowledge and evidence to support reflection on disability outcomes internationally and in Aotearoa New Zealand. Over one billion people live with disability worldwide. Approximately 4.5% of the world's population live with significant difficulties in function, activity, and participation. In Aotearoa New Zealand, approximately 1.1 million (24%) people have a disability, making disability the largest minority group. Yet disabled people face extreme health inequities. These are exacerbated when response planning and service delivery during times of humanitarian emergency, such as COVID-19, fail to include and consider the impact decisions will have for disabled people. Disabled people are more "at risk" of contracting COVID-19, and some disabled people are "at risk" of poorer health outcomes from COVID-19. However, "vulnerability" arises from the continuation and exacerbation of discriminatory policies, including health professionals' conscious and unconscious biases, in times of crisis but also within conventional health service delivery. As part of the health system, it is perhaps timely for physiotherapists to reflect upon their knowledge of the health inequities disabled people experience, and to consider personal and collective bias. There are strategies physiotherapists might adopt to challenge interpersonal, internalised, and institutional bias. These steps will help affirm disability inclusiveness at all levels of the health system and support a human rights expectation that all New Zealanders should have equitable health outcomes.

Perry, M. A., Ingham, T., Jones, B. & Mirfin-Veitch, B. (2020). "At risk" and "vulnerable"! Reflections on inequities and the impact of COVID-19 on disabled people. *New Zealand Journal of Physiotherapy, 48*(3), 107–116. https://doi.org/10.15619/NZJP/48.3.02

Key Words: Disability, Inequities, COVID-19

CONTEXTUAL DISCLAIMER

Meredith Perry is an academic and physiotherapist who has built a platform of research on the ora (health) of people with life-long conditions. She is also the mother of two children with disability, one receiving very high Ongoing Resourcing Scheme (ORS) funding.

Tristram Ingham (Ngāti Kahungunu, Ngāti Porou) has a lifetime of lived experience of disability. He is an academic clinical epidemiologist. He chairs the Ministry of Health's Māori disability advisory group, Te Ao Mārama, and the Muscular Dystrophy Association of New Zealand (one of seven nationally recognised disabled persons organisations [DPOs]). He has governance roles across three central district health boards as a board member of the Health Quality and Safety Commission, and Capital Coast District Health Board.

Bernadette Jones (Ngā Wairiki Ngāti Apa) is a nurse with lived experience of disability. She is a senior Māori researcher specialising in Māori health inequities and disability.

Brigit Mirfin-Veitch has been involved in disability research and the disability sector for over 2 decades. She is the Director of the Donald Beasley Institute and a Senior Research Fellow with the Centre for Postgraduate Nursing Studies, University of Otago.

The work presented below reflects the professional perspective of the authors, based on their personal and professional knowledge and lived experience of disability. All authors were part of the Ministry of Health's Disability Directorate COVID-19 Communications Response Team. However, the views presented here demonstrate their own critical thinking of the evidence of COVID-19 and the implications of COVID-19 for disabled people, and are therefore not representative of all disabled people nor the Ministry of Health.

INTRODUCTION

The intent of this professional perspective is to provide background knowledge and evidence to support reflection on disability outcomes internationally and in Aotearoa New Zealand. As health inequities are magnified during humanitarian crises, COVID-19 has provided an opportunity to consciously consider how physiotherapists as health professionals, and the systems we operate within should respond to health inequities, including and especially those affecting disabled people. As physiotherapists, we are professionally obliged to explore health inequities and take proactive steps to mitigate them (Physiotherapy Board of New Zealand, 2020). International and local research shows that health professionals fail to recognise disabled people as a distinct population in the same manner as they view older persons, children, racial minorities, and other groups (DeJong et al., 2002). Furthermore, while individual health professionals might arguably have limited capacity to advocate for structural change at higher levels in the system, lack of specific knowledge of disability (including health inequities in this population), and conscious and unconscious bias towards disabled people enables the perpetuation of unmet health needs (Pelleboer-Gunnink et al., 2017; Ravichandran et al., 2020; Sahin & Akyol, 2010). This commentary describes the systemic discrimination experienced by disabled people, including within the health system, and how these multi-factorial and cumulative events result in health inequities. It also provides examples of how decisions during times of humanitarian crisis can unfairly impact disabled people, exacerbate already existing health inequities, and infringe disabled peoples' human rights. Finally, the commentary encourages physiotherapists to reflect upon, recognise, and challenge systemic bias, and proposes strategies physiotherapists might take to help mitigate and address health inequities in Aotearoa New Zealand.

DISABILITY

What is disability?

Disability is inherent in humanity (World Health Organisation [WHO], 2011); almost everyone will experience temporary and/or permanent disability, particularly as we age (WHO, 2011). The New Zealand Disability Strategy suggests that:

> Disability is not something individuals have. What individuals have are impairments. They may be physical, sensory, neurological, psychiatric, intellectual or other impairments… Disability is something that happens when people with impairments face barriers in society…this is the thing all disabled people have in common. (Office for Disability Issues, 2017)

Disability identity

Many academic journals and publication styles recommend bias-free and person-first terminology, such as "person with disability" or "people with stroke", but with the caveat that identity-first language (for example, autistic people or the Deaf community) may also be appropriate (American Psychological Association, 2020; Mousavi et al., 2020; New Zealand Journal of Physiotherapy, 2020). Contextually, placing disability before the individual was considered de-humanising, thus a shift from placing disability first has occurred. Yet, as person-first language has increased editorially, increased discrimination from its application has also been observed, as there is not an equivalent term for "people with ability" (Gernsbacher, 2018). Identity-first language derives from the social model of disability. This is a model which acknowledges the barriers created by society (for example, attitudinal, environment, systems) which limit participation (Andrews, 2017; Retief & Letšosa, 2018). In contrast, the biomedical model creates a divide between an idealised "health normalcy" and the alternative presence of deficit or impairment (Watermeyer, 2013). For many disabled people, their uniqueness is a part of their identity and a source of pride. Therefore, affirming disability as an identity enables an individual to positively identify aspects of their individuality at their own discretion, rather than being told how to identify by an external (usually non-disabled) "authority". Currently, the term "disabled people" and "disabled person" is the preferred term by many disability organisations in Aotearoa New Zealand (Disabled Persons Assembly, 2020; Office for Disability Issues, 2020).

Not all members of the disability community identify with identity-first language. Importantly, Māori typically prefer to identify as Māori first, with collectivism, relational, and holistic cultural values (for example, whānau, language, whakapapa to terrestrial and spiritual worlds) paramount to te ao Māori (Hickey & Wilson, 2017; Ministry of Health [MoH], 2018). In te ao Māori, disability is *just* an aspect of the collective cyclical experiences of life (Hickey & Wilson, 2017). Specific terms for Māori with disability exist, including "whānau hauā", and more recently, "tāngata whaikaha" (literally, "people with strength") (MoH, 2018). The positive imperative ascribed to tāngata whaikaha is worth acknowledging: "people with disabilities who are determined in some way to do well and create opportunities for themselves as opposed to being labelled, as in the past" (MoH, 2018, p. 8). With deference to current preferred terminology by representative groups, a conscious decision was taken to use the term "disabled people" and "tāngata whaikaha" throughout this commentary.

Why disability rights are relevant to all physiotherapists

Over one billion people (15% of the population) live with disability worldwide (WHO, 2011). Approximately 4.5% of the world's population live with significant difficulties in function, activity, and participation (WHO, 2011). In Aotearoa New Zealand, approximately 1.1 million (24%) people have a disability (MoH, 2014), making disability the largest minority group. Consequently, a large proportion of physiotherapists' patients will have a disability.

Yet disabled people face extreme health inequities (Marmot et al., 2008; WHO, 2018). Physiotherapists are obliged to uphold legislation, standards, and conventions as described in the Physiotherapy Standards framework (Physiotherapy Board of New Zealand, 2020). This includes legislation, such as the Health Practitioner Competence Assurance Act 2003, the Code of Health and Disability Services Consumers' Rights 1996, and the United Nations Convention on the Rights of Persons with Disabilities. These highlight factors that perpetuate health inequities and underscore the ideal: bias-free and just service delivery. Moreover, physiotherapists are ethically obliged to consider their personal and collective role in addressing such inequities (Physiotherapy Board of New Zealand, 2020). This is particularly relevant now as physiotherapists have and will continue to have an integral role in the acute hospital management of people with COVID-19, the rehabilitation and recovery of people following COVID-19 infection, and the primary management (including telehealth) and acute care management of people with other health and disability issues (Silva et al., 2020; Haines & Berney, 2020; Quigley et al., 2020; Sheehy, 2020; Thomas et al., 2020; Turolla et al., 2020).

SOCIAL DETERMINANTS OF HEALTH

The social determinants of health are the material circumstances, biological, behavioural, and psychosocial factors individuals/whānau are born with, are exposed to, or exhibit (these are sometimes called the individual or intermediary determinants) (Whitehead & Dahlgren, 1991; Whitehead & Dahlgren, 2006). However, health is also determined by social cohesion and capital, and more structural determinants, such as education, occupation, cultural and societal values, and policies (macroeconomic, social, and public) (Whitehead & Dahlgren, 1991; Whitehead & Dahlgren, 2006). For instance, inequities in education and employment affect relative income within a country, housing, and health (Heaphy et al., 2011). The stepwise or linear decrease in health is known as the "social gradient", and results in a higher risk of illness and death, and a shorter life expectancy (Marmot, 2004). Thus, avoidable, unfair, and unjust structural inequalities in multiple domains or systems of the social determinants of health create and maintain health inequities for disabled people (Marmot, 2004; Whitehead & Dahlgren, 1991; Whitehead & Dahlgren, 2006).

Examples of social outcomes creating and maintaining health inequities for disabled people in Aotearoa New Zealand

This section demonstrates how inequities in one domain or system can negatively influence another system, resulting in a perpetuating downward gradient of health inequity. There are large discrepancies in social outcomes for disabled people compared to the general population in Aotearoa New Zealand. Almost 27% of disabled people aged 16 to 39 years of age have no school qualification compared to 12% in the general population (MoH, 2014; Statistics New Zealand, 2015). Only 39% of disabled people aged 18 to 64 are employed compared to 81% in the general population (Stats New Zealand, 2020b). Recent statistics (June quarter, 2020) show that 23% of disabled adults do not have enough money to meet their everyday needs and live off a median weekly income of $402. In comparison, 6.5% of adults the same age in the general population do not have enough money to meet their everyday needs and report a median weekly income of $713 (Stats New Zealand, 2020b, 2020c).

Compared to adults aged between 18 and 64 years in the general population in Aotearoa New Zealand, disabled people report higher levels of loneliness (12% versus 3.8%), poor life satisfaction (44% versus 15%), and poor mental well-being (46% versus 19%) (Stats New Zealand, 2020b, 2020d). While disabled people access health services twice as often as that of the general population, they report multiple barriers with accessing these services, including discrimination by health providers (Health and Disability System Review, 2020). Importantly, increased use of health services results in financial distress (Mitra et al., 2009). The burden of additional health- and disability-related services expenditure on family income is 4.4% for disabled people compared to 1% for the general population (Mitra et al., 2009). Increased poverty due to increased health needs further reduces educational and employment opportunities, and financial stability, thus negatively impacting health outcomes even further (Mitra et al., 2009), exemplifying the downward social gradient. The recent Health and Disability System Review (2020) noted that all determinants combined result in high unmet health needs and inequitable health outcomes for disabled people. In short, disabled people are not subject to the same privileges as the general population.

The multiplicative effect of intersectionality

Intersectionality is the multiplicative effect from discrimination occurring due to the presence of two or more identities which are marginalised. For instance, international statistics show that disability is more prevalent in women, children, and indigenous populations (WHO, 2011). These groups face discrimination due to gender, age, and ethnicity, and are more vulnerable to socio-economic inequities, irrespective of disability identity. But due to the social gradient, the health inequities these groups face consequently increase the risk of disability (Marmot, 2004). When two or more marginalised identities occur, health inequities increase even further.

This is seen in Aotearoa New Zealand too. Te Tiriti o Waitangi principles of partnership, tino rangatiratanga (self-determination and participation), options, active protection (MoH, 2019), and equity have been largely reneged by two centuries of colonisation, including subjugation of rights, confiscation of lands, and racism towards Māori (Waitangi Tribunal, 2019). As a marginalised group, Māori are 10 times more likely to experience multiple types of discrimination compared to non-Māori (Harris et al., 2006). Discrimination is observed in acts of interpersonal[1], internalised[2], and institutional racism[3], which leads to systemic bias (Harris et al., 2006; Reid & Robson, 2007). Systemic biases explicitly and implicitly affect the social determinants of health, and have a multiplicative effect, resulting in unequivocal inequity (Moewaka Barnes & McCreanor, 2019; Pitama et al., 2007).

It is unsurprising, therefore, that Māori people have a higher prevalence of disability (age adjusted at 32% and 26% respectively) compared to European (24%) and Asians (17%) (MoH, 2014). The multiplicative effect of intersectionality is observed with tāngata whaikaha experiencing extremely poor health outcomes (Waitangi Tribunal, 2019). For example, more tāngata whaikaha (25%) than disabled people of other ethnicities (23%) have insufficient household income to meet their daily needs, 66% have a personal annual income of less than $30,000 NZD, and over 40% have no school qualification (Statistics New Zealand, 2015). Cold and damp housing is more

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[1] Interpersonal racism is the differential expectations of ability by ethnicity (Jones, 2020)

[2] Internalised racism is the acceptance of negative stereotypes about ability and intrinsic worth by stigmatised groups (Jones, 2020)

[3] Institutional racism is the differential provision of and access to good, services, and opportunities by ethnicity (Came et al., 2018)

common, rates of unemployment higher, and participation in culturally popular recreational activities lower for tāngata whaikaha compared to Māori without disability (Statistics New Zealand, 2015). In addition, tāngata whaikaha specifically report issues with insufficient assessments, treatment, and access to culturally acceptable support, equipment, and care funding (Hale et al., 2018; Ratima & Ratima, 2007; Statistics New Zealand, 2015).

COVID-19 AND DISABILITY

On 20 January 2020, WHO declared the outbreak of a novel coronavirus disease, COVID-19, to be a public health emergency of international concern due to the speed and scale of transmission (WHO, 2020). This was upgraded to pandemic status on 12 March 2020 due to the rapid increase in confirmed COVID-19 cases in multiple countries across the world. The potential heightened risk of COVID-19 for specific groups of people was already recognised, as those with the poorest health outcomes are typically more severely affected by crisis situations, including pandemics (WHO, 2020).

Some disabled people may be at greater risk of contracting COVID-19 or other droplet-borne viruses for numerous reasons. These include difficulty implementing hygiene measures due to environmental and physical barriers, difficulty implementing physical distancing recommendations due to additional health and support needs which require close physical contact, and risk of exposure due to multiple external support service providers/caregivers (United Nations, 2020; WHO, 2020).

In addition, some disabled people are “at risk” of poorer health outcomes from COVID-19 specifically. While impairment is frequently conflated with poor health status disability *per se*, it often has limited, or no overall health impact (Scully, 2020). Nevertheless, secondary health conditions, comorbidities (such as diabetes), chronic medical conditions (such as heart disease), a compromised skin barrier due to open wounds or medical devices (for example, ileostomy, tracheostomy, and feeding tubes), impairments, and medications are prevalent in disabled people (Battalio et al., 2019; Hole & Stainton, 2020; McGuire et al., 2020; United Nations, 2020). The presence of these factors leads to greater risk of morbidity and mortality from COVID-19 (United Nations, 2020; WHO, 2020). Furthermore, as previously mentioned, already present inequities (for example, barriers to accessing timely and appropriate health care) and the socio-economic consequences of COVID-19 can further exacerbate the severity of adverse health outcomes (United Nations, 2020).

Finally, increased risk can also arise during times of humanitarian crisis, including pandemics, if communication strategies are not fit for purpose. Access to timely, trustworthy, and understandable health and disability information in accessible formats is critical in times of crisis. In the Aotearoa New Zealand COVID-19 response, there were significant challenges in rapidly developing and distributing both general and disability-specific messages in accessible formats (for example, braille, New Zealand Sign Language and Easy Read) in a timely manner. A critical limitation is the likely lack of disability-related capability and capacity across most central government agencies, district health boards, and health practitioners. Without the direct and proactive collaboration of key disability advocates, academics, and disability support providers, delivery of new or adapted services and facilitation of disability-specific resources would have been limited in Aotearoa New Zealand (Pulman, 2020). However, lessons can still be learned as many disabled people were negatively impacted, often as a result of structural policy decisions. These decisions also created ethical dilemmas for health professionals.

ETHICAL DILEMMAS RELATED TO COVID-19

The extraordinary threat of COVID-19 has raised numerous ethical challenges to those working in the health and disability sector (McGuire et al., 2020). Some of the most publicly contested include (a) professional responsibility to treat people with COVID-19; (b) disclosure of COVID-19 status; (c) allocation of COVID-19 tests when resources are limited; (d) allocation of scarce resources; (e) implications of relaxing research rules and health professional accreditation; and (f) addressing end-of-life issues (Kramer et al., 2020). These areas, and many others, are worthy of reflection (McGuire et al., 2020). However, in this commentary we have space to focus on only two, specifically, professional responsibility and allocation of scarce resources. These two challenges exemplify the implications of decisions in “conventional”, “contingency”, and “crisis levels of surge capacity”[4] on the health outcomes of disabled people, especially when decision-making does not include a disability lens.

Professional responsibility

Accounts from Spain of older adults in aged care being abandoned and left to die emerged in March 2020 (British Broadcasting Company, 2020). The newspaper article presents the horror of this event and announces the investigation being launched. Incidents such as these were, and are, occurring in myriads of individual homes and institutional care globally (Pulman, 2020; Webster, 2020). Personal risk of contracting COVID-19 by healthcare professionals and/or caregivers providing personal care and domestic assistance, and meal preparation/delivery when caring for someone with COVID-19, someone with a possible COVID-19 status, or someone at risk of COVID-19 is understandable given the widespread reporting of the death of healthcare professionals from COVID-19. Access to effective personal protective equipment (PPE), and being (up) skilled in the appropriate application and removal (donning and doffing) of PPE should mitigate this risk. But despite many governments’ reassurances that there were sufficient supplies of PPE, reporting of on-the-ground shortages was rife, including in Aotearoa New Zealand (Kramer et al., 2020; Pennington, 2020). The ethical dilemma of professional responsibility is particularly pertinent when the institutional or in-home care provided to disabled people is considered.

Most (>94%) in-home caregivers in Aotearoa New Zealand are female with a median age of 49 years, rising up to 64 years (Callister et al., 2014; Ravenswood & Douglas, 2017).

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[4] These capacity terms derive from a taxonomy for health care which delineates, on a continuum, changes to service provision, and thus resource allocation that might occur. Where a facility is on the spectrum is dependent on the onset and scope of the crisis being faced (Hick et al., 2009)

Over 50% are the primary earner and receive approximately $17.00 per hour (Ravenswood & Douglas, 2017). Many also spend time (up to 30 hours per week) outside work also caring for whānau (Callister et al., 2014). Caregivers are often the interface between the community and the disabled person. They frequently work with several people a day, and care may include exposure to bodily fluids and aerosol generating procedures. Therefore, many caregivers are of an age that puts them at risk; the work they do also puts them at risk, and due to financial circumstances and whānau dependents, they cannot run the risk of becoming sick from COVID-19. Accordingly, the early weeks of Level 4 lockdown saw many caregivers recognise their own "at risk" status and, consequently, stood down from work voluntarily (Radio New Zealand, 2020).

The inability to source PPE also created increased risk of exposure for disabled people. Caregivers, for the same reasons alluded to above, put disabled people at greater risk of contracting COVID-19. In Aotearoa New Zealand, disabled people reported waiting times of several weeks or even months for PPE, resulting in many sewing their own masks from old clothes (Pulman, 2020). Many disabled people required support, but due to staff shortages, they were left without care (Radio New Zealand, 2020). Other disabled people made the difficult decision to cancel their formal care supports, and only received support from whānau during lockdown (Parahi, 2020). The extent of physical and psychosocial impacts due to disruption of usual supports for disabled people and their whānau is yet unknown (Hole & Stainton, 2020)

Allocation of scare resources with contingency and crisis capacity

Health is a basic human right for all, even during a pandemic. Thus, allocation of resources became a fiercely contentious issue (Pring, 2020) when the National Institute for Health and Care Excellence (NICE) published guidelines on 29 March 2020 recommending that the provision of critical care be determined by a clinical frailty score (NICE Guidelines, 2020). It recommended use of this score when surge capacity forced deployment of "crisis capacity"[5] healthcare provision (Nelson et al., 2020). The guideline, and others like it, was intended to provide advice on managing health and safety of staff, management of non-finite healthcare resources (such as ventilators and ICU beds), and maximise patient safety (Kramer et al., 2020; McGuire et al., 2020; Nelson et al., 2020; NICE Guidelines, 2020; Scully, 2020). However, it resulted in cries of discrimination[6] by disabled people and disabled persons organisations (McGuire et al., 2020; Pring, 2020; Webster, 2020). In essence, the guideline recommended that anyone with a frailty score of 5 or above should not be offered ventilator support (NICE Guidelines, 2020). A 5 is someone with evident slowing, requiring help with high-order activities of daily living (finance, transportation, and heavy housework). Thus, many disabled people, but not necessarily frail people, would find themselves meeting this threshold.

These guidelines were subsequently amended (29 April 2020) to clarify that the frailty score does not apply to "people with stable long-term disability … learning disability or autism" and that the frailty score should not be the sole assessment of frailty (NICE Guidelines, 2020, p.6). The amended guidelines now recommend that individual patient assessment should be performed but, in all cases, taking comorbidities and underlying health conditions into consideration (NICE Guidelines, 2020). Furthermore, the guidelines remind health professionals of the need to exercise their clinical judgement while taking the guidelines fully into account (NICE Guidelines, 2020).

But the guidelines, including amendments, do not necessarily relieve anxieties for disabled people (Pring, 2020). This is because up to 50% of people with disability have secondary health conditions and comorbidities (Battalio et al., 2019). In addition, the subjective decision-making required by health professionals, pressured by health system population level guidelines, is considered suspect and untrustworthy, arguably due to the longstanding structural bias and racism resulting in health inequities, as discussed earlier in the paper (Berger & Miller, 2020; McGuire et al., 2020). Assumptions about quality of life and social utility are frequently made by health professionals with respect to disabled people (McGuire et al., 2020; Scully, 2020). This is especially true for people with a learning (intellectual) disability or cognitive impairment who traditionally face extreme discrimination and have higher rates of do-not-resuscitate orders (McGuire et al., 2020; Nelson et al., 2020; Parsons & Johal, 2020).

Conversely, many individual health professionals found population-related "crisis" capacity recommendations morally distressing (McGuire et al., 2020). This is because they forced health professionals to work from a "best interests" perspective (Parsons & Johal, 2020). A best interests perspective undermines standards of professional practices, such as gaining of informed consent, facilitating supported decision-making to ensure will and preferences, maintaining autonomy, and respecting patient well-being (Wicclair, 2020). Furthermore, value-based decisions based on lives and life-years saved can be conscientiously objectionable, as they unjustly disadvantage disabled people (Berger & Miller, 2020; McGuire et al., 2020; Nelson et al., 2020; Wicclair, 2020) whose health status is attributable to determinants largely outside their control (Marmot et al., 2008; Whitehead & Dahlgren, 1991).

Fortunately, in Aotearoa New Zealand as in other parts of the world, "crisis capacity" has remained mostly theoretical or of limited duration. Instead, a prolonged period of "contingency capacity" has been in place. At contingency capacity, rehabilitation beds, post-anaesthesia care rooms, and other patient areas are modified to increase ICU capacity

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[5] "Crisis capacity is when non-traditional spaces are used for patient care so that ICU capacity can expand by up to 200%. Staff may practice outside of their usual expertise and there may be insufficient staff to deal with the volume of patients. Critical supplies are often limited, leading to higher risk reuse, such as reusing usually sterile supplies. Uniquely, crisis capacity involves taking treatments, such as ventilators, from one patient to give to another due to a shortage of supplies." (Nelson et al., 2020 p. 2)

[6] Publication of discriminatory guidelines as part of COVID-19 crisis management are not isolated to the United Kingdom. Similar examples can be found in the United States and elsewhere (McGuire et al., 2020).

by 100%. Typically, one staff member will care for a larger group of patients, and supplies are conserved or re-used (when considered low risk) (Negrini et al., 2020; Nelson et al., 2020). The redeployment of staff and repurposing of beds results in shorter stays and fewer admissions (Negrini et al., 2020; Nelson et al., 2020). Also, many "non-essential" services, which disabled people rely upon, either cease or are delivered less regularly (Parahi, 2020; United Nations, 2020; Webster, 2020). These services include, but are not limited to, outpatient appointments; delivery of health and/or essential supplies, for example, podiatry and incontinence items; community care, including day and respite services; and home and personal support. Furthermore, contingency capacity with COVID-19 has seen many hospitals and institutions (aged care and supported living homes) maintain no visitor policies in the "best interests" of the people being cared for (Hancock, 2020; Nelson et al., 2020).

Negative experiences with service delivery, including no visitor policies, at both crisis and contingency capacity phases of the ongoing COVID-19 response, are widespread for disabled people in Aotearoa New Zealand and internationally (Armitage & Nellums, 2020; Parahi, 2020). The impact on the health of disabled people by the (delayed) designation of some services (for example, home support, physiotherapy, and podiatry) may never be fully known. Similarly, aside from the emotional trauma a no visitor policy can inflict (Hole & Stainton, 2020; Nelson et al., 2020), loss of face-to-face contact can significantly exacerbate existing conditions (for example, depression and anxiety, or physical health deterioration due to a decrease in oversight), and this cost is also yet unknown (McGuire et al., 2020). Furthermore, it is unlikely that new provisions that arose during crisis capacity for disabled people will have mitigated the negative impacts of the COVID-19 response. These provisions included fully subsidised taxi fares to New Zealand Total Mobility customers from March until the 30 June (Metlink, 2020). This provision was put in place following the realisation that the COVID-19 public transport safety measures limited disabled people from being able to use these services. Thus, whilst the public transport changes were discriminatory, their implementation led to the provision of a different service which alleviated the risk of contracting COVID-19 on public transport, reduced health-related expenditure and, likely, provided some biopsychosocial benefits.

In almost all of the above examples of crisis and contingency capacity, changes to the allocation of resources, a loss of opportunity for enhancing, maintaining, or slowing loss of function is represented (Negrini et al., 2020; Nelson et al., 2020). Interestingly, it is entirely possible that the ongoing impact of contingency capacity is likely to pose a greater risk to disabled people than crisis capacity (McGuire et al., 2020; Nelson et al., 2020; Pulman, 2020). Estimates across 35 countries in Europe suggest this collateral damage is affecting up to 2.2 million people every day (Negrini et al., 2020). Thus, crisis or contingency capacity policy (as well as education, transport, and employment decisions) which are made at the population level can inadvertently disadvantage disabled people who may already face precarity[7], and will have morbidity and mortality implications (Hole & Stainton, 2020; United Nations, 2020). Consequently, the Chair of the United Nations Committee on the Rights of Persons with Disabilities, on behalf of the Committee on the Rights of Persons with Disabilities and the Special Envoy of the United Nations Secretary-General on Disability and Accessibility, issued a statement reminding member states, of which Aotearoa New Zealand is one, of their obligations. Included in this statement was specific reference to the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) Article 11 "Situations of risk and humanitarian emergencies":

> States parties shall take all possible measures to ensure the protection and safety of persons with disabilities in the national response to situations of risk and humanitarian emergencies. This comprises measures in all areas of life of persons with disabilities, including the protection of their access to the highest attainable standard of health without discrimination, general wellbeing and prevention of infectious diseases, and measures to ensure protection against negative attitudes, isolation, and stigmatization that may arise in the midst of the crisis. (Basharu & Cisternas Reyes, 2020)

WHAT IS THE IMPACT OF COVID-19 ON DISABLED PEOPLE TO DATE?

Due to previously existing drivers of health inequity, disabled people are likely to have a higher COVID-19-related morbidity and mortality. Excess deaths are a means of exploring the impact of COVID-19 on mortality. In Aotearoa New Zealand, an excess mortality rate has not been observed (Stats New Zealand, 2020a). However, other countries have not been so fortunate. Between 1 March and 1 August 2020, approximately 200,000 people, which represents a 20% increase, died in the United States of America. Interestingly, COVID-19 was reported as the cause of death in only 67% of these excess deaths. Remaining deaths were attributed to heart disease and dementia (Woolf et al., 2020). However, this would represent a highly unusual increase in the baseline death rate of people with heart disease and dementia for this period of 2020 (Woolf et al., 2020). This trend is similarly observed in the United Kingdom, with higher excess mortality in adults over the age of 85 years (Sinnathamby et al., 2020). Therefore, these examples likely reflect under-reporting due to unrecognised or undocumented infection in the disability community.

It is imperative that COVID-19 data for disabled people are collected and published (McGuire et al., 2020; Reed et al., 2020; Sabatello et al., 2020; United Nations, 2020). Without disability data, health inequities and social injustice are perpetuated (Reed et al., 2020; Sabatello et al., 2020), and disabled people will continue to be excluded from policy decisions which affect their health and well-being (Armitage & Nellums, 2020; Reed et al., 2020; Sabatello et al., 2020; United Nations, 2020). Lamentably, there is a paucity of this type of analysis to date

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[7] "Precarity is the politically induced condition in which certain populations suffer from failing social and economic networks of support and become differentially exposed to injury, violence and death" (Butler cited in McNeilly, 2015, p.150)

(Reed et al., 2020; Sabatello et al., 2020). Yet the disability data that exist are alarming (Turk & McDermott, 2020). Data from the United Kingdom exploring known or reported COVID-19 related deaths demonstrate that disabled people account for 60% of all deaths. Moreover, the age standardised mortality rate was statistically significantly higher for disabled people than the general population (Office for National Statistics, 2020). Furthermore, mortality is higher in those with learning (intellectual) disability and developmental disability (Landes et al., 2020), and this group is dying younger (Turk et al., 2020).

IMPLICATIONS FOR PHYSIOTHERAPISTS AS HEALTH PROFESSIONALS

While some disabled people might be more at risk of COVID-19, "vulnerability" arises from the continuation and exacerbation of discriminatory policies, including health professionals' conscious and unconscious biases. There are numerous strategies by which physiotherapists can help address inequities; the following are suggestions that could be easily integrated into clinical practice or could be advocated for collectively as a profession.

As per ethnicity, physiotherapists are professionally and ethically obliged to individually and collectively consider their role in perpetuating health inequities for other identities too. Conscious reflection upon their own practice, consideration of institutional bias, and determining areas of professional development may be required. To gain some understanding of the discrimination disabled people experience might require reading about models of disability; the UNCRPD; current government strategy documents, such as the New Zealand Disability Strategy (Office for Disability Issues, 2017) and Whāia Te Ao Mārama 2018 to 2022 (MoH, 2018); and about the lived experiences of disabled people within the health system, including experiences with inclusive and supported decision-making. New knowledge and reflection on one's own experiences may enhance a deeper and more nuanced understanding of the impact of systemic bias resulting in long-standing health inequities.

Unless disability specific data are collected and disaggregated, the full impact of COVID-19 on the morbidity and mortality of disabled people will never be known. The paucity of these data is testimony to the ongoing systematic and systemic discrimination of disabled people. To help put this issue in perspective, it is only since ethnicity data was routinely collected by health services in Aotearoa New Zealand that the extent of Māori health inequities have been revealed. At present, disability identity is not routinely collected by health services in Aotearoa New Zealand. Physiotherapists should consider how disability identity might be sensitively collected in their area of practice and query the routine inclusion of disability identity as part of demographic data collection in larger organisations. They could also advocate for the routine disaggregation of disability data in their area of practice.

Finally, physiotherapists could advocate for better inclusion of disabled people within the wider health sector. Employing disabled people within the health and disability system is one mechanism for reducing discrimination. As per ethnicity, employment of disabled people provides a mirror on society, and a unique and valuable perspective on decisions made at a micro level. Certainly, this will then require the explicit inclusion into and support of disabled people within health professional programmes; physiotherapists in academia may wish to consider how they might advocate for this change. Furthermore, collection and analysis of disabled physiotherapists within the health workforce demographic will be required to determine if representation improves over time. Physiotherapists working in policy development (meso and macro) should expect meaningful inclusion of disabled people in the co-development of acts, standards, and guidelines, rather than obligatory consultation. They could query the process when the former "ideal" process is not attained. When disabled people are not included in national and local structural policy decisions, bias is perpetuated.

Admittedly, some of these strategies might feel confrontational to some physiotherapists. A growing awareness of the concept of silence being considered as complicit might help all physiotherapists find the confidence to challenge interpersonal, internalised, and institutional bias when it is observed.

KEY POINTS

What is already known

1. Society, including health professionals, is complicit in the perpetuation of health inequities in disabled people. Systemic bias is highlighted by the lack or limited inclusion of disabled people in the response planning for humanitarian emergencies and when a crisis event, such as COVID-19, arises.

What this paper adds

1. This commentary highlights the health inequities disabled people experience in Aotearoa New Zealand (and internationally) and explains why these are exacerbated in times of crisis, such as the COVID-19 pandemic.
2. A case is made for physiotherapists to reflect upon their knowledge of the health inequities disabled people experience.
3. Strategies physiotherapists might adopt to challenge interpersonal, internalised, and institutional bias are presented

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PERMISSIONS

None.

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Implementation of Telerehabilitation in Response to COVID-19: Lessons Learnt from Neurorehabilitation Clinical Practice and Education

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ABSTRACT

The health response to the COVID-19 pandemic has had significant impacts on neurorehabilitation provision both internationally and in New Zealand. Telerehabilitation, the delivery of rehabilitation at a distance using information and communication technologies, was advocated as a means of addressing the rehabilitation needs of our patients while maintaining physical distancing and reducing the risk of viral transmission. Despite research evidence indicating that telerehabilitation is as effective as in-person rehabilitation for people with neurological conditions, there were significant challenges in delivering and sustaining telerehabilitation practice. We draw upon our experiences in delivering telerehabilitation in neurorehabilitation clinical practice and education to reflect on the process of practice change and to consider how these experiences can inform practice development in the future. We propose that rehabilitation organisations and physiotherapists continue to develop capability to provide telerehabilitation; that physiotherapists and the physiotherapy profession focus on translating their communicative, relational and clinical skills to the digital space to ensure they are competent in telerehabilitation; and that, as a profession, we focus on what constitutes “best practice” in telerehabilitation, and how in-person and telerehabilitation can be integrated to provide engaging, evidence-based and person-centred rehabilitation.

Signal, N., Martin, T., Leys, A., Maloney, R. & Bright, F. (2020). Implementation of telerehabilitation in response to COVID-19: Lessons learnt from neurorehabilitation clinical practice and education. *New Zealand Journal of Physiotherapy, 48*(3), 117–126. https://doi.org/10.15619/NZJP/48.3.03

Key Words: Rehabilitation, Telerehabilitation, COVID-19, Physiotherapy, Education, Communication, Digital Health, Telehealth

BACKGROUND

Telerehabilitation is the delivery of rehabilitation across a distance using information and communication technologies. During telerehabilitation, communication between the healthcare professional and patient can be mediated by telephone, text messaging, email, web-based resources, videoconferencing, rehabilitation devices, and wearable technologies. Depending on the mode of delivery, communication can be synchronous (in real time) or asynchronous (where communication occurs with a delay, without the need to respond immediately) (Figure 1). A range of commercially available platforms have been developed to support the delivery of telerehabilitation, such as PhysiTrack® and Cliniko®.

Telerehabilitation has a number of potential advantages over in-person rehabilitation. It can improve access to rehabilitation for those who live remote to healthcare services, and reduce monetary, time and environmental costs associated with travel to rehabilitation services (Smith et al., 2020; Soopramanien et al., 2020). Telerehabilitation can support the standardisation of delivery of care and information provision, promote self-management and contextualisation of rehabilitation to the person’s home and community environment, and help engage whānau[1] in the rehabilitation process (Chen et al., 2019; Matamala-Gomez et al., 2020). It also offers the opportunity to effectively monitor rehabilitation outcomes using patient reported outcomes (Chen et al., 2019; Cramer et al., 2019; Knepley et al., 2020; Smith et al., 2020).

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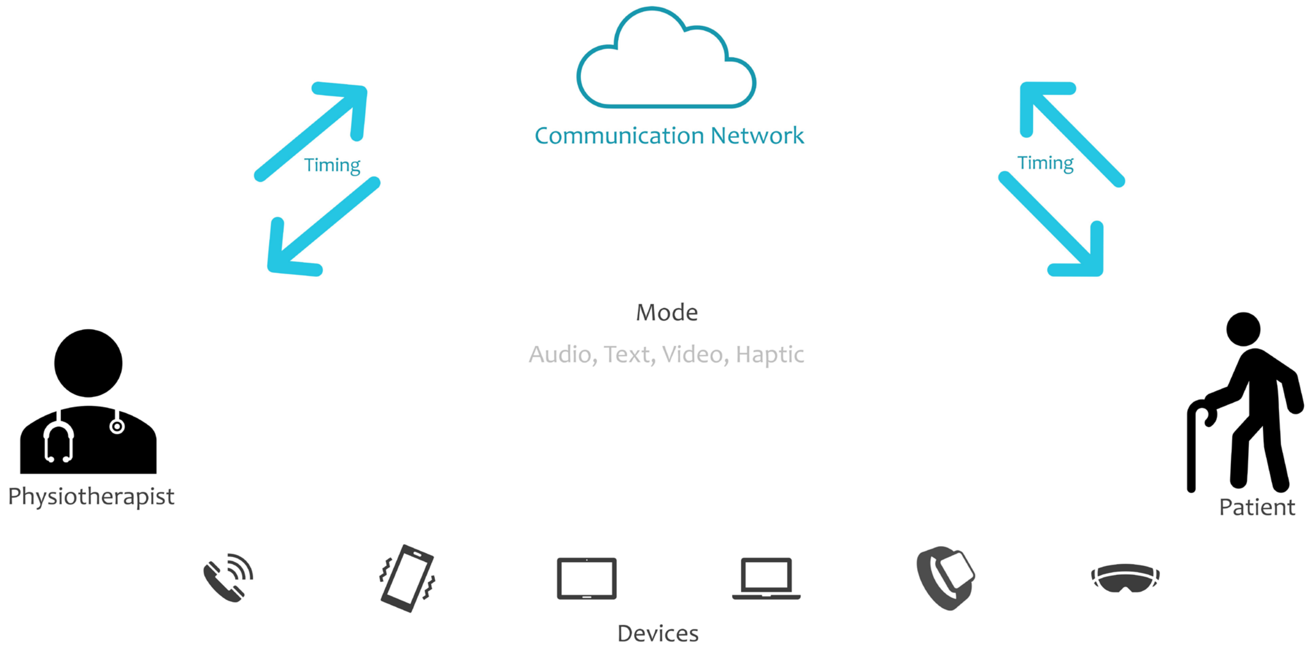
[1] Whānau is the Māori term for extended family, family group, a familiar term of address to a number of people – the primary economic unit of traditional Māori society. In the modern context the term is sometimes used to include friends who may not have any kinship ties to other members (Moorfield, 2003-2020).

Figure 1

Telerehabilitation Methods of Delivery



The evidence base supporting the effectiveness of telerehabilitation has grown over the last 15 years, with published randomised controlled trials for a range of neurological populations (for example, Cramer et al., 2019; Gandolfi et al., 2017; Rimmer et al., 2018; Saywell et al., 2020). For example, a 2020 Cochrane systematic review and meta-analysis found that telerehabilitation is as effective as in-person rehabilitation for people with stroke (Laver et al., 2020), with similar findings seen in other populations (Di Tella et al., 2020; Ownsworth et al., 2018). Telerehabilitation has been shown to have positive impacts on activities of daily living, health-related quality of life, and depressive symptoms in people with neurological disabilities (Appleby et al., 2019; Laver et al., 2020; Ownsworth et al., 2018). Preliminary evidence suggests that telerehabilitation may be more cost-effective than in-person interventions (Caughlin et al., 2020; Housley et al., 2016; Lloréns et al., 2015). It is important to note that systematic reviews and meta-analyses of telerehabilitation synthesise findings from interventions which use information and communication technologies to deliver rehabilitation remotely. Studies vary in the information and communication technologies used, and the mode and timing of communication. They also differ markedly in rehabilitation content, dosage, and theoretical underpinnings. Further work is required to identify what types of interventions are best delivered using telerehabilitation, when and how they are best delivered, for whom it is most appropriate, and how telerehabilitation approaches can effectively be integrated with in-person rehabilitation.

The health response to the COVID-19 pandemic has had significant impacts on rehabilitation provision (Aguiar de Sousa et al., 2020; Liu et al., 2020). In New Zealand, inpatient rehabilitation providers identified that the lockdowns during the COVID-19 pandemic led to (a) a shift of resources to focus on preparations for an anticipated surge in COVID-19 patients; (b) a reduction in the number of patients admitted to inpatient care; (c) suspension of rehabilitation in people with COVID-like symptoms; (d) a reduction in rehabilitation beds and staffing to accommodate physical distancing requirements; (e) limitations to the amount, type, and location of rehabilitation activities carried out; (f) restricted whānau involvement in rehabilitation; and (g) early, untimely and unsupported discharge of patients to home (New Zealand National Stroke Network, personal communication, April 16 and September 3, 2020). Yet, despite significant impacts on the provision of inpatient rehabilitation, the pandemic also resulted in the suspension of, or a marked reduction in, rehabilitation delivered through outpatient, community and residential care services (Bettger et al., 2020; Y. Ratnasabapathy & J. Gundy, personal communication, September 2020). These limitations on service delivery reflected the need to prevent transmission of the virus amongst staff and vulnerable patients, and patient and healthcare providers' fear of transmission of the virus when engaging in rehabilitation. Internationally the impact of the pandemic has also seen rehabilitation services suspended as healthcare services have been overwhelmed by patients experiencing the acute effects of COVID-19 infection (Aguiar de Sousa et al., 2020; Leira et al., 2020; Willan et al., 2020). Prior to the pandemic, audits of rehabilitation provision in New Zealand consistently highlighted delays in service provision and limitations in the amount of rehabilitation provided (McNaughton et al., 2014; Thompson et al., 2019; Yeo et al., 2016). At this stage, it is not possible to estimate the compounding effect of the COVID-19 pandemic on access to neurorehabilitation, but given what we know about the importance of rehabilitation in reducing dependence, improving health-related quality of life and carer burden, we must mitigate this impact.

Telehealth has consistently been advocated as a means of providing healthcare services while maintaining physical distancing and reducing the risk of viral transmission during the COVID-19 pandemic. Yet, despite evidence of the effectiveness of telerehabilitation, its implementation in response to COVID-19 has been slow and challenging. In New Zealand, few district health boards (DHBs) achieved a substantial implementation of telerehabilitation in response to COVID-19 lockdowns, with provision often limited to telephone and email contact, and to a lesser extent, video conferenced rehabilitation sessions using tools such as Zoom® and Microsoft Teams®. The authors are not aware of any DHBs which adopted a commercially available telerehabilitation platform to support their service delivery. Private neurorehabilitation practices appeared to achieve a quicker transition to telerehabilitation, sometimes using commercially available telerehabilitation platforms. Many of these new methods of delivering rehabilitation were not sustained when public health strategies and physical distancing restrictions were relaxed, illustrating the challenges of delivering effective telerehabilitation, and the complexities of embedding and sustaining such a substantive change in healthcare practice. It is essential that, as a profession, we learn from this experience in order to prepare for future surges in COVID-19 and future infectious disease outbreaks, to enhance equitable access to rehabilitation, and to optimise the delivery of neurorehabilitation in general (Ford et al., 2020).

Aims

The purpose of this commentary is to reflect on the experience of rapidly implementing telerehabilitation in response to COVID-19 in neurorehabilitation clinical practice and physiotherapy education in New Zealand. In this commentary, we use our different experiences to reflect on the process of practice change and consider how these can inform practice development in the future. We draw upon our experience delivering telerehabilitation in private practice (TM, NS), in DHBs (AL, RM), when educating student physiotherapists (FB, NS), and when supporting the professional development of practising physiotherapists upskilling in telerehabilitation (FB, AL, RM, TM, NS). The commentary also draws upon published research and recently published editorials to support our reflections, inform our understanding, and to make suggestions for good practice moving forward.

LESSONS LEARNT

An overview of the key components of telerehabilitation is provided in Figure 2.

Organisational readiness

Implementation of telerehabilitation occurred at a time of high stress and significant uncertainty, both in the workplace and in people's personal lives, which brought additional challenges to implementing a new way of working. In most cases, individuals and organisations began the implementation of telerehabilitation with little or no experience, and few resources. Swift implementation was supported by organisational readiness, in particular, where preparations for telerehabilitation were already underway, telehealth had been successfully used

Figure 2

Key Components of Telerehabilitation

in other healthcare services within the organisation, or staff had experience of telerehabilitation before the pandemic. A supportive and resourceful information technology (IT) department, strong support from organisational leaders and "on the ground" clinical champions enabled some organisations to adopt telerehabilitation quickly.

Technological tools used in providing telerehabilitation were in most instances selected based on platforms which organisations already had access to, as opposed to an evaluation of the needs of the patients and physiotherapists. Often physiotherapists did not have suitable workspaces or adequate hardware to support the efficient delivery of telerehabilitation. At a minimum, a web camera and speaker/microphone headset (ideally wireless), a second screen, and a strong, stable internet connection is required, along with access to email, a work telephone, and a private workspace.

Early in the implementation process, limited information and resources were available to support physiotherapists. At times, advice around COVID-19 alert level restrictions and their impact on healthcare delivery, and the medicolegal implications of delivering rehabilitation through information and communication technologies were contradictory and confusing. Not all physiotherapists were aware of their obligations under the Health Information Privacy Code and the Telecommunications Information Privacy Code, especially in relation to the selection of technology platforms. National and international networks and groups, such as Allied Health Aotearoa New Zealand, the New Zealand National Stroke Network, the NZ Telehealth Forum Resource Centre, and the Australian Telehealth for Stroke Community of Practice, quickly self-organised to crowdsource expertise, information and resources, as did commercially available telerehabilitation platforms. Many clinical champions engaged with and contributed to these networks, and a large and growing body of resources is now available (Allied Health Aotearoa New Zealand, 2018; Lee et al., 2020; Physiotherapy Board of New Zealand, 2020).

Effective delivery of telerehabilitation required physiotherapists to be competent managing the technical aspects of service delivery, not only for themselves but for their patients (Caughlin et al., 2020). A lack of technical competence was seen as a key barrier for many physiotherapists. This appeared to have a flow-on effect to communication and clinical skills. When physiotherapists were focused on how the technology worked or the activities they needed to complete, they appeared more likely to overlook the patient's experience, resulting in task-focused interactions. Having experience of different technologies, such as Zoom® or practice management software, helped some quickly upskill. Early adopters of telerehabilitation played an important role in advocating for telerehabilitation and supported colleagues to develop technical competence. Key elements which supported the development of technical competence included having documented, easy-to-follow procedures to guide the set-up, use and troubleshooting of technical issues experienced by physiotherapists and patients; active support from IT departments; creating a buddy system between early adopters and less technically competent staff; addressing technical issues and solutions in team meetings; and devoting time to mastering the platform through dedicated practice before working with patients.

TIPS

- Select technology tools and platforms which meet the needs of all users.
- Ensure staff have suitable hardware and space.
- Link with telerehabilitation networks to share expertise, information and resources.
- Identify clinical champions.
- Develop 'How to..." guides.
- Practice, practice, practice...
- Focus team and professional development activities on telerehabilitation.

Getting the patient set up

Telehealth is a new model of healthcare delivery, and consequently, most patients were unfamiliar with it. This meant that physiotherapists needed to "pitch" the concept of telerehabilitation, clearly describing what was involved and the potential benefits and limitations. At times, patients and whānau were sceptical of the value of telerehabilitation, but for many, once they had experienced it, they were able to see its value in rehabilitation.

Technology screening was required to determine the patient's access to a suitable device and data connection; their experience using technology and social media; their capacity to engage in telephone, email, text message and videoconferenced interactions; and the level of whānau support and resources. In some cases, physiotherapists needed to outline the privacy and data security concerns associated with platforms such as FaceTime® and WhatsApp® to explain why they were not suitable for telerehabilitation. One DHB offered the loan of iPads with data SIM cards, enabling those without digital access to engage in telehealth services. When the telerehabilitation pitch and technology screening was undertaken by a third party or a staff member who was sceptical about the appropriateness, efficacy or value of telerehabilitation, it was often unsucessful. At times, it was noted that healthcare professionals were reluctant to offer telerehabilitation to people who were older, communicatively or cognitively impaired, from diverse cultural backgrounds, or those experiencing financial hardship. Healthcare professionals sometimes made assumptions about the person's capacity, preferences and resources for telerehabilitation. It was not uncommon for these assumptions to be incorrect. Many patients and their whānau were able to access a suitable device and connection, and effectively engage in telerehabilitation. Some organisations developed innovative ways of pitching and preparing people for telerehabilitation, including videoconferencing with patients before discharge from inpatient care with the support of the inpatient physiotherapist, having a physiotherapy assistant familiar with telerehabilitation provide the pitch, and getting whānau and friends onboard before pitching to the patient. Some private providers also offered a free first session for patients to trial telerehabilitation before they committed to using it.

The telerehabilitation set-up worked most effectively when the physiotherapist devoted the first session to supporting the patient and whānau to develop competence with the technology platform and to optimise their operating system, data connectivity, audio and video quality, and environmental set-up for future sessions. Establishing and documenting camera and patient position for different rehabilitation tasks during this session saved set-up time in future sessions.

TIPS

- Assume that everyone can engage in some aspects of telerehabilitation with support.
- Pitch telerehabilitation to all patients.
- Devote time to setting the patient up for telerehabilitation.
- Test out camera and patient positions during the set up phase.

Translating communication and relational skills to the digital space

Communication is an area of practice that is commonly taken for granted and often appears to work well with little conscious attention. The shift to telerehabilitation challenged this and highlighted the many complexities associated with communicating via technology. The changes in nonverbal communication, loss of touch and disruptions to usual conversational flow due to connectivity lags all impacted on how patients and physiotherapists related and worked together. Turn-taking was less natural, with more likelihood of overlapping speech. Facial expressions, which might ordinarily communicate emotions or the desire to speak, were less obvious in a video consultation or not evident at all in a telephone consultation. To mitigate this, physiotherapists made turn-taking opportunities overt, clarified the patient's understanding frequently, and used purposeful eye contact and exaggerated facial expression and hand gestures. Our experiences echoed the call to "step up" verbal and non-verbal skills (Graham, 2020), adapt communication to build strong therapeutic relationships, ensure patient understanding, facilitate engagement, and monitor the subtle aspects of communication and well-being that might easily be missed.

Physiotherapists expressed concerns that telerehabilitation might negatively impact the therapeutic relationship, although research suggests the same concerns are not generally held by patients (Lawford et al., 2019). Once using telerehabilitation, physiotherapists indicated that building and maintaining relationships went more smoothly than expected and the overall strength of the relationship was, from their perspective, unchanged. However, they noted that it could take longer to build therapeutic relationships and required an intentional focus. This process was naturally more straightforward when the physiotherapist knew the patient. When there was no pre-existing relationship, physiotherapists needed to spend more time getting to know not just the patient, but the context in which rehabilitation was occurring. Allowing for "relational transitions" between checking the technology set-up and rehabilitation interventions was important. Moving forward, the Hui Process may provide a helpful framework for all (Lacey et al., 2011). This presents four stages of a clinical interaction: mihimihi (the initial greeting and engagement, which could include the checking of technology), whakawhānaungatanga (building relationships and making connections), kaupapa (attending to the clinical purpose of the interaction), and poroaki (closing the session). We noted that telerehabilitation changed the power dynamic of the therapeutic relationship, creating a more balanced relationship between the patient and physiotherapist; this has been identified in previous telerehabilitation research (Bridges Self Management, 2020; Lawford et al., 2019). A range of factors appeared to give patients greater control over the rehabilitation process, such as patients being in their own environment, physiotherapists being less able to "impose" expertise through touch, and patients having the ability to choose to disengage if their needs and priorities were not being met (Graham, 2020; Lawford et al., 2019).

TIPS

- Allow time for relational, pro-social talk before and within rehabilitation activities.
- Notice and acknowledge emotions evident in verbal and non-verbal communication.
- Emphasise empathetic behaviours such as nodding, gestures and facial expression.
- Voice empathy and acknowledge the patient's perspective and experience.

Working with patients with cognitive and communication impairments, and those from non-English speaking backgrounds presented unique challenges. Communication strategies that we might intuitively use during in-person rehabilitation, such as touch, facilitation of movement, and demonstrations, are either not available or are more challenging. Interdisciplinary teamwork was vital, aided when speech-language therapists saw patients first and developed supported communication resources such as communication books. That said, simple devices like pen and paper, and whiteboards were invaluable, enabling patients and therapists to write key words and draw diagrams, aiding comprehension and expression. Whānau members assisted communication, although care needed to be taken to ensure the physiotherapist did not exclude the patient by only talking with whānau. The inclusion of a third party, such as an interpreter, presented particular challenges, as the physiotherapist sometimes needed to coach other care providers in the use of technology and monitor their adherence to data security and privacy requirements.

TIPS

- Connect with the speech-language therapist.
- Involve whānau.
- Use a physical or electronic whiteboard to support communication.

Translating clinical skills to the digital space

Whilst the research evidence base indicates that telerehabilitation is as effective as in-person rehabilitation, physiotherapists expressed concerns about the implications of working in the digital space. Many of these concerns centred on the inability to touch, physically support and facilitate movement. However, telerehabilitation highlighted the need to employ a range of skills during rehabilitation which do not rely on touch or physical contact. The rehabilitative emphasis shifted to task-specific training, exercise rehabilitation, and activity promotion. It often involved a coaching approach, with greater emphasis on problem-solving, patient empowerment, and education; these approaches all helped build capability for self-management (Hinman et al., 2019; Lawford et al., 2019). This shift from "doing to" to "working with" the person required therapists to seek out, rely on and respond to the patient's expertise. This shift in ways of working also sometimes required physiotherapists to reflect on their professional identity and scope of practice.

Assessment

Telerehabilitation required a change in the timing and mode of information collection during the assessment process. Assessment was often distributed over three to six shorter interactions and was completed using telephone, email, online forms, prerecorded videos of function, and videoconferencing. Many physiotherapists valued this, noting that telerehabilitation (a) supported clinical reasoning, particularly for novice practitioners for whom the pressure of a single assessment session is sometimes challenging; and (b) mitigated fatigue in patients who could not tolerate a single long assessment session. Some physiotherapists described how conducting the assessment in the digital space enabled them to work more efficiently. Automating the delivery of instructions, having the patient email videos of functional tasks and objective assessments, and collecting patient-reported outcome measures all reduced face-to-face time. Well-structured, holistic documentation templates, often completed by physiotherapists in real time during telerehabilitation, helped ensure that all areas important in the assessment were covered, therefore reducing documentation time. This sometimes made it easier to raise sensitive subjects, such as sexuality. When embedded in the template, sensitive subjects were addressed as simply another area that needed to be discussed. When not using a telerehabilitation platform or documentation template, it was important for physiotherapists to carefully plan the assessment process to maximise the quality and quantity of information gleaned from each interaction with the patient.

Assessment in telerehabilitation relied heavily on subjective interviewing, patient-reported outcome measurement, and functional assessment as the primary sources of information to support clinical reasoning. It was often not possible to conduct objective assessment at the impairment level, for example, of muscle tone or sensation, due to the hands-on nature of these assessment techniques. Instead, therapists needed to interpret subjective interview findings and movement observation to identify relevant impairments. This posed particular challenges to novice and student physiotherapists, whose clinical reasoning is not always supported by a strong understanding of the relationship between symptoms, participation, functional activity limitations, impairment, and pathophysiology. Observation of movement was influenced by video quality, meaning that optimising video and audio quality was essential. Coaching patients and whānau in videography became a core skill to support both assessment and treatment.

One advantage of telerehabilitation was the ease with which patient-reported outcomes could be gathered. However, some physiotherapists and student physiotherapists expressed concern that these types of measures are less valid than objective outcome measurements. This may reflect underlying beliefs that our movement observation and physical assessment skills are more reliable than the patient's account of their experiences or functioning. However, this is not supported by evidence (Hinman et al., 2019). Additionally, therapists should be reassured by evidence from musculoskeletal practice which suggests that diagnostic accuracy in telerehabilitation assessment is equivalent to in-person assessment (Richardson et al., 2017; Russell et al., 2010). We suggest that this different approach to information gathering helps redistribute power in the therapeutic relationship and better recognises the expertise that patients hold and bring to rehabilitation.

TIPS

- Plan the timing and mode of data collection across the assessment process.
- Gather information using online forms and email communication.
- Ask the patient to email videos of key functional activities.
- Use a template to support documentation in real time.
- Source and use patient reported outcome measures.

Treatment

One marked advantage of telerehabilitation is that it occurs in the person's own home or community. Contextualised and meaningful practice is often difficult to create in clinical environments, yet it is known to increase the likelihood that learning is retained and that skills transfer to everyday life (Kleim & Jones, 2008). However, without the accoutrements of clinical spaces, physiotherapists had to be resourceful, for example, using washing baskets and backpacks filled with books as strength training equipment and kitchen benches as parallel bars. Telerehabilitation also supported whānau engagement in rehabilitation, either through direct involvement in videoconferencing or inclusion in telephone, text and email communication.

A key concern for physiotherapists was safety, particularly when patients were undertaking balance and walking rehabilitation activities. Similar to the approaches taken during in-person community rehabilitation, physiotherapists mitigated safety risks through careful planning, communication, and monitoring.

TIPS

- Establish and document emergency procedures for both the physiotherapist and patient.
- Provide written and pictorial instructions detailing safe exercising environments, clothing, footwear and equipment requirements.
- Have the patient to scan the camera around the room to check for hazards and ensure privacy.
- Have the patient work near solid walls and furniture such as kitchen benches, in corners, hallways, adjacent to beds and using mobility aids as appropriate.
- Ensure that the patient can get up off the floor if they do lose their balance.

Safety also relied on the physiotherapist's ability to develop a rehabilitation session which progressively developed mastery of movement skills. Having a repertoire of progressions and modifications tailored to the patient within the session plan and explicitly seeking regular feedback from the patient about the difficulty level of each task was essential in effectively titrating difficulty. This required precise communication and was most successful when a structured approach was taken. Cues were often needed to paint a clear picture for the patient, drawing on analogies (e.g. "Stand tall like a tree"), everyday contexts (e.g. "Show me how you would shampoo the back of your head"), and environmental cues (e.g. "Step toward the TV"). Physically disabled patients who required physical support to achieve sitting or standing presented particular challenges. Enlisting whānau and caregivers as assistants required careful planning and education, and constant monitoring of what the whānau member was feeling and how much they were assisting.

TIPS

- Send a description of the session structure in advance.
- Take a structured approach to movement coaching
    - o Physically demonstrate the movement.
    - o Specify and confirm the starting position.
    - o Add movement and task variations one at a time.
    - o Reinforce each step through gesture and verbal affirmations.
- Follow up with key 'take home' messages in an email or text after the session.

Physiotherapists described using multiple modes of communication, and tailoring both the mode and timing of the communication to the patient and their whānau. In addition to videoconferenced sessions, physiotherapists saw value in emailing instructions and session plans in advance, using text reminders to support attendance and engagement in exercise programmes, emailing or providing links to educational content, and developing and emailing videos of exercises and rehabilitation tasks. These strategies supported patients in home exercise programmes and self-management, and allowed physiotherapists to tailor education to the person. However, for some, substantial time went into sourcing, developing, and individualising resources, and few available resources were considered culturally or communicatively accessible. This process was streamlined where organisations collaborated to develop and share resources, or physiotherapists used commercially available telerehabilitation platforms with already developed content and the ability to upload their own content.

Professional development

Telerehabilitation offered a powerful opportunity to embed student supervision, critical self-reflection and professional supervision into clinical practice for student physiotherapists, physiotherapists and physiotherapy assistants alike. Connecting colleagues into sessions through videoconferencing enabled specialists or other members of the interdisciplinary team to offer brief consultations related to specific issues. With the patient's consent, it was relatively easy to screen capture the session for later review or to include a third party in a video conference session to enable professional supervision. This also allowed physiotherapists to reflect on their intervention and their communication. However, it was noted that like other professional development opportunities, therapists were sometimes reluctant to engage in this shared practice and professional supervision with colleagues, and thus did not make the most of the opportunities telerehabilitation offers.

DISCUSSION

Telerehabilitation is a viable and effective approach to neurorehabilitation. It allows physiotherapists to provide larger doses of rehabilitation, which are essential to maximising recovery (Lohse et al., 2014). During the COVID-19 pandemic, telerehabilitation was valued when in-person rehabilitation was not an option. Indeed, some aspects of telerehabilitation were highly valued and offered advantages over in-person rehabilitation, highlighting that telerehabilitation should remain within our therapeutic repetoire. While telerehabilitation was being considered within many services and was in use in a small number of neurorehabilitation services in New Zealand prior to the pandemic, COVID-19 restrictions facilitated therapists and services to make a rapid shift in practice. Therapists and services invested significant time in upskilling, creating systems and structures, and developing resources to support the delivery of telerehabilitation. It is now critical to build on the experiences and investment to date, and the skills that therapists have developed, and to embed telerehabililitation in everyday neurorehabilitation so that patients, therapists, and services alike can fully benefit from the opportunities that telerehabilitation opens up. Moving into the future, we have opportunities to integrate in-person rehabilitation and telerehabilitation, using different modalities at different times, to maximise our ability to provide evidence-based, person-centred neurorehabilitation.

The required and rapid shift to telerehabilitation challenged a number of our assumptions about both telerehabilitation and physiotherapy. Telerehabilitation has commonly been seen as the poor cousin to in-person rehabilitation. However, this experience has highlighted some of what telerehabilitation can offer to patients and physiotherapists – increasing dose, reducing travel time and cost, facilitating regular points of connection through the use of different modes of communication, and shifting of power. Our assumptions about who might struggle to engage with telerehabilitation, such as older people or Māori whānau (for whom kanohi ki te kanohi is important in relationship building) were not necessarily correct. That said, there is still significant work to be done to understand what engaging, high-quality rehabilitation involves for different patient groups and whether there are inequities in access to, or quality of, service. We do not claim to fully understand how different patient groups have experienced telerehabilitation, and we suspect there will be significant differences across patient groups, particularly for marginalised and under-resourced populations. Developing better knowledge of the needs of these people and shaping services to best support their needs is imperative if we are to ensure equity in access, experience, and outcomes in rehabilitation on a long-term basis.

Implementing telerehabilitation and our response to this new way of working has also highlighted some of the deeper assumptions that underpin physiotherapy and rehabilitation practice. Touch and hands-on treatment are important components of physiotherapy identity, and the loss of this communication and clinical medium presented significant challenges. In line with published research on telerehabilitation, physiotherapists perceived the loss of touch and reliance on verbal communication to be potentially problematic and less effective (Lawford et al., 2019). This view reflects the historical underpinnings of physiotherapy practice, something that continues to be reinforced in education and practice (Moffatt and Kerry, 2018). Physiotherapists had to enhance their communication skills rapidly, and appreciate and attend to the therapeutic relationship. These are aspects of practice that are often taken for granted (Hinman et al., 2019), yet have been shown to be important factors in patient experience and outcomes (Pinto et al., 2012). Reliance on patient self-report has also challenged our understandings of whose knowledge is privileged. The unintended impact of telerehabilitation was a focus on self-management, and enhancing people’s capability and confidence to self-manage (Bridges Self Management, 2020; Hinman et al., 2019; Lawford et al., 2019), areas emphasised within practice guidelines yet not consistently addressed well in clinical practice (Mudge et al., 2014). Together, these factors show how telerehabilitation can open up different ways of thinking about and doing neurorehabilitation. This is likely to be to the advantage of our patients and their whānau.

We need to integrate telerehabilitation into “usual practice”, and COVID-19 has helped in this process. However, moving forward, there are a number of areas for educators, physiotherapists and services to consider. We have an obligation to develop skills and knowledge in telerehabilitation to ensure we meet the needs of our patients. Telerehabilitation should be a core competency of physiotherapy practice, part of undergraduate education, and a focus of professional development. To date, we have done the best possible in the circumstances, but we now need to consider what constitutes best practice telerehabilitation in New Zealand, and alongside this, what constitutes best practice neurorehabilitation with a blending of in-person and telerehabilitation. Our position is that best practice neurorehabilitation should include *both* in-person *and* telerehabilitation, not one or the other. This requires strong clinical reasoning to determine the aspects of each approach that are most appropriate and effective for which patients, and at what points and for which purposes within the rehabilitation process. There are opportunities to share and standardise resources and care pathways throughout the country, facilitating more efficient and effective ways of working. We also argue that services and structures, including reporting and financial systems, need to recognise the changing service delivery models of neurorehabilitation to ensure integrated neurorehabilitation services are appropriately funded and able to be provided. Quality frameworks and associated quality indicators, often unseen influences on practice, must be flexible to allow for multiple modalities of rehabilitation provision, rather than privileging in-person rehabilitation, regardless of whether or not it is the most appropriate for the patient and their needs.

CONCLUSION

Along with its many challenges, the COVID-19 pandemic has offered the physiotherapy profession an exceptional learning experience. Through the process of rapidly implementing telerehabilitation in neurorehabilitation clinical practice and education we have had the opportunity to learn new skills, relate to our patients in new ways, and reflect upon our professional identity and the future of rehabilitation practice in New Zealand. Whilst there are many opportunities to further develop telerehabilitation practice in New Zealand, our experiences in teaching and providing telerehabilitation over the last six months highlights that the most important thing is to start – give telerehabilitation a try, seek feedback from patients and their whānau, critically reflect on your practice, and don’t be afraid to add telerehabilitation to your rehabilitation repertoire.

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PERMISSIONS

Nada Signal gives permission for the use of the attached figures.

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Complementary and alternative medicine: A pilot survey of current clinical practice and attitudes of physiotherapists in the Otago region of New Zealand

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ABSTRACT

This pilot survey aimed to explore the feasibility of conducting a nationwide survey investigating the current practice and attitudes towards complementary and alternative medicine (CAM) in New Zealand registered physiotherapists. This was a cross-sectional, online study using a questionnaire developed from previous survey instruments. An electronic link to the questionnaire was distributed via email to members of the Otago Branch of Physiotherapy New Zealand (*n* = 344). Questions included current clinical practice and use of CAM as well as attitudes and opinions on its effectiveness. Feasibility outcomes of this survey included the response rate and completion rate. Data were analysed in Microsoft Excel®. The response rate was 10.5% (*n* = 36) and the completion rate was 86.1% (*n* = 31/36). A range of conditions treated with CAM were cited by respondents; the most frequently treated condition was "back and neck pain" (*n* = 10/36). Physiotherapists in this sample believed acupuncture and massage are the most effective CAM modalities used for "back and neck pain" treatment and were most likely to use acupuncture and massage as CAM modalities when treating these conditions. Acupuncture was found to be the most common CAM practiced by respondents, and an acupuncturist was the CAM practitioner to which patients are most commonly referred by respondents. This study demonstrated that conducting a nationwide survey is feasible, subject to an improved survey design and increased response rate. Such a survey is scheduled in 2021 in order to gather a more representative understanding of the practice and attitudes towards CAM among New Zealand physiotherapists.

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Key Words: Complementary and Alternative Medicine, Physiotherapy, New Zealand, Back and Neck Pain, Acupuncture

INTRODUCTION

Complementary and alternative medicine (CAM) is a group of healthcare systems, practices, and products that are not considered part of conventional medicine (Adams et al., 2012). CAM modalities are divided into five main categories by the National Center for Complementary and Alternative Medicine in the United States: alternative medical systems, biologically based treatments, manipulative and body-based methods, mind-body interventions, and energy therapies (National Center for Complementary and Alternative Medicine, 2000) (Table 1). CAM therapies follow a holistic model of health, employing interventions that promote the innate healing ability of the body while retaining a core focus on individuality, holism, education, and disease prevention (Leach, 2010). The growing use of CAM worldwide (Abuelgasim et al., 2018; Asfaw Erku & Basazn Mekuria, 2016; Frass et al., 2012; Teo et al., 2016; Wode et al., 2019) can be attributed to many factors. These include but are not limited to the move towards holistic well-being, the recognition of the limitations associated with conventional medicine, and the increasing discourse on the important contribution of CAM to overall health and wellbeing (Stratton & McGivern-Snofsky, 2008). There is limited research

Table 1

Categories of CAM Therapies (National Center for Complementary and Alternative Medicine, 2000)

Alternative medical systems	Mind-body interventions	Biologically based interventions	Manipulative and body-based methods	Energy therapies
Ayurveda	Art therapy	Biological therapies	Chiropracty	Magnets
Homeopathy	Dance	Herbal therapies	Massage	Qigong
Naturopathy	Hypnosis	Orthomolecular therapies	Osteopathy	Reiki
Traditional oriental medicine (acupuncture)	Meditation	Special dietary therapies		Therapeutic touch
	mental healing			
	Music			
	Prayer			

in New Zealand on CAM. The most recent nationwide survey providing information on the use of CAM showed that 25% of New Zealanders visited a CAM practitioner during a 12-month period (Ministry of Health, 2004). Another two regional surveys reported that CAM had been used by 38% of people presenting to an emergency department (Nicholson, 2006) and 49% of cancer patients in a cancer treatment centre (Chrystal et al., 2003). CAM users are more likely to be middle-aged, female, educated, and European (Nicholson, 2006; Pledger et al., 2010).

The boundary between CAM and conventional therapy is vague and continually shifting, as it largely depends on cultural and political attitudes (Dew, 2003). A nationwide survey evaluating the views and use of CAM by general practitioners (GPs) in New Zealand showed GPs had different viewpoints on whether therapies were considered conventional or CAM (Poynton et al., 2006). The study found that approximately 20% of GPs practice CAM, of whom 95% refer patients to one or more forms of CAM. While the most common CAM therapy practiced by GPs was acupuncture, chiropractic manipulation was the most common GP-referred CAM therapy. Of the responding GPs, 32% had formal training in one or more CAM therapies and 29% were self-educated. It reported that GPs wanted more CAM education as part of their medical education.

Physiotherapy is one of the allied health professions that aims to remediate impairments, and promote mobility and function. In New Zealand, physiotherapists provide a range of therapeutic techniques including advice, exercises, and mobilisation (Physiotherapy Board of New Zealand, 2020). Meanwhile, physiotherapists practice some techniques that could be considered CAM therapies, for example acupuncture, which is offered at a postgraduate level and considered within the general scope of physiotherapy practice by New Zealand's physiotherapy regulatory body (Physiotherapy Board of New Zealand, 2008). However, there have been no studies to date to evaluate New Zealand physiotherapists' level of use of CAM and perceptions toward CAM in routine practice. Prior to undertaking a nationwide survey to investigate the current clinical practice of CAM, and the knowledge and attitudes of CAM among New Zealand physiotherapists, a pilot survey was carried out as an essential precursor. This pilot survey aimed to investigate:

1. The feasibility to conduct a nationwide survey using the current survey design.
2. The current practice and attitudes towards CAM in physiotherapists in the Otago region of New Zealand.

METHODS

Data collection: Overview

This was a pilot online questionnaire survey of physiotherapist members of the Otago Branch of Physiotherapy New Zealand (PNZ), of which there were 344 registered members (Physiotherapy New Zealand, 2018). Ethical approval for this study was obtained from the University of Otago Human Ethics Committee (Health) (reference number 18/117), and Māori consultation was completed through the Ngāi Tahu Research Consultation Committee.

The questionnaire was designed to investigate the views and use of CAM by physiotherapists. It was based on questionnaires exploring the perception and use of CAM by physiotherapists in the United Kingdom, which have demonstrated excellent validity and response rates (Hughes et al., 2011; Osborn, 2001; Quinn, 2006). The content was tailored to the New Zealand context based on feedback from experienced researchers and physiotherapists (*n* = 5) working at the Centre for Health, Activity and Rehabilitation Research, School of Physiotherapy, University of Otago. Content and face validity of the survey were investigated by piloting the survey among a group of physiotherapists (*n* = 5) currently working at the School of Physiotherapy clinics (Dunedin). The physiotherapists were asked to evaluate the questionnaire contents against the goal of this study, as well as the flow and logic of survey items, after which suggested (minor) amendments were incorporated. A biostatistician reviewed the final questionnaire for face validity before it was converted into Qualtrics®, an online survey tool which was used to conduct this study.

The invitation and links to the questionnaire, and the participant information sheet were sent by the administrator of PNZ via email to all physiotherapists within the Otago Branch. Participants had 13 days to complete the survey based on the timeframe for the study, which was completed as part of a 6-week research paper for final-year University of Otago physiotherapy students. One reminder email was sent 5 days after the initial release. All participants consented to participate in the survey.

Questionnaire

The questionnaire contained three sections (Appendix A). Section 1 sought physiotherapists' demographics and their work setting/environment. Section 2 asked physiotherapists to indicate the conditions they currently treat and to rank the five conditions they most frequently treat using a Likert scale of 1 to 5, where 1 was the most frequent and 5 the least frequent. Section 3 concentrated on physiotherapists' use and referrals of CAM as well as their opinions on effectiveness of these modalities. Physiotherapists were asked if CAM was available in their clinic, whether they practiced CAM, and the form(s) of CAM to which they refer patients and their reasons for doing this. They were then asked to rank the effectiveness of a range of CAM therapies for managing the five conditions they cited in Section B as treating most frequently as either "highly effective", "somewhat effective", "not effective", or "unsure". The 18 CAM therapies provided in the questionnaire were selected after reviewing previous literature (Hughes et al., 2011; Poynton et al., 2006; Quinn, 2006), consultation with the Ngāi Tahu Research Consultation Committee at University of Otago, and from the list of the National Center for Complementary and Alternative Medicine in the United States (National Center for Complementary and Alternative Medicine, 2000). These therapies were acupuncture, the Alexander technique, aromatherapy, chiropractic, faith/spiritual healing, herbal medicine, homeopathy, hypnotherapy, massage, meditation, osteopathy, Reiki, reflexology, shiatsu, qigong/tai chi, vitamins/minerals, yoga, and mirimiri/romiromi. Physiotherapists were asked whether they were aware if their patients attended CAM therapists and if they routinely asked this question during an assessment.

Physiotherapists were then asked to state factors which they believed influenced the success of CAM as a treatment and the percentage of the effectiveness of CAM due to a placebo effect (i.e. non-specific effect). Physiotherapists were also asked whether CAM has a role in district health boards (DHBs). The final open question gave physiotherapists the opportunity to add a further comment regarding CAM and its use in New Zealand.

Data analysis

Data from completed surveys were exported from Qualtrics® as comma separated values into Microsoft Excel® where these were analysed. Data were checked for errors, and descriptive statistics were calculated. Response rate (number of respondents/number invited) and completion rate (number of respondents who completed the whole survey/number of respondents) were calculated. Three key cross tabulations were then completed to further analyse the data, including years of practice in relation to use of CAM, perceived effectiveness of a range of CAM modalities in relation to the most commonly treated condition, and estimation of a placebo effect of CAM in relation to use of CAM. The open-ended question was analysed using an inductive content analysis (Hsieh & Shannon, 2005).

RESULTS

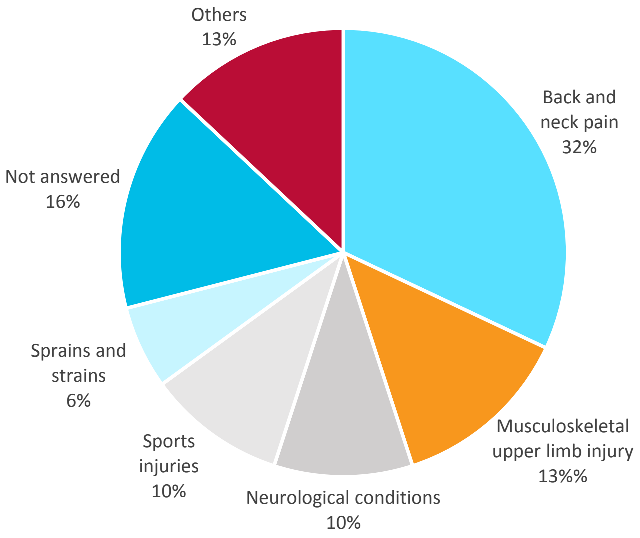
The study invitation and questionnaire were sent by email without practical problems. A response rate of 10.5% (*n* = 36/344) was obtained after the reminder was sent out. Five questionnaires were incomplete and, therefore, not included in the analysis, thus resulting in a completion rate of 86.1% (*n* = 31/36).

The mean age of respondents was 42.1 years with ages ranging from 24 to 62 years. The majority of respondents were female (*n* = 19, 61.3%). The largest ethnicity group was New Zealand European (*n* = 24, 77.4%), followed by Māori (*n* = 3, 9.7%), "other" (*n* = 3, 9.7%). Eight respondents (25.8%) had an undergraduate degree in physiotherapy and 23 (74.2%) had completed postgraduate training, including a PhD (*n* = 6, 19.4%), master's degree (*n* = 4, 12.9%), postgraduate diploma (*n* = 10, 32.3%), and postgraduate certificate (*n* = 3, 9.7%). The mean time of practice was 18.9 years (ranged from 2 to 41 years). In terms of practicing clinic mode, 13 (41.9%) worked in sole physiotherapy practices and 12 (38.7%) worked in a multidisciplinary environment, which provided services including (but not limited to) physiotherapy, chiropractic, acupuncture, osteopathy, and massage. Of the respondents, 20 (64.5%) worked in private practices, while seven (22.6%) worked at the University of Otago and four (12.9%) at the Southern District Health Board. There were 20 respondents (64.5%) who worked in full-time employment. On average, the respondents treated 29.2 patients per week (ranged from 10 to 80 patients), with each patient treated for an average of 39 minutes/session (ranged from 25 to 60 minutes).

The conditions most frequently treated by respondents were "back and neck pain" (*n* = 10) followed by "musculoskeletal upper limb injury" (*n* = 4), "neurological conditions" (*n* = 3), "sports injuries" (*n* = 3), "sprains and strains" (*n* = 2), and "other" (*n* = 4), including "falls and fractures", "cardiorespiratory physiotherapy", and "paediatrics" (Figure 1).

Figure 1

Conditions Treated by Respondents



Just over half of respondents (*n* = 17/31) stated that a CAM service was available in their clinic. Slightly less than half of respondents (*n* = 14/31) reported that they practice some form of CAM: the most common form was acupuncture (*n* = 8/14). Other CAM therapies less commonly used by respondents included Reiki, bioptron light therapy, heat, cupping, and herbal remedies. Nearly half of respondents (*n* = 15/31) referred their patients to CAM practitioners, the most popular referral being an acupuncturist (*n* = 7/15). When asked about reasons for a CAM referral, the most common reason was "to supplement a conventional medical treatment".

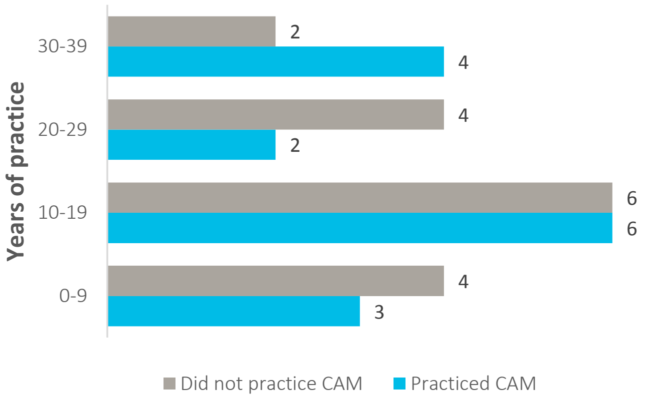
The CAM treatments used for managing "back and neck pain" that were given the highest ratings for effectiveness (marked as "highly effective" or "somewhat effective") were acupuncture (*n* = 9), massage (*n* = 9), yoga (*n* = 6), meditation (*n* = 5), and osteopathy (*n* = 5) (Table 2). There were 22 respondents (71%) who were aware of patients' use of a CAM therapist for treating their conditions, and almost all these respondents (*n* = 21/22, 95.6%) reported that they routinely asked this question during patient assessments. Results of the cross tabulation between "years of practice" and "use of CAM" suggested that respondents with over 30 years of practice are proportionally more likely to be practicing a CAM (Figure 2).

Over three-quarters of respondents (*n* = 24/31) identified factors which they believe influenced the success of CAM, with 16/24 (66.7%) stating "patients' opinions and/or beliefs towards CAM" to be the most common factor. Just over half of respondents (*n* = 16/31) considered that at least 50% of the effectiveness of CAM was due to a placebo effect. Interestingly, respondents who did not use CAM believed the placebo effect of CAM modalities was higher (mean, 63%) compared to those who practiced CAM (mean, 46.2%).

Nearly two-thirds of respondents (*n* = 19/31) believed that CAM had a role in the New Zealand publicly funded health and disability services. Of these 19 respondents, 85% (*n* = 16/19) added comments, including the place for CAM as an evidence-based practice alongside Western medicine (*n* = 4), the need to give patients choice of treatment based on their beliefs and in additional to physiotherapists' preferred conventional treatments (*n* = 4), and the endorsement of CAM in the New Zealand health system as long as it is practiced safely (*n* = 2).

Figure 2

Years Practicing as a Physiotherapist and Use of CAM



Nine respondents added further comments regarding CAM and its use in New Zealand. These comments varied widely, and there were no obvious themes (Appendix B). Comments included "more training needed for undergraduate health care students to improve knowledge/awareness of CAM practices and to encourage safe practice", "replication of evidence in support of CAM therapies by independent groups is necessary to overcome the level of skepticism CAM has earned itself through a history of few, limited, and poorly conducted studies with high risk of bias", and "overcoming people's unwillingness

Table 2

Perceived Effectiveness of CAM Modalities for Treating Back and Neck Pain

CAM modality	Highly effective	Somewhat effective	Not effective	Unsure	Not answered
Acupuncture	3	6	1	0	0
Alexander technique	0	1	0	8	1
Aromatherapy	0	0	4	5	1
Chiropractic	0	4	2	3	1
Faith/spiritual healing	0	0	4	5	1
Herbal medicine	0	1	4	4	1
Homeopathy	0	0	4	5	1
Hypnotherapy	0	0	4	5	1
Massage	2	7	0	0	1
Meditation	3	2	3	1	1
Mirimiri/romiromi	0	0	2	7	1
Osteopathy	1	4	1	3	1
Qigong/tai chi	0	4	3	2	1
Reflexology	0	1	4	4	1
Reiki	0	2	2	5	1
Shiatsu/acupressure	0	3	1	5	1
Vitamin/minerals	0	1	4	4	1
Yoga	1	5	2	1	1
Other	0	0	2	1	7

to pay for treatment or nutritionals themselves is a major factor". Finally, one respondent added a comment regarding the design of questionnaire: "This questionnaire was difficult to answer for the population I work with, which is in a long-term rehab type setting".

DISCUSSION

This pilot survey of members of the Otago Branch of PNZ was the first study investigating the current practice and attitudes of New Zealand physiotherapists towards CAM in routine practice. It demonstrated that it is feasible to conduct a nationwide survey but with the aim of improving the survey design and response rate.

We achieved a response rate of 10.5% (*n* = 36/344), which was lower compared to the rates in other similar survey studies (Harris et al., 2006; Hughes et al., 2011). Due to the limited timeframe of this study (this study was based on a 6-week research paper for final-year physiotherapy students), the survey was only active for 13 days, therefore the invited physiotherapists did not have long to respond. For the subsequent nationwide survey, a longer timeframe will be needed. Furthermore, a combination of techniques will be used to improve the response rate, including both postal and email contact, increased follow-ups, cash incentives, and different survey modes delivered in sequence (i.e., email then postal) (Millar & Dillman, 2011). In addition, it may be worthwhile to conduct the survey onsite at physiotherapy professional assemblies, such as the PNZ national physiotherapy conference.

The completion rate of the survey was considered good at 86.1% (*n* = 31/36). Overall, the response to the survey design was positive. One respondent suggested that future surveys be tailored for different areas of physiotherapy practice to canvas a wider group of respondents.

While findings from this pilot survey are limited by its small sample size and low response rate, there were several important preliminary findings from this study. Firstly, the most frequently treated condition by respondents was "back and neck pain", and the CAM modalities rated the most effective for treating this condition were acupuncture and massage (with the majority of respondents rating these two forms "somewhat" or "highly effective"). Secondly, acupuncture was the most popular CAM modality which respondents integrated into their practice, and an acupuncturist was the CAM practitioner to which patients were most commonly referred by respondents.

It is not surprising that "back and neck pain" was the most frequently treated condition in this study, given the high prevalence of back pain (Buchbinder et al., 2018; Hoy et al., 2012). It was reported that 40-60% of physiotherapists' patient load comprised low back pain (LBP), with the majority of patients being treated for chronic LBP (Hughes et al., 2011; Kolt & McEvoy, 2003). Physiotherapists who responded to the survey rated acupuncture and massage as the most effective forms of CAM for managing back and neck pain. This was consistent with findings from a previous survey study conducted in the United Kingdom that reported physiotherapists believe acupuncture and massage were effective for relieving all types of LBP (Hughes et al., 2011). While physiotherapists may favour acupuncture and massage based on opinion or clinical experience, the accumulating evidence on the effectiveness of acupuncture and massage in the management of back and neck pain may also explain why they are preferred treatment options (Furlan et al., 2015; Liu et al., 2015).

This study found that acupuncture is the most popular form of CAM practiced by physiotherapists, and an acupuncturist is the CAM practitioner that physiotherapists mostly commonly refer their patients to. The number of physiotherapists practicing acupuncture in this study (57.1%) was higher than the number of GPs (10%) in New Zealand who incorporated acupuncture into their routine practice (Poynton et al., 2006). Apart from the established effectiveness of acupuncture (stated above), regulatory policy may also drive the popularity of acupuncture in New Zealand. New Zealand physiotherapists are recorded as having practiced acupuncture as early as 1972 (Scrymgeour, 2000) and acupuncture is considered within the general scope of physiotherapy practice by the regulatory body (Physiotherapy Board of New Zealand, 2004). Additionally, PNZ's Physiotherapy Acupuncture Association of New Zealand (PAANZ) special interest group provides ongoing training and peer support for physiotherapists using acupuncture, and regularly publishes guidelines for safe acupuncture and dry needling practice (Physiotherapy Acupuncture Association of New Zealand, 2018). Previous studies report that acupuncture courses are frequently attended by physiotherapists in the United Kingdom (Foster et al., 1999; Gracey et al., 2002). In New Zealand, although such data are not available, acupuncture training (for physiotherapists) is provided at a postgraduate level in public tertiary education organisations.

From this limited sample of survey respondents, there was no correlation between "years of practicing" and "use of CAM"; firm conclusions cannot be reached without a further nationwide survey with a higher response rate. Interestingly, this study found that there was a clear trend toward physiotherapists who do not practice CAM believing that the success of CAM was more likely attributable to a placebo effect (non-specific effect). While there has been ongoing debate around the non-specific effects of CAM (as well as conventional therapy), CAM therapists view the placebo effect as patient's self-healing power, resulting from the establishment of a patient's trust and belief during the treatment process (Stub et al., 2017). This may challenge an orthodox medical system that supports the use of intervention/medicine if it results from the application of biomedical concepts and science. Nevertheless, CAM is apparently perceived by many patients as aligned with their general philosophy and ideas regarding illness and health care, and provides patients more control over their condition and relevant treatments (Corp et al., 2018). In this study, over three-quarters of respondents identified factors which they believed influenced the success of CAM, with the overwhelming theme being "patients' opinion or beliefs on CAM". This was in keeping with a previous study which identified an individual's confidence in CAM treatments or practitioners was, in some cases, simply expressed as trusting, having faith, or believing in a particular CAM therapy (Corp et al., 2018). Nevertheless, more research is needed before these conclusions can be drawn.

Despite the response rate limitations, this study found that 71% of physiotherapists were aware that their patients attended CAM practitioners, and the majority of respondents routinely asked this during their assessment. This is at odds with findings from previous studies which reported that up to 77% of patients using CAM do not tell their medical practitioners (Robinson & McGrail, 2004; Thomson et al., 2012). Reasons cited for such behaviour included "concerns about a negative response by the practitioners, the belief that the practitioner did not need to know about their CAM use, and the fact that the practitioner did not ask" (Robinson & McGrail, 2004). The current study indicated that for this sample of physiotherapists at least, the physiotherapist-patient communication around CAM use is more open, although the openness of communication was not specifically assessed in this study. An earlier study reviewed physicians' attitudes and practices regarding CAM, as physicians have a major role in controlling patients' beliefs and attitudes towards CAM (Milden & Stokols, 2004). It found that 61% of physicians discouraged CAM use simply due to lack of knowledge and insight on CAM's safety and efficacy, but 81% showed an interest in gaining more CAM knowledge, and providing sufficient clinical trials, education and resources to support CAM practice. The latter finding was consistent with an earlier New Zealand survey of GPs which suggested that appropriate education about CAM should be included in the medical curriculum and that CAM therapies need more scientific testing before being used in conventional medicine (Poynton et al., 2006).

As a pilot survey, the primary limitation of this study was the small sample size and low response rate. However, this also reflected the purpose of a pilot study, which is to test the rationale and method proposed for use in the main study (Arain et al., 2010). Due to a large percentage of respondents with a postgraduate qualification (74.2%), the survey results may not accurately represent the practices and attitudes of all physiotherapists in New Zealand, as the data is likely to be skewed towards an academic perspective. In order to capture a comprehensive understanding of New Zealand physiotherapists' current practice and attitudes towards CAM, a nationwide survey with New Zealand registered physiotherapists based on recommendations from this pilot survey represents the next phase of investigation. The nationwide survey is planned for 2021. Based upon the current number of registered physiotherapists in New Zealand (n = 5,417) (Physiotherapy Board of New Zealand, 2020), an estimated sample size of 350 will allow a confidence level of 95% with a margin of error of 5% for such a survey, although as already noted, more efforts are needed to improve the response rate and survey design.

CONCLUSION

This pilot study investigated the current practice and attitudes of physiotherapists in the Otago region of New Zealand. It found that the most frequently treated conditions by participating physiotherapists were "back and neck pain", and acupuncture and massage were rated as the most effective CAM modalities in treating these two conditions. The most common form of CAM used by physiotherapists was acupuncture, and an acupuncturist was the CAM practitioner that physiotherapists most commonly referred patients to. The study demonstrated that it is feasible to conduct a nationwide survey, subject to an improved survey design and response rate. Such a survey is scheduled in 2021, which will gather a more representative understanding of the practice and attitudes towards CAM among New Zealand physiotherapists.

KEY POINTS

1. Acupuncture and massage were the most effective CAM modalities for treating "back and neck pain".
2. The most common CAM modality used by respondents was acupuncture.
3. The most common referral to a CAM practitioner by respondents was an acupuncturist.
4. Recommendations from this pilot survey will help improve the response rate and design of a nationwide survey investigating the current practice and attitudes towards CAM among New Zealand registered physiotherapists.

DISCLOSURES

No funding was obtained for this study. There are no conflicts of interest which may be perceived to interfere with or bias this study.

PERMISSIONS

Ethical approval was obtained from the University of Otago Human Ethics Committee (Health) (reference number 18/117).

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APPENDIX A

COMPLEMENTARY AND ALTERNATIVE MEDICINE: A SURVEY OF CURRENT CLINICAL PRACTICE AND ATTITUDES OF PHYSIOTHERAPISTS

1. Demographic information

Reference number: ____________________

Gender: ☐ Male ☐ Female ☐

Age: ________ years

Ethnicity: ☐ New Zealand European ☐ Māori ☐ Cook Island Māori
☐ Niuean ☐ Samoan ☐ Tongan ☐ Chinese
☐ Indian ☐ Other: ____________________

Education qualification in physiotherapy (tick more than one item if applicable):
☐ BPhty ☐ BPhty(Hons) ☐ PGCertPhty ☐ PGDipPhty
☐ MPhty ☐ PhD ☐ Other (please state): ____________________

Year(s) you gained your qualification: ____________________

Training place(s): ____________________

Total length of training: ________ years

New Zealand registered physiotherapist (general scope of practice): ☐ Yes ☐ No

Currently practicing: ☐ Yes ☐ No

Years of practice: ________ years

Employment status: ☐ Full-time ☐ Part-time

Practicing clinic address:

Practicing clinic mode: ☐ Sole physiotherapy ☐ Multidisciplinary rehabilitation

Numbers of patients you treat per week: ____________________

Average length of treatment per patient: ________ min

2. General clinical practice

From the list below, please tick the following conditions that you have treated/are treating in your current clinical practice (tick all that apply). In addition, please *rank 5 conditions* you most frequently treat in the order of 1 to 5 where *1 is the most frequent.*

Condition	Tick box	Ranking	Condition	Tick box	Ranking
Arthritis	☐		Post-surgery	☐	
Carpal tunnel syndrome	☐		Repetitive strain	☐	
Chronic pain syndrome	☐		Rotator cuff injury	☐	
Concussion	☐		Running injuries	☐	
Dizziness, vertigo, and imbalance	☐		Sciatica	☐	
Frozen shoulder	☐		Sports injuries	☐	
Golfer's elbow	☐		Sprains and strains	☐	
Headaches	☐		Tendonitis	☐	
Heel and foot pain	☐		Tennis elbow	☐	
Low back pain	☐		Temporomandibular joint dysfunction	☐	
Motor vehicle accident injuries	☐		Whiplash	☐	
Paediatric conditions	☐		Other (please state)	☐	
Pelvic floor conditions	☐				

3. Complementary and alternative medicine (CAM)

1. Is any form of CAM service available in your clinic or department (see list over page)?
   ☐ No
   ☐ Yes (please state): ____________________
2. Do you practice any forms of CAM?
   ☐ No
   ☐ Yes (please state): ____________________
3. Do you refer patients to CAM practitioners?
   ☐ No
   ☐ Yes (please state forms of CAM and the associated conditions for which you refer patients):

CAM	Conditions

4. What is the reason you refer patients to use CAM?
   ☐ To treat a specific condition
   ☐ Relaxation
   ☐ Advised by research findings
   ☐ Other (please state): ____________________
   ☐ To supplement a conventional medical treatment
   ☐ Advised by colleague

5. In your opinion, how effective are the following CAM treatments in managing patients' symptoms? Please first *write the names of the 5 conditions* you most frequently treat in row 2, and then state the effectiveness level of the CAM treatments for each of these 5 conditions:

(1 = highly effective; 2 = somewhat effective; 3 = not effective; 0 = unsure)

CAM	Name of condition				
	Condition 1	Condition 2	Condition 3	Condition 4	Condition 5
Acupuncture					
Alexander technique					
Aromatherapy					
Chiropractic					
Faith/spiritual healing					
Herbal medicine					
Homeopathy					
Hypnotherapy					
Massage					
Meditation					
Osteopathy					
Reiki					
Reflexology					
Shiatsu					
Qigong/tai chi					
Vitamins/minerals					
Yoga					
Mirimiri or romiromi[a]					
Other (please state)					

[a] Advised by the Ngāi Tahu Research Consultation Committee, University of Otago.

6. (i) Are you aware whether patients you treat also use CAM for their conditions?

   ☐ Yes ☐ No ☐ Unsure

   (ii) If yes, do you routinely ask this question during assessment?

   ☐ Yes ☐ No

7. Can you identify factors that in your opinion or experience influence the success of CAM?

8. Part of the effectiveness of any medical treatment, whether a CAM or conventional treatment, is due to a placebo effect. What percentage of the effectiveness of CAM do you believe is due to a placebo effect?

9. Do you believe CAM has a role in the New Zealand publicly funded health and disability services?

   ☐ No

   ☐ Yes (please state):

10. If you have any further comments regarding CAM and its use in New Zealand, please state below.

Thank you for taking time to complete this survey. Your help with this research is much appreciated.

Appendix B

RESPONDENTS' COMMENTS ON CAM AND ITS USE IN NEW ZEALAND

Quotes[a]
Replication of evidence in support of CAM therapies by independent groups is necessary to overcome the level of skepticism CAM has earned itself through a history of few, limited, and poorly conducted studies with high risk of bias. (1/M/NK)
My feelings can be summed up by something I saw on Facebook. Alternative medicine that works is called medicine. Basically, once it has been investigated and proven to work, it's no longer alternative rather it becomes medicine. (2/M/36)
More training needed for undergraduate health care students (medical/allied health/nurses/dental etc.) to improve knowledge/awareness of CAM practices and to encourage safe practice. Joint research projects would be great to review effectiveness of CAM practices and also of placebo in general. (4/F/40)
CAM can be a useful adjunct to allow comfort to push exercise therapy if patient keen to complete both. In our population, patients often fund naturopathy, massage therapy or acupuncture as part of their treatment plan. This is their decision, and I do not influence their decision to complete these as part of their overall treatment plan. (7/F/39)
Wouldn't have classified chiropractic and osteopathy as CAM. (8/F/50)
Overcoming people's unwillingness to pay for treatment or nutritionals themselves is a major factor. (11/F/62)
There are many components of my "physiotherapy" practice, and that of colleagues, which have borrowed from insights and experience of CAM – aspects of meditation, visualisation, diet, movement therapies, including Alexander technique, yoga and tai chi, because these offer modes of practicing holistically – recognising there is little success in treating the hole in the patient; you have to treat the whole patient/person. (18/NK/42)
This questionnaire was difficult to answer for the population I work with, which is in a long- term rehab type setting. I wonder if having different surveys for different settings might improve the accuracy/specificity of your information. (23/F/36)
Based on the evidence, we can use some CAM therapies as part of comprehensive integrated care. (26/M/60)

Note. CAM = complementary and alternative medicine; F = female; M = male; NK = not known.

[a] Quotes were identified by study number, sex, and age.

Prevalence and Physiotherapist Awareness of Shoulder Pain and/or Stiffness as an Early Symptom of Parkinson's Disease: An Australian Perspective

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ABSTRACT

Musculoskeletal pain is known to be an associated symptom of Parkinson's disease (PD). However, there is limited literature that describes the likelihood of shoulder pain and/or stiffness as an early presentation of the disease. The aim of this study was to determine the prevalence of shoulder pain and/or stiffness as an initial symptom of PD and to gain an understanding of physiotherapy awareness of this early symptom. Two cross-sectional, purpose-designed surveys were undertaken. A postal survey was mailed to 189 patients with PD and an online survey was emailed to 336 physiotherapists. A response rate of 63% was obtained for PD patients and 23% for physiotherapists. Of the patients with PD, 13% reported onset of shoulder pain and/or stiffness within 5 years prior to diagnosis, with no reported past history of shoulder issues. Of these patients, 8% specifically reported shoulder symptoms as the initial manifestation of the disease. However, 74% of physiotherapists surveyed were unaware of the potential for the early presentation of this symptom. This study has reinforced the potential for shoulder pain and/or stiffness to be an early symptom of PD and has identified a key area for knowledge improvement for physiotherapists in order to reduce the potential of misdiagnosis and mismanagement of this symptom.

Walmsley, S., Chandley-Pascoe, D., Collins, E. & Marquez, J. (2020). Prevalence and physiotherapist awareness of shoulder pain and/or stiffness as an early symptom of Parkinson's disease: An Australian perspective. *New Zealand Journal of Physiotherapy, 48*(3), 138–147. https://doi.org/10.15619/NZJP/48.3.05

Key Words: Parkinson's Disease, Shoulder Pain, Shoulder Stiffness, Physiotherapy, Diagnosis

INTRODUCTION

Parkinson's disease (PD) is the second most common neurodegenerative disorder in Australia (Deloitte Access Economics, 2015). The exact prevalence of PD is difficult to determine; however, it is estimated that there are 294 per 100,000 people with the disease living in Australia (Deloitte Access Economics, 2015) and 210 per 100,000 people in New Zealand (Myall et al., 2017). This number is expected to increase with the growing population, and it has been suggested that it may double within the next 15 years (Hirsch et al., 2018). PD is a chronic, progressive condition associated with lifelong disability (Bohingamu Mudiyanselage et al., 2017; Haddad et al., 2017). This places a considerable burden on individuals, family, the health system, and society in general (Bohingamu Mudiyanselage et al., 2017). The financial burden alone for an individual living with PD in Australia has been suggested to be approximately $32,500 per year (Bohingamu Mudiyanselage et al., 2017). Symptoms of the disease are due to the progressive loss of dopamine producing neurons in the basal ganglia, and people living with Parkinson's disease (PLWPD) generally do not present with symptoms until 60-80% of dopamine loss has occurred (Ya-Ting et al., 2015). Characteristic symptoms include tremor, muscle rigidity or stiffness, bradykinesia, and postural instability. More specifically, shoulder pain and/or stiffness has been reported as one of a number of early clinical manifestations of the disease and may be present years prior to the onset of the more commonly recognised features (Cleeves & Findley, 1989; Riley et al., 1989; Stamey et al., 2008; Schrag et al., 2014, Ya-Ting et al., 2015).

Shoulder pain has been reported to be more prevalent within PLWPD populations compared to the general population (Defazio et al., 2008; Madden & Hall, 2010). The underlying reason for the early presence of shoulder symptoms in PD has not been ascertained. It has, however, been speculated that rigidity and bradykinesia may go undetected due to being generalised and not specifically related to function. These motor symptoms may lead to immobility, which may precipitate shoulder pain and dysfunction (Stamey et al., 2008). Shoulder pain and/or stiffness as an initial manifestation of PD is often unrecognised, misdiagnosed or improperly treated (Stamey et al., 2008). Misdiagnoses include arthritis, bursitis, rotator cuff disease and frozen shoulder (Jankovic, 2008; Riley et al., 1989; Stamey et al., 2008). In a survey of the Canadian population to investigate the relationship between PD and essential tremor, it was reported that 19% of 150 PLWPD described a diagnosis of frozen shoulder, or a spontaneous onset of pain and restriction of the shoulder (Riley et al., 1989). A similar English study reported 12% of 100 PLWPD described shoulder pain as their initial PD symptom, including 8% diagnosed with frozen shoulder prior to a diagnosis of PD (Cleeves & Findley, 1989). An American study also reported 11% of 309 PLWPD complained of shoulder pain, with 20% reporting their shoulder pain preceded the onset of motor symptoms (Stamey et al., 2008). Furthermore, Madden and Hall (2010) compared PD to controls, and concluded PLWPD have six times the odds (Odds ratio [OR] = 6; 95% confidence interval [CI] =1.69-21.6; p = 0.006) of having shoulder pain compared to those without PD. Failure to recognise this pain as a presenting symptom of PD could delay correct diagnosis as well as lead to unnecessary and potentially costly procedures (Stamey et al., 2008).

Early diagnosis and treatment of PD is important to limit the impact of the disease on quality of life and, potentially, lower long-term treatment costs (Deloitte Access Economics, 2015; Pagan, 2012). Schrag et al. (2014) found the rate of progression is faster in early PD compared to later in the disease course. As the condition progresses, the severity of symptoms increase and the burden on quality of life, as well as the proportion of costs involved, become greater (Deloitte Access Economics, 2015). Despite no cure being currently available for PD, regular exercise has been found to have a positive role, reduce the symptom burden, and slow the decline in functional ability, especially early in the disease (Bridgewater & Sharpe, 1996, Flynn et al., 2019). Cardiorespiratory fitness has also been shown to be correlated with greater functional activity and ability, and as such, improved endurance could lead to improvements in overall function (Schenkman et al., 2012). The benefit of initiating medication early within the disease progression remains unclear (Connolly & Lang, 2014). However, evidence suggests the use of monoamine oxidase type B inhibitor in early PD provides small symptomatic benefit, and earlier initiation of rasagiline has been associated with slower long-term progression of symptoms (Hauser et al., 2009; Ives et al., 2004). Therefore, recognition of any early symptom of PD, including shoulder pain and/or stiffness, may facilitate earlier treatment and provide the best opportunity to maximise patient outcomes.

Persons experiencing a painful and/or stiff shoulder will frequently present for physiotherapy treatment. During 2015-2016, physiotherapists were the most common referral from GPs within Australia (Britt et al., 2016), with the majority of referrals being made for musculoskeletal problems (Dennis et al., 2018). Furthermore, over half of the people who access physiotherapy are self-referred (Dennis et al., 2018). Arguably, therefore, it is important that physiotherapists, along with other health professionals, recognise the potential for shoulder pain and/or stiffness to be an early manifestation of PD so that appropriate management can be initiated. Therefore, the research questions posed for this study were:

1. What is the prevalence of shoulder pain and/or stiffness as an early symptom reported by newly diagnosed PLWPD in an Australian population?
2. What are the characteristics and typical management strategies sought and received by PLWPD for shoulder pain and/or stiffness?
3. How aware are physiotherapists of shoulder pain and/or stiffness as a symptom of PD, and what are the typical interventions they apply?
4. Are there any sub-groups of physiotherapists more aware of shoulder pain and/or stiffness as a symptom of PD?

METHODS

Two cross-sectional surveys were conducted. The first involved a postal survey of PLWPD to answer questions 1 and 2. The second involved an online survey of practising physiotherapists to answer questions 3 and 4. As there is no validated tool available that addresses the research questions, each survey was designed by the research team specifically for the purposes of this study. Both surveys were piloted with members of the respective target populations and revised prior to final dissemination. Involvement in this study by both PD and physiotherapy participants was voluntary, and no compensation was provided. Consent was implied if the anonymous postal survey was returned or the anonymous online survey was submitted.

Participants

Recruitment of PLWPD

Potential PLWPD participants were all newly diagnosed patients who attended the Parkinson's clinic at a regional hospital in New South Wales between January 2014 and December 2018 (5-year period). The time since presentation to the clinic was restricted to the past 5 years to limit the risk of recall bias for participants when attempting to report initial symptoms and treatments. Cognitive decline is a continuous process that affects nearly all PLWPD over time and may lead to dementia in advanced disease (Aarsland et al., 2017). We did not exclude those with advanced disease or dementia (Balash et al., 2017), and consequently, we may have recruited those who have reduced capacity to evaluate and self-report their symptoms.

Recruitment of physiotherapists

Potential physiotherapist participants were all registered physiotherapists located within the local health district (LHD) who were either working in private clinics or outpatient physiotherapy departments at private and public hospitals. Employment type was restricted to private clinics and hospital outpatient departments to ensure the target was physiotherapists who would likely be responsible for the management of patients presenting with shoulder pain and/or stiffness as an initial symptom. Private clinics within the LHD were identified using the "find a physio" function on the publicly available Australian Physiotherapy Association website. The private and public hospitals within the LHD were identified on the New South Wales government website.

Design

The questionnaire targeting PLWPD was a postal mail survey (Appendix A). The instrument consisted of 18 questions, incorporating both closed- and open-ended questions. It was categorised into three sections: section 1 requested demographic information; section 2 requested information regarding the onset of PD and initial symptoms; and section 3 sought further information if the patient had experienced shoulder symptoms, and if so, the type of treatment they received from either a physiotherapist or other health professional. A letter of invitation and the survey were mailed to the potential participants' last known postal address. Potential participants were asked to complete the anonymous survey and return it to the researchers in a reply post-paid envelope.

The questionnaire for physiotherapists was an online survey (Appendix B). It consisted of 17 questions and, similarly, incorporated closed and open-ended questions divided into three sections. Section 1 requested demographic and work experience information about the therapist, section 2 asked questions regarding typical physiotherapy management of shoulder pain and/or stiffness, and section 3 enquired about their knowledge of pain and/or stiffness as an early presenting manifestation of PD and management of this condition. Each practice/hospital was contacted by telephone to determine the number of potential participants at each site and to identify a contact email address. Each practice/hospital was sent an email and a letter by post to the address given. The email contained a flyer describing the project as well as a link to an information statement and the survey. Similarly, flyers corresponding to the number of physiotherapists working at the location were sent with the postal letter. The online survey was completed using Qualtrics^{XM} software, a secure platform provided by the research institution. Two reminder emails were sent to each physiotherapy setting at two and four weeks after the initial distribution.

This study was approved by the Hunter New England Research and Ethics Committee (H-2019-0028) and co-registered with the University of Newcastle Human Research Ethics Administration (2018/ETH00631). Informed consent was obtained from both PLWPD and physiotherapists.

Data analysis

Descriptive statistics, including means and standard deviations (SD), were calculated for demographic and ordinal data. A Pearson product-moment correlation coefficient was computed to assess the relationship between continuous variables. When variables were measured on an ordinal scale, a Spearman's correlation was used. Chi-square tests were used to assess the relationship between two categorical variables, while Fisher's exact test was used when cells had a frequency of fewer than five subjects. Regression analysis was conducted to assess the relationship between knowledge of shoulder pain/stiffness in PD and other variables. Statistical significance was set at $p < 0.05$. STATA 14.2 statistical software (STATA Corp, Texas) was used for all analysis. Data from open-ended questions were collated verbatim and then coded independently by two examiners. The open coding method of grounded theory, with line by line examination of responses and the development of a coding tree that represented the discrete ideas underlying each sentence or word, was used (Corbin & Strauss, 2008). This includes data describing the initial PD symptom, history of shoulder problems, treatment received by PLWPD, treatment prescribed by physiotherapists, and factors that would indicate PD.

RESULTS

Participants with Parkinson's disease

A total of 189 PLWPD were invited to participate in the study; of these 120 returned completed surveys (63%). The demographic characteristics of the respondents are presented in Table 1.

Table 1

Demographic Characteristics of Participants with Parkinson's Disease

Demographic	*n* (%)^a
Age (years)	Mean 68.4, SD 9.5
Age at PD diagnosis (years)	Mean 59.7, SD 9.7
Gender	
Male	62 (52)
Female	58 (48)
Private health insurance	84 (70)
Born in Australia	100 (83)
Aboriginal or Torres Strait Islander	0 (0)
Highest level of education	
Did not complete high school	15 (13)
School certificate (year 10)	32 (27)
HSC (year 12)	6 (5)
Certificate/diploma	34 (28)
Bachelor's degree	22 (18)
Postgraduate degree	9 (8)

Note. PD = Parkinson's disease; SD = standard deviation.

[a] Except where indicated.

Description of initial symptoms

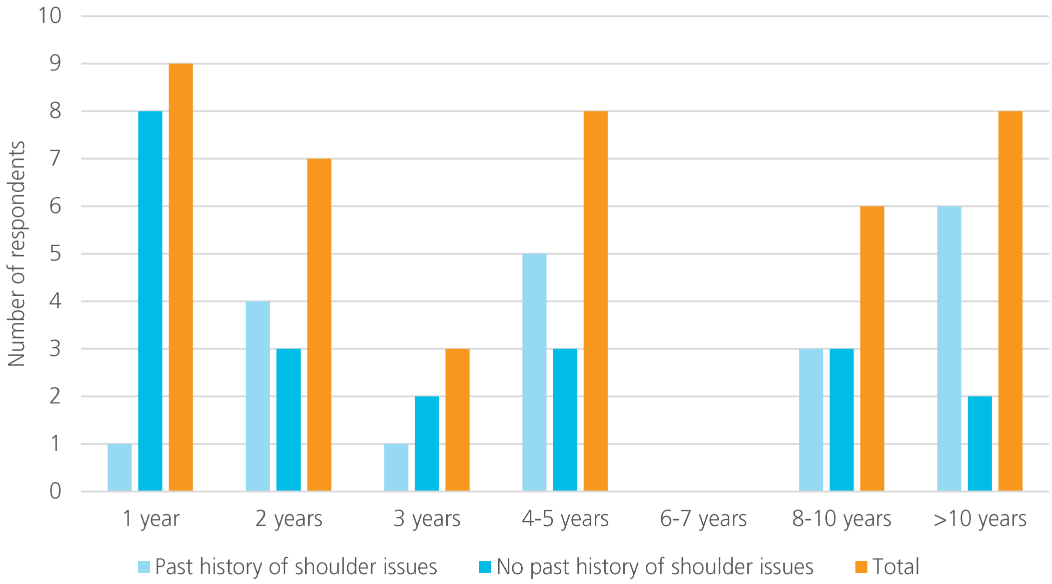
Tremor or shaking was reported as the initial recognised symptom by 57% of participants. The tremor occurred most predominantly in the upper limb: right (16%), left (12%), and unspecified (8%). Other reported initial symptoms included pain and stiffness (16%), difficulty with writing and hand function (13%), disturbed balance and gait (11%), reduced arm movement (9%), loss of smell (8%), weakness (5%), slow movement/bradykinesia (5%), altered speech (3%), paraesthesia/numbness (2%), and vivid dreams (1%).

Participants with shoulder pain and/or stiffness

The majority of participants (73%) reported having experienced shoulder pain and/or stiffness. Of those, 53% reported the onset of shoulder symptoms prior to being diagnosed with PD, whilst 20% were "unsure" and the remainder (26%) reported the symptoms occurred after diagnosis. Of those reporting shoulder pain and/or stiffness prior to diagnosis, 43% reported "no past history of shoulder problems or injuries". Of these, 80% reported the symptoms manifested within 5 years before diagnosis, including 55% who reported the symptoms occurred

Figure 1

Onset of Shoulder Pain and/or Stiffness Prior to a Diagnosis of Parkinson's Disease



within 24 months prior to diagnosis, as shown in Figure 1. Specifically, 8% of participants reported shoulder symptoms as their initial manifestation of the disease, which was categorised as either stiffness (3%), pain (3%) or "shoulder problems" (2%).

Of the participants who reported shoulder pain and/or stiffness prior to diagnosis and a past history of shoulder issues, rotator cuff injury (42%) was the most reported issue. Other previous shoulder problems included arthritis (19%), frozen shoulder (19%), injury from long-term work/sport (12%), bursitis (8%), fracture or bone spur (8%), and shoulder dislocation (4%). There was no statistically significant association between shoulder pain and/or stiffness as an initial symptom, with any other variables including age (r = -0.13, p = 0.27), age at PD diagnosis (r = 0.07, p = 0.59), gender (Chi^2 = 0.42, p = 0.52) or education level (p = 0.48).

Participants who received physiotherapy

Of the participants who had experienced shoulder pain and/or stiffness, 56% had received physiotherapy. The percentage of participants accessing physiotherapy did not differ significantly whether the shoulder symptoms occurred before or after diagnosis. A description of physiotherapy treatment/management is presented in Table 2. Of the participants who received physiotherapy, 16% reported that the physiotherapist referred them to other services to review the shoulder symptoms. This included 8% to an orthopaedic surgeon, 4% to a doctor/GP, and 2% to a chiropractor or another physiotherapist.

Of the participants with shoulder pain and/or stiffness, 48% had received treatment other than physiotherapy. This included cortisone injection (20%), acupuncture (8%), surgery (5%), massage (5%), exercises (4%), medication (3%), and alternative therapy (2%).

Table 2

Physiotherapy Treatment for Shoulder Symptoms as Reported by Participants with Parkinson's Disease

Intervention	*n* (%)
Stretching exercises	35 (71)
Home exercises	34 (69)
Strengthening exercises	31 (63)
Massage	25 (51)
Education and advice	19 (39)
Heat	18 (37)
Dry needling/acupuncture	11 (22)
Taping	7 (14)
Ice	7 (14)
Vibration	1 (2)

Physiotherapists

A total of 157 health facilities were identified for inclusion in the study, consisting of 118 private practices, 27 public hospitals, and 12 private hospitals. However, at seven private practices and six public hospitals, the physiotherapist was unable to be contacted. A total of 144 facilities were therefore invited to participate in the study; two private practices declined participation, and 10 private hospitals were excluded because they did not provide outpatient physiotherapy. A total of 336 physiotherapists were identified, with 76 (23%) responding to the survey, as shown in Figure 2. The demographic characteristics of the physiotherapy participants are described in Table 3.

Figure 2

Flow of Physiotherapy Participants Through the Study

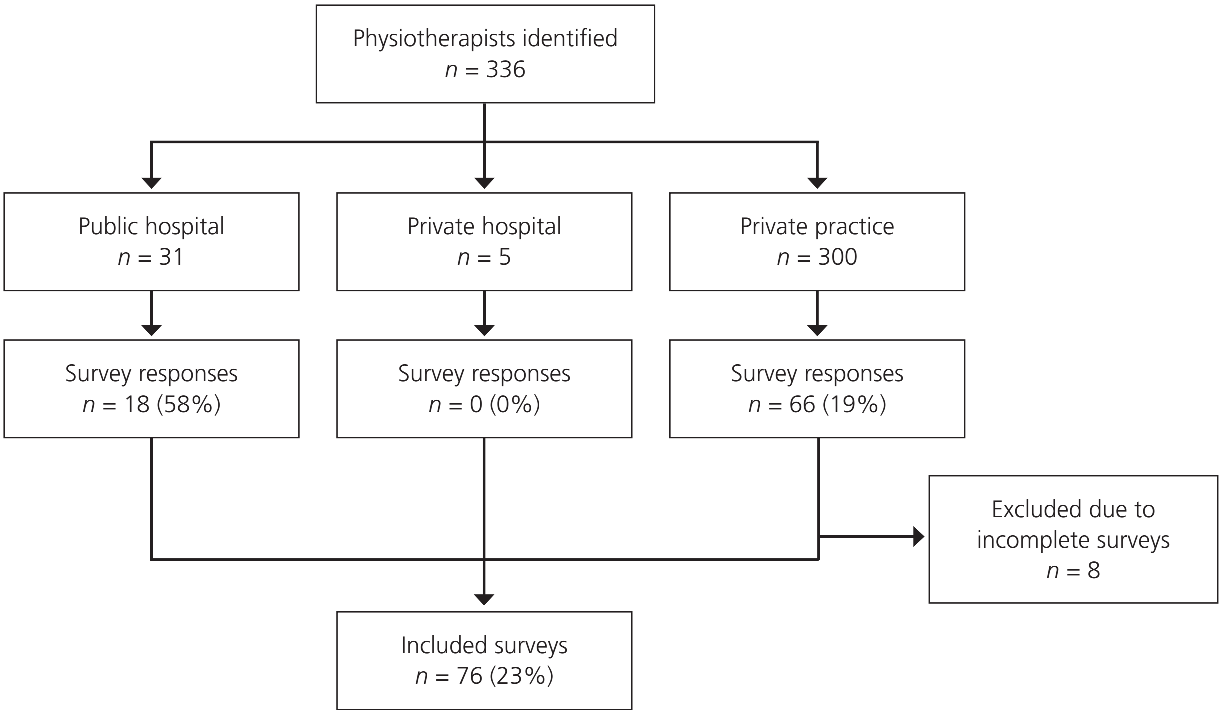


Table 3

Demographic Characteristics of the Physiotherapist Participants

Demographic	*n* (%)
Gender	
Male	18 (24)
Female	58 (76)
Highest physiotherapy qualification	
Graduate diploma	8 (11)
Bachelor's degree	51 (67)
Master's degree	17 (22)
Doctorate	0 (0)
APA titled	18 (24)
Sports	6 (33)
Musculoskeletal	5 (28)
Sports and exercise	2 (11)
Neurology	1 (6)
Musculoskeletal and sports exercise	1 (6)
Not specified	3 (17)
Fellow of Australian College of Physiotherapists	2 (3)
Years practising physiotherapy	
0 to 2	10 (13)
3-5	10 (13)
6-10	15 (20)
11-20	9 (12)
21-30	12 (16)
Over 30	20 (26)

Note. APA = Australian Physiotherapy Association.

Treatment of shoulder pain and/or stiffness

Of the 76 respondents, 95% (*n* = 72) reported treating patients with shoulder pain and/or stiffness. The average number of patients per month varied from 0 (1%), 1–5 (47%), 6–10 (38%), 11–15 (13%) to >15 (1%). The reported typical management for shoulder pain and/or stiffness and the action taken if the patient did not respond to normal management is presented in Table 4.

Shoulder pain and/or stiffness as an early symptom of Parkinson's disease

The majority of respondents (74%) reported that they were unaware that shoulder pain and/or stiffness could present as an early symptom of PD. There was no statistically significant association between awareness of the early symptom and level of qualification ($p = 0.19$), being titled ($\text{Chi}^2 = 1.15$, $p = 0.28$), work setting ($\text{Chi}^2 = 0.94$, $p = 0.33$), number of years working ($p = 0.75$) or gender ($\text{Chi}^2 = 0.75$, $p = 0.78$). Of the 26% (*n* = 20) that did recognise this early symptom of PD, the presence of tremor was the most reported factor of patient presentation that raised suspicion of PD (60%). Other reported factors included gait impairments or reduced arm swing (45%), masked facial expression (30%), rigidity (30%), stiffness (25%), changes to speech (20%), reduced coordination/proprioception (20%), posture (20%), and balance issues or recent falls (15%). Of these 20 respondents, 85% further indicated that the management approach of shoulder pain and/or stiffness would change if PD was suspected. Altered management included referring the patient to their GP (80%); completing a more detailed assessment, including neurological assessment (65%); and referring the patient to a neurological physiotherapist, neurological support service or exercise group (50%).

Table 4

Physiotherapy Management of Shoulder Pain and/or Stiffness

Management	*n* (%)
Typical management	
Education and advice	68 (89)
Strengthening exercises	68 (89)
Stretching exercises	56 (74)
Manual therapy	53 (70)
Referral to GP for further management, e.g. corticosteroid injection	17 (22)
Dry needling	13 (17)
Referral for orthopaedic opinion	12 (16)
Electrophysical agents	7 (9)
Taping	5 (7)
Hydrotherapy	2 (3)
Management if the patient doesn't respond to normal management	
Refer back to GP or medical officer in a hospital setting	62 (82%)
Manage with another physiotherapy option	27 (36%)
Discharge with exercises and advice	8 (11%)
Refer to another health professional	7 (9%)
Refer to specialist	5 (7%)
Imaging	4 (5%)
Continue to work the patient	2 (3%)

DISCUSSION

The aim of this study was to investigate the prevalence of shoulder pain and/or stiffness as an early symptom of PD within an Australian population, and to gain an understanding of the physiotherapist awareness of this early symptom. This study used surveys of both persons diagnosed with PD as well as physiotherapists to explore these issues. To our knowledge, this is the first study of its kind to gather information from these two sources, which may facilitate earlier recognition and subsequent management of this disorder.

It is well documented that musculoskeletal pain is associated with PD (Broen et al., 2012; Ha & Jankovic, 2012; Valkovic et al., 2015). However, there is limited evidence reporting its presence as an initial PD symptom. Nevertheless, pain and stiffness related to the shoulder have been reported as an early symptom of the disease by a number of authors (Cleeves & Findley, 1989; Madden & Hall, 2010; Riley et al., 1989; Stamey et al., 2008, Schrag et al., 2014). In the current study, approximately three-quarters (73%) of PLWPD reported having experienced shoulder pain and/or stiffness in the past or currently. This is higher than the reported 38% for a general Australian population aged 55-74 years (Hill et al., 2010). Our findings are consistent with a study of 25 American PLWPD (Madden & Hall, 2010), but the prevalence is also higher than in another two studies that reported between 11 and 43% (Riley et al., 1989; Stamey et al., 2008). This may be explained by differences in research methods, whereby Stamey et al. (2008) performed a retrospective analysis in which shoulder pain was not specifically sought during the examination, potentially resulting in under-reporting. Similarly, we found the peak onset of shoulder symptoms to be 0–24 months prior to diagnosis, which is consistent with earlier reports (Riley et al., 1989), as was the 8% incidence of shoulder pain, stiffness or "shoulder problems" as the initial symptom (Cleeves & Findley, 1989; Riley et al., 1989). Furthermore, although not assessed in our study, two other studies have reported other typical symptoms of the disease present on the ipsilateral side to the shoulder symptoms in 16 out of 19 cases (Riley et al., 1989) and all 12 cases (Cleeves & Findley, 1989).

The pathophysiological process related to the development of shoulder symptoms in PLWPD has not been determined. It is postulated that rigidity and bradykinesia could lead to immobility and predispose subsequent shoulder dysfunction and discomfort (Stamey et al., 2008). As the aetiology is unclear, the misdiagnosis of PD-related shoulder symptoms may commonly occur. This may have occurred in those respondents reporting the onset of pain and/or stiffness prior to PD diagnosis and a past history of shoulder problems. Of this sample, 25% reported the onset of symptoms within 24 months of a PD diagnosis, and had received a diagnosis of either frozen shoulder, rotator cuff tear, bursitis or arthritis – all of which have been identified as potential misdiagnosis for PD-related problems (Jankovic, 2008; Riley et al., 1989; Stamey et al., 2008). Findings from previous research are similar: one study found 8% of PLWPD reported frozen shoulder as their initial PD symptom (Riley et al., 1989). Another study reported that 8% of PLWPD sought medical advice for their shoulder pain prior to diagnosis of PD and received a diagnosed of frozen shoulder (Cleeves & Findley, 1989). Therefore, it is possible that recognition of this symptom as part of the PD disease process could have resulted in earlier and potentially more appropriate treatment for this group of PLWPD.

With the evidence supporting shoulder pain and/or stiffness as an early symptom of PD, it is essential that health professionals both recognise and understand how to appropriately manage a patient with this presentation. Our results demonstrate limited knowledge of shoulder symptoms as an initial symptom of PD, with only 26% of respondents reporting awareness of this relationship. This lack of awareness may result in patients receiving inappropriate investigations and treatment, resulting in delayed management of the disease. To our knowledge, this has not previously been investigated, and comparison with other cohorts of physiotherapists is not possible. Our responses included physiotherapists from metropolitan, rural, and remote areas, with a large distribution in years of experience and average number of patients treated with shoulder pain and/or stiffness each month. Therefore, this study provides a good approximation of the overall Australian physiotherapy population and suggests that the lack of awareness is across multiple physiotherapy domains.

The physiotherapy treatment for shoulder pain and/or stiffness reported by the physiotherapists was very similar to that reported by the PLWPD. The main variation was 89% of physiotherapists reported providing education and advice, while only 39% of patients reported receiving it. The signs and symptoms that the physiotherapists reported that raised suspicion of PD included tremor; gait impairments; impaired writing and hand function; slow or altered speech; altered or reduced sense of smell; and reduced balance, proprioception, and coordination. All of these were common initial symptoms reported by PLWPD participants within our study as well as by other research (Sveinbjornsdottir, 2016). Furthermore, the majority (82%) of physiotherapists reported they would refer the patient to a GP or medical officer if their symptoms did not respond to normal management, which could lead to further delays in receiving appropriate management. However, it highlights the importance for all medical professionals to recognise shoulder pain and/or stiffness as a potential early symptom of PD, and the appropriate treatment path to follow.

There are a number of limitations to this study. Both surveys had good response rates from the target populations (Daikeler et al., 2020). However, there may be limitations with external generalisability, as the PLWPD were sourced from one clinic and a limited number of physiotherapists sourced from one LHD. Furthermore, both surveys were subject to responder bias and may have attracted patients with shoulder pain and physiotherapists with an interest in PD. Although typical treatments provided/received for shoulder pain/stiffness were recorded, the response to treatment was not investigated within the study. Also, the surveys used were designed for this study, and although they were piloted, they are not validated instruments. As a result, the use of a non-validated instrument with a focus on pain/stiffness may have led to an overestimation of self-reported shoulder symptoms (Buhman et al., 2017) or recruitment bias of participants with experience of those symptoms. Increasing the sample size and widening the sampling frame may provide greater insight into this issue. Finally, combining a similar survey approach with focus groups or qualitative interviews to gain a clearer understanding and expand on the pattern and description of pain and/or stiffness may provide further valuable insight.

It is important for health professionals, in particular first-line practitioners, to consider the possibility of a PD diagnosis when a patient presents with shoulder symptoms. The clinical reasoning process should carefully consider all presenting features when assessing patients with a painful and/or stiff shoulder to ensure an accurate diagnosis and, therefore, an appropriate management pathway is followed. As the results indicate, the majority of physiotherapist respondents are currently unaware of this early manifestation. Therefore, further education and professional development may be needed to avoid inappropriate investigations and treatment. The lack of understanding between shoulder pain and/or stiffness as an early symptom of PD and the other variables investigated within the study increases the need for education, as there are no other indicators that allude to the possibility of a PD diagnosis. Following the delivery of education, repeating the survey in the future may also be valuable to determine whether the knowledge and awareness of physiotherapists on this topic changes over time.

CONCLUSION

This study provides important insight from both a patient and physiotherapist perspective into shoulder pain and/or stiffness as an early or initial symptom of PD. The study has identified a high prevalence of shoulder pain and/or stiffness as an initial symptom of PD and limited physiotherapist knowledge on this topic. As such, a key focus area for physiotherapy professional development has been identified. Increasing the knowledge and awareness of health professionals on this topic may lead to earlier and accurate diagnosis for PLWPD, which would facilitate appropriate treatment and reduce the costs associated with misdiagnosis and mismanagement. Although our results reflect an Australian perspective, arguably they could be generalised to other countries, including New Zealand, with similarities in population and provision of health care.

KEY POINTS

1. Almost one in 10 patients with Parkinson's disease report shoulder pain and/or stiffness as the initial symptom of Parkinson's disease.
2. Many patients with Parkinson's disease reported the onset of shoulder pain and/or stiffness within 5 years prior to diagnosis, without a past history of shoulder issues.
3. Physiotherapists have limited knowledge and awareness of shoulder pain and/or stiffness presenting as an early symptom of Parkinson's disease.

DISCLOSURES

No financial support was obtained for this study. There are no conflicts of interest which may be perceived to interfere with or bias this study.

PERMISSIONS

This study was approved by the Hunter New England Research and Ethics Committee (H-2019-0028) and co-registered with the University of Newcastle Human Research Ethics Administration (2018/ETH00631).

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Appendix A

SURVEY FOR PATIENTS WITH PARKINSON'S DISEASE

These questions ask background information about you

1. In what year were you born? ______
2. What is your gender? ☐ Male ☐ Female ☐ Other
3. What is your postcode? ______
4. In what country were you born? ______
5. Do you identify as Aboriginal or Torres Strait Islander?
   ☐ Yes, Aboriginal
   ☐ Yes, Torres Strait Islander
   ☐ Yes, both Aboriginal and Torres Strait Islander
   ☐ No
6. Which response best describes your highest level of education completed?
   ☐ Did not complete high school
   ☐ School certificate (year 10)
   ☐ Higher school certificate (year 12)
   ☐ Certificate/diploma (TAFE)
   ☐ Bachelor degree
   ☐ Postgraduate
7. Do you have private health insurance?
   ☐ Yes ☐ No

These questions ask about your Parkinson's disease symptoms

8. How old were you when you were diagnosed with Parkinson's disease? ______
9. What was the first Parkinson's disease symptom you experienced? ______
   ______
10. Have you ever experienced shoulder pain and/or stiffness?
    ☐ Yes ☐ No

    *If you answered **No** to the last question, you do not need to continue, and you have now completed the survey.*

    *If you answered **Yes**, please continue.*

These questions ask about your shoulder symptoms

11. Did the shoulder pain and/or stiffness occur before your diagnosis of Parkinson's disease?
    ☐ Yes ☐ No *(go to question 13)*
    ☐ Unsure *(go to question 13)*
12. How long prior to your Parkinson's disease diagnosis did you experience pain and/or stiffness?
    ______
13. Do you have a past history of any shoulder problems, e.g. rotator cuff problem, arthritis?
    ☐ Yes ☐ No
    If ***yes***, please describe: ______
    ______
14. Have you seen a physiotherapist for your shoulder pain and/or shoulder stiffness?
    ☐ Yes ☐ No
15. If ***yes***, what treatment did you receive from the physiotherapist for your shoulder?

    Please tick all that apply.
    ☐ Education and advice
    ☐ Taping
    ☐ Ice
    ☐ Heat
    ☐ Dry needling/acupuncture
    ☐ Other, please describe: ______
    ______
    ☐ Stretching exercises
    ☐ Strengthening exercises
    ☐ Home exercises
    ☐ Massage
16. Did the physiotherapist refer you to someone else to review your pain and/or shoulder stiffness, e.g. another physiotherapist, a chiropractor, an orthopaedic surgeon?
    ☐ Yes ☐ No
    If ***yes***, please describe: ______
    ______
17. Have you had any treatment other than physiotherapy for your shoulder pain and/or stiffness, e.g. acupuncture, cortisone injection, surgery, other?
    ☐ Yes ☐ No
    If ***yes***, please describe: ______
    ______
18. Would you like to provide any further comments?
    ______
    ______
    ______
    ______

Thank you for completing this survey. Your time and contribution are greatly appreciated.

Appendix B

SURVEY FOR PHYSIOTHERAPISTS (FORMATTED INTO QUALTRICS)

1. What is your current primary/main physiotherapy work setting?

☐ Private practice ☐ Private hospital
☐ Public hospital

2. What is the postcode of the location of your primary/main physiotherapy workplace? ____________________

3. What is your gender?

☐ Male ☐ Female ☐ Other

4. How many years have you been practising as a physiotherapist?

☐ 0-2 ☐ 11-20
☐ 3-5 ☐ 21-30
☐ 6-10 ☐ Over 30

5. What is your highest physiotherapy qualification?

☐ Graduate diploma ☐ Master's degree
☐ Bachelor's degree ☐ Doctorate

6. Are you an Australian Physiotherapy Association titled member?

☐ Yes ☐ No

*(Condition: **No** is selected. Skip to question 9)*

7. If yes, please indicate the national group to which your titling was awarded, e.g. musculoskeletal, sports, neurology.

8. Are you a fellow of the Australian College of Physiotherapists?

☐ Yes ☐ No

9. Do you see patients with shoulder pain and/or stiffness?

☐ Yes ☐ No

*(Condition: **No** is selected. Skip to question 13)*

10. If you do see patients with shoulder pain/stiffness, on average, how many new patients would you see in a month?

☐ 0 ☐ 11-15
☐ 1-5 ☐ >15
☐ 6-10

11. If you diagnose a patient with shoulder pain/stiffness, what is your typical management? Please select all that apply.

☐ Education and advice ☐ Dry needling
☐ Electrophysical agents ☐ Strengthening exercises
☐ Manual therapy ☐ Stretching exercises
☐ Referral to GP for further management, e.g. corticosteroid injection
☐ Referral for orthopaedic opinion
☐ Other, please specify:

____

12. If a patient doesn't respond to your usual management, what do you do? Please select all that apply.

☐ Manage with another physiotherapy option
☐ Discharge with no referral
☐ Discharge with exercises and advice
☐ Refer to another health professional, e.g. exercise physiologist, acupuncture
☐ Refer back to GP or medical officer in a hospital setting
☐ Other, please specify:

____

13. Before reading the information accompanying this questionnaire, were you aware that shoulder pain and/or stiffness is frequently an early symptom of Parkinson's disease?

☐ Yes ☐ No

*(Condition: **No** is selected. Skip to: Question 17)*

14. If you examine a patient with shoulder pain and/or stiffness, what factors of their presentation would make you suspect Parkinson's disease?

15. Would your management of shoulder pain/stiffness differ if you suspected Parkinson's disease?

☐ Yes ☐ No

*(Condition: **No** is selected. Skip to: Question 17)*

16. If you examine a patient with shoulder stiffness and suspect it may be due to Parkinson's disease, what is your management? Please select all that apply.

☐ Do a more detailed assessment, including assessment of any neurological symptoms
☐ Refer the patient to a neurological physiotherapist/ neurological support group/exercise group?
☐ Refer the patient to their GP
☐ Other, please specify:

17. Do you have any further comments that you think may be useful to the research team?

____
____
____
____

Intersection of the Elements of Evidence-Based Practice in Interdisciplinary Stroke Rehabilitation: A Qualitative Study

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ABSTRACT

Evidence-based practice (EBP) is a foundational approach to clinical decision-making that integrates scientific research; clinical expertise; and patient preferences, values and circumstances. The purpose of this study was to explore the intersection of the three elements of EBP among an interdisciplinary stroke rehabilitation team. An exploratory qualitative descriptive design was used to examine the intersection of elements through a focus group with the allied health members of an interdisciplinary stroke rehabilitation team. Thematic analysis was applied to the data. Three main themes were developed: the patient as the driver, EBP as a fluid process, and EBP as a collaborative team process. While all three elements intersected during care planning, patient preferences, values, and circumstances were the dominant influence in decision-making. EBP was a dynamic process changing over time and context. Collaboration with the patient and between health professionals was an integral part of the approach. Results demonstrated that EBP is a complex and iterative process. Clinicians require skills in integrating each of the three elements for successful application of EBP in stroke rehabilitation.

Vingerhoets, C., Hay-Smith, J. & Graham, F. (2020). Intersection of the elements of evidence-based practice in interdisciplinary stroke rehabilitation: A qualitative study. *New Zealand Journal of Physiotherapy, 48*(3), 148–154. https://doi.org/10.15619/NZJP/48.3.06

Keywords: Evidence-Based Practice, Interdisciplinary, Stroke, Rehabilitation, Team

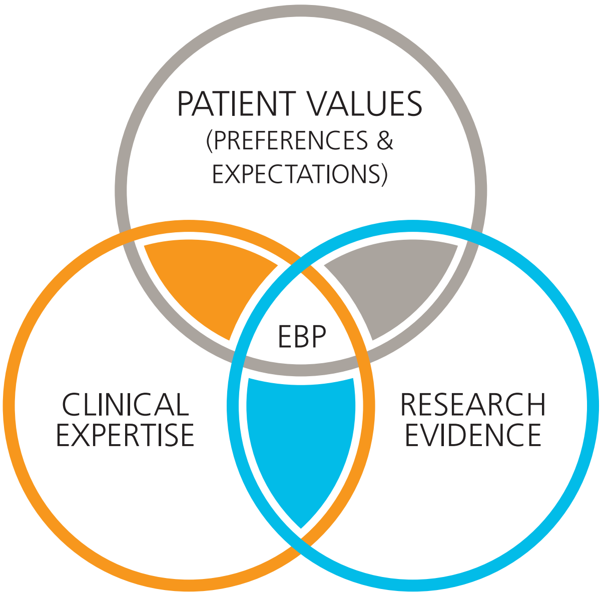
INTRODUCTION

Evidence-based practice (EBP) is an approach to healthcare decision-making that involves the integration of scientific evidence; clinical expertise; and patient values, preferences and circumstances (Straus et al., 2019). It is a well-established process that "promotes the development of service effectiveness, efficiency and quality, competent professionals and discipline credibility" (Whiteside et al., 2016, p. 417)

Conceptually, EBP is typically depicted as a Venn diagram (Figure 1), with three elements considered essential to evidence-based decision-making. Reviewing and appraising relevant research evidence allows healthcare professionals to remain current and expand their clinical knowledge (Hoffmann et al., 2014). Research applied in isolation cannot guide practice, as evidence may be limited or not applicable in clinical contexts that differ substantially from the research conditions (Siminoff, 2013). Clinical expertise involves the application of critical thinking and professional experience; it is tacit knowledge that clinicians develop to determine which treatments are appropriate for particular patients and circumstances (Dawes et al., 2005). The integration of patient values and preferences is necessary to guide how evidence is applied for individuals (Siminoff, 2013). Although there is a growing body of research on EBP use among allied health professionals, existing literature has primarily focused on how they obtain, evaluate, and utilise scientific evidence (Abu Bakar et al., 2018). It is less clear how the three components of EBP interact to influence clinical decision-making.

Figure 1

Conceptual Representation of EBP Based on Written Information in Sackett et al. (2000).



Existing literature suggests that despite clinicians' understanding of the importance and application of EBP, the translation of EBP principles into clinical practice remains inconsistent (P. Upton et al., 2012). Additionally, while many healthcare professionals demonstrate positive attitudes, knowledge, and beliefs towards EBP, these do not necessarily result in EBP uptake (D. Upton et al., 2014; Wilkinson et al., 2012). The majority of EBP research has been conducted with single professions, with limited exploration in interprofessional teams.

The objective of this study was to explore the intersection between the three elements of EBP in care planning among an interdisciplinary stroke rehabilitation team.

METHODS

Study design

This exploratory qualitative descriptive study (Neergaard et al., 2009) examined the intersection of EBP elements during care planning in an interdisciplinary stroke rehabilitation team of allied health professionals in a Canadian hospital. Ethical approval was obtained from the Institutional Research Ethics Board (R19-020).

Qualitative description enabled the reporting of findings with interpretation that did not intend to provide a conceptual or theoretical output (Neergaard et al., 2009). The consolidated criteria for reporting qualitative research (COREQ) checklist (Tong et al., 2007) guided the study's reporting.

Participants and recruitment

All allied health members of the interdisciplinary team on the integrated stroke and rehabilitation unit were eligible to participate, including occupational therapists, physiotherapists, social workers, and speech-language pathologists. The unit provides acute care and inpatient rehabilitation post-stroke until discharge from hospital (average length of rehabilitation is 23 days). Potential participants were approached in-person by the principal investigator (CV), who worked as a physiotherapist at the same institution but within a different department. She was known to the study's participants and was familiar with the processes of the unit, having worked there for 9 years, until 3 years ago.

Data collection

The principal investigator undertook recruitment, data collection, and analysis. This research was conducted in recognition of the potential challenges of EBP application in an inpatient rehabilitation context. Demographic data (age, professional discipline, number of years in practice, highest level of education, and previous participation in research) were collected at the time the participants were recruited. The principal investigator observed one "rehabilitation rounds" where the allied health team, along with the patient's primary nurse, met with each patient in their room to discuss care plans and set goals. Field notes captured examples of how and what the team discussed during treatment planning for use as prompts in the focus group, but these notes were not used in the analysis.

Immediately after the rehabilitation rounds, the focus group commenced, facilitated by the principal investigator. The development of focus group questions and prompts occurred through multiple, iterative discussions within the research team, which included two senior researchers with extensive experience in qualitative research and focus group techniques. Participants were reminded of the definition of EBP (Straus et al., 2019) to establish context. Four main questions were posed:

1. How do you value each of the three elements of EBP?
2. How does the team utilise EBP for decision-making?
3. Is there one element of EBP that is most influential during care planning?
4. What contributes to an unequal weighting of EBP elements?

Focus group techniques were used to encourage discussion between participants to enhance the development of ideas and explore alternate or complementary perspectives (Liamputtong, 2011). The focus group was 45 min long, audio recorded, and transcribed verbatim.

Data analysis

The inductive content analysis (Neergaard et al., 2009) began with data familiarisation (repeatedly listening to the audio recording, transcription, reading and re-reading the transcript) followed by coding. Units of text that captured the phenomena of interest were coded systematically at a descriptive level. A second investigator (JHS) independently coded the data, and discussion occurred between all authors to refine codes. Preliminary codes were grouped into themes and subthemes based on similarities in the content. Iterative discussion between the principal investigator and second investigator led to agreed themes that reflected the intersection of elements of EBP in the care planning process. To improve credibility and confirmability, participants were presented with a summary of the study findings, both verbally and in writing, and invited to provide comment on the interpretation of the data.

RESULTS

All of the clinicians who were approached to take part in the study (*n* = 7) consented, although two were unable to attend the focus group. Five clinicians participated (two occupational therapists, two physiotherapists, and one social worker); all were female, with ages ranging from 34-54 years, and with 11-27 years of professional practice. One had a profession-specific undergraduate degree and four had professional Master's degrees. All clinicians worked full-time, and none had previously participated in post-registration research. Demographic data were presented in aggregate due to the small sample size and risk of compromising anonymity.

Three main themes represented the intersection between EBP elements in care planning within a stroke rehabilitation team: "the patient as the driver", "EBP as a fluid process", and "EBP as a collaborative team process". The intersection of patient values, clinical expertise, and research evidence appeared throughout the discussion. Clinicians drew from each of these elements during care planning, while the context (patient and organisational influences) determined the ways and degree to which they intersected. Patient preferences were at the forefront of discussion, and clinicians continually came back to the patient as the primary influence on care planning and team-patient negotiation.

The patient as the driver

This theme is composed of three subthemes: "the primacy of patient-centredness", "patient-directed goals" and "being patient-specific". The patient was considered the primary driver of EBP during care planning. There was consensus that the team valued a patient-centred approach and that processes focused on the patient as a unique individual.

The primacy of patient-centredness

While the contribution from each EBP element was acknowledged, the patient was the dominant influence in decision-making:

> For me, the patient part [of EBP] is the driver. I don't necessarily think that it's more important, because I think what the research says and what my past experience says have a lot to say to that. But where they're [the patient] at is really the driver of how those other things are brought in … It doesn't matter how good the research is or how much I think something's going to help, if the patient doesn't want to do it, or won't do it, then it's [not going to work]. (OT 1)

Clinicians expressed that patient values, preferences, priorities, goals, and circumstances guided care planning and service delivery. They used language and examples that highlighted their desire and effort to engage in a patient-centred approach. Patient-centredness was also perceived to improve patient outcomes and engagement in rehabilitation.

Patient-directed goals

Goal setting was the most common example of care planning. Clinicians felt that patient-directed goals were more meaningful to patients, which also helped to improve patient engagement and outcomes: "It's really about what the patient identifies as their concerns and their goals, and how to address them" (SW).

Active patient participation in goal setting and care planning was regarded as a key component of rehabilitation. Clinicians felt that the goal-setting process held therapeutic value for patients, especially those with communication deficits, and helped the clinicians better understand the patients' perspective.

Being patient-specific

The care planning process was specific to the patient and their context. Decision-making was influenced by intrinsic and extrinsic patient-related factors. Intrinsic factors included patients' attitudes and beliefs, preferences, cognition, communication, and health literacy. Extrinsic factors, such as the patients' social support system, home environment, and financial circumstances, were also considered. Treatment plans were guided by patient impairments and goals, and the clinicians' desire to promote patient success: "Knowing that's a challenge for her, what things can we have her be successful with so that she has even a small repertoire of things that she *can* [emphasis added] do?" (OT1).

Communication strategies were tailored, and content was individualised. For instance, sometimes a clinician explicitly discussed research underpinning their recommendations with a patient if they perceived it would improve patient engagement.

EBP as a fluid process

The elements of EBP were valued and prioritised in different ways, by different clinicians, under different circumstances. While patient preferences were often dominant in directing decision-making, the iterative interaction of all three elements was evident:

> I think that [putting the patient first] almost ties back and loops around to the fact that evidence would support that patient values have to be the priority. Especially in stroke, meaningful activity and functional activity and all of those things are [important], and also my personal experience to back that up. So, I think although you put the patient first, the other things [research evidence, clinical expertise] would say that [as well]. So, they all tie together. (OT1)

This clinician drew on research evidence about the importance of patient-centredness backed up by her clinical experience to explain why patient values were the most explicit and dominant element of EBP in everyday practice.

Factors such as time, staffing, training, access to evidence, and organisational priorities influenced the clinical application of EBP. One clinician described constraints on seeking and using scientific research, which changed the relative influence of the other two EBP elements on care planning:

> The priorities of the [hospital] or wherever it is that you're working [matter], because what I find is that if I don't have time to ensure that I'm always doing what the newest, best or latest research [recommends], I can get into a rut. Then it's my clinical experience taking over rather than the patient's concerns. (PT2)

Clinicians also acknowledged that physical resources, like space and materials, influenced their ability to incorporate patient preferences (e.g., meal preparation) into clinical practice:

> Just the availability of materials to make something meaningful. You have to have the right materials to do cooking; you either have to have a kitchen or spend a lot of time thinking about how you're going to do that in a different setting. (OT1)

While attention to patient priorities during care planning was evident, the contribution of other EBP elements may not be as obvious in clinical practice. Clinicians acknowledged that they did not necessarily verbalise the application of research evidence during care planning, although this was embedded in their clinical recommendations:

> When I'm thinking back to some goals we tend to set, a lot of the time they're coming from the research. So, you're thinking that way and that's why you're saying, 'Why don't we have a goal around you stabilising on your active arm?' (PT2)

There were times when research evidence was explained to the patient or other team members as a means to justify particular goals or treatment strategies:

> I don't think we overtly [discuss evidence], except for [evidence-based] sit-to-stand goals. The nurses or the patients will be like, 'Why do I have to do 13 sit-to-stands?'… So I will explain that [research evidence] because that's not obvious all the time. (PT2)

The EBP process evolved over time. For instance, a recent change in rehabilitation rounds, which now involved the team meeting with the patient present to discuss care plans and set goals, was intended to facilitate patient participation and elicit preferences, congruent with an EBP model of practice. Clinicians felt that it was also a way to improve interprofessional practice by increasing the engagement of other health professionals (nurses) to enhance patient-centred care:

> Sometimes when it's just us [allied health], making up 'these are our goals' they [nurses] don't have any buy-in into it. And now, they're hopefully seeing more of, 'Okay, this is what the patient is asking to do and this is what the therapists are saying about how to get there'. (OT2)

Clinicians reflected positively on this practice evolution, iterating the value of this change for integrating patient preferences in evidence-based decision-making: "I should always be a lot more realistic with goal setting. It's good that this [the new rehabilitation rounds] is a way that we can learn more about the patients and make their goals more realistic and appropriate for them" (PT2). This participant suggested a shift in the balance of EBP elements for her, from a dominant contribution of clinical expertise to more weighting of patient values in the goal-setting process.

Clinical experience, another key element of EBP, had also evolved, especially for those with less experience: "As someone who hasn't worked in stroke for that long, I'm coming along with my experience, I have more of a reservoir to pull from, [to say] 'This person really reminds me of so-and-so'" (OT2). Novice clinicians also drew on and incorporated the experience of more expert clinicians in the team as a critical source of clinical expertise: "Being fairly new to this caseload, having folks with lots of experience is essential" (PT2).

EBP as a collaborative team process

The utilisation of EBP was influenced by team functioning. This team comprised the patient and allied health clinicians within a wider group of healthcare professionals providing care for a patient (e.g., nurses and doctors). Two subthemes reflected these team processes: "patient-clinician collaboration" and "professional collaboration".

Patient-clinician collaboration

Many examples of patient-clinician collaboration were described. Collaboration was typified by active patient involvement in goal setting and required the clinicians to have a clear understanding of the patient's circumstances, values, and preferences. In turn, clinicians provided education to patients and their families by drawing on clinical expertise and relevant research. Collaboration was believed to improve therapeutic alliance and enhance patient engagement in rehabilitation. However, some challenges to collaboration were highlighted as clinicians were clear that patients and therapists may see things differently. When clinicians were aware of a difference of opinion, they appeared to give primacy to the patient's view, consistent with the "patient as driver" theme:

> Sometimes it's [care planning] a collaboration between what the patient is wanting to work on and goals that the team identify …. I would have loved to have my own goals to see where that patient would be, but it doesn't matter. It is where that patient is at and how to support that patient at that moment in time. (SW)

Clinicians described reframing a patient's large or long-term goal into smaller or short-term components, believing patients and families did not have the necessary skill or knowledge to see these steps toward the larger goal. Reframing goals drew heavily on the other two EBP elements – clinical experience and research:

> This happened in our 'rehab rounds'. The patient saying, 'My big goals are to walk'. They don't know what steps to take or what interventions are going to get them there; they just see that end goal. It's [providing education] related to our [experience]. This [short-term goal or treatment] is what's worked in the past based on how other patients have presented and the research. (OT2)

Professional collaboration

Collaboration among clinicians enhanced practice and enabled EBP. Clinicians described the benefit of a team for broadening the clinical expertise element of EBP: "When you get stuck in that rut, sometimes experience from another professional can say, 'How about try this?' And it opens a whole other world for you to look at" (PT1).

Clinicians recognised that the expertise they contributed in the context of EBP was shaped by their professional perspective and that others might approach care planning from differing views, bringing distinct knowledge and skills to the team process: "Certainly that's my philosophy as a social worker, is always to be where the patient is at" (SW).

Clinicians felt that educating others about research, sharing one's clinical reasoning, and the presence of patients at rehabilitation rounds helped the extended team apply EBP: "They [nurses] might learn more about where these goals are coming from and why, what our thought process is, so their interaction may end up being more client-centred in the end" (OT2). It was perceived that professional collaboration was an essential part of offering team-based EBP, and a genuinely interprofessional approach enhanced the practice of individual team members and improved patient care:

> I think that we are looking at the whole experience side of it, like our professional experience. We do, as a team, do a lot of talking and comparing of patients, 'This person reminds me of so-and-so', and what worked in the past with them. … Then using the other professionals around us who may have [had] success with the intervention or with care planning. (OT2)

DISCUSSION

In this interdisciplinary team of allied health professionals in stroke rehabilitation, all three elements of EBP intersected during care planning. However, patient values, preferences, and circumstances served as the starting point and primary focus for the clinicians. Within this environment, EBP was a fluid process that changed over time and context, and relied upon collaboration with the patient and within the interdisciplinary team.

The intersection of EBP elements was evident throughout the discussion of treatment sessions, care planning, and goal setting, but the primacy of patient values and preferences was a core concept. There is extensive literature on EBP engagement among allied health clinicians, the majority of which examines the use of scientific research in clinical practice (Abu Bakar et al., 2016; D. Upton et al., 2014). The current study provides a contrasting view of EBP, one in which the patient is the primary focus of decision-making.

Clinicians drew attention to patient preferences and values in the ways they spoke about the choice of treatment strategies specific to each patient, as well as the promotion of patient participation in goal setting. This demonstrates the overlap between the EBP element of patient preferences and the concept of patient-centred care, which highlights the patient as an active participant in their own care (Siminoff, 2013). The foundation of patient-centred care is that treatment decisions should consider patients' values, preferences, and wishes (Street et al., 2012), which is consistent with the EBP process if applied in a way that truly integrates each element of the EBP triad. The way clinicians described their practice might reflect a contemporary emphasis on patient-centredness. The concept of EBP was proposed and debated in the 1990s (Sackett et al., 1996), with widespread adoption as a foundation for health professional training and practice, while patient-centred care narratives have risen to prominence in the 2000s (Slater, 2006). Patient-centred care and EBP, as described by these clinicians, were complimentary.

Barriers to integrating patient values and preferences in evidence-based practice were identified. Organisational priorities, such as facilitating discharge and lack of physical resources (e.g., space and materials), limited the clinicians' capacity to engage in care that was as patient-centred as they desired. Individual and organisation-related barriers and facilitators to EBP engagement have been previously explored. However, this literature has focused on barriers and facilitators of applying research evidence clinically (Scurlock-Evans et al., 2014; Whiteside et al., 2016). While clinicians in this study also identified barriers to accessing and utilising research evidence, they were more concerned with limitations to providing patient-centred care than adherence to research-informed treatment. Findings indicated that perceived barriers to implementing EBP could influence the relative contribution of each EBP element to care planning; one element of EBP may be more dominant because of barriers to accessing or applying another.

The intersection of EBP elements in care planning was most evident in the examples that participants gave about goal setting. Attention to the patient was paramount for clinicians, as evidenced by their beliefs that patient-directed goals were more meaningful than clinician-directed goals and improved patient engagement; and active patient participation in goal setting was essential to successful rehabilitation. These are consistent with clinician beliefs expressed in previous qualitative studies on goal setting in stroke rehabilitation (Leach et al., 2010; Parsons et al., 2018).

Despite universal recognition that the patient is at the forefront of the goal-setting process, clinicians in this study felt that patients typically selected long-term goals and that specific short-term goals were also necessary. This is consistent with a recent mixed-method systematic review of goal setting in stroke rehabilitation that suggested patients typically expressed hopes rather than goals, identifying broad, long-term functional aspirations, whereas clinicians generally identified short-term impairment-related goals (Sugavanam et al., 2013). Clinicians in the current study drew on their clinical expertise and research evidence to reframe a patient's goal into short-term steps towards the patient's long-term goals. The strategy of reframing patients' goals has been described as a means to communicate treatment rationale, to override patient goals (Parsons et al., 2018), or to prioritise goal qualities of being realistic or achievable within the timeframes of inpatient rehabilitation (Levack et al., 2011). Regardless of the motivation, reframing patient goals into shorter, more discrete goals requires the application of research evidence and clinician expertise regarding stroke impairment and recovery, and knowledge of the health service context applied to patients' overall hopes and goals (Prescott et al. 2015).

Team collaboration is essential for successful EBP engagement in clinical practice. Each team member brings a unique perspective and set of experiences to the process, shaped by their professional identity and culture (Hall, 2005). "EBP profiles", which include the attitudes, knowledge, and skill of an individual in relation to EBP, have been shown to differ between groups of allied health professionals (McEvoy et al., 2010; D. Upton & Upton, 2006), reflecting variance in professional training, organisational exposure, and professional culture (Wilkinson et al., 2012). Professional roles influenced clinicians' EBP engagement in this study, with differences in perspective and approach evident between professional disciplines. Despite these differences, the team found a way to collectively implement EBP through a shared team value (i.e., primacy of patient preferences, values, and goals), which is characteristic of good teamwork (Nancarrow et al., 2013). The benefits of this collective view were highly regarded. Clinicians welcomed the perspectives of other team members and felt that discussing research evidence, clinical reasoning, and patient preferences enhanced EBP engagement, improved their practice, and, ultimately, lead to better patient-centred care.

Limitations

The current study had some methodological limitations. A small sample of one interdisciplinary team at a single institution limits the transferability of the findings. This study did not explore the opinions of members of the broader team (e.g., doctors, nurses), and therefore, the data represents only the allied health members of the interdisciplinary team.

The principal investigator was a clinician at the same institution. This experience and training may have sensitised her to the study context. However, including two external researchers in the study enabled discussion of any assumptions made during the data analysis. Moreover, the longstanding relationship between the principal investigator and the study participants potentially enhanced participants' candour during the discussion.

The present study was an exploratory look at the interaction of EBP elements in an inpatient stroke rehabilitation context. Future research in an alternate setting, such as outpatient or community-based stroke rehabilitation, may potentially see different intersectionality of these elements, where patient values and preferences may be more salient. A comparison of the EBP process with different subsets of this population, such as stroke severity, may yield different findings. Further research involving the observation of clinical practice may clarify how clinicians negotiate the intersection of EBP elements.

CONCLUSION

This study demonstrated the intersection between EBP elements in stroke rehabilitation. The results showed that each of the elements was considered and contributed to care planning. However, patient preferences, values, and circumstances were the primary influence for clinicians. EBP was a dynamic process that changed over time and within contexts. Collaboration with the patient and between the members of the interdisciplinary team was essential to the delivery of care that truly integrated all three elements of the EBP approach.

KEY POINTS

1. The intersection of EBP elements is a complex and iterative process that is context dependent.
2. Patient values, preferences, and circumstances are the primary drivers of the EBP process.
3. Collaboration within the team, and between healthcare professionals and the patient is a vital component of a successful EBP approach.
4. Organisational support of *all* elements of EBP is necessary for the successful application of EBP in stroke rehabilitation.

DISCLOSURES

No funding was obtained for this study. There are no conflicts of interest which may be perceived to interfere with or bias this study.

PERMISSIONS

Ethical approval was obtained from the institutional research ethics board (reference number R19-020). Written informed consent was obtained from all participants. No permissions were required for the development of this manuscript.

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Challenges to Physiotherapy Practice in COVID-19 times

Thanks largely to Dr Li Wenliang, the world became aware of a new type of coronavirus, similar to severe acute respiratory syndrome (SARS), in early December 2019. It would eventually be named coronavirus disease 2019 or COVID-19 (World Health Organization, 2020a). As of 13 September 2020, COVID-19 had already infected approximately 28,919,000 people and was responsible for 924,619 deaths worldwide (World Health Organization, 2020b). Measures taken to restrict the spread of this virus, such as "lockdown" strategies, have created a multitude of difficulties in the healthcare system, including cessation or reduction of outpatient and home-care services, which in turn have made rehabilitation challenging. Consequently, the Chartered Society of Physiotherapy in the United Kingdom has predicted a "tsunami of rehabilitation needs", particularly for patients who have been ventilated in an intensive care unit (ICU) (Thornton, 2020). Since the focus of healthcare systems worldwide has shifted to the needs of COVID-19 patients, the medical and rehabilitation needs of non-COVID patients have also been compromised, and this situation has created inequity of healthcare access for a variety of people with disabilities and/or frailties (De Biase et al., 2020). Physiotherapy services have also been impacted. To overcome these challenges, changes are needed in healthcare delivery as well as the way we think and practice. A comprehensive policy, which addresses all issues related to COVID and non-COVID patients would be beneficial to ensure the needs of all patients are being met. Physiotherapists are also facing multiple barriers in their clinical practice, which they will continue to encounter. Some of the key factors which require consideration are as follows:

1. Protection of physiotherapists, not only to save lives but also to maintain the health of "working hands". This a primary concern, and World Physiotherapy has started an advocacy campaign to ensure the availability of personal protective equipment for all physiotherapists (World Physiotherapy, 2020).
2. Physiotherapy interventions: The experiences in Italy and China have taught the world about the importance of providing timely physiotherapy interventions (Vitacca et al., 2020; Lazzeri et al., 2020; Zhao et al., 2020). Because of the lack of randomised control trials, recommendations prescribed by various bodies should be followed, with individual modifications where required (Vitacca et al., 2020). Physiotherapy management should focus on the musculoskeletal system as well as the respiratory system, as both are affected by COVID-19. Attention should also be paid to post-ICU rehabilitation, as currently, this seems to be neglected. While rightly, the current emphasis is on saving lives, eventually the number of survivors impacted by COVID-19 will rise, necessitating an assessment of its long-term impact in terms of rehabilitation. Community-based care should be emphasised because, in upcoming months, the number of COVID-19 cases will continue to increase and care closer to home will become important.
3. Importance of physical activity: On a positive note, renewed importance has been given to exercise and physical activity, particularly to counter sedentary behaviours that have been promoted by "lockdown" (Srivastav et al., 2020). Anecdotal data suggest that there has been a surge of YouTube videos, television programmes and mobile apps related to structured exercise protocols. Instagram, Facebook and other social media platforms are also being used to spread this message. This is a healthy trend, but some deleterious effects, like an increase in the incidence of injury, have been reported, as often self-help video-based exercises are being performed without appropriate guidance. Hence prudence is advised.
4. Reorganisation of personnel and systems: Capacity building exercises need to be undertaken by physiotherapy departments. This should include short-term training courses about management strategies, and creating teams of trained professionals to deal with such a crisis. Also, staff numbers need to be increased, as ICU staff and other teams caring for patients with COVID-19 have to be separated from regular workers, although this can be managed via a structured rotation system too. Standard operating procedures have to be developed for equipment handling, and appointment systems should be adhered to in order to encourage and/or enforce social distancing norms. Orthopaedic physiotherapists need to revisit the evidence for hands-on treatment for some clinical conditions. Telerehabilitation is the need of the hour.
5. Effective communication and the sharing of information among professional members. This plays an important role in addressing common issues, hence, any barriers to the effective functioning of interdisciplinary teams must be removed.

The COVID-19 pandemic has changed the world. We too have to change and adapt. This change must be reflected from the mode of delivery to the methods of delivery. As healthcare professionals, physiotherapists have to strive to impart the best service to all patients, while keeping personal safety in mind. This may bring about much-needed change in understanding the importance of rehabilitation, which might lead to the development of standard operating procedures, an increase in finances and effective management which will benefit everyone (Wade, 2020). Healthcare professionals will not only endure, but will thrive, if they work together as an interdisciplinary team (Wade, 2020).

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