Advanced Physiotherapy Practitioners in the New Zealand health context: An exploratory case study

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Abstract

Background: Musculoskeletal complaints affect one in four New Zealanders, accounting for 25% of total annual health spending. Health Workforce New Zealand, a workgroup of the Ministry of Health, reviewed the rising healthcare needs of New Zealanders against the fiscal constraints of the economy and proposed recommendations for healthcare delivery. One recommendation included up-skilling physiotherapists and extending their scope of practice to work in collaboration with multidisciplinary teams to deliver future healthcare. These recommendations were based on international examples where the development of Advanced Physiotherapy Practitioner roles has been shown to reduce orthopaedic waiting lists and improve timely patient access to specialist care and services. Although Advanced Physiotherapy Practitioner roles were first piloted in New Zealand in 2002 and despite recommendations from the Health Workforce Force and Ministry of Health policies, it is unclear why these roles have not gained traction in New Zealand, where similar health care issues exist.

Aim: This study investigated the drivers and barriers to Advanced Physiotherapy Practitioner role development in the New Zealand context. A secondary aim was to assess the current work practices of clinicians working in these roles.

Method: An exploratory single embedded case study design was undertaken. Document analysis, qualitative survey data analysis, and semi-structured interviews were utilised as data sources. A purposive sampling strategy was used. Data were analysed using qualitative content analysis and triangulated to ensure rigour.

Results: The results of this current study identified several key drivers for Advanced Physiotherapy Practitioner role development in New Zealand. These were access to care, service needs, government drivers, fiscal constraints, legislative drivers, surgeon-led drivers to manage waiting lists, and profession-led drivers. Interviewees from our study identified that Advanced Physiotherapy Practitioner role development barriers relate to New Zealand's dual healthcare system with different funding streams split between the Ministry of Health and Accident Compensation Corporation. There were also barriers with a lack of recognition, lack of funding for the role, lack of training, lack of career pathway, lack of title recognition, inter-professional barriers, and intra-professional barriers. These barriers are currently greater than the drivers. This research suggests that addressing the barriers may enable the Advanced Physiotherapy Practitioner roles to be implemented in New Zealand to optimise their impact on musculoskeletal healthcare burden. Lastly, this study identifies that the Advanced

Physiotherapy Practitioner working practices in New Zealand are congruent with international research in terms of their clinical practice but are shaped by the health sector in which the clinician works.

Conclusion: Currently, the Advanced Physiotherapy Practitioner roles in New Zealand are ad-hoc and opportunistic, dependent on the reactive needs of the organisation. There is an identified niche for the Advanced Physiotherapy Practitioner role to improve patient outcomes, improve patient flow and add value to the clinical and operational demands of health care in the face of growing complexity, workforce shortages, and fiscal burden. Nevertheless, this research has explored the reasons for the limited uptake of the Advanced Physiotherapy Practitioner roles in the New Zealand context despite these strong drivers. These findings need to be considered by the stakeholders when considering the implementation of the Advanced Physiotherapy Practitioner roles in the New Zealand context. The future for Advanced Physiotherapy Practitioner roles in New Zealand appears promising due to recent changes in legislative scope. To ensure that this promise is realised, Advanced Physiotherapy Practitioner roles need to be tailored to meet New Zealand's unique healthcare drivers and reduce the barriers.

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Abbreviations

ACC	Accident Compensation Corporation
APA	Australian Physiotherapy Association
APP	Advanced Physiotherapy Practitioner
AUT	Auckland University of Technology
AUTEC	Auckland University of Technology Ethics Committee
BSMC	Better Sooner More Convenient Pathway
COP	College of Physiotherapy
CPA	Canadian Physiotherapy Association
CPD	Continuous Professional Development
CSP	Chartered Society of Physiotherapy
DHB	District Health Board
DHSc	Doctor of Health Sciences
ED	Emergency Department
ESP	Extended Scope Practitioner
GBD	Global Burden of Disease
GP	General Practitioner
HCPC	The Health and Care Professions Council
HPCA	Health Practitioners Competency Assurance
HWF	Health Workforce New Zealand
MoH	Ministry of Health
NHS	National Health Service
NZ	New Zealand
PBNZ	Physiotherapy Board of New Zealand
PNZ	Physiotherapy New Zealand
QCA	Qualitative Content Analysis
RA	Regulatory Authority
UK	United Kingdom
WCPT	World Confederation of Physical Therapy
WP	World Physiotherapy

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signature	07/06/2021 Date

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Chapter 1 Introduction

1.1 Introduction

This chapter aims to introduce the reader to the Advanced Physiotherapy Practitioner (APP) role development within the New Zealand (NZ) context. The first section provides background information to familiarise the reader with the APP role development and the relevant evidence to demonstrate the APP role's effectiveness. It then considers the terminology used to describe this role and explains the researcher's reflexive position and choice of the research topic. The international context for the APP role development is clarified, followed by an analysis of the NZ context and its healthcare systems. Lastly, it contextualises the research question, its aims, and its significance within the NZ healthcare landscape. It also provides an outline of the subsequent chapters.

1.2 Background

The Global Burden of Disease (GBD) study conducted by The World Health organisation quantifies the health loss from diseases and injuries worldwide. The GBD study from 1990 to 2016 demonstrates that the disease profile has shifted from communicable to non-communicable diseases such as musculoskeletal, diabetes, cancer, chronic respiratory, and cardiovascular conditions (Hay et al., 2017). The GBD study shows that musculoskeletal conditions increased from 43.9% of global disability-adjusted life-years in 1990 to 61.4% in 2016. Musculoskeletal complaints represent 12% of the non-communicable diseases in NZ (Ministry of Health, 2020b). Briggs et al. (2018) report that the most common musculoskeletal conditions that limit physical capacities and functional ability are back pain, neck pain, osteoarthritis, rheumatoid arthritis, and fractures. Musculoskeletal complaints affect one in four New Zealanders and account for 25% of NZ's total annual health spending (Bossley & Miles, 2009; Jones, 2018). Additionally, the NZ healthcare system is also burdened with rising costs driven by numerous factors. These factors include economic constraints, workforce shortages, health inequalities, a burgeoning older population with long-term and complex diseases, and new expensive technologies and medications (Deloitte, 2015). Amidst these challenges, healthcare funders need to deliver efficient, economical, and timely healthcare (Arthritis New Zealand, 2018; Bossley & Miles, 2009).

In the traditional healthcare models, the doctor was the key decision-maker in all areas of the patient pathway, from the first presentation, referral, and management to discharge. However, due to a shortage of this medical workforce and increasing referrals, patients are waiting longer to receive assessment and care (Aiken, Harrison, & Hope, 2009; McPherson et

al., 2006; Stanhope, Grimmer-Somers, Milanese, Kumar, & Morris, 2012). The need to improve access, reduce costs and offer more value to patients and funders of healthcare has prompted a rethink of the traditional models of health care delivery and consideration of alternative models of care (Aiken, Atkinson, Harrison, & Hope, 2007; Ludvigsson & Enthoven, 2012; Salmon, Humphreys, Price, Smith, & Heaton, 2017). Internationally, physiotherapists have been employed in an effort to reduce waiting times for medical consultations and improve the cost-effectiveness of services (Desmeules et al., 2012; Robarts, Kennedy, MacLeod, Findlay, & Gollish, 2008; Saxon, Gray, & Oprescu, 2014). Physiotherapists working in these roles have varied titles 'advanced physiotherapy practitioners,' 'extended scope practitioners,' 'expanded scope practitioners,' or 'clinical specialists.' This complexity in terminology is discussed in the next section.

According to Desmeules et al. (2012), physiotherapists who work in APP roles can reduce hospital waiting lists by providing patients with early access to specialised musculoskeletal care and free up surgeon time to assess patients requiring more advanced care. Physiotherapists have been shown to possess the clinical skills and capability required to act as first specialist assessors for musculoskeletal conditions by undertaking thorough assessment and triage in line with international clinical guidelines and recommendations (de Gruchy, Granger, & Gorelik, 2015; Desmeules et al., 2012; Durrell, 1996; Health Workforce New Zealand, 2011; Lefmann & Sheppard, 2014; Murphy, Blake, Power, & Fullen, 2013). APP clinicians have been able to request radiological investigations and blood tests autonomously and refer patients for appropriate specialist assessments, such as rheumatology and neurology (Durrell, 1996). Studies suggest that APPs are clinically in concordance with their medical counterparts, and they can manage the entire spectrum of care from triage to discharge (Akbari et al., 2008; Burn & Beeson, 2014; Byles & Ling, 1989; Hockin & Bannister, 1994; Marks, Comans, Bisset, & Scuffham, 2017; Thompson, Yoward, & Dawson, 2017). These roles have also shown a reduction in waiting times by 26%-87% (Blackburn, Cowan, Cary, & Nall, 2009; Razmjou et al., 2013; Schoch & Adair, 2012; Trostrup, Juhl, & Mikkelsen, 2020). In summary, research into APP roles suggests that instigating the APP role within a secondary or primary care framework allows health sectors to access clinically effective, cost-efficient services and to deliver appropriate healthcare and meet health targets (Hattam & Smeatham, 1999; Oakley & Shacklady, 2015; Oldmeadow et al., 2007).

1.2.1 Terminology

There is ambiguity around the terminology used to describe APP roles. The two most common terms used for physiotherapists working in this role are 'Advanced Physiotherapy Practitioner' (APP) and 'Extended Scope Practitioner' (ESP). These terms are often used interchangeably,

making recognition of roles, scopes of practice, and regulation around APP role challenging (Desmeules et al., 2012; Kersten et al., 2007). The term APP is mainly used to describe clinicians undertaking advanced practice *within* the profession's legislated scope of practice (Chartered Society of Physiotherapy, 2016a; Government of Western Australia, 2015). The term ESP primarily indicates that the practitioner undertakes 'role substitution' or 'role enhancement' of skills traditionally performed by other specialties. Extension to the scope of physiotherapy practice is dependent on the legislative support within the country in which the clinician practices and the local definitions of scopes of practice (Australian Health Workforce Advisory Committee, 2015; Australian Physiotherapy Association, 2009; Chartered Society of Physiotherapy, 2016a; Martinello, Bhandari, Santos, & Dinh, 2017). In the United Kingdom (UK), legislative sanctions have been progressively lifted to enable physiotherapists to practice to the full extent of their competency (Chartered Society of Physiotherapy, 2016a). APP in the UK can undertake aspects of extension of scope and no longer carry the title of ESP. In Canada and Australia, there are provincial and legislative restrictions; hence, the nomenclature varies. In Canada, these physiotherapists are called APP. Whereas in Australia, they can be referred to as APP, ESP, or expanded scope practitioner. This lack of clarity in terminology makes it very confusing to define the APP or ESP role, its exact scope of practice and compare it with international literature. Throughout this thesis, the term APP will be used, as this is the most prevalent term used internationally and by the Physiotherapy Board of New Zealand (PBNZ). This term will encompass both APP and ESP. The next section describes the reflexivity of the researcher to provide an insight into the choice of the research topic.

1.3 Reflexive statement

I am a physiotherapist with 35 years of experience. A majority of my experience relates to the musculoskeletal field of practice. Over the last three decades of my practice in four different countries, I have undertaken clinical, leadership, service development, and educator roles. My impetus to examine the APP role development within the NZ context originates from the roles I have established and practised in the UK and NZ. Practising as an APP in two London hospitals in the UK from the year 2000 until 2010, I undertook orthopaedic triage of patients with knee, hip, and spinal conditions, as well as for joint arthroplasty clinics. In my APP role, I assessed, diagnosed, and managed patients. My extension of scope included requesting pathology and radiology investigations and directly listing patients for surgery. The primary drivers for these services in the UK National Health Service (NHS) were providing timely care to patients, reducing waiting times, and meeting workforce shortages due to alterations in junior doctor hours and consultant contracts.

I have also established two APP roles in NZ. I have been practising as an APP in NZ for the last nine years, undertaking orthopaedic triage of spinal patients in a large public hospital. Within this role, I assess, diagnose, and request radiology and pathology investigations as appropriate. My extension of scope includes referrals for high-tech investigations. I refer patients for consideration of surgery or injections after discussion with the surgeon. During my employment as an APP within NZ, it was apparent that although few clinicians were working in such roles, there was no wider healthcare recognition for these roles or a structured accredited career framework, clinical pathway, or training to develop these clinicians. Thus, I began my journey to investigate what influenced or posed a barrier to the development of APP roles in NZ.

To provide a better understanding of the APP role, the section below describes the health systems of countries where this role has been established before positioning this research within the NZ context.

1.4 International Context

APP roles were initially developed in the UK, Canada, and Australia to address long waiting times to see specialist doctors for musculoskeletal conditions and elective surgical waiting times (Aiken et al., 2007; Desmeules et al., 2012). These three countries deliver government-sponsored universal health care, and citizens are entitled to have the option to purchase private health insurance. The UK has been through radical healthcare reforms due to the commissioning of services, waiting list initiatives, and modernisation of careers, which have created new integrated models that span boundaries between primary and secondary care (Sturgeon, 2014).

The UK has been the forerunner for developing the APP role (Blackburn et al., 2009). In the 1980s, there was a natural evolving of APP roles in the UK, initially due to the collaborative work with orthopaedic surgeons in the NHS in an attempt to manage long waiting lists (Byles & Ling, 1989; Durrell, 1996; Hattam & Smeatham, 1999; Hockin & Bannister, 1994). This innovative model of care demonstrated a way forward to manage orthopaedic waiting lists and free up surgeon time to perform more surgery. It was later underpinned by Department of Health policies and subsequent legislative changes, which are discussed in chapters four and six (Byles & Ling, 1989; Chartered Society of Physiotherapy, 2016a; Suckley, 2012).

In the UK, the APP roles are more prevalent in orthopaedics, rheumatology, and musculoskeletal settings than other sub-specialties within physiotherapy such as cardiorespiratory, neurology, or pelvic health (Burn & Beeson, 2014). Australia has developed

APP roles primarily in the Emergency Department (ED) and musculoskeletal settings (Anaf & Sheppard, 2007b; Bird, Thompson, & Williams, 2016; Crane & Delany, 2013; Stanhope et al., 2012). In Canada, APP roles have evolved in arthritis care management, joint arthroplasty, and orthopaedic triage (Aiken et al., 2007; Desmeules et al., 2012; MacKay, Veinot, & Badley, 2008; Napier, McCormack, Hunt, & Brooks-Hill, 2013; Norman, Jones, & Saunders, 2015). APP roles appear to have been initially created in musculoskeletal settings to manage orthopaedic waiting lists, and following their success, they have expanded into other specialities (Australian Health Workforce Advisory Committee, 2015). Globally, the APP roles appear to be established primarily as service delivery initiatives to target long waiting lists and provide timely intervention.

1.5 New Zealand context

The Social Security Act 1938 marked the universal entitlement to comprehensive, tax-financed health care in NZ. State-owned hospitals deliver public hospital services, while primary health services are provided by self-employed private practitioners (Ashton, Mays, & Devlin, 2005). The Labour government (1935-1949) also envisaged free primary health care, but General Practitioners (GPs) insisted on remaining independent; thus, the cost was subsidised by the government on a fee-for-service basis rather than salaries or capitation payments (Ashton et al., 2005; Cumming et al., 2014). Consequently, the health system in NZ is dichotomous, commonly described as a 'dual system,' in which hospital care is predominantly public-funded by the Ministry of Health (MoH) and primary care predominantly private, albeit subsidised by the MoH (Starke, 2010). This split system has contributed to the fragmentation of services, leading to disparities in accessing care (Gauld, 2009; Goodyear-Smith & Ashton, 2019).

New Zealand has another unique entity embedded within its healthcare delivery, that is, the Accident Compensation Corporation (ACC). The ACC was established in 1974, and it is the sole no-fault accident compensation scheme for both work and personal injuries sustained in NZ (McNaughton & McPherson, 2000). ACC is a quasi-government social insurance scheme funded by levies and government contributions for people who are not in paid work (McNaughton & McPherson, 2000). Patients covered by ACC for injury-related care have shorter waits for their specialist assessments and treatment than those not covered by the Act, as they can access care through the private sector (Accident Compensation Corporation, 2017, 2018). In contrast, non-accident-related musculoskeletal conditions such as osteoarthritis are managed through the public system and experience longer waiting times (National Health Committee, 2015). Non-accident musculoskeletal conditions such as low back pain, neck pain, or osteoarthritic joints are often chronic. They are often intensively investigated with

specialised investigations and incur inflated surgical intervention costs overloading the existing overwhelmed public healthcare system (National Health Committee, 2015).

The Physiotherapy New Zealand (PNZ) workforce review in 2018 highlighted that out of 5,133 physiotherapists registered with the Physiotherapy Board of New Zealand (PBNZ) in 2018, 25 percent worked in District Health Boards (DHBs), and 58 percent worked as primary care providers in private practice (Physiotherapy New Zealand, 2018). Physiotherapists in NZ appear to have two main funders of their services, the ACC and DHBs or the Ministry of Health (MoH) (Physiotherapy New Zealand, 2018). Physiotherapists who work for ACC primarily manage accident-related musculoskeletal cases. In contrast, physiotherapists working in the DHB work in different specialties such as musculoskeletal, cardio-respiratory, neurology, general surgery, and medicine. Broadly the musculoskeletal areas of practice in DHB include outpatient services, orthopaedic services, and emergency departments.

Currently, the Minister of Health provides leadership and has the overall responsibility for the health and disability system in NZ. The MoH, Health Workforce New Zealand (HWF), and other ministerial committees play an advisory role for the minister in regard to policy issues. The Health Strategy of NZ drives the DHB's activities, which administer three-quarters of the funding, engaging in planning, managing, purchasing, and providing health services for their district population by focusing on health targets. The health targets set by the Health Strategy and MoH are a set of national performance measures specifically designed to improve health services' performance, reflecting significant public and government priorities. One of the current health targets is directed towards patient access to elective surgeries (Ministry of Health, 2016c). Interestingly, these health targets do not include consideration of early adoption of conservative treatment and rehabilitation, which might reduce the burden of elective surgical and pharmaceutical costs (Baldwin, Briggs, Bagg, & Larmer, 2017). The health target, which defines the timeframes for patient access to elective surgery, directly impacts the orthopaedic service's key performance indicators, the principal surgical specialty that undertakes joint arthroplasty, spinal, and other elective surgery. By 2026 the number of hip and knee replacements is projected to increase by 84% and 183%, respectively, equating to a further 6,000 operations at an additional cost of over $90 million annually (Baldwin et al., 2017; Hooper, Lee, Rothwell, & Frampton, 2014). If the orthopaedic service fails to achieve this target, the DHBs are liable to pay fines for not meeting the key performance indicators (Hutton, 2016).

The Health Strategy identified that the cost of providing health services through the current healthcare model is unsustainable in the long term (Ministry of Health, 2016c). The treasury estimates that the percentage of Gross Domestic Product spent on healthcare will rise from 7%

in 2015 to 11% in 2060 if there are no changes made to existing funding structures and healthcare delivery models (Ministry of Health, 2016c). The treasury recommends that it is essential that new and sustainable ways to deliver services are found and that resources need to be invested to provide the best possible outcomes for people's health and wellbeing.

In 2009 the MoH introduced the '*Better Sooner More Convenient*' (BSMC) policy to forge collaborative pathways between primary and secondary care to deliver patient-centred, timely care (Ministry of Health, 2011). The HWF proposed an extension of the scope of practice for physiotherapy professionals to meet some of the health services' demands and ensure effective cost utilisation of resources (Health Workforce New Zealand, 2015). In summary, NZ's unique health care system, with its fiscal constraints and need to deliver timely, effective, and efficient healthcare to its citizens, lends itself to creating new models of care such as the APP roles.

1.6 Rationale for research

Health accounts for nearly 22% of the total governmental funding (Ministry of Health, 2016c). Musculoskeletal complaints represent 12% of the non-communicable diseases in NZ (Ministry of Health, 2020b). The current NZ public health care model is clearly struggling to meet its musculoskeletal health service targets of waiting lists times, and this could act as an initial driver for the APP roles. However, the need for such roles in the private sector is unclear. There are no current frameworks to provide clinical governance or support for these APP roles in the NZ context. The stakeholders, such as DHBs, designing these roles and seeking Ministry funding for innovative projects do not appear to possess clear-cut guidelines about the role and scope.

The research to date demonstrates that the core competencies, baseline skills of physiotherapists, and additional specialised training have enabled APP practitioners to perform additional extended tasks safely and effectively under medical directives (Dawson & Ghazi, 2004; Department of Health, 2007; Hattam, 2004). However, there appears to be a lack of recognised relevant professional or university programs or training modules to develop these extended or advanced skills in the NZ context.

In summary, NZ has the same issues as other countries with its rising healthcare costs, disparities in the management of long-term conditions, and increasing cost of expensive technologies and medications. It also has workforce shortages, as the other countries delivering a government-sponsored universal health system within its constrained funding envelope. Internationally, government bodies have seen fit to utilise the physiotherapy

workforce as one solution to meet the health targets for delivering effective and efficient, timely healthcare. Whilst NZ policymakers have suggested upskilling of the physiotherapy workforce for the same purpose; few physiotherapists are employed in these roles. This raises the question of why this is the case. To answer this, it is important to identify what barriers exist to the development of APP roles and what factors might facilitate their development in NZ healthcare.

1.7 Aims of Research

This research intends to answer the research question

'What are the drivers and barriers to the development and recognition of Advanced Physiotherapy Practitioner roles in New Zealand?'

This research question has two aims.

1. To identify the drivers for and the barriers against APP's formal recognition in NZ.
2. To describe the current work practices of the physiotherapists working in APP roles in NZ.

1.8 Significance of research

To the author's knowledge, this is the first study to explore the drivers and barriers to the development of APP roles in an NZ context. This research has the potential to identify the beneficial effects of APP roles on musculoskeletal healthcare delivery to New Zealanders. This research has the potential to influence change in areas of advanced physiotherapy practice by identifying the current practices of clinicians working in musculoskeletal APP roles and highlighting their training needs. This research might be of interest to clinicians embarking on APP roles as it explores the placement (niche) for APP roles in NZ. Awareness of the APP role's potential benefits through decreased waiting times for patients and the implementation of appropriate, timely care may enable healthcare funders to consider APP roles as potential solutions to meet health service needs. Therefore, the results of this research could be valuable to the stakeholders, registration boards, and health professionals considering the development and implementation of APP roles in an NZ context.

1.9 Structure of the Thesis

The first chapter provided background information about APP role development within the international context. It then provided the rationale for and potential significance of this research in an NZ context.

Chapter two provides a review of the relevant academic literature on APP roles summarising and synthesising the existing body of knowledge. It examines the varied facets of the APP role by considering the evidence that has explored the effectiveness and impact of service delivery. Research that has examined the drivers for and barriers against the APP role is presented. The review also explores patient and stakeholder views, training, and governance implications for the role. The chapter concludes by identifying the research focus that it seeks to answer.

Chapter three provides a theoretical insight into the research paradigms, philosophical construct, and philosophical position shaping the research design. It then discusses the case study methodology adopted to conduct the research and the reasoning behind the research strategy's choice. It discusses the methods chosen to conduct the research and presents the analysis of the interviews, qualitative survey data, and document review followed by triangulation of data. The ethical compliance and rigour within the study are also presented to strengthen the study's dimensions.

Chapters four, five, and six include the research's key findings discussing the identified sub-categories and categories from all data sources. Chapter four discusses the category *workforce development*, which relates to strategic drivers for APP role development, such as national directives, policies, and frameworks, to embed the creation of APP roles. Chapter five examines category *service development*, which enables health care organisations to meet governmental drivers of improving patient care outcomes, enhancing patient experience, and managing timeliness of care. Chapter six explores the category of *professional development*, which seeks to emphasise the physiotherapy profession's views on the APP roles at a professional development level.

The final chapter, seven, discusses the key findings of the study and compares them with literature. By evaluating the research question, this chapter pulls the whole thesis together. This final chapter also draws conclusions about the research question, fulfilment of the research objectives, and implications for practice. The study identifies access to care, service needs, government drivers, fiscal constraints, legislative drivers, surgeon-led drivers, and profession-led drivers for the development of APP roles in NZ. It concludes that despite strong drivers, there is limited uptake of APP roles in NZ due to lack of recognition, lack of accredited career pathways, and lack of training for APP roles. Additionally, NZs unique 'dual' health system, which shapes its clinicians' practices and funding streams, represents another key barrier. The future for APP roles in NZ appears to be promising, but work needs to be done around breaking down barriers and consolidating the drivers.

Having outlined the overall structure of the thesis and explained the rationale for the research question and the structure, the thesis will now move to Chapter 2, where, as outlined earlier, the literature review for this study will be presented.

Chapter 2 Literature review

2.1 Introduction

This chapter examines the available literature to summarise and synthesise current knowledge about the APP roles providing a baseline for what is known so far. It investigates the varied facets of the APP role by examining it both in the international and NZ context. Following this, it considers the evidence that has explored the effectiveness, impact of service delivery, drivers, and barriers for the APP role. The review also explores patient and stakeholder views, training, and governance implications for the role. The current chapter begins by describing the method of search and then reports the search results. The results are organised into relevant categories to provide a conceptual overview of the research topic.

2.2 Method

2.2.1 Choice of review method

A systematic review and narrative review are the two most common literature reviews (Cronin, Ryan, & Coughlan, 2008). Systematic reviews are considered the gold standard, credible, authoritative sources of evidence (Cognetti, Grossi, Lucon, & Solimini, 2015). A systematic review is placed higher in the hierarchy of secondary research evidence and assumed to be the pinnacle of evidence due to its methodological comprehensiveness, criterion-based selection of relevant evidence, reduced bias, and narrow focus of research question (Collins & Fauser, 2005; Davies, 2019). Nonetheless, a systematic review approach may oversimplify the answers to complex queries (Carr-Hill, 1998; Malterud, 2001). To meaningfully analyse a multi-faceted topic, the reviewer needs to incorporate a broad range of strategies, knowledge sources and undertake multilevel interpretation using intuitive knowledge, creativity, and judgement (Collins & Fauser, 2005; Petticrew et al., 2013).

Narrative reviews are comprehensive as they synthesise and critique a varied range of research interpretively (Greenhalgh, Thorne, & Malterud, 2018; Malterud, 2001). Collins et al. (2015) stated that the strength of a narrative review lies in its broad coverage and situational choices about the inclusion of evidence; on the other hand, the rigour of a systematic review was essential for predicting effectiveness. The authors, therefore, recommend balancing the strengths of both systematic and narrative research. Greenhalgh et al. (2018) concur that narrative review is a different but potentially complementary form of analysis that sits alongside the systematic review, and the authors suggest a re-evaluation of narrative review to

avoid further research waste. A narrative review of the current literature was undertaken to investigate the complexity of the multi-faceted APP role.

2.2.2 Search strategy

Literature was accessed for the narrative review by systematically searching journals, textbooks, webinars, conference proceedings, and electronic databases covering health sciences and medicine. Literature was initially reviewed in 2017 and updated throughout the Doctor of Health Science (DHSc) journey, concluding February 2020. Librarians specialising in health sciences were consulted to assist with the search to ensure that the search was robust and comprehensive. The search terms and strategies are detailed in Appendix 1.

Preliminary searches and repeated scoping reviews were undertaken with the librarian in early 2017 to identify and refine keywords and understand the research topic to design the research question. Due to the differences in terminology for APP, search terms such as “extended scope practitioner,” “clinical specialists,” and “physician assistant” were used. The resulting citations were screened by title and abstract according to the fundamental concepts embedded within the APP role: “clinical effectiveness,” “cost-effectiveness,” “drivers,” “barriers,” and “governance.”

Assistance was also sought from the Auckland University of Technology (AUT) librarian, and an initial search was undertaken in July 2018. The last search was conducted in February 2020. Studies for the research were identified by searching electronic databases (CINAHL, MEDLINE, SPORTDiscus, EBSCO, Science Direct/ Elsevier, Wiley/ Crossref, and Google scholar) relating to the research question and its aims. A list of keywords relevant to each concept was generated, and a search was performed using Boolean operators and truncation. The key terms used in the search and repeated across the databases were “advance*” OR “practi*” OR “ext* scope*” OR “ext* pract*” OR “physiotherapy*” OR “physical therap*” OR “physical therapists” OR “physio” OR “advanc*” OR “ext* scope*” OR “clinical specialist” OR “physical therap*” OR “physician assistant*.”

The search was further expanded to include relevant professional bodies of countries by using titles of the professional bodies or legislative bodies directly as keywords, accessing their professional websites, and reading through their position statements and publications. Professional bodies were chosen where the APP role is currently well established or being developed, such as the: Australian Physiotherapy Association (APA), Chartered Society of Physiotherapy (CSP), Canadian Physiotherapy Association (CPA), Physiotherapy New Zealand (PNZ), and World Confederation of Physical therapists (WCPT). The PBNZ, the legislative body

of NZ, was also checked. Additional articles from the doctoral candidate's database were also included in the literature review. Duplicate citations were removed from the search results. Titles and abstracts of citations were screened against the inclusion/ exclusion criteria. Full texts of articles that appeared to meet the eligibility criteria were retrieved through relevant databases, hand-searching, or inter-library loans. The reference lists in articles were hand-searched for additional papers. Data and ensuing categories were extracted.

Inclusion-Exclusion criteria

The inclusion/ exclusion criteria refined the search to fit the parameters of the research question.

Inclusion criteria

Full-text English language articles were selected. Research that contained physiotherapists, APP, and/or ESP, and/ or clinical specialists were included to ensure that all findings related to the physiotherapy profession and not to other health practitioners. Literature relating to APP roles in other professions was excluded; however, if they also discussed APP or ESP roles in physiotherapy, this was included. Research that included concepts embedded within APP roles such as the advanced or extended scope of practice, effectiveness (diagnostic agreement between APP and medical colleagues, the cost-effectiveness of service delivery, impact on waiting lists), stakeholder views, training, drivers and, barriers to the APP role development, and clinical and legislative governance was included.

Exclusion criteria

Duplicates of articles were removed, and literature relating to APP roles in other professions were excluded.

2.3 Results

With the initial search strategy, articles about APP practice totalled 382. After applying the inclusion and exclusion criteria, 46 articles were retained. Out of the retained papers, ten were systematic reviews (Desmeules et al., 2012; Hussenbux, Morrissey, Joseph, & McClellan, 2015; Kersten et al., 2007; Marks et al., 2017; McPherson et al., 2006; Oakley & Shacklady, 2015; Saxon et al., 2014; Stanhope et al., 2012; Thompson et al., 2017; Trostrup et al., 2020), two were randomised control trials (Daker-White et al., 1999; Samsson, Bernhardsson, & Larsson, 2016) and one was a Delphi study (Suckley, 2012). Twenty-five primary studies were retained, and hand-searching reference lists of retrieved articles identified eight other studies. See Appendix 2 for the literature review table, which includes authors, research aims, methods, results/conclusions and strengths and limitations of each study. Twenty-three publications and

position statements of professional and legislative bodies were retained. These publications and position statements were included in the document analysis in chapter three.

2.3.1 Systematic reviews

Seven systematic reviews evaluated the APP's role in musculoskeletal settings (Desmeules et al., 2012; Hussenbux et al., 2015; Marks et al., 2017; Oakley & Shacklady, 2015; Stanhope et al., 2012; Thompson et al., 2017; Trostrup et al., 2020). Two systematic reviews examined the evidence for APP roles for varied allied health professionals and included physiotherapy (McPherson et al., 2006; Saxon et al., 2014). Five systematic reviews studied several aspects of the APP roles (Hussenbux et al., 2015; Kersten et al., 2007; Marks et al., 2017; Thompson et al., 2017; Trostrup et al., 2020).

Hussenbux et al. (2015) explored intermediate care pathways and evaluated the APPs effectiveness. Kersten et al. (2007) investigated the drivers and perspectives of extended scope practitioners, whereas Marks et al. (2017) studied the substitution of doctors with physiotherapists in the management of musculoskeletal disorders. Thompson et al. (2017) focused their review on APPs decision-making and clinical outcomes in musculoskeletal care, analysing qualitative and quantitative studies. In contrast, Trostrup et al. (2020) compared the diagnostic assessment undertaken by an APP with an orthopaedic surgeon. Stanhope et al. (2012) and Saxon et al. (2014) updated previous systematic reviews. Six systematic reviews originated in the UK, two from Australia, one each from Denmark and Canada.

The quality of systematic reviews was not reviewed in the analysis process as this was a narrative review. All systematic reviews discussed the low methodological quality of studies, scarcity of high-quality research, and highlighted the need for robust research to underpin the APP roles. However, four high-quality studies supported the clinical efficacy of the APP role (Desmeules et al., 2013; Dickens, Ali, Gent, & Rees, 2003; MacKay, Davis, Mahomed, & Badley, 2009; Razmjou et al., 2013).

2.3.2 Other articles

Out of the two randomised control trials, the Daker-White et al. (1999) trial evaluated the clinical and cost-effectiveness of specially trained physiotherapists in the assessment and management of defined referrals to orthopaedic outpatient clinics. Whereas Samsson et al. (2016) assessed patients' perceived quality of care in a physiotherapist-led orthopaedic triage in primary care, comparing it with the standard practice of orthopaedic surgeons in Sweden. The Delphi consensus study explored core clinical competencies of the APP working in

musculoskeletal interface clinics based in primary care by sampling an expert group of stakeholders and APPs (Suckley, 2012).

Early seminal descriptive studies that described the musculoskeletal APP roles appear to originate in the UK (Byles & Ling, 1989; Weale & Bannister, 1995; Weatherley & Hourigan, 1998). As the APP roles seemed to demonstrate impact on surgical waiting lists, there was an increased uptake and creation of APP roles in Canada and Australia, which have similar universal government-funded healthcare as the UK (Brismée et al., 2018; de Gruchy et al., 2015; Desmeules et al., 2012; Hussenbux et al., 2015; McPherson et al., 2006; Saxon et al., 2014; Stanhope et al., 2012; Thompson et al., 2017). Some research has been conducted by Swedish and Danish groups, albeit on a smaller scale (Samsson et al., 2016; Trostrup et al., 2020). However, only one narrative review which investigated the impact of APP roles on health care efficiency, service design, and perceptions of consumers of APP role has been published in NZ (Williams, Stotter, Hefford, Warren, & Darlow, 2019). This singular review highlights the dearth of peer-reviewed literature on APP roles in the NZ context.

The majority of literature on the APP roles highlights that these roles are more prevalent within musculoskeletal specialties than any other subspecialties (Kersten et al., 2007). These musculoskeletal practitioners appear to work across a spectrum of health care ranging from secondary, intermediate to primary care (Candy, Haworth-Booth, & Knight-Davis, 2016; Goodwin & Hendrick, 2016; Hattam & Smeatham, 1999; Hockin & Bannister, 1994; Hussenbux et al., 2015). Most roles seem to be positioned in secondary care; however, recent evidence from the UK describes the substitution of primary care GPs with APPs (Goodwin & Hendrick, 2016).

Analysis of literature reveals an increased focus on some elements of APP role rather than others. To provide a narrative overview of the current literature, elements covered within the APP role have been grouped into six categories: 1) Effectiveness of APP roles which examines clinical effectiveness, cost-effectiveness, and impact on waiting lists. 2) Stakeholder views, 3) Training, 4) Drivers, 5) Barriers, and 6) Clinical and legislative governance.

2.4 Effectiveness

Internationally, it appears that the musculoskeletal APP role was developed in response to government drivers to reduce orthopaedic outpatient waiting lists and decrease surgical waiting times (Desmeules et al., 2012; Desmeules et al., 2013; Razmjou et al., 2013; Trostrup et al., 2020). Due to the extensive variation between the roles and service models, demonstrating the clinical quality and cost-effectiveness of APP roles has been challenging

(Griffiths, 2012). Quality of life indicators cannot be used to assess the impact of triage clinics, as patients are only seen once. Griffiths (2012) suggested that reviewing diagnostic agreement, impact on waiting lists, surgical conversion rates, and cost-effectiveness are more appropriate ways to measure the effectiveness of physiotherapists working in these APP roles.

2.4.1 Clinical effectiveness

Several studies have analysed diagnostic agreement in APP roles by appraising their competencies (Marks et al., 2017; Oldmeadow et al., 2007; Trompeter, Shaikh, Bateup, & Palmer, 2010), clinical practice (Burn & Beeson, 2014; Gardiner & Turner, 2002), clinical reasoning (Kerridge-Weeks & Langridge, 2016; Langridge, Roberts, & Pope, 2015), diagnostic and investigative accuracy (Burn & Beeson, 2014; Moore et al., 2005; Rabey, Morgans, & Barrett, 2009), and ability to accurately refer patients for surgery and treatment (by comparing practices of APP and orthopaedic surgeons) (Burn & Beeson, 2014; Rabey et al., 2009). Ten systematic reviews (Desmeules et al., 2012; Hussenbux et al., 2015; Kersten et al., 2007; Marks et al., 2017; McPherson et al., 2006; Oakley & Shacklady, 2015; Saxon et al., 2014; Stanhope et al., 2012; Thompson et al., 2017; Trostrup et al., 2020) and six primary studies evaluated the effectiveness of APP roles in a variety of health settings (Burn & Beeson, 2014; Goodwin & Hendrick, 2016; Hattam, 2004; Kerridge-Weeks & Langridge, 2016; McClellan, Greenwood, & Benger, 2006; Oldmeadow et al., 2007). Some systematic reviews with high methodological quality studies concluded that APPs have comparable diagnostic concordance with orthopaedic surgeons and medical doctors in 68% to 96% of cases, and APP managed 72% to 97% of referrals (Desmeules et al., 2012; Hussenbux et al., 2015; Marks et al., 2017).

This section examines the clinical effectiveness between the APP and orthopaedic surgeon through diagnostic agreements, treatment recommendations, and onward referrals.

Diagnostic agreement

Desmeules et al. (2012) undertook a systematic review that analysed 16 studies that explored aspects in APP role such as 1) communication of medical diagnosis, 2) triaging by physiotherapist or specialist for consultation or surgery, 3) ordering imaging or laboratory investigations, 4) conservative treatment recommendations, and 5) onward referral. This systematic review assessed advanced physiotherapy practice in patients with musculoskeletal disorders in various settings, including orthopaedic clinics, emergency departments (EDs), and a military hospital. These studies were conducted in countries with nationalised health settings, such as Canada, UK, Australia, and Ireland. The APP roles varied depending on the country and their clinical settings. The quality within the studies was wide, ranging from 25% to 93%, with only 43% of studies reaching or exceeding a score of 70% on the methodological

quality rating scales. The findings of their review concluded that the APP could provide equivalent or better than traditional care when compared to orthopaedic surgeons in terms of diagnostic accuracy, treatment effectiveness, patient satisfaction, use of healthcare resources, and economic costs (Desmeules et al., 2012). Another primary study by Desmeules et al. (2013) also reported that 88% of diagnosis and triage recommendations made by the APP for patients with hip and knee disorders were comparable with the orthopaedic surgeons.

Trostrup et al. (2020) systematically reviewed the effect of APP assessment in diagnostic settings, cost of diagnostic assessment, and patient and GP satisfaction with the APP role. The authors evaluated one randomised control trial and 31 observational studies. Data collected included author, year and country, study design, the number of participants, affected body part, reported study outcomes, and main results. Two authors used Scottish Intercollegiate Guidelines Network 50 checklist to evaluate bias. Studies that focussed on a diagnostic agreement for assessments performed by APP compared to orthopaedic surgeons concluded that the agreements ranged from 65% to 100% (Aiken & McColl, 2008; Desmeules et al., 2013; Dickens et al., 2003; Razmjou et al., 2013). The overall percentage of diagnostic agreement between the APP and orthopaedic surgeons was similar for high and acceptable quality methodological studies ranging from 76% to 93% for high-quality studies and 65% to 92% for acceptable studies. One low-quality study had 100% diagnostic agreement.

Thompson et al. (2017) reviewed literature systematically, emphasising the decision-making process, patient/clinician interaction, and clinical outcomes. The authors used a mixed-method synthesis approach to synthesise 22 quantitative and three qualitative studies in their systematic review. Their results showed high patient satisfaction with the APP role, support for APP listing patients for orthopaedic surgery, a high positive correlation of decision-making between APP and orthopaedic surgeons, and evidence of a positive impact on patient outcomes. The qualitative themes reflected the importance of the clinician's decision-making, interpersonal skills, and their role in patient education.

Marks et al. (2017) reported that stakeholders keen to introduce APP roles wanted evidence about the impact of using a physiotherapist for role substitution in terms of safety, efficacy, and economic value. The authors concluded in their systematic review that no significant or adverse effects were reported from role substitution. Goodwin and Hendrick (2016) also assessed the role of first contact practitioners in GP surgeries in the UK and reported that APPs were safe and clinically effective. No evidence of adverse reactions or harmful impacts was noted to the public or health system.

Treatment recommendations

Studies that evaluated the treatment recommendations made by APPs concluded that APPs were in agreement with the orthopaedic surgeons and doctors (Desmeules et al., 2012; Hussenbux et al., 2015; Marks et al., 2017; Thompson et al., 2017; Trostrup et al., 2020). Studies that compared the APP to orthopaedic surgeons while comparing arthroscopy, medical imaging, or surgical findings stated that the results were comparable as agreements ranged from 52% to 88% for APP assessment and 37% to 92% for orthopaedic surgeon assessments (Aiken & McColl, 2008; Ashmore, Smart, O'Toole, & Doody, 2013).

Marks et al. (2017) undertook a systematic review of doctors' substitution with physiotherapists to manage common musculoskeletal disorders and reported that physiotherapists made similar diagnostic and management decisions compared to the orthopaedic surgeons. Studies on diagnostic concordance between the physiotherapist and orthopaedic surgeons showed that the physiotherapist and orthopaedic surgeon had 90% concordance in diagnosis and 75% accuracy compared to definitive diagnostic methods; they also had 87% agreement in treatment recommendations (Aiken & McColl, 2008). The analysis on an agreement between clinical diagnosis and MRI findings produced a clinical diagnostic accuracy of 74.5% for ESP, 80.8% for orthopaedic surgeons, and 35.4% for non-orthopaedic providers (Moore et al., 2005).

Onward referrals

Seven systematic reviews and one primary study that assessed the suitability of onward referrals for specialist or surgical opinion concluded that APPs were comparable to the orthopaedic surgeons and medical doctors (Desmeules et al., 2012; Hussenbux et al., 2015; Kerridge-Weeks & Langridge, 2016; Marks et al., 2017; McPherson et al., 2006; Stanhope et al., 2012; Thompson et al., 2017; Trostrup et al., 2020). Three studies that reviewed the appropriateness of surgical conversion rates suggested that APP was effective in identifying suitable surgical candidates, and nearly 79% to 89% of the total numbers referred to orthopaedics were suitable for surgery (Hattam, 2004; Rabey et al., 2009; Wood, Boszczyk, Dunstan, & Hendrick, 2016).

Kerridge-Weeks and Langridge (2016) reviewed 100 spinal patients consecutively referred from February to April 2013 to an APP spinal triage clinic. The purpose of their study was to determine if APP could allocate patients into distinct diagnostic triage commensurate with national and international guidelines. Their second aim was to describe the APP’s clinical decision-making. Patient demographics, clinical diagnosis, and triage categories selected for each patient were recorded. Any subsequent investigations, onwards referral to the consultant

was recorded. The findings from this study showed that APP independently managed 69% of patients. Thirty percent of patients were referred to the consultant, out of which 12 underwent intervention representing a conversion rate of 40% for spinal triage. This study's lower surgical conversion rate is reflective of spinal triage activity in contrast to activity evaluating hip or knee joint triage.

Hussenbux et al. (2015) and Stanhope et al. (2012) systematically assessed and concluded that APPs were accurately able to identify appropriate surgical candidates. Hussenbux et al. (2015) and Trostrup et al. (2020) systematically assessed and reported that APPs managed more patients independently and referred fewer patients to surgery. Trostrup et al. (2020) summarised that the surgical conversion rate of patients triaged by an APP was 25% to 91%. Whereas, Hussenbux et al. (2015) identified that 72% to 97% of patients could be managed entirely within intermediate care with a 20% to 60% resultant reduction in orthopaedic referral rate. In their randomised control trial, Samsson et al. (2016) also reported a higher selection of accuracy for onward referral by APP as compared to GPs. Data from these studies appear to suggest that the APP's choice of management options is comparable to the medical doctors and their onward referrals to other specialities are appropriate.

In summary, the studies presented so far provide important insights into the APP role's advanced scope aspects, demonstrating their clinical skills, competencies, and diagnostic accuracy. They suggest high levels of diagnostic agreement between the APP and orthopaedic surgeons. However, the qualities of studies included in the systematic reviews were variable, and there were a limited number of high-quality studies evaluating the APPs clinical effectiveness. The reasons for this are: 1) inconsistencies with the use of titles describing the APP roles, 2) lack of clarity on APP roles, 3) lack of clarity on APP training and tasks undertaken, 4) lack of validated criteria used for diagnostic accuracy, 5) lack of clarification on whether the orthopaedic surgeon and the APP assessed the same cohort of patients, and 6) variations of models of care. The resultant generalisation can also be questioned as all included studies were performed by a single APP and/or a single orthopaedic surgeon. This lack of methodological robustness makes it difficult for a researcher to evaluate research. In conclusion, although there was a lack of high methodological quality studies, all the highest-quality studies appeared to support the APP's clinical effectiveness.

2.4.2 Cost-effectiveness

Due to continuous funding pressures in public health, funders evaluate models of care to optimise the use of resources and manage demand (Burn & Beeson, 2014). Therefore, cost-effectiveness forms an integral part of a business case proposal in the development of APP

roles. Nevertheless, there are very few studies that have analysed the actual cost-effectiveness of APP roles (Belthur, Clegg, & Strange, 2003; Burn & Beeson, 2014; Comans, Raymer, O'Leary, Smith, & Scuffham, 2014; Daker-White et al., 1999; Trostrup et al., 2020). One systematic review and two primary reviews, which assessed the cost of physiotherapy-led triage clinics versus orthopaedic surgeon-led clinics, concluded that these roles were cost-effective (Belthur et al., 2003; Burn & Beeson, 2014; Trostrup et al., 2020). However, they established that these studies were difficult to generalise as they each used unique methods to evaluate their costs.

Trostrup et al. (2020) systematically assessed the cost-effectiveness of the APP roles and concluded that the healthcare cost savings were 27%-49% following the implementation of an APP role. The authors identified two studies as high methodological quality studies (Comans et al., 2014; Daker-White et al., 1999). Comans et al. (2014) study is the first paper to propose an economic model such as the Markov model to compare traditional orthopaedic services in a public hospital to a physiotherapist–led service in the management of three common orthopaedic conditions. Their findings showed that the physiotherapy-led service remained cost-effective over a range of one-way sensitivity analysis, and the service was likely to be cost-effective.

Daker-White et al. (1999) undertook a randomised control trial that evaluated the effectiveness and cost-effectiveness of specially trained physiotherapists in assessing and managing defined referrals to hospital orthopaedic departments. These authors concluded that APP was as effective as sub-orthopaedic surgeons (post- Fellowship junior staff and clinical assistant orthopaedic surgeons) in both the initial assessment and management of new referrals to outpatient orthopaedic departments, and they generated lower initial direct hospital costs. In their opinion, the lower costs were attributed to APPs generating less specialised investigations and onward orthopaedic reviews (Daker-White et al., 1999). Two other studies evaluating the efficiencies and the lower costs associated with these roles echoed that in addition to the lower referral rates for investigations and orthopaedic opinion, there was an element of lower salaries of APP clinicians in contrast to their colleagues in the medical profession (Gardiner & Turner, 2002; Morris et al., 2011).

Belthur et al. (2003) conducted an audit to assess the cost-effectiveness of APP clinics in paediatric orthopaedics. The authors carried out a cost-effective analysis by comparing the costs per patient managed in the APP clinic to the cost per patient managed in a consultant clinic. All costs were calculated by gathering accurate information on cost per grade from the various directorates involved. It was estimated that each consultant saw 12 new patients, and the APP saw six new patients. The cost of the infrastructure was the same for both clinics. This

study revealed that the average cost per patient managed in the APP clinic was approximately £9.67, compared with £16.26 in the consultant clinic. More importantly, 82 consultant sessions were saved over three years, potentially providing the consultant time to assess more complex and urgent cases in the outpatient department (Belthur et al., 2003).

Burn et al. (2014) conducted the first known study to look at cost-effectiveness across the patient pathway. The pilot study analysed the cost of two processes, one a paper triage and the second a face-to-face appointment with the APP. Cost comparisons were calculated utilising appointment costs (as a unit cost) across patient pathways, unlike the appropriateness of diagnostics requested or appropriateness of referrals as previously investigated. The tariff for consultant orthopaedic new and follow-up appointments was used as a baseline cost. These were compared against the cost of an APP new and follow-up appointment across the patient pathway (as calculated by cost of service for one year including all on costs and divided by appointments as there was no national or agreed on local tariff for APP appointments). This study considered the complexity of analysing cost-effectiveness within the APP role and its impact on the specialty. It concluded that within the small sample surveyed, there were cost efficiencies along the pathway (Burn & Beeson, 2014).

In summary, the studies presented so far appear to indicate that APP roles' cost analysis is complicated due to its variability and complexities. Cost-effectiveness studies seem to pose challenges as a direct cost comparison between orthopaedic clinics and APP clinics cannot be easily undertaken. Based on just salary comparisons, an APP clinic appears to be cheaper than a consultant clinic, as it does not account for inherent variables embedded within the consultant clinic setup. It also does not consider the time allocation of the respective clinician to patients. To enable the healthcare funders to make informed choices of cost-effective care, more studies are needed to evaluate the actual cost of employing an APP and gauge their efficiency, value, and impact on health care resources.

2.4.3 Impact on waiting lists

The majority of studies examining drivers for the inception of APP roles cite that these roles have been established to target long waiting lists (Desmeules et al., 2012; Durrell, 1996; Hattam, 2004; Oldmeadow et al., 2007; Sephton, Hough, Roberts, & Oldham, 2010). Three systematic reviews and one primary study evaluating the waiting times for initial orthopaedic assessment for either the APP or orthopaedic surgeon showed a reduction by 26%-87% (Hussenbux et al., 2015; Marks et al., 2017; Razmjou et al., 2013; Trostrup et al., 2020). Trostrup et al. (2020) reported a 26% to 87% reduction in initial waiting times for APP clinics and stated that 34% to 99% of patients could be managed independently. Hussenbux et al.

(2015) systematically assessed and showed a significant reduction of wait times due to the implementation of APP clinics in intermediate care from 50 weeks to five weeks. Marks et al. (2017) also reported shorter waiting times for APP compared with doctors in general practices. Patient satisfaction surveys and outcome measures revealed that APP as an autonomous practitioner could manage between 30%-85% of routine patients referred to the orthopaedic clinic (Akbari et al., 2008; Burn & Beeson, 2014; Byles & Ling, 1989; Hockin & Bannister, 1994) and 41%-54% patients referred to spinal clinics (Hourigan & Weatherley, 1994; Hourigan & Weatherly, 1995).

Razmjou et al. (2013) undertook a prospective study that examined the role of APP through agreement with the orthopaedic surgeon on 1) diagnosis and management of shoulder patients referred to a tertiary care centre, 2) waiting times, and 3) satisfaction with care. A modified and validated version of the *Visit-Specific Satisfaction Instrument* was used to assess satisfaction in seven domains. Kappa (k) coefficients and bias- and prevalence-adjusted kappa (PABAK) values were calculated, and strength of agreement was categorised. Wait time and satisfaction data were examined using non-parametric statistics. The authors concluded that compared to the orthopaedic surgeon, the waiting times for APP assessment were significantly shorter ($p < 0.001$) and resulted in a significant reduction over three years. Agreement on major diagnostic categories varied from 0.68 (good) to 0.96 (excellent) and agreement on indication for surgical intervention was 0.62 -0.88 (good). The authors concluded that using APP reduced waiting times without compromising patient management and satisfaction.

Increased waiting times for specialist care are assumed to equate to increased cost for the health service (Saxon et al., 2014) and chronicity, which compounds its social and economic impact (Maddison et al., 2004). Any initiative directed towards these variables would likely impact the cost and chronicity, yet studies focusing solely on these two variables are very sparse. Nevertheless, studies that evaluated the waiting times for APP compared with a consultant or orthopaedic surgeon demonstrated that these waits were shorter for the APP (Desmeules et al., 2012; Hussenbux et al., 2015). APPs employed as first contact practitioners in GP surgeries in the UK to assess musculoskeletal patients also appear to shorten the patient's pathway and achieve more streamlined care in a timely manner (Goodwin & Hendrick, 2016).

In summary, these studies suggest that the APP role impacts the waiting list. An APP-led clinic has the potential to deliver timely care to patients, thereby improving the patient’s health outcomes. These roles have the potential to free up consultant time to assess patients requiring specialist opinion and intervention.

2.5 Stakeholder views

Understanding stakeholder perspectives to APP role development is crucial as it directly impacts their health outcomes or working practices. Three systematic reviews, one randomised control trial, and four primary studies evaluating stakeholder views reveal stakeholder views to be wide-ranging from satisfaction with service delivery to rating these roles as cheap generic substitution of skills (Anaf & Sheppard, 2010; Desmeules et al., 2012; Marks et al., 2017; McClellan et al., 2006; Milligan, 2003; Reeve & May, 2009; Samsson et al., 2016; Trostrup et al., 2020). Studies exploring patient satisfaction with APP roles highlighted that the patient satisfaction rates with these roles were high at approximately 88% to 89%. (Anaf & Sheppard, 2010; Byles & Ling, 1989; Desjardins-Charbonneau, Roy, Thibault, Ciccone, & Desmeules, 2016; Hourigan & Weatherley, 1994; Kennedy, Robarts, & Woodhouse, 2010; Marks et al., 2017; McClellan et al., 2006; Samsson et al., 2016). Some studies showed that the patients were as or more satisfied with seeing an APP (Kennedy et al., 2010; Reeve & May, 2009; Samsson et al., 2016).

Samsson et al. (2016) undertook a randomised control trial and allocated patients referred to a primary healthcare clinic in Sweden into either APP triage or orthopaedic surgeon assessment. Neither subjects nor clinicians were blinded in this study. The questionnaire *Quality from the Patient's Perspective* was used to evaluate the perceived quality of care focusing on the caregivers' medical-technical competence and identity-orientated approach. The patient's expectations and intention to follow advice were also evaluated. Participants in both groups reported that they perceived good quality of care. However, the patients in the APP triage reported significantly higher perceived quality of care than those in the standard practice group seen by the orthopaedic surgeon. The study concluded that this model of care appears to meet patients' expectations and results in a higher intention to follow advice and instructions for self-management.

McClellan et al. (2006) undertook a systematic review of APP services in the ED and showed that APP could provide a high standard of care at an affordable cost whilst positively influencing patient satisfaction. In addition to evaluating patient satisfaction, this study also measured the functional outcome of patients attending an adult ED by comparing their management by APP, emergency nurse practitioners, and all grades of ED doctors. The authors concluded that adding an APP service to the interdisciplinary team achieved higher patient satisfaction levels than doctors or emergency nurse practitioners (McClellan et al., 2006). This study also showed inter-professional team satisfaction with the APP service provision.

Reeve and May (2009) conducted semi-structured interviews to gauge patient views on spinal physiotherapy practitioner-led service. Analysis of data identified five themes the authors felt were important to the participants in the study. These included: 1) provision of information (time scales, investigations, management), 2) inter-personal skills of the post holder (in developing rapport with the patient), 3) professional skills of the APP (demonstrating their knowledge, qualification, competence), 4) outcome of care (involving an explanation of diagnosis, prognosis, and individualised care), and finally 5) patient care pathway (which reviews shorter waits, venue, access) (Reeve & May, 2009).

In NZ, a narrative literature review published in 2019 analysed the impact of advanced physiotherapy on health care efficacy, efficiency, service design, and perceptions of stakeholders who engaged with these post holders. This review considered the need for clarity on the scope and focus of APP roles in establishing an inter-professional practice. The review suggested that advanced physiotherapy roles benefitted the health system and public when they were implemented in innovative, interdisciplinary, and non-traditional ways (Williams et al., 2019).

In contrast, some studies suggested that the lack of clarity in professional roles and scope of practice may lead to ‘turf battles’ in service delivery, which reinforces conservative approaches such as physician dominance over inter-professional collaboration (Crane & Delany, 2013; Lahey & Currie, 2005; Milligan, 2003). In Milligan’s (2003) study, registrars argued whether APP could assess and diagnose patients, despite longstanding recognition of physiotherapists as first contact practitioners indicating medical professionals' perceptions of these roles as a cheap generic role substitution which de-professionalised medicine. Others in the medical profession have also voiced concerns over the safety issues associated with task substitution and true inter-professional working and recommended that doctors retain their central role within health care (Yong, 2006).

In summary, most of the studies and audits appeared to be in favour of the development of APP roles. Kersten et al. (2007) stated that 76% of resources were supportive of APP roles but lacked the rigour of research. APP roles appear to deliver a high level of patient satisfaction. Some studies have evaluated the perceptions of the teams that the APPs work in; however, few studies have analysed the wide range of stakeholders impacted by creating the APP role. Further studies are needed to assess the APP role development and its viability and sustainability. There is a scarcity of literature outlining the clinical pathways and frameworks that shape these roles. Nevertheless, the mounting evidence of concordance between APP and

orthopaedic surgeon, clinical effectiveness, clinician, and patient satisfaction highlighted by these studies demonstrate APP clinicians' effectiveness in executing effective role substitution.

2.6 Training

There is minimal literature describing the training requirements or qualifications of physiotherapists working in APP roles. Some studies describe elements of working practices of APP, which include the right to order investigations, perform soft tissue and joint injections, refer for surgery or to other services and prescribe medications (Kerridge-Weeks & Langridge, 2016; Kersten et al., 2007; Saxon et al., 2014). Studies also suggest that an APP's skill lies in their ability to use their knowledge of musculoskeletal systems, pain mechanisms, critical thinking, clinical analysis, and communication to patient care (Langridge et al., 2015; Thompson et al., 2017).

Suckley et al. (2012) conducted a Delphi study that identified 104 core clinical competencies. The Delphi experts reached a consensus on 85 of these competency items, which covered history-taking and physical examination skills, underpinning knowledge, teaching and assessment methods, and vital attributes, attitudes, and behaviours essential for the APP role (Suckley, 2012). The study acknowledged the interdependent relationship between the APP and medical professionals and considered the methods of acquiring and assessing these identified competencies for APP. This study examined aspects of APP skills characterised as 'medical' and wondered whether medical professionals should be involved in the APP training and education due to the delegation of tasks.

In summary, most studies make a reference to clinicians' scope of practice within the study but do not detail the postholder's qualifications or how they achieved this advanced training. Training for the APP role has been discussed in various countries, but there are no formal guidelines or universally acceptable frameworks to define it. This demonstrates a gap in the literature that needs to be addressed.

2.7 Drivers

An evaluation of research following the implementation of new APP roles has provided a valuable resource for mapping out what is known about the drivers and barriers for this role development. Most studies articulate the drivers for the creation of these roles in brief. These drivers comprise rising healthcare costs due to the introduction of innovative technologies, new medications, increased burden of musculoskeletal conditions, increasing chronic conditions, and fiscal constraints (Aiken, Harrison, Atkinson, & Hope, 2008; Burn & Beeson, 2014; Durrell, 1996; MacKay et al., 2008; Marks et al., 2017). Kersten et al. (2007)

systematically reviewed 153 resources and reported that local and national service demands were instrumental in introducing the APP roles. Funding constraints driving innovative schemes to provide cost-effective care, rising patient expectations, targets for reduction in waiting times for specialist appointments, altered professional boundaries, and alteration in doctors hours and contracts were also flagged up as contributing to the development of new models of care (Aiken et al., 2008; Aiken et al., 2009; de Gruchy et al., 2015; Desmeules et al., 2012; Durrell, 1996; Kersten et al., 2007; Marks et al., 2017; McPherson et al., 2006). Other drivers included physician shortages, reduction of inappropriate referrals to secondary care, ageing population, changes in healthcare reform, and policies which have altered priorities and demands for health services and shifted the balance of power from secondary to primary care (Burn & Beeson, 2014; Hattam & Smeatham, 1999; Hussenbux et al., 2015; Kersten et al., 2007). Additionally, professional aspirations, career development, job satisfaction, and autonomy in practice were other identified drivers (McPherson et al., 2006).

2.8 Barriers

Few physiotherapy studies have focused on barriers to developing these roles as most of them describe the roles and audit them. Systematic reviews have analysed the scope and function of the APP roles and articulated the governance concerns, but they have not explicitly elaborated on the constraints and restraints for the role development (Kersten et al., 2007; McPherson et al., 2006). Some studies have explored the clinician's experiences of working within these roles, highlighting some barriers to developing or implementing this role (Dawson & Ghazi, 2004; Moloney, Dolan, Shinnick, Murphy, & Wallace, 2009). No studies appear to have explored the clinician's cognition of the role, its responsibilities, accountabilities, and liabilities.

Wiles and Milanese (2016) conducted semi-structured interviews with Australian health directorate orthopaedic, nursing, and allied health professionals to understand their perceptions of the APP roles. The authors concluded that APP roles experience structural, cultural, and administrative barriers. The structural barriers are in the form of existing legislation, organisational rules, or regulations. In contrast, cultural differences exist between professions and organisations (Wiles & Milanese, 2016). In addition, professionals found administrative boundaries of charging the insurer directly for care challenging (Wiles & Milanese, 2016). A natural evolution of the APP role has occurred internationally through physiotherapists, working in collaboration with orthopaedic surgeons, undertaking either task or role substitution (Durrell, 1996; Hattam & Smeatham, 1999; Hockin & Bannister, 1994). Whilst this has been beneficial in ensuring the support of some medical specialists, it has

positioned the APP role within a medical domain with links to medical and other allied healthcare clinicians.

Studies suggest that the APP role directly impacts on a variety of stakeholders, patients, medical, nursing staff, and administrative workers; hence, there is a need to share power, skills, and responsibilities to provide a safe service to patients (Cameron, 2011; Candy et al., 2016; Daker-White et al., 1999; Gilmore, Morris, Murphy, Grimmer-Somers, & Kumar, 2011). Working in these inter-professional teams, the clinician's scope of practice overlaps (Buttress & Marangon, 2008). As medical professionals and allied health clinicians extend their boundaries, this theory of permeable inter-professional boundaries presents its own set of unique challenges (Gilmore et al., 2011). Research suggests that this has led to a degree of 'political struggle' between various professions (Moloney et al., 2009) due to competing ideologies and values, competition for domains, and professional self-interest (Buttress & Marangon, 2008; Gilmore et al., 2011).

Studies highlight that the APP as a clinician must be aware of the complicated professional landscape in which they work, as this influences their professional autonomy and capacity for professional advocacy (Lefmann & Sheppard, 2014; Moloney et al., 2009). Lewy (2010) suggests that professions are more interested in emphasising the differences between professions than 'sharing' knowledge and skills, which may be perceived as a threat to their professional status rather than as an opportunity. Abbott (2014) reiterates this by stating that all professions strive for 'jurisdiction' over their field of work, suggesting dominance over other professions within the same field and clear boundaries against other professions.

Studies to assess the inter-professional relationships between the various members of the multidisciplinary team reveal that medical consultants support the task or role substitution undertaken by the APP by providing them with support, training, and affirmation of their place in the team (Dawson & Ghazi, 2004; Lefmann & Sheppard, 2014). However, lack of consultation with these medical consultants during role development is reflected in the lack of clinical supervision, mentoring, or support for the role and post holder (Dawson & Ghazi, 2004; McNeil, Mitchell, & Parker, 2013). This pivotal relationship between the consultant and APP was reinforced in the Dawson and Ghazi (2004) qualitative study. The physiotherapists working in the orthopaedic clinics indicated that they relied on the medical consultant as a source of support, offering practical help and encouragement. Physiotherapists whose posts were instigated by their physiotherapy department were frustrated and anxious as they felt that further development was dependant on political factors outside their control. Clinicians

reported that the job could be stressful, but it was also fulfilling at the same time (Dawson & Ghazi, 2004).

Moloney et al. (2009) warned that unless a framework for career development was established, there was a risk that these innovators would become disillusioned. This message was reiterated by other authors, who affirmed that this role provided the APP post holder with unique opportunities for collaborative working and developing collegial relationships with their colleagues; however, it could also lead to the isolation of the lone post holder, increased legal exposure and stress (Abbott, 2014; Dawson & Ghazi, 2004; Lewy, 2010; Moloney et al., 2009).

In summary, drivers and barriers to the establishment of APP roles exist both internationally and within NZ. The APP roles appear to flourish in the universal government-funded health care system. This role is positioned in the medical domain and interacts with varied stakeholders who may influence, facilitate, and/or act as barriers to this role development. It is evident from the literature that the interactions between the APP role and various stakeholders play a vital role in the success or failure of this role development (Dawson & Ghazi, 2004; Moloney et al., 2009). Nevertheless, there are very few studies that evaluate APP clinicians' experiences in their work settings. No studies appear to have been undertaken to assess the strengths, opportunities, weaknesses, and threats for this role. Although the studies included in this review provide evidence to justify creating the APP role in NZ, further research needs to be undertaken to establish the specific placement (niche), drivers, barriers, and career pathways for this role within the NZ context.

2.9 Clinical and legislative governance

The scope of practice for a profession is directed by legislative directives, which allow for specific education and experience and specific demonstrated competency. Each jurisdiction has laws, licensing bodies, and regulations that describe education and training requirements and define the scope of practice (Crane & Delany, 2013). APPs work in a layered regulated framework subject to clinical and legislative parameters. Within their role, these clinicians need to be aware of policies, regulatory frameworks, and ethical obligations (Crane & Delany, 2013). Studies analysing the scope of practice of APP roles report that APP clinicians undertake tasks that may have previously been undertaken by the medical profession, such as referral for specialist investigations, injecting, prescribing, and listing for surgery (McPherson et al., 2006; Morris & Grimmer, 2014; Saxon et al., 2014). Clinicians undertake these extensions to duties through delegation (Allied Health Professions office Queensland Health, 2014; Ng Fuk Chong et al., 2015).

In undertaking role substitution, the APP undertakes elements of medical practice. Dimond et al. (2009) cite the Bolam Test (English case law), which stipulates that a doctor cannot be considered negligent if he or she acts in accordance with a responsible body of medical opinion. Doctors receive training and undertake qualifications, which the General Medical Council regulates. While applying the legal framework to the scope of physiotherapy practice, Dimond (2009) concludes that if the APP undertakes practice outside the scope of their profession, they need to ensure that their practice is evidence-based and follows algorithms of safe clinical practice as described in the Bolam test (Dimond, 2009). This conclusion is reiterated by other authors who believe that the APP will be judged by their peers (Buttress & Marangon, 2008). As there are very few APP peers undertaking this advanced practice scope, the clinician will be judged in the court of law and compared against the medical consultants' practice as they work in a specialist practice (Brook & Rushforth, 2011; Skegg et al., 2015).

Lahey and Currie (2005) suggest that professionals expanding into new inter-professional practice areas have potentially increased legal exposure as they may not be equipped, either through a lack of legal precedent or competency standards set by professions to examine and determine responsibility and liability. Buttress et al. (2008) advocate that the APP should be aware of their skills and limitations and seek a senior or expert colleague's advice when necessary. The authors state that this could potentially impact the individual's liability in any clinical negligence claim. Clinical and legislative governance underpin the development, implementation, and evolution of the APP role (Gilmore et al., 2011). Crane et al. (2013) suggest that the physiotherapy profession should keep pace with the changing landscape by developing evidence-based regulatory, ethical, and educative frameworks.

Durrell (1996) examined the professional practice issues in these roles and advised the APP to seek consent from the patient for their clinical consultation. The author stated that the physiotherapist maintains responsibility for the patient's care unless the patient is referred to the consultant team. Durrell asserted that the physiotherapist is clinically responsible to the orthopaedic consultant whose clinic is targeted. The author emphasised the importance of the APP receiving adequate training for all delegated practice areas to maintain a safe and competent practice. Finally, Durrell recommends that the physiotherapist ensures adequate professional liability insurance to cover all aspects of their role in addition to the vicarious liability that some organisations might offer their employees.

In summary, the APP role needs an appropriate governance framework and pathways to demonstrate their ongoing competence as they work in multidisciplinary settings (Dimond, 2009; Lahey & Currie, 2005). There is no evidence of a substantiated framework within

international literature that guides clinicians towards understanding their clinical liability, clinical risk, and autonomy. Instigators of the role and APPs themselves should become cognisant of the clinical and legislative requirements to ensure a safe practice.

2.10 Strengths and Limitations

A narrative literature review was chosen for this research as it enabled the researcher to gain a broad overview of the research topic and its landscape and incorporate a broad range of data sources. A narrative review allowed consideration of the diversity and nuances embedded within the APP role. It facilitated the application of the researcher lens to gain individual insights by increasing flexibility and opportunities. The literature sources were drawn from seminal and current studies and included a range of systematic reviews, randomised control trials, a Delphi study, and primary studies. Based on classification for research hierarchy level, systematic studies are considered gold standard due to their methodological rigour closely followed by well-conducted randomised control trials. Delphi studies require a panel of experts to consolidate findings. Additionally, the analysis of strengths and weaknesses of each study, as indicated in appendix 2, demonstrates a degree of critique of each study.

The use of narrative review might be perceived as a limitation as it lacks the same degree of methodological rigour as a systematic study. However, when this narrative literature review was undertaken in 2017, two systematic reviews were recently published (Marks et al., 2017; Thompson et al., 2017). Undertaking another systematic review would have added minimally to the knowledge base and reduced focus to limited aspects of the APP role. The purpose of this narrative review was to synthesise literature pertaining to the multi-faceted APP role. It was noted that there was minimal literature from the NZ context. Other limitations include the heterogeneity of the studies included in the narrative review, which adds bias. The overlap of primary studies within the systematic reviews may also introduce bias. Some primary studies lacked methodological robustness, and other authors have indicated an ongoing lack of rigour in studies. However, it was appropriate to include the range of studies as they provided the knowledge of multiple facets, evolutionary changes, and development of APP roles.

2.11 Conclusion

The number of APP roles in allied health has increased internationally in an ad-hoc, opportunistic way in response to drivers such as the evolving health system, altered working patterns, mobility of the workforce, delivery of patient-centred timely care, and altered funding models (Burn & Beeson, 2014; Desmeules et al., 2012; Gilmore et al., 2011; Saxon et al., 2014). The limited studies that have analysed APP-led services compared to usual

orthopaedic care have demonstrated the cost-effectiveness of the role in musculoskeletal settings (Belthur et al., 2003; Burn & Beeson, 2014; Comans et al., 2014; Daker-White et al., 1999). Overall, most studies consistently support the clinical and cost-effectiveness of the APP role and its impact on stakeholders and access to care. However, due to a lack of high methodological quality, no firm conclusion can be offered, although high methodological studies (Desmeules et al., 2013; Dickens et al., 2003; MacKay et al., 2009; Razmjou et al., 2013) supported the APP role development in orthopaedic clinics.

There is sparse literature about this role development in NZ. The available literature suggests that the creation of APP roles is on a case-by-case basis (Cadogan, 2019, February; Hames & Exton, 2010, November; Naik, 2016). Most APP appointments are created in response to local needs; hence, the practitioner's scope varies depending on their local context (Physiotherapy New Zealand, 2018, November, 2019, October). However, these roles are positioned in the medical domain amid a culture that might foster or create barriers for APP role development (Crane & Delany, 2013; Dawson & Ghazi, 2004). There are also legal and governance constraints on these roles (Crane & Delany, 2013; Dimond, 2009). APP roles are in their infancy in NZ. Further research into the evaluation of drivers, barriers, career pathways, training, clinical governance, and legislative support in the NZ context needs to be undertaken to assess the feasibility and niche of this role development in an NZ context.

Chapter 3 Methodology and Methods

3.1 Introduction

This chapter focuses on the research design, methodology, and methods used for data collection and analysis to answer the research question. It provides the reader with an explanation of the research design by elaborating on the research philosophies and paradigms which inspire this study. It also describes the methodology which underpins this study design. The single embedded exploratory case study utilises a combination of Yin and Merriam's research study design (Merriam, 2016; Yin, 2014). Yin's design steps, such as plan, design, prepare, collect, analyse, and share, are used alongside Merriam's approach towards recruitment, sampling, interviews, and triangulation. The steps taken to ensure ethical compliance are outlined in the research. The chapter concludes by outlining the measures undertaken to ensure trustworthiness and rigour during the research process.

3.2 Research Question

The research question for this study is

'What are the drivers and barriers to the development and recognition of Advanced Physiotherapy Practitioner roles in New Zealand?'

It has two aims; the first aim is to identify the drivers for and the barriers against APP's formal recognition in NZ. The second aim is to describe the current work practices of the physiotherapists working in APP roles in NZ.

3.3 Research Philosophy

Research "is the systematic and rigorous process of enquiry, which aims to describe phenomena and to develop explanatory concepts and theories. Ultimately it aims to contribute to a scientific body of knowledge" (Bowling, 2014, p. 1). Crotty (2015) defines research approach as scaffolded learning, which includes elements of ontology (nature of social reality), epistemology (theory of knowledge), research paradigms (philosophical beliefs), methodology (strategy behind the choice and use of methods to achieve desired outcomes), and methods (specific means of collecting and analysing data). This process provides a researcher with the philosophical underpinnings and foundations on which they can position themselves. It also enables the researcher to conceptualise their research design, choose the rationale for using a specific research methodology and method (Crotty, 2015).

3.3.1 Ontology and Epistemology

Ontology is an assumption we make about the kind and nature of reality, what exists, and the social world itself (Creswell, 2014; Denzin & Lincoln, 2017). Ontology is classified into nominalism versus realism, dependent on whether the researcher believes in a single reality or multiple realities (Bryman, 2012). Epistemology addresses how reality is known and the relationship between the 'knower' and 'known.' It explains the nature, form, way of acquisition, and communication of knowledge (Denzin & Lincoln, 2017). There are two broad epistemological positions, positivism and constructivism (Bryman, 2012). Positivism views knowledge as measurable, tangible, where the researcher is objective and detached. In comparison, constructivism views knowledge as flexible, subjective, where the researcher engages with the participants and is entwined in knowledge production. Ontological assumptions affect our epistemological inclination, thereby influencing our research paradigm, methodology, and method (Crotty, 2015). The current research chooses ontology located in realism which aligns with constructivism epistemology.

The APP role in NZ is a complex, multi-faceted role that has inherent subtleties. There are multiple pluralities embedded within the APP role. The physiotherapy profession within NZ is aware of the role from an international perspective but lacks its clarity in an NZ healthcare system. The multiple realities embedded within the APP role steer the choice of ontology towards realism. Interpreting these multiple realities and constructing meaning from participant voices guides this research to use an epistemology inclined towards constructivism.

3.3.2 Research paradigms

Research paradigms are believed to be sets of beliefs and practices shared by the communities of researchers who regulate inquiry within their disciplines (Bunniss & Kelly, 2010). Several research paradigms are defined and explained in the literature: positivist, post-positivist, interpretive, critical, and pragmatic (Creswell, 2014; Denzin & Lincoln, 2017). Positivism describes the underlying doctrine that underpins the quantitative positivist approach, which focuses on objectivity, systematic and detailed observation, testing hypotheses through experimentation, and verification (Sarantakos, 2013). On the other hand, post-positivism has evolved from the subjectivity of reality and moves away from the purely objective stance of logical positivism. In an interpretive paradigm, reality is viewed as complex, multifactorial, and context dependent. The interpretive paradigm assumes that there is no single observable reality. Instead, there are multiple realities or interpretations of the same event (Merriam, 2009). The purpose of an interpretive inquiry is to understand a particular phenomenon by studying real-world situations as they unfold naturally (Denzin & Lincoln, 2017). In comparison,

the critical paradigm aims to raise awareness and promote social change (Denzin & Lincoln, 2017). Pragmatic or emancipatory paradigm tries to solve 'real-world problems' (Feilzer, 2010). The current research adopts an interpretive paradigm and qualitative approach to answer the research question.

3.4 Qualitative research

The characteristics of qualitative research include constructivism which enables an individual to construct reality and meaning in interaction with their social world. It focusses on meaning and understanding, which allows researchers to understand how people interpret their experiences, construct their worlds, and what meaning they attribute to their lives and experience (Denzin & Lincoln, 2017; Guba & Lincoln, 1994). In qualitative research, the researcher is the primary instrument for data collection and analysis. The process is inductive, in which the researcher gathers data to build concepts, hypothesis, and theories from intuitive understanding after using varied data sources (Creswell, 2014; Merriam, 2009). The product of the inquiry is richly descriptive of context, including the involvement of participants and activities of interest. Additionally, it is supported by the findings of the study in the form of quotes and excerpts. The design is flexible and emergent, responsive to changing conditions of the study (Creswell, 2014; Denzin & Lincoln, 2017; Guba & Lincoln, 1994; Merriam, 2009). The sample is selective, non-random, purposeful, and small (Merriam, 2016). The qualitative researcher is a reflexive practitioner, aware of his or her own political and cultural perspectives, yet willing to engage in self-questioning and self-understanding (Patton, 2002).

Most physiotherapy research relies heavily on quantitative research to provide its evidence base (Johnson & Waterfield, 2004). However, the current research question seeks to evaluate the future development of the APP physiotherapy workforce in NZ. As clinicians currently deliver APP roles on an ad-hoc basis, the researcher needs to understand the position, rationale, and perceptions of the physiotherapy profession in developing these roles in the NZ context. The multiple realities that respond to this research query guide us to use an interpretive paradigm with a qualitative approach. The research question lends itself to using a case study methodology which is clarified in the section below.

3.5 Methodology

Guba and Lincoln (1994) postulate that ontological and methodological assumptions are the main steps in selecting a methodology. Before deciding its preferred methodology, this current research considered a few different methodologies such as mixed-methods, grounded theory, Bourdieu's approach, and Foucault's discourse analysis. Mixed methods provide a broader

focus than a single method design through the use of qualitative and quantitative approaches. The advantage of a mixed-methods approach lies in its ability to collect comprehensive information about phenomena that can be applied to healthcare decisions about practice (Shorten & Smith, 2017). A mixed-methods methodology was rejected as our data sources were primarily qualitative. The second choice, grounded theory, is a methodology for theory generation grounded in data that is systematically gathered and analysed (Noble & Mitchell, 2016). Grounded theory as a methodology was excluded as the research question aimed to gather a multi-perspectival analysis rather than theory generation. Bourdieu's approach and Foucault's discourse analysis were also rejected as they view issues from a perspective of the power imbalance and struggle, which was not the aim of the research question. The research question was broad and sought to seek both the drivers and barriers to the development of APP roles in NZ.

The current research aimed to explore the foundational concepts within the APP role. It sought to investigate the multifaceted complexity embedded within the APP role through its two aims. The first aim was targeted at identifying the drivers and barriers to the development of the APP role. It was designed to understand the current scarcity of APP roles in NZ healthcare despite the strategic musculoskeletal drivers and health targets identified by the MoH. The second aim delved into the working practices of the current APP clinicians to understand the baseline practices and concepts related to APP scope, training, the extension of practice, autonomy, and governance for the roles. A case study methodology was chosen for its multi-perspectival, comprehensive, in-depth approach to analyse a complex, multi-faceted, contemporary practice issue in the NZ health care system.

A case study can be considered a methodology, method, or design according to the researcher's research perspective and the disciplines they represent (Taylor & Francis, 2013). Three seminal authors guide case study methodology on a continuum extending from positivism to constructivism. Yin (2012) approaches case study from the post-positivist frame, whereas Merriam (2009) and Stake (1995) situate it in a social constructivist paradigm (Nerida, Kenny, & Dickson-Swift, 2014; Yazan, 2015). Luck, Jackson, and Usher (2006, p. 447) state that the case study research design has a practical versatility in its agnostic approach as "it is not assigned to a fixed ontological, epistemological or methodological position."

Seminal authors advocating case study research consistently describe it as an adaptable form of inquiry most suitable for a comprehensive, holistic, real-world perspective and in-depth investigation of a complex issue (phenomena, event, situation, organisation, programme, individual or group) in context, where the boundary between the context and issue is unclear

and contains many variables (Creswell, 2014; Merriam, 2009; Stake, 2006; Yin, 2014). Cases are selected based on the research purpose and question and for what they could reveal about the phenomenon or topic of interest, and the aim is to provide a rich, holistic description that illuminates one's understanding of the phenomena (Merriam, 1998). Yin (2014) purports that the focus of using case study methods is to explore or explain a phenomenon in its natural context, and it is particularly useful for answering "how," "what," or "why" questions. Figure 1 below encapsulates this current case study's research design by aligning it with the knowledge of ontology, epistemology, and paradigms.

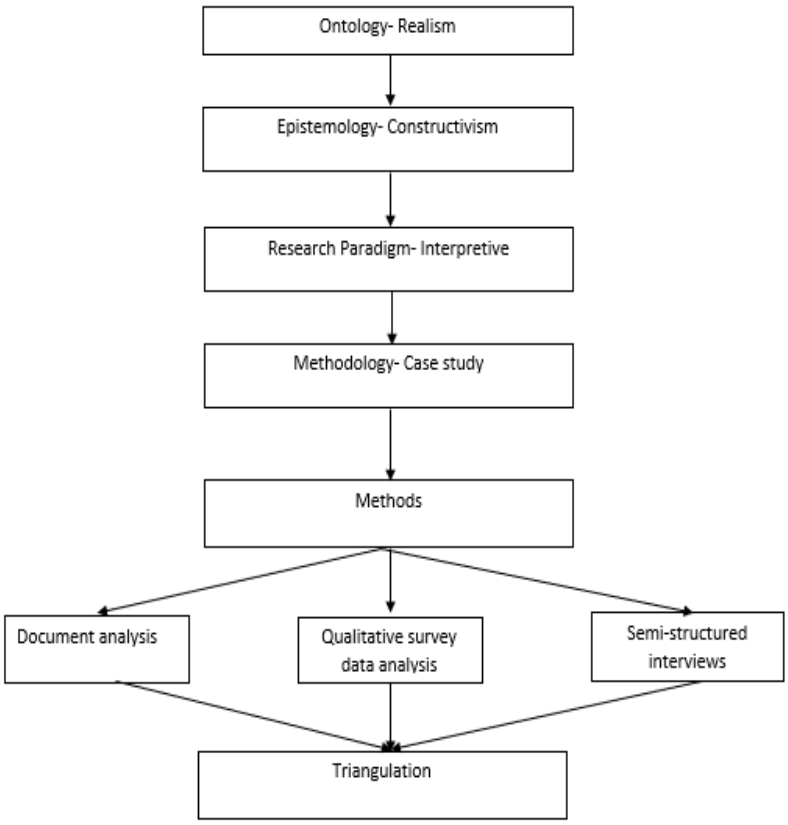

Figure 1 Current case study research design aligned with ontology, epistemology, and research paradigm

Stake (1998) emphasises the importance of the 'case' within a case study research rather than investigation methods. On the other hand, Yin (1994) places more emphasis on the method and the techniques that constitute a case study. Luck et al. (2006) and Mehedi (2018) reinforce Merriam's (2009) assertion that case study research can use both quantitative and qualitative methods by describing it as a bridge between the qualitative inductive reasoning and quantitative deductive paradigm. Tellis (1997) similarly argues that by including quantitative and qualitative data, a case study helps explain both the process and outcome of a phenomenon through complete observation, reconstruction, and analysis of the cases under

investigation. Gerring (2013) defines a ‘case study’ as the intensive study of a single unit or a small number of units (the cases) to understand a larger class of similar units (a population of cases).

As this case study research uses a qualitative framework, Merriam’s approach to case study design, which is a combination of both Yin and Stake, provides the necessary qualitative template. Merriam’s recruitment and sampling, interviews, and triangulation have been used alongside Yin’s research design plan. Yin’s (2014) study design includes steps such as Plan, Design, Prepare, Collect, Analyse, and Share to provide the necessary design rigour.

Yin (2014) suggests four basic types of case study designs: the single-case study (holistic), the single-case (embedded), multiple-case (holistic), and the multiple-case (embedded). Single case studies tend to be selective, focusing on one or two fundamental issues to understand the system being examined. To study one single thing (for example, a person from a specific group) or a single group (for example, a group of people), a single case study is the best choice (Yin, 2003). When a single case study is used, the researcher develops a deeper understanding of the subject (Dyer & Wilkins, 1991). These studies can be holistic or embedded, the latter occurring when the same case study involves more than one unit of analysis. Embedded case studies use multiple subunits of analysis that focus on the case's unique salient aspects (Scholz & Tietje, 2002).

Yin also categorises case studies into explanatory, descriptive, and exploratory case studies depending on the research question (Yin, 2018). An explanatory study tries to establish causal relationships, whereas a descriptive study describes the characteristics of variables (Saunders, Lewis, & Thornhill, 2007). An exploratory design is conducted for a research problem when there are few or no earlier studies to refer to or rely upon to predict an outcome (Cavana, Delahaye, & Sekeran, 2001). The focus is on gaining insights and familiarity for research problems in a preliminary investigation stage. APP roles are in their early stages in NZ. There is a lack of literature and knowledge about these clinicians' scope of practice and the niche for this role in the NZ health system. Yin (2003) suggests undertaking single case studies for the exploratory nature of a problem in contrast to multiple case designs for descriptive or explanatory case studies. This research used an exploratory single embedded case study research design based on Yin’s classification to examine this research question.

3.5.1 Advantages and disadvantages of using case study

There are several advantages and disadvantages to using a case study research design. Case studies provide rich, holistic descriptions with multi-perspectival analysis, and they can be used

retrospectively and prospectively (Stake, 1995; Zucker, 2009). Case studies are useful for generating and testing a hypothesis to develop theories, but they are not restricted to these activities alone (Flyvberg, 2006; Taylor & Francis, 2013). A case study enables in-depth empirical inquiry of a contemporary phenomenon (the case) in the real-world context, and it is suitable for answering "how," "what," and "why" questions (Thomas, 2016; Yin, 2014). As a research strategy, a case study embodies a comprehensive approach, including the logic of design, data collection techniques, and analytical approaches (Simons, 2009).

The case study methodology is frequently criticised due to its dependence on single case studies, rendering it incapable of providing generalisable conclusions (Tellis, 1997). Some authors, however, argue that the goal of the study should establish the parameters and all research elements so that even a single case could be considered acceptable, provided it has met the established objective (Hamel, Dufour, & Fortin, 1993; Yin, 1984, 1994). Yin (1994) proposed three remedies to counteract this issue by using multiple sources of evidence, establishing a chain of evidence, and finally having a draft case study report reviewed by key informants. The second criticism against case studies is the lack of systematic procedure within the method (Tellis, 1997; Yin, 2014). However, Bromley (1990) describes a case study as a systematic inquiry into an event or a set of related events that describes and explains the phenomenon of interest.

The third criticism is the potential investigator subjectivity in the study, which may affect the construct validity. However, case studies have been shown to provide a multi-perspectival analysis as the researcher considers the participants' voice and perspective (Feagin, Orum, & Sjoberg, 1991; Merriam, 2009; Stake, 2006; Yin, 2014). Flyvberg (2006, p. 237) stated that "case study contains no greater bias toward verification of the researcher's preconceived notions than other methods of inquiry. On the contrary, experience indicates that the case study contains a greater bias toward falsifying preconceived notions than toward verification". Flyvberg also addressed some of the critiques of the case study as a methodology and as a rigorous form of inquiry. He argued that summarising case studies was sometimes difficult as it depended on the properties of the reality, which were studied rather than the case study as a research method. He reasoned that sometimes it was not desirable to summarise and generalise case studies but suggested that they should be read as narratives in their entirety (Flyvberg, 2006; Flyvbjerg, 2011).

The current single embedded case study's goal was to conduct a systematic inquiry into the drivers for and barriers against APP role development in the NZ context and identify their working practices. As a research methodology, the case study was chosen based on its

comprehensive approach and ability to conduct a multi-perspectival in-depth inquiry of our contemporary research question, beginning with 'what.' The study considered the participants' voices and perspectives rather than biasing it towards the researcher's preconceived notions. It used a comprehensive approach for its data collection technique, gathering multiple sources of evidence that were triangulated. Case selection and research question were crucial elements within this study design, which paved the way for the case study design.

3.5.2 What is the case?

Although experts in the field offer differing definitions of a case study, there is an agreement that the 'case' is central to case study research (Johansson, 2003; Merriam, 1998; Simons, 2009; Stake, 1995; Yin, 2014). Patton (1990) and Stake (1995) state that a case may be purposefully selected by virtue of its being information-rich, critical, or revelatory, unique, or extreme, or the case might be given and studied with an intrinsic interest in the case. Yin (2014) describes that the complexity of a case sometimes blurs the boundaries around it. He states that the researcher should explain the inter-relationships between the case and the context and rationale for identifying the case (Yin, 2003). Binding a case ensures that it stays within scope.

In a qualitative case study design, the establishment of boundaries is similar to the development of inclusion and exclusion criteria for sample selection in a quantitative study. However, these boundaries also specify the study's breadth and depth and not merely the sample to be included (Baxter & Jack, 2008). A case study's focus involves an intensive and detailed examination of a single unit or a 'case' (Foreman, 1948; Luck et al., 2006; Ragin & Becker, 1992; Stake, 1995). The case or central unit of analysis (Yin, 2014) in this case study is the '*APP role*' and '*the drivers and barriers to this role development in NZ*' define its boundaries. This case study is also temporally bound from '*2013 until 2021'* as this is the time period within which all the data sources were collected.

3.6 Method

The term method describes the exact steps that were undertaken to address the research question.

3.6.1 Data Sources

Yin (2003) identified six data sources of evidence which can be used for case study research: documents, archival records, interviews, direct observation, participant observation, and physical artefacts. Yin stated that a case study's strength lay in its opportunity to use many

different sources of evidence (Yin, 2003). This case study methodology utilised document analysis, qualitative survey data analysis, and semi-structured interviews as the three data sources that responded to the research question's aims. Additionally, these three data sources were triangulated to ensure their trustworthiness. Ritchie and Lewis (2003 pg. 35) highlighted that "documentation is an appropriate method for triangulating with interviews in studies where history of events or experiences are relevant to gain better understanding of the research question." In the section below, each data source will be described separately with the data analysis technique. Data gathered from document analysis, qualitative survey data analysis, and semi-structured interviews were analysed using Qualitative Content Analysis (QCA) techniques. Qualitative content analysis is one of the several qualitative methods available for analysing data and interpreting its meaning (Satu et al., 2014). Priest, Roberts, and Woods (2002) refer to the use of QCA in exploratory studies to answer research questions.

Data source -1: Document Analysis

Document analysis is a method of collecting data by reviewing existing documents. This method has been identified as an efficient and cost-effective process as it is independent of the availability or participation of particular groups of people (Bowen, 2009). However, Bowen (2009) also identifies limitations to this method due to insufficient details, low retrievability, and biased selectivity. There is nominal literature on APP roles in the NZ context. Internationally, these roles flourish, and their literature and experience have provided a good foundation to explore the current research question and its aims.

Document retrieval

The document search for the research was guided primarily by the search terms and secondly through the knowledge shared with participants and supervisors. Search terms for document analysis were guided by the study propositions, literature, the research question, and its aims (Merriam, 2016; Stake, 1995; Yin, 1994). As discussed in the literature review chapter, a narrative literature review was undertaken. Appendix 3 reveals the search terms used. Additionally, the researcher also searched the websites of physiotherapy boards such as PBNZ, Health and Care Professions Council (HCPC), and the Australian Board of Physiotherapy. Professional physiotherapy associations such as PNZ, CSP, APA, and CPA were also searched along with WCPT. Additional terms such as HWF, MoH, Health Practitioners Competency Assurance Act (HPCA) were included. New Zealand and international government policies and publications were also searched. Mined documents included: governmental health policies, documents related to standards and scope of practice, documents related to the development of the PBNZ accredited specialist roles, national and international competency guidelines for APP, and legislative acts such as the HPCA documents. Organisational documents and policies,

guidelines, protocols related to role development or reports, and other relevant material shared by the interview participants were also examined. A checklist for document collection included: its source, type, identification details, purpose, bias, and validity.

Physiotherapy New Zealand survey

In addition to these documents, the survey questions sent out by PNZ in 2017 were also analysed. PNZ provided the researcher with aggregated responses to their questionnaire. The PNZ survey explored the profession's views on the development of APP roles. The PNZ survey included APPs from the College of Physiotherapy (COP). The COP representation of 53 members included 7% Life members, 17% Fellows, 46% Advanced practitioners, and 28% members. (The COP 'Fellows' were analogous to the current PBNZ accredited 'specialist.' 'Life members' were an honorary category. The 'APP' required a Master's or post-graduate diploma for entry and 5-10 years of clinical practice while 'members' referred to registered physiotherapists and members of PNZ.) The majority of the respondents were from a musculoskeletal background with some representation from other specialities such as sports, women's health, cardio-respiratory, neurology, paediatrics, hand therapy, occupational health, older adults, and chronic pain.

Data Analysis

An Excel database was created to record the information gained from researching the documentary evidence. An example of the document record is enclosed in Appendix 4. The database included details about the document's demographics, information, relevance, limitations, implications, applicability, and relevance to the research question. Relevant references were used from the original document to source other related documents. Qualitative Content Analysis (QCA), along with the steps described by Yin (2014), was used to analyse both textual and interview transcribed data as it facilitated a systematic method of data reduction and analysis. The goal of QCA is to provide knowledge and understanding of the phenomena being studied (Downe-Wamboldt, 1992). The purpose is to systematically transform a large amount of data into a highly organised and concise summary of key results (Hsieh & Shannon, 2005).

Information from documents was coded. Coding involves grouping similar sections of data together under a descriptive title, prompting the researcher to think about the data (Miles & Huberman, 1994). Data were examined for each document to analyse its context and relevance to research aims. Data were then analysed for each country and then cross-referenced with data from other countries and WCPT. Documents were categorised into three groups (see Table 1 below)

In the quest to answer the research aim related to APP role development drivers, group one documents were identified. These 19 documents reviewed individual countries' health systems and supported the drivers for creating APP roles. Twenty-four documents were grouped in group two to explore the APPs working practices, scope, and professional advocacy. Seven, group three documents supporting public safety and providing governance for the advancement or extension of APP practice emerged through exploration for group two documents.

Grouping codes in the document analysis revealed the evolving nature of the APP role and its development in various countries. Some documents presented the innovative APP practice models, their implementation methods and articulated their impact on health services. Various position statements from professional and legislative bodies conveyed the components in physiotherapy practice relating them to professional, jurisdictional, and personal scope. The definitions for APP roles that met the individual requirements of each country, and its professional identity were noted. Legislative documents which provided a regulatory stance on professional practice and its conformity to standards of conduct, performance, and ethics were grouped for each examined country. The World Physiotherapy (WP) organisation (renamed in 2020) or previous WCPT offered guidance on terminology, roles, and practice specifications to achieve standardisation for APP roles. This information was grouped with the PNZ survey analysis.

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Table 1 Categorised documents to answer research question.

Country	Group 1 -Health systems of countries providing drivers for APP	Group 2- Scope of profession and professional advocacy	Group 3- Support for public safety
New Zealand	The role of Health Workforce New Zealand	The credentialing framework for New Zealand Health professionals	Health Practitioners Competence Assurance Act 2003
	Report on the Musculoskeletal Workforce Service Review	Physiotherapy Standards Framework	Standing order guidelines
	Better, Sooner, More Convenient Health Care in the Community	The Scopes of Physiotherapy	New Zealand registered physiotherapists practising in a defined field
	New Zealand Health Strategy future direction	Accreditation Standard for Physiotherapy Practitioner Programmes in Aotearoa New Zealand	Giving advice to patients about medication/medicines
	New Zealand Health Strategy Roadmap of actions	Specialisation information sheet	
		PBNZ Annual report- 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018	
		Physiotherapy practice thresholds in Australia & Aotearoa New Zealand	
		Orthopaedic Physiotherapy Practitioner Roles and Training Framework	
		Specialist Survey Report	
		Review of the NZ College of Physiotherapy - Consultation Document	

Country	Group 1 -Health systems of countries providing drivers for APP	Group 2- Scope of profession and professional advocacy	Group 3- Support for public safety
United Kingdom	Multi-professional framework for advanced clinical practice in England	First Contact Physiotherapy posts in General Practice	The use of medicines with injection-therapy in physiotherapy services.
	Interim NHS People Plan: The future allied health professions and psychological professions workforce	Resource Manual and competencies for extended musculoskeletal physiotherapy roles	Practice Guidance for Physiotherapist Supplementary and/or Independent Prescribers (4th Edition)
	The NHS Long Term Plan	Think physio for primary care	
	Meeting the Challenge: A Strategy for the Allied Health Professions	Advanced practice in physiotherapy	
	Allied Health Professions into Action		
	Interim NHS People Plan		
Australia	Physiotherapy Career Pathway- White paper	Physiotherapy Career Pathway Competence Framework physiotherapy.asn.au Version 6.0	ASPRINH Project Prescribing Assessment Toolkit
	Australian Physiotherapy Association- Scope of practice	APA National Advanced Musculoskeletal Physiotherapy Competency Framework: Standard of Practice	
	The National Strategic Action Plan for Arthritis	Advanced Musculoskeletal Physiotherapy Clinical Education Framework -The manual	
	National Strategic action plan for Osteoporosis		
	National Strategic Framework for Chronic Conditions		
	National Strategic Action Plan for Pain Management		
Canada	The Role of Physiotherapy in Canada. Contributing to a stronger healthcare system	Clinical Specialty Program	
WCPT	Advanced Practice Physiotherapy in the European Region of the WCPT Position Statement	WCPT Policy Statement: Advanced Physical Therapy Practice	

Physiotherapy New Zealand survey

The aggregated data from the open and closed-ended questions from the PNZ survey was included in the document analysis. There were 13 questions in this survey (Appendix 5). Five questions were close-ended, and eight were open-ended; however, as this data was aggregated, it had lost its qualitative nuance. These data were analysed to note the questions, responses and identify gaps. This data captured the APPs' perceptions of skills and competencies required within the APP role, its impact on healthcare, and its education and training. Data were coded and grouped to answer propositions. Data from all documents and PNZ survey were included in the matrix created during coding cycle two analysis which will be described later. This document analysis was then triangulated with qualitative survey data analysis and interviews. A triangulation template was developed to facilitate ease of access to information to enable the researcher to write.

Data source-2 Qualitative survey data analysis

The PBNZ steering committee surveyed the physiotherapy profession in 2013 to gauge their interest in the extended scope of practice. The PBNZ briefly summarised the results of this survey in their annual report in 2014 and 2015. PBNZ survey questions related to working practices of the physiotherapy workforce and explored the physiotherapy profession's desire to develop an APP role (referred to as ESP in the survey). Out of the 4,040 physiotherapists registered with the PBNZ in the practicing year 2013-2014, 983 physiotherapists responded, representing 24% of the profession. The representative sample in the PBNZ survey predominantly included clinicians from musculoskeletal specialty; however, there was representation from respiratory, pelvic health, lymphoedema, paediatrics, neurology, sports, Emergency Department (ED), mental health, chronic pain, vocational rehabilitation, and clinical education physiotherapists, which added uniqueness to the findings as this information is scarce in the literature.

Data retrieval

PBNZ shared the 2013 survey questionnaire and responses with the researcher. The survey comprised fifteen questions, of which five were close ended. Ten questions were open-ended and provided a unique insight into the physiotherapy profession's interest in developing an APP (Appendix 6). The researcher analysed the information included within these open-ended questions for two purposes. One purpose was to identify results and gaps prior to framing the questions for the semi-structured interviews. The second was to answer the research aim directed to describing the work practices.

Data analysis

Each qualitative question was analysed separately (Appendix 7). Each question and its responses were read and re-read until the researcher developed familiarity with the data. Information within each question was colour coded and assembled and reassembled to distil its distinctiveness. Data appeared to be primarily targeted towards answering questions about the scope of practice, participants' working practices, acceptance of the role, and expectations of an extended scope of practice (Appendix 8). Some qualitative questions produced less data, and some produced more dependent on the question. Data were coded and re-coded. The codes which described the working practices of advanced practitioners were grouped together and across their individual specialities. This information provided the knowledge for answering the second aim of the current research. These data were triangulated with data from other data sources.

The representation within the survey included 47% clinicians from private practice, 20% clinicians from DHB, 3% Leaders or administrators from DHB, 2.5% Leaders or administrators from other health sectors, 5.5% academics, 17% who did not work in NZ, and 13% who identified themselves as 'Other category.' Analysis of data revealed that the majority of the physiotherapy workforce in NZ was in the private sector, but the issues of funding, remuneration, and lack of career pathways were consistent across all sectors. In addition to demonstrating overwhelming support for APP role development, findings also provided an insight into the concerns and hesitancies for APP role development. This data addressed the suppositions and offered alternative views which supported the rival explanations as described by Yin. This qualitative survey data analysis was included in cycle two analysis, loaded onto the matrix, and triangulated with other data sources to ensure rigour. Additionally, similarities and differences were noted between the PBNZ and the PNZ survey (Appendix 9). The responses to the data in both surveys appeared congruent; however, the PNZ survey had captured the clinicians working within the APP roles, which added another dimension.

Data source 3: Semi-structured interviews

Individual interviews are widely used as a data collection tool in qualitative research (Sandelowski, 2002). The data from these interviews provide the researcher with various perspectives (Roulston & Choi, 2018). Merriam (2016) suggests that depending on the topic, interviewing is sometimes the only way to get data. The different types of interviews identified in the literature are structured, semi-structured, and unstructured (Bernard, 2011; Fellows & Liu, 2008). Each interviewing style is dependent on the philosophical orientation and the context of inquiry (Fielding, 1994). In a structured interview, there is little scope for probing interviewee responses by asking supplementary questions. On the other hand, in an

unstructured interview, the interviewer introduces the topic briefly and then records the respondent's replies. The semi-structured interview bridges the gap between these two extremes. A semi-structured interview was used to gather data to develop a better understanding of the topic under consideration and gain additional knowledge by allowing respondents to express their views in their own words and share their opinions and thoughts (Merriam, 2009). This semi-structured interview format provided the researcher with reliable, comparable qualitative data and the flexibility to expand the interview to cover relevant information revealed by the participant.

Interview questions

The semi-structured interview questions were developed from the analysis of documents, survey questions from PBNZ and PNZ, and collaboration with supervisors and learning resources from AUT to ensure the detail and rigour of the questions (Appendix 10). For the participants to report varied aspects of their role, drivers, barriers, perceptions of the positioning of the role within the profession, training, clinical governance, funding, and discuss aspects on which they placed the most emphasis, fourteen open-ended questions were asked. The inclusion of open-ended questions to follow relevant topics that may stray from the interview guide provided the researcher with an opportunity to identify new ways of seeing and understanding the topic at hand. It avoided biasing the research towards verification of the researcher's priori bias (Dipboye, 1994; Lambert & Loiselle, 2008).

Sampling

The purpose of sampling in qualitative research is to acquire information useful for understanding the complexity, depth, variation, or context surrounding a phenomenon, unlike quantitative research, representing populations (Gentles, Charles, Ploeg, & McKibbon, 2015). A purposive sampling technique was primarily utilised to recruit participants to obtain a holistic, in-depth, multi-perspectival analysis of the question (Merriam, 2016). Purposive sampling is a non -probability sampling strategy used by a researcher to select participants who meet the study's inclusion criteria (Berg, 2001). Data were gathered from physiotherapy clinicians who were most informative in answering the research question as the participants were living the experience under the study. A trial with a small sample size of two APPs was initially undertaken to assess any potential issues with sampling and research techniques.

Semi-structured interviews were conducted with 20 participants. The initial trial sample was included in the overall data collection. The research was positioned in the musculoskeletal domain as there was more prevalence of musculoskeletal APP undertaking these roles. However, this net could be cast wider for future research to include other specialities. Two

cohorts of participants, group A and group B, were selected using a purposive sampling technique. Group A included physiotherapists, and group B included stakeholders. Group A was further sub-divided into three categories. Category 1 included physiotherapy specialists accredited by the PBNZ. Currently, there are ten physiotherapy specialists, out of which seven are musculoskeletal specialists. All seven were interviewed, but one PBNZ specialist dropped out as he was worried about being identified due to the small sample size. All specialists work in the private sector except one who also does part-time work in a DHB. Category 2 included two APPs from the now obsolete College of Physiotherapy (COP). Both work in private practice. Category 3 included six APP from the musculoskeletal background. These included two APPs from sports, one from the Emergency Department, and three from the general musculoskeletal outpatient background. Two practitioners work in DHB. One works in a government agency, and three others work in private practice. Group B included stakeholders. This group comprised one orthopaedic surgeon, one sports physician, one ACC manager, one PBNZ executive team member, and one PNZ executive team member.

Recruitment for interview

Prior to data collection, Ethics approval was gained from the Auckland University of Technology Ethics Committee (AUTEC) (Appendix 11).

Ethical Approval

Ethical approval was obtained from AUTEC. Respect for participants' knowledge and time, their right to privacy and confidentiality, the research process, and deference to the academic community underpinned this process of ethical approval. These ethical principles were not just confined to seeking ethical approval, but they were embedded within the research process and dissemination of findings. The ethics application focussed on participant privacy, confidentiality, and anonymity. The NZ physiotherapy community is small and interconnected. Within this community, the number of specialists and clinicians undertaking APP roles is limited and identifiable; hence every effort was made to ensure the privacy and confidentiality of these practitioners. Pseudonyms were used to protect the identity of the participants. Any identifying details were changed within transcripts and thesis. Participants and their workplaces were anonymised within the report of the case study. Participants were provided with a copy of their interview transcripts for verification if any misrepresentation may have taken place.

The ethics application also directs the researcher to the tenets of the Treaty of Waitangi. However, as this research aimed to gain insight into the physiotherapy profession's perceptions, ethnic data were not collected from the participants. However, if anyone had

identified themselves as Maori, they would be treated in a culturally appropriate way. The EA1 research application acknowledged both the small community of physiotherapists undertaking these APP roles and NZ's bicultural context. Another application was made to AUTEC to revise the original application once the researcher had decided to transcribe the interviews personally rather than using a transcription service and use NVivo software to assist with the QCA process (Appendix 20). This permission was granted. Locality agreements from participating healthcare organisations were obtained prior to interviewing participants in a public hospital setting. As described earlier, all data were collected and stored under AUTEC policies.

Inclusion/ Exclusion criteria

The inclusion/ exclusion criteria developed in conjunction with AUT supervisors and informed by the document analysis process guided the interview recruitment process. The inclusion criteria for Group A/ physiotherapists included:

- Physiotherapists who had consented to the interview.
- All physiotherapy participants who had a current annual practicing certificate.
- All PBNZ accredited musculoskeletal specialist physiotherapists. These clinicians were chosen as they had undergone the rigour of being assessed for their specialist competence (Physiotherapy Board of New Zealand, 2017b).
- Physiotherapists who had been accredited by the former COP as musculoskeletal APP
- The generalist physiotherapists working in APP roles or undertaking an extended or advanced practice.

The extended scope of practice definition was sourced from the PBNZ 2014 position statement and Australian Workforce Advisory Committee 2015 document (Australian Health Workforce Advisory Committee, 2015; Physiotherapy Board of New Zealand, 2014a). The advanced scope of practice definition was sourced from the CSP 2016 document (Chartered Society of Physiotherapy, 2016a).

The inclusion criteria for the Group B/ stakeholders included:

- Consenting stakeholders.
- Medical or surgical clinicians working alongside APP roles.
- Managers of health services, ACC with knowledge of their individualised services and knowledge of APP roles.
- Representatives of the legislative or professional physiotherapy body with knowledge of their individualised services and APP roles.

The research excluded medical consultants and DHB managers from the organisation that the researcher worked for to avoid any conflict of interest. It also excluded other allied health professionals who were not physiotherapists.

Recruitment of participants

The physiotherapy specialist and advanced practitioner community are small, so participants' choice was based on purposive sampling. The details for these clinicians and stakeholders were sourced from their organisations, web pages, and contacts within the profession.

Specialist physiotherapists: The PBNZ accredited specialist's names were sourced through the PBNZ website. The researcher was familiar with six specialists but had email contacts for three. The contact details for the other three were obtained through the AUT supervisors. One additional specialist had already consented to interview prior to being credentialled as a PBNZ specialist, as she used to be an APP under the obsolete COP.

An introductory email was sent to all potential participants with a participant information sheet to offer them an opportunity to discuss the research and ask questions using email correspondence. A template of this introductory email to approach participants was drafted during the ethics application. (Appendix 12). The participant information sheet (Appendix 13 and 14) for both groups A and B included: details of the research aim, clarified issues of confidentiality and anonymity, the role of participants, and the right of the participant to withdraw from research without penalty at any time. It identified the researcher's role and how the research would be disseminated. If the participant expressed an interest in the research project, a consent form (Appendix 15 and 16) was sent to complete. All the interviewed participants completed a written consent form.

College of Physiotherapy accredited musculoskeletal APPs: The former COP accredited musculoskeletal APP were sourced by contacting PNZ. An email was sent to PNZ with the participant information sheet and consent form requesting them to disseminate it to the relevant potential participants. PNZ forwarded the researcher a list of 22 clinicians with their details who had consented to be a part of the research study. Participants were chosen for their affiliations with PBNZ, PNZ, and other relevant bodies, their past roles in these organisations, and after discussion with the supervisors.

Musculoskeletal APPs: Due to a lack of a comprehensive sampling frame, the number of physiotherapists working in DHB in APP roles was unknown. This information was sourced by sending an email to the DHB Leaders and Manager's special interest group, which comprised of Professional and Clinical leaders and Allied health managers. There was virtually no

response to this email. One musculoskeletal and one ED APP from DHB were interviewed after receiving confirmation of locality agreements from their respective organisations (Appendix 17 and 18). Two APP from sports and two from musculoskeletal speciality were sourced through the AUT supervisor's contacts.

Stakeholders: The contact details for stakeholders who represented the professional body and legislative body were sourced through their organisations. The ACC manager had interviewed for the PNZ magazine, and his contact details were sourced through PNZ using the same processes as before. The orthopaedic consultant details were sourced from their private practice website. Another orthopaedic consultant initially agreed but then could not commit to the interview due to work-related issues. A locality agreement was obtained prior to interviewing the orthopaedic surgeon who worked part-time in a DHB. The sports physician was sourced through the AUT supervisor's contacts. Two hospital managers were contacted. One did not respond despite sending two emails. The second manager responded to one email but then failed to respond to the second email.

Data collection

All interviews were conducted in Auckland from June 2019 until January 2020. Physiotherapists and stakeholders based in South Island or outside Auckland were interviewed using Skype/Zoom interview technology. Zoom was used in preference to Skype as it allowed the researcher to record the interview easily. Auckland based stakeholders and physiotherapists were interviewed either face to face or using the Zoom interviewing technique. Consent for this electronic interview process had been gained from the AUTEC (Appendix 16). These semi-structured interviews were conducted in a location and at a date and time convenient for the participants. A face-to-face interview was undertaken at the participant's office. The interviewee was requested to book a quiet interview room to enable the process of interview and recording.

Before the interview

Preceding each interview, the researcher prepared for the interview. An interview protocol template was designed and utilised to ensure that all aspects of the interview were covered to include consent for the interview and recording of the interview (Appendix 19).

During the interview

In brief, the researcher explained the research aims, and checks were undertaken to ensure that the consent forms had been signed either using paper copies or electronically. All interviews were recorded, and permission for this was confirmed verbally by each participant before the interview. Zoom interviews do both audio and video recording at the source, and

participants were informed that the video recording would not be utilised for data collection purposes. For the face-to-face interviews, a tape recorder was used. During the interview, the researcher also made notes. Most interviews lasted for 60- 70 minutes; two interviews lasted 90 minutes. Interviewees were asked for recommendations on relevant documents and any further suggestions on suitable candidates to interview. All participants were informed that the interview would be transcribed verbatim.

After the interview

Each interview was transcribed verbatim by the primary researcher using the Dragon speech recognition application. Ethics for this had been obtained (Appendix 20). Each recording was reviewed alongside the transcript to ensure its accuracy. The verbatim transcript was returned to the respondents for attesting accuracy, verification, and editing of information. Some respondents requested removing personal anecdotes and some minor changes to grammar, spelling, or words. Some corrected the names that they had mentioned during the interview. Reminders had to be sent to some respondents to verify their transcripts. A couple did not alter anything in the transcript but indicated their acceptance. Memos were written following each interview. The corrected interview transcripts were then read and re-read repeatedly to familiarise and immerse in the data.

Storage of data

A case study database was established, enabling both physical and electronic storage and retrieval of the study data. The completed consent forms were stored in a locked filing cabinet of the primary supervisor and not accompanied by any research data. All collected data were stored on a password-protected computer during the research period with the researcher and then stored on a USB as per the AUTEC policy for six years. After this time duration, the data will be destroyed.

Data Analysis

In a case study research method, data collection and analysis occur simultaneously (Costello, Ackroyd, & Fleetwood, 2000). Data were analysed inductively. Nineteen interviews were included in the analysis as one participant opted out of the research. Threads of knowledge were gathered for each interview and woven with the others. Results from the 19 threads were included in the data analysis. The interviewees are listed in Table 2 below to include only their roles and employers to maintain anonymity within the small sample.

Table 2 List of interviewees, roles, and employers

Interviewees	Roles	Employer
PBNZSP 1	MSK Specialist	Private/ DHB
PBNZSP 2	MSK Specialist	University/ private
PBNZSP 3	MSK Specialist	Private
PBNZSP 4	Sports Specialist	Private
PBNZSP 5	MSK Specialist	Private
PBNZSP 6	MSK Specialist	Private
COP1	MSK APP	Private
COP2	MSK APP	Private
APP1	ED triage APP	DHB
APP2	MSK APP previous DHB APP	Private
APP3	Orthopaedic triage APP-MSK	DHB
APP4	Private practice owner, MSK APP	Private
APP5	Head of sports therapy	Government
APP6	Private practice owner, sports APP	Private / Government
ST 1	Sports Physician	Private
ST 2	PBNZ executive	Private
ST 3	PNZ executive	University
ST 4	Orthopaedic Surgeon	Private/ DHB
ST 5	ACC Manager	ACC

Note. (Emergency Department-ED, District Health Board-DHB, Musculoskeletal-MSK, College of Physiotherapy-COP, Accident Compensation Corporation-ACC, ST-Stakeholders)

Except for two stakeholders, all other interviewees had a physiotherapy background. Some interviewees had been practising the APP role for thirty to forty years, and they had experienced the evolution of the physiotherapy profession within NZ. These interviewees shared the profession's trials and tribulations and discussed the APP's role within the wider context. All interviewees offered valuable insights. There was a wide breadth of experience within the APP roles and stakeholders. Most interviewees found it easier to talk about the scope of practice or niche for the APP role, but they consistently struggled with the question of clinical liability and governance. Stakeholders better articulated clinical liability, probably due to their medical background and strategic overview.

Most interviews flowed well. In qualitative research, the researcher is considered an integral part of both the inquiry and interpretation of gathered data (Berger, 2015). A researcher comes into the research with their assumptions, and their intimate involvement in the research enables them to understand others' experiences and their own. One of the difficult parts of this process as a researcher was understanding NZ health systems' complexity, nuances, influence on practitioners, and their perceptions of the APP role. It was illuminating to view the APP role from individual lenses, understand the similarities and differences, manage personal reflexivity, and then make sense of the whole.

Steps to analyse data

Databases were created to record the data using Yin's study design principles. Microsoft word template was used to create the transcripts, but coding and matrix development was performed using an Excel database. Numerous key steps were undertaken in the Qualitative Content Analysis (QCA) process to support valid and reliable inferences from data. These steps include transcription, coding, developing sub-categories and categories. Interviews were transcribed, and transcripts were repetitively read to achieve immersion and obtain a sense of the whole (Graneheim & Lundman, 2004; Tesch, 1990). Transcripts were noted, colour highlighting the main points from individual interviews and field notes to capture the key thoughts or concepts or meaning units. Mapping the data from multiple sources is an important task. Analysis and data display processes described by Miles, Huberman, and Saldaña (2014) were used in the study, beginning with coding. The research's coding prototype was designed based on Graneheim and Lundman's (2004) template (Appendix 21). Collated documents were assembled and reassembled in both Excel and Word databases to enable more in-depth analysis.

Data analysis was undertaken utilising an interpretivist approach to understand the socially constructed meaning for the APP role in its current context based on local and international knowledge whilst recognising the evolutionary changes in the NZ context. The interpretivist approach refers to the unique entanglement of the researcher with their research and the researched (Dean, 2018). According to the interpretive paradigm meaning is constructed from the data. The process of the researcher engaging with the participants and arriving at a level of interpretation of data combines elements of researcher reflexivity, social and cultural construction which, when combined with memory, learned convention, and narrative models, tell the participants stories (Sandelowski, 2002). Sandelowski refers to interpretive validity within data analysis, which involves providing an accurate account of the meaning of data gathered from data sources grounded in participants' language and relies on their own words and concepts (Sandelowski, 2000). Two cycles of data analysis were undertaken.

Cycle one of data analysis

In cycle one, level 1 coding was undertaken from the transcripts to summarise segments of data. The coding was entered into a visual coding template which was created on flip charts using colour-coded papers. A coding map seen in Figure 2 below was designed to identify semantic and latent codes.

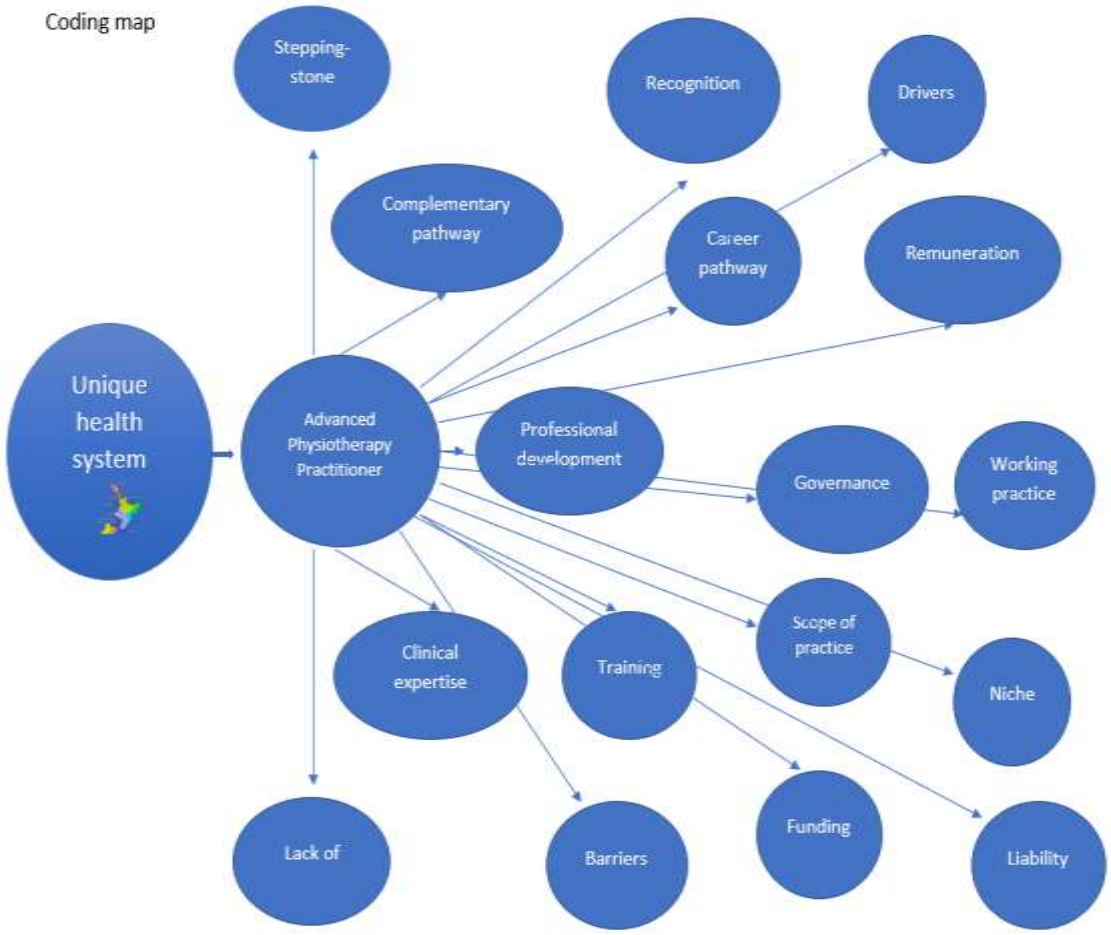

Figure 2 Coding map for case study research

Each interview question from the interview protocol was analysed separately by clustering the relevant data from the 19 interview participants and loading it onto a matrix. Data saturation was noted. Comparisons were made between the interviews of physiotherapists and stakeholders. The individual responses in this matrix were then disassembled and reassembled congruent to Robert Yin's and Miles, Huberman, and Saldaña's qualitative data analysis principles to identify broad sub-categories and categories (Miles et al., 2014; Yin, 2015). Sub-categories were based on how different codes were related and linked (Patton, 2002). The abstraction of sub-categories led to the development of categories (Appendix 22). Abstraction involves thinking about the interactions and combinations of the data components to inform understanding of events and subsequent category and theory building (Pawson, 2013). Questions from interviews formulate categories in exploratory case studies (Cavanagh, 1997). The categories were colour-coded depending on suppositions. Analytic memos, providing details of the researcher's thinking and decision-making, were kept. PBNZ specialists, COP, accredited APP, and musculoskeletal APP were analysed individually and compared with the stakeholder data to understand the weighting of different concepts before taking it forward for further analysis.

Cycle two of data analysis

Data from the first cycle were assembled and coded into more meaningful units of analysis. Transcripts were re-read, and a level 2 coding was then undertaken from the transcripts using Miles and Huberman's principles to identify if any new semantic or latent codes could be identified using this method (Miles et al., 2014) (Appendix 23). In the second cycle of coding, summaries from the first cycle were grouped into smaller sub-categories and categories. Data were again assembled and reassembled for the second phase of analysis (Appendix 24). Sub-categories were grouped to align with key categories. The data were grouped and sub-grouped into varied combinations to answer the research question, and its aims. Categories were then colour-coded and linked to the quotes from the participants. Content analysis was undertaken to identify the weighting for repeatedly echoing concepts within the interviews. This dynamic cyclic process was further strengthened by the reflective diary and a reflexive stance. This process enabled an in-depth analysis of the interview data.

Development of categories and sub-categories

Research aims were explored by analysing all data sources. Reflection and analysis of categories began early in each interview process and started with coding, reading, and writing. After reading through the interviews and reflexive diary, words and ideas were collected and put into a matrix. As deeper analysis continued during assembling and reassembling of data from all sources, it offered new perspectives and insights (Appendix 25). The emergence of insights happened with the researcher engaging with the participants, supervisors, and reading relevant literature. The reflexive journal kept throughout the process also contributed to the reflection on categories and maintained a strong relationship in considering the parts along with the whole. Replicated words and ideas were noted and posted on poster paper (Appendix 26). Many ideas appeared recurrently; some offered new perspectives and added depth and breadth to each category. These words and ideas were played several times before connections and similarities were found, and within these, the sub-categories and categories emerged. Three categories emerged: 'workforce development,' 'service development,' and 'professional development.' Each category had three sub-categories. The three sub-categories and categories are illustrated in Figure 3 below.

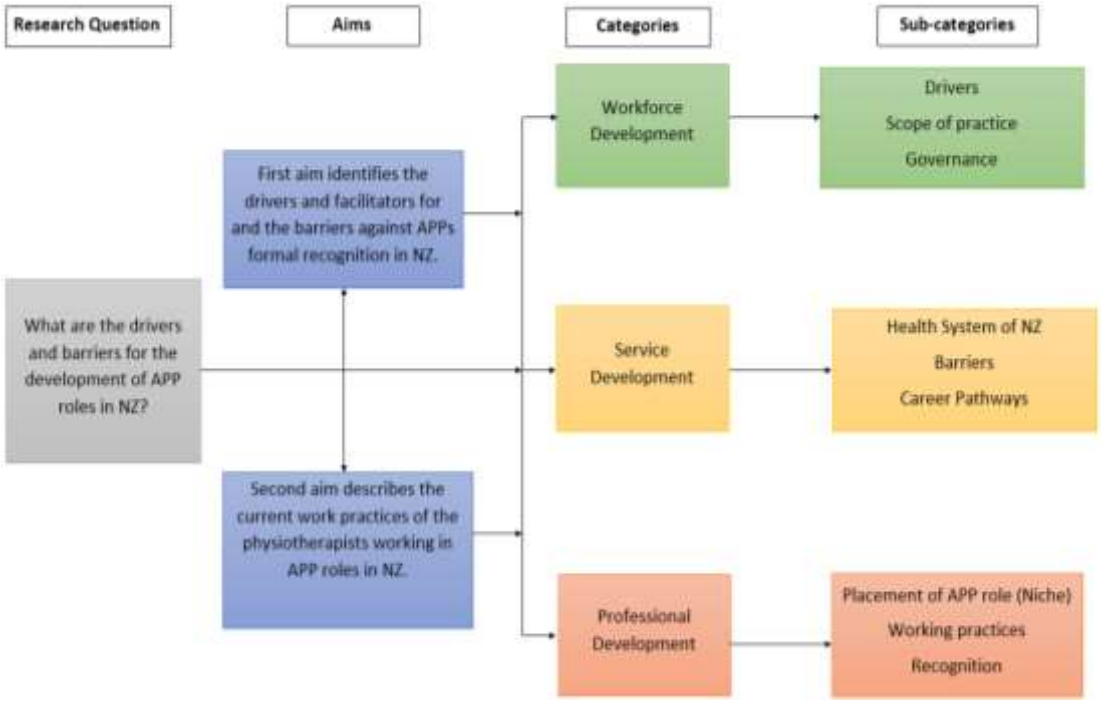

Figure 3 Diagram of research question, its aims, development of sub-categories and categories

Workforce development relates to strategic drivers for workforce development and mechanisms to facilitate this change. It relates to national directives, policies, and frameworks to embed the creation of APP roles. Codes such as drivers, scope of practice, clinical liability, clinical and legislative governance of roles, autonomy, clinical risk, vulnerability, which underpin strategic initiatives, coalesced into three sub-categories: drivers, scope of practice, and governance. The second category, service development, relates to local organisational or departmental needs. This category includes elements of inter-professional practice, organisational drivers and barriers, culture of the organisation, and local practices. Codes such as clinical and career pathways, organisational drivers and barriers, health systems, funding, and remuneration, were merged into sub-categories: health systems, barriers, and career pathways. The third category, professional development, relates to professional development through training, professional development activities, professional drivers and barriers, and desire for APP role creation. Codes such as working practices, professional identity, recognition, professional development, training, peer review, drivers and barriers, and placement of APP role (niche) for the role were melded to form sub-categories: placement of APP role (niche), working practices, and recognition. Some sources of data added a lot to one category others offered less or not at all. Some sub-categories overlapped categories.

For visual ease, diagrams were created from the data, explaining the process of analysis in a simplified manner (see Table 3 below).

Table 3 Analytical steps for each method leading to triangulation of data

Interview		Document analysis		Qualitative analysis of PBNZ questionnaire	Triangulation
First level analysis	Second level analysis	Documents	PNZ survey		
All interviews were read and transcribed	All interviews were re-read	Created Excel database to capture all data. Data were entered to tease out details using a template	Aggregated responses from PNZ survey were clustered	Responses from each question from PBNZ survey were clustered	Comparative analysis of coding 1 and 2- identified inductive and deductive codes (semantic/ latent)
Coding-1 (Graneheim and Lundman -2004)	All interviews were re-recoded- Pattern Coding 2	Documents coded	Responses from each question on PNZ survey were disassembled	Responses from each question from PBNZ survey were reassembled	Created matrix of codes from all categories and assembled and reassembled data
Each interview question was analysed separately by clustering data from 19 interview participants	Created a matrix with codes from level 2 coding	Coded documents were incorporated with interview coding 2 to re-assemble data	Responses from each question on PNZ survey were reassembled	Responses were compared, contrasted, and grouped with data from documents and interviews	Data from interviews, documents, PNZ questionnaire and PBNZ survey was combined, categorised, sub-categorised and common threads and variations were identified.

Interview		Document analysis		Qualitative analysis of PBNZ questionnaire	Triangulation
First level analysis	Second level analysis	Documents	PNZ survey		
The individual responses were disassembled and reassembled (Yin). Broad categories were assigned to regrouped information	Data was disassembled and reassembled into categories	Document grouping was undertaken depending on categories	Responses were compared, contrasted, and grouped with data from documents, qualitative PBNZ survey analysis and interviews	Responses from each question from PBNZ survey were dis-assembled	Generated sub-categories for each category
Created a matrix using Miles and Huberman's principles to record all responses from 19 participants	Data were cross referenced for coding 1 and 2- common themes were identified from interviews	Data from documents were triangulated with interviews and qualitative PBNZ survey data analysis		Responses from PBNZ survey were re-assembled	Generated categories: Workforce development, Service development and Professional development.
Content analysis count – code groupings, DHB vs. APP vs. academic, PTs vs. non-PT	Themes were colour coded and refined			Responses from PBNZ survey were re-assembled	
Data analysed for APP, PBNZ specialists and stakeholder individually	Data was matched to quotes			Responses were compared, contrasted, and grouped into documentary evidence	
	Data were triangulated with documents, qualitative PBNZ survey data analysis				

Writing and scrutinising the field journal contributed to the research triangulation, enhancing qualitative validity and credibility. Depending on research aims, data were regrouped into three themes: 1) information gathered in the documents, interviews, and qualitative survey data analysis, 2) information supporting research aims, and 3) information offering new ideas. Finally, all of the data were read, summarised, and organised (Yin, 2003). Explanation building is an iterative process involving comparing the data to the theory, revising the theory, comparing the data to the revised theory repeating the process, considering rival explanations, and keeping in mind the study's purpose (Yin, 2003, 2014). Qualitative Content Analysis was summarised, finally including it in data triangulation for the process of addressing reliability and validity.

3.7 Triangulation

Triangulation has been advocated as a methodological technique not only to enhance the validity of the research findings but also to achieve ‘completeness’ and ‘confirmation’ of data using multiple methods or approaches, to minimise one method's weaknesses or challenges by the strengths of other methods (Regmi, 2014; Yin, 1994). Denzin (2009) proposed four triangulation types: data triangulation, researcher triangulation, methodological triangulation, and theoretical triangulation. To ensure that case studies were credible, rigorous, and applicable, Merriam proposed the use of triangulation of data (Merriam, 1998, 2009). Stake also stated that the need for triangulation arose from the ethical need to confirm the validity of the case study research processes and ensure its accuracy (Stake, 1995). It has been argued that triangulation methods risk focussing the analyst excessively on the similarities between sources and methods as it is assumed that the addition of this source or method was designed to confirm an existing interpretation (Pope, Mays, & Popay, 2007). Tobin and Begley (2004), however, suggest that triangulation should extend beyond the conformability of data relative to fixed points of comparison to provide multi-dimensional points of reference to enhance the completeness of findings.

As seen in Figure 4 below, this study used data triangulation to reveal similarities and incongruencies between the data collected from varied sources. As the APP role is multi-factorial, triangulation would be able to examine its complexity from multiple dimensions. Data and QCA processes from document analysis, qualitative PBNZ survey data analysis, and interviews were triangulated to ensure this study's accuracy, validity, and trustworthiness. Attention was directed to ensure the case study's credibility by adhering to the concepts of validity, credibility, trustworthiness, and reliability. Attention to detail within the research method enhanced the analysis and increased the study's rigour and validity (Zucker, 2009).

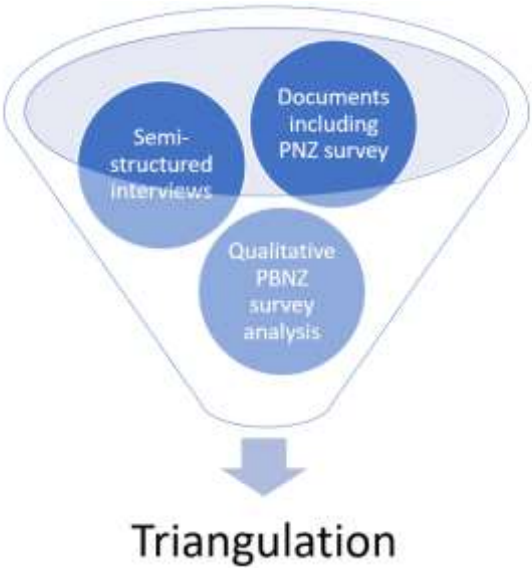

Figure 4 Data triangulation

3.8 Writing -Case study report

Case study reports and writing styles are guided by the potential audience (Yin, 1984). The information included within the case study report provides an enhanced understanding of the phenomena and context, and a full descriptive style was chosen to explain the findings. This report's outline included stating the problem, listing the research questions, describing the methods used to conduct the research and any potential flaws in the method used, explaining the data gathering and analysis techniques used, and concluding with the answers to the questions and suggestions for further research. The researcher developed each issue using quotations or other details from the data collected and pointed out the triangulation of data where applicable. The report also included confirming and conflicting findings from literature reviews. The conclusion section made assertions and suggestions for further research activity so that another researcher may apply these techniques. The research was written to demonstrate its significance, show the completeness of data, and the absence of artefactual conditions. It also considered alternative theories, perspectives, and explanations supporting and challenging the data gathered (Yin, 2014).

3.9 Summary of Chapter 3

This chapter provided clarity on concepts of paradigms and their underpinned ontologies, epistemologies, and methodologies. It defined the chosen interpretivist paradigm and case study research methodology to answer the research questions and meet its objectives. The choice of using a case study was rationalised while considering its advantages and disadvantages. The study examined the role of the unit of analysis or ‘case’ and its boundaries. Data collection in the study was attained through document analysis, qualitative survey data

analysis, and semi-structured interviews. Finally, the study discussed the triangulation model and ethical compliance to ensure validity, credibility, and rigour of practice. The next chapter focuses on the study's findings to lead to further discussion and summarisation of results.

Chapter 4 Results – Workforce development

4.1 Introduction to results chapters

The purpose of the results chapters is to systematically report key findings from the data sources used in this research to answer the research question and its aims. As detailed in Figure 5 below, data analysis revealed three major categories 'workforce development,' 'service development,' and 'professional development.'

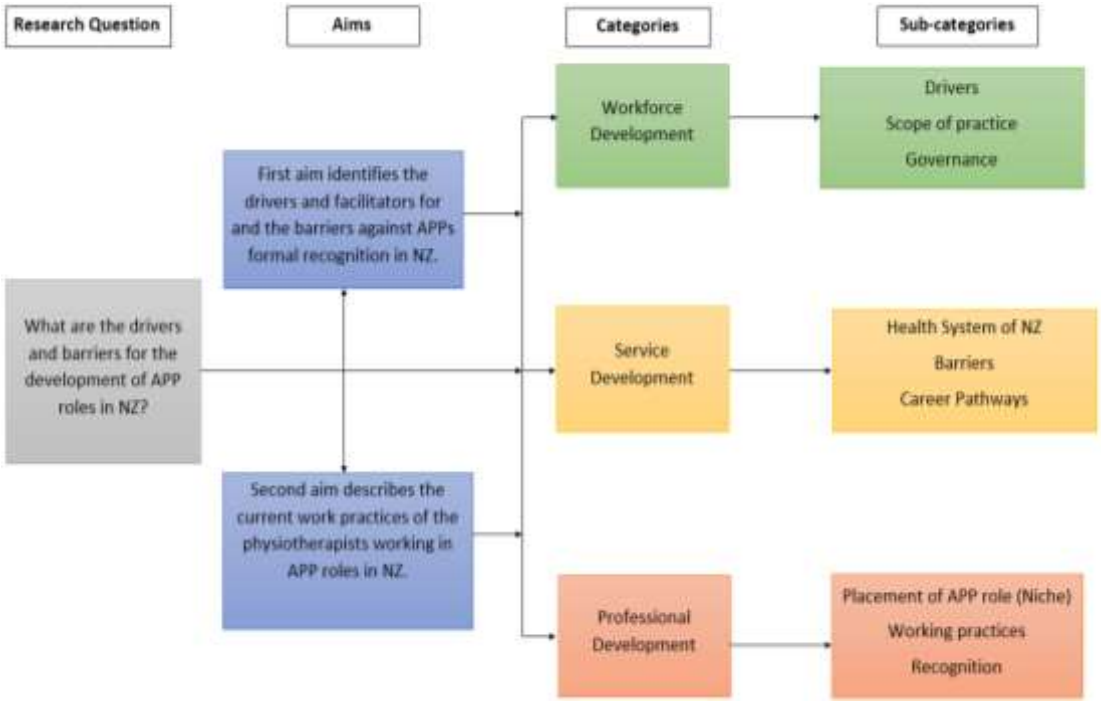

Figure 5 Diagram of research question, its aims, development of sub-categories and categories

Categories refer to the grouping of similar information to define its characteristics to answer a research question and its aims (Miles et al., 2014). Morse (2008) explains that the ultimate use of categories is in the development of a taxonomy, in which the researcher identifies relationships between categories and sub-categories. The three broad categories, workforce development, service development, and professional development, relate to the three domains that impact the creation, implementation, and development of the APP role. The sub-categories capture the embedded characteristics within each category.

This research explored the question *'What are the drivers and barriers to the development and recognition of Advanced Physiotherapy Practitioner roles in New Zealand?*' This research question had two aims. The first aim was to identify the drivers for and the barriers against APP's formal recognition in NZ. The second aim was to describe the current working practices of the physiotherapists working in APP roles in NZ. The research aims relating to drivers and

barriers and working practices are spread across all three categories. However, drivers for the APP role development have been combined and described in the workforce development category as it relates to ensuring a regulated framework for the APP role creation and governance. Barriers, on the other hand, have been grouped into the second category, service development which influences the APP practice within its healthcare environment and organisational systems. Category two, service development, relates to the operational systems of APP service implementation. The third category, professional development, focusses on concepts of professional practice, scope, training, and development of physiotherapists. Professional development includes the results for the second research aim of working practices as this focuses on addressing the issues related to physiotherapy professional and APP clinician development.

Each results chapter introduces and discusses one distinct category and its linked sub-categories. Every chapter includes the triangulation of all data sources. Data were gathered from 1105 sources (50 documents, 53 PNZ survey respondents, 19 interviewees, and 983-PBNZ survey respondents). The list of interview participants is detailed in Table 4 below, and the breakdown of 1105 sources is detailed in Table 5 below.

Table 4 List of interviewees, roles, and employers

Interviewees	Roles	Employer
PBNZSP 1	MSK Specialist	Private/ DHB
PBNZSP 2	MSK Specialist	University/ private
PBNZSP 3	MSK Specialist	Private
PBNZSP 4	Sports Specialist	Private
PBNZSP 5	MSK Specialist	Private
PBNZSP 6	MSK Specialist	Private
COP1	MSK APP	Private
COP2	MSK APP	Private
APP1	ED triage APP	DHB
APP2	MSK APP previous DHB APP	Private
APP3	Orthopaedic triage APP-MSK	DHB
APP4	Private practice owner, MSK APP	Private
APP5	Head of sports therapy	Government
APP6	Private practice owner, sports APP	Private / Government
ST 1	Sports Physician	Private
ST 2	PBNZ executive	Private
ST 3	PNZ executive	University
ST 4	Orthopaedic Surgeon	Private/ DHB
ST 5	ACC Manager	ACC

Note. (Emergency Department-ED, District Health Board-DHB, Musculoskeletal-MSK, College of Physiotherapy-COP, Accident Compensation Corporation-ACC, ST-Stakeholders)

Table 5 Results from data sources documents to include PNZ survey, PBNZ survey and semi-structured interviews

Documents-included documents and aggregated data from PNZ survey in 2017	Qualitative survey data analysis-Physiotherapy Board of NZ survey in 2013	Semi-structured Interviews from 2019- 2020
Documents 50 documents were analysed. These were grouped in three groups. **Group 1 -**19 documents reviewed individual countries' health systems and supported the drivers for creating APP roles. **Group 2 -**24 documents explored the APPs working practices, scope, and professional advocacy. **Group 3 -**7 documents supported public safety and provided governance for the advancement or extension of APP practice	983 physiotherapists responded, representing 24% of the profession. The representation within the survey included 47% clinicians from private practice, 20% clinicians from DHB, 3% Leaders or administrators from DHB, 2.5% Leaders or administrators from other health sectors, 5.5% academics, 17% who did not work in NZ, and 13% who identified themselves as 'Other category.' The representative sample in the PBNZ survey predominantly included clinicians from musculoskeletal specialty; however, there was representation from respiratory, pelvic health, lymphoedema, paediatrics, neurology, sports, ED, mental health, chronic pain, vocational rehabilitation, and clinical education physiotherapists.	19 interviews were included in the analysis Group A and group B were selected using a purposive sampling technique. Group A included physiotherapists, and group B included stakeholders. **Group A** was further sub-divided into three categories. **Category 1 -**included physiotherapy specialists accredited by the PBNZ. Currently, there are ten physiotherapy specialists, out of which seven are musculoskeletal specialists. All seven were interviewed, but one PBNZ specialist dropped out due to small sample size. **Category 2 -**included two APPs from the now obsolete College of Physiotherapy (COP). **Category 3 -**included six APP from the musculoskeletal background. These included two APPs from sports, one from the Emergency Department, and three from the general musculoskeletal outpatient background.
PNZ survey 53 physiotherapists responded. The College of Physiotherapy (COP) representation included 7% Life members, 17% Fellows, 46% Advanced practitioners, and 28% members. The majority of the respondents were from a musculoskeletal background with some representation from other specialities such as sports, women's health, cardio-respiratory, neurology, paediatrics, hand therapy, occupational health, older adults, and chronic pain.		**Group B** included stakeholders. This group comprised one orthopaedic surgeon, one sports physician, one ACC manager, one PBNZ executive team member, and one PNZ executive team member.

Table 4 shows a list of participants who engaged in the interviews. Participants were allocated prefixes depending on the three categories from which they were selected and numbered according to the interview order. So, the PBNZ specialists were named PBNZSP, College of Physiotherapy APP were named COP, and APP from musculoskeletal speciality, emergency department, and sports speciality were just called APP. Stakeholders were assigned a prefix of ST and numbered depending on interviewing sequence. Information of participants was limited to their areas of work and employer to maintain their anonymity.

International document analysis was included in the case study methodology as participants referred to international documents that underpin APP roles. International documents were also used as a reference point and as a learning opportunity to draw on experiences of other countries which have delivered the APP role for the last thirty years. The drivers in the UK, Australia, and Canada are specific to their countries but share the commonality of the burden of care and fiscal constraints with NZ and therefore represent drivers for the APP role. As NZ has limited literature on APP roles, there was also a need to use a baseline to analyse the relevance of current research findings.

4.2 Introduction to workforce development chapter

Chapter four is the first of the three results chapters, and it presents detail on the findings for the category 'workforce development.' Workforce development is an essential aspect of health policy to ensure that the workforce is adequately configured and responsive to meet New Zealanders' current and future health care needs. Workforce development is driven by healthcare expenditure, demand for services, workforce shortages, and an inadequate skill mix (Ministry of Health, 2006). The workforce development category addresses APP workforce development and alignment with the strategic drivers that dictate the national workforce development policies. This category is examined through its three sub-categories: drivers, scope of practice, and governance, as shown in Figure 6 below.

Figure 6 Workforce development and its sub-categories

4.3 Sub-category 1: Drivers

Drivers for APP roles was a clear sub-category that emerged across all three major categories. It has been positioned in the workforce development category as governmental, strategic, and legislative drivers are the key contributors, followed by service and professional drivers. All data sources contributed information relevant to this sub-category, albeit in varying degrees. Multiple drivers for the APP roles appear to exist within and outside the profession. These can be economical, professional, and ethical. Drivers for the APP roles appear to originate from stakeholders such as professions allied to physiotherapy, consumers of care, and insurance companies; in a quest to receive excellent care from experts in the profession. The international drivers were identified in chapter two of this thesis. One of the interview questions in the current semi-structured interviews was '*What are the facilitators or drivers to APP role development in the New Zealand context*?' Data analysis led to the interviewees' responses being grouped into governmental, legislative, system/service objectives, surgeon-led drivers, patient's needs, access to care, and profession-led drivers. These headings have been used to group data from all sources.

4.3.1 Government drivers

Analysis of all data sources identified government funding constraints, disparity in resources, and the demand for care as key drivers for change within the health system. All sources identified that this health burden drove the need to create alternative care models. Analysis of international documents from group one (refer to chapter 3 Table 1) exploring the drivers for APP roles highlighted three documents from the UK, one from Canada, and four from Australia.

The three documents from UK which address the APP drivers are '*The NHS Long Term plan*,' '*Interim NHS People Plan*,' and '*Interim NHS People Plan: The future Allied Health professions and psychological professions workforce*' (National Health Service, 2019a, 2019b, 2019c). '*The NHS Long Term plan'* outlines the concerns of funding, staffing, increasing inequalities, and pressures from the growing ageing population. One of its recommendations is the expansion of physiotherapists in the primary care sector as first specialist assessors to enable patients to see the right clinician at the right time (National Health Service, 2019c). The document '*Interim NHS People Plan'* highlights the ten-year vision of the NHS to improve the quality of care and health outcomes across all major health conditions, undertake prevention, act on health inequalities, and harness technology to transform services (National Health Service, 2019a). Embedded within this document is the '*Interim NHS People Plan: the future allied health professions and psychological professions workforce.*' This document proposes that the

expertise of the allied health workforce be directed into decreasing the over-reliance on hospitals and reducing unnecessary care costs in the primary care sector.

'*The role of physiotherapy in Canada: Contributing to a stronger health care system'* examined the opportunities to optimise the role of rehabilitation within a changing Canadian health landscape to stakeholders, funders, and insurance companies (Martinello et al., 2017). The Canadian document highlights the role of physiotherapists in optimising healthcare through increased emphasis on upstream solutions and diversion of care from expensive acute healthcare interventions and emergency services to affordable, timely community services. This is anticipated to reduce the healthcare burden on government budgets and improve the patient experience. The Australian documents are included under patient needs.

Five key documents in NZ address the health needs of New Zealanders and propose solutions to provide effective, timely care. These documents are: '*Better, Sooner, More Convenient Health Care in the Community'* (BSMC), '*New Zealand Health Strategy future direction,'* '*New Zealand Health Strategy Roadmap of actions,'* 'The *Report on the Musculoskeletal Workforce Service Review,'* and '*The role of Health Workforce New Zealand'* (Health Workforce New Zealand, 2011; Ministry of Health, 2011, 2014, 2016c, 2016d). The '*BSMC*' policy included a range of initiatives to facilitate horizontal and vertical integration of a wide range of primary and hospital services to share responsibilities and meet patients' needs to achieve optimal health provision. This document outlined the financial impact of health and identified improvements within service deliveries. It considered solutions through redefining the roles of various key healthcare providers, working collaboratively. This document considered the role of physiotherapists and provided an example of their impact on falls prevention programs in the community, working in conjunction with other multidisciplinary providers (Ministry of Health, 2011, p. 14).

In 2016, the MoH released '*New Zealand Health Strategy.'* which provided a framework for the health system to address its impact on the country's health budget by addressing the pressures and significant demands of its health care services. The health strategy has two parts: future directions and a roadmap of actions. The future directions section puts greater emphasis on maintaining health, health literacy, and illness prevention to reduce future demands and allow New Zealanders to '*live well, stay well, and get well.'* The future directions component identified that New Zealanders' health needs and expectations were changing, and it pursued equitable outcomes for all New Zealanders within the next ten years. The '*New Zealand Health Strategy Roadmap of actions'* provides a template with 27 areas for action. This is to ensure that the NZ health strategy's key themes are implemented in a tiered fashion.

'*The New Zealand Health Strategy Roadmap of actions'* document supports the creation of APP roles by proposing workforce development initiatives, improving capability and capacity that will meet the nation's needs (Ministry of Health, 2016d, p. 27). The areas of work set out in this roadmap will have a critical role in driving change.

Interviewee ST3 considered the role of the health strategy and how it supports the APP role development. According to this stakeholder, the demand for services, resource shortages, and complexity of care would need to be managed within both hospital and community sectors; hence interviewee ST3 anticipated a need for APP in both sectors. Interviewee ST3 stated:

> The 2016 New Zealand health strategy is looking for innovation. The fact of the matter is that the resources available to deliver healthcare are not increasing at the same pace as our population. We cannot continue to do what we have always done with effectively less resources for a greater population. So, I think being able to reimage the health system and how that is delivered and pushing care from inside hospitals to more being dealt with within the community. **(ST3)**

As discussed in chapter one, HWF provides national guidance on the NZ health and disability workforce to the Minister of Health (Ministry of Health, 2014). The committee provides leadership and advice on workforce planning, gathers intelligence and workforce data, and invests in health workforce training. Working with the health sector, the HWF builds a sustainable, well-equipped workforce to meet New Zealanders' current and future healthcare needs (Ministry of Health, 2016a). In doing so, it encompasses the NZ Health Strategy and its accompanying Roadmap of Actions.

In 2011, HWF published the '*Report on Musculoskeletal Workforce Service Review.*' In this document, HWF reviewed the burden of musculoskeletal care and the possibilities of up-skilling the physiotherapy workforce to meet the needs of New Zealanders (Health Workforce New Zealand, 2011, p. 4). This report specifically referred to the advanced physiotherapy roles and highlighted the impact of this role in the provision of musculoskeletal care. The report outlined the development of appropriate pathways for patient care, defining models of care to improve the efficiency and effectiveness of musculoskeletal care. It supported the delivery of the BSMC policy. Its recommendations included: 1) providing opportunities to the physiotherapy workforce to upskill to undertake musculoskeletal assessments at first level triage, 2) apply the recommendations from BSMC policy and 'Bone and joint decade' initiative (which is a global multidisciplinary collaborative effort to improve quality of life for individuals impacted by bone and joint diseases such as osteoarthritis, and osteoporosis), and 3) improve triage models so that the most appropriate clinician assesses the patient.

'*The role of Health Workforce New Zealand*' document outlined five workforce challenges, some of which act as drivers for developing APP roles (Ministry of Health, 2014). These are 1) significant workforce shortages in rural and provincial areas, 2) an ageing workforce, 3) disparity in representation of cultural minority groups, 4) increasing need for community and health-based care, and 5) government targets to deliver services in specified timeframes. This document recommends an alteration of regulatory reform required to facilitate the APP role development and reduce barriers to innovation.

The need for workforce re-design was suggested by interviewee ST5, who highlighted that modern healthcare delivery was deficient in its spread of professional groups and not fit for current or future service delivery. Interviewee ST5 commented:

> So, if you started from ground zero, would you still have the same group of therapies and nursing and medicine as you do now, or would the professional groups be slightly different? Because the needs of the health system are quite different from what they were hundreds of years ago when these professional groups were developed. **(ST5)**

The same stakeholder commented that these health professions were created historically to meet the health service needs at that time. However, as health needs had evolved, the composition of the future health professions would need to be reconfigured. Interviewee ST5 felt that the healthcare workforce required generalists with aptitude and expertise to deliver good quality holistic care. In interviewee ST5's view, the APP clinician with a wide range of adaptable skills was the future of the workforce as this utilised the most efficient member of a clinical team in the timeliest manner. Interviewee ST5 states:

> From the health system perspective, there is a need to improve the efficiency of the system and better help people get the right healthcare from the right clinician at the right time. At the moment, with the existing models, often people are either receiving decisions from clinicians who don't have the appropriate skill sets to be able to make that determination, or they are spending a lot of time seeing a clinician who isn't going to be the best one to help them with their condition. **(ST5)**

4.3.2 Legislative drivers

Interviews and documents contributed to the identification of legislative drivers. All interviewees indicated that the legislative drivers stemmed primarily from the PBNZ's role as a regulatory authority (RA) to protect the public, stakeholders, and profession. Interviewees anticipated that by authorising the scope of the APP role, the PBNZ would provide the profession with the framework for clinical and legislative governance. Interviewee PBNZSP-1 felt that legislating the scope would provide governance for the role and probably facilitate

tiered funding from either the ACC, DHBs, or insurance providers. Interviewee PBNZSP-1 states:

> I think certainly a regulated role; in other words, a separate scope of practice would certainly provide more safety for the public around the roles. … It may also facilitate the funding streams if we are looking at getting a tiered funding structure, whether it is within the DHB or even within ACC or private health insurers. Having the scope regulated means there has to be a standard, and along with that comes all the ethical and clinical responsibilities of that role. **(PBNZSP-1)**

PBNZ reports from 2012 to 2018 demonstrate that PBNZ has engaged with the physiotherapy profession to chart out a career pathway in a tiered manner by developing the 'Specialist' role first. The supporting governance documents are covered later in the governance sub-category.

4.3.3 System/service objectives

Both interviewees and PBNZ survey respondents believed that the local organisation instigated system/service objectives to increase their compliance with government health targets, overcome workforce shortages, and improve cost-efficiency. This is corroborated in document reviews. For example, the UK launched its first contact physiotherapy practitioner role in the primary sector in 2015 to meet the patients' musculoskeletal needs in primary care and provide a solution to the GP workforce shortage (Downie, McRitchie, Monteith, & Turner, 2019). The document '*First Contact Physiotherapy posts in General Practice*' and ' *A five-year framework for GP contract reform to implement The NHS Long Term Plan*' backed by the British Medical Council underpins this role (British Medical Association, 2019; Chartered Society of Physiotherapy, 2018a). In 2000, '*Meeting the Challenge: A Strategy for the Allied Health Professions*' laid the foundations for advancing allied health professions in the UK. This document highlighted the role of APPs and individual stakeholders in developing APPs' to improve healthcare delivery (National Health Service, 2000). A later document, the '*Allied Health professions into Action*,' is a blueprint to aid the system leaders in making decisions about allied health professionals and utilising their transformative services to address health system challenges (National Health Service, 2017a).

All interviewees felt that within NZ, creating an APP role in a DHB would enable the DHB to meet: MoH waiting list initiatives, reduce breaching of health targets, avoid steep fines for the organisation, assist with service delivery pressures, reduce multiple emergency admissions, improve surgical conversion, and comply with the unmet need. Most interviewees highlighted the existing system's inefficiencies by pointing out that patients were referred by GPs to orthopaedic surgeons when they did not need surgical intervention. All interviewees thought

APPs could support surgeons and GPs in managing their workload and improve the quality of care offered to patients. Interviewees believed that the APP would free the surgeon to see more complex specialised cases and undertake more surgical intervention. Interviewee ST4 commented that the increased demand for healthcare in a DHB setting versus staff shortages of medical doctors, lack of theatre space, and infrastructure contributed to creating an APP role. Interviewee ST4 commented:

> What would be the drivers for it [APP]? I think the overwhelming need for medical treatment and the under-resourcing of medical staff and resources in terms of theatre space, for example. So, we cannot get as many people to operate on, so I think it lends itself to rehabilitating them. But I think access, there is a big push for equity and access, and given this stage in this hospital where I am the only surgeon, there is no other way to get those people seen. I cannot see them all. **(ST4)**

On the other hand, the drivers for creating an APP role in the private sector in the absence of waiting list initiatives fell to the insurer's and funders' service needs. Interviewees PBNZSP-1, PBNZSP-6, and PBNZSP-2 identified that following the ACC contract for PBNZ specialists, accredited APP clinicians who could perform complex assessments and undertake rehabilitation were needed to undertake surplus clinical work from specialists. Interviewee APP4 suggested that MoH's rehabilitative pathways to manage long-term conditions, and ACC initiated Escalated Care Pathways for triage of musculoskeletal conditions, also acted as a driver for creating an APP role in the private sector. All interviewed private physiotherapists suggested that developing an accredited APP role in the private sector would provide the funder with reliable quality clinical care.

4.3.4 Surgeon-led

A small number of interviewees referred to champions of change, visionaries, or people with a strategic overview who facilitated change. Interviewees APP2, APP3, PBNZSP-1, PBNZSP-2, ST1, ST2, and ST4 perceived the surgeon as a driver for creating the APP role. Some interviewees thought that the medical profession had demand and appetite for the role; however, others felt that the APP's diagnostic skills and management challenged some medical colleagues. Several APPs and PBNZ specialists believed that the medical profession was trying to get better standards of care for their patients and endorsed the development of the APP role. All DHB physiotherapists identified the surgeon as a driver of change. Interviewee APP3 stated:

> I think at this stage, the individual surgeon is the driver. Judging by the other centres doing it, it has one surgeon who has an interest or assumes that role of supervising, and they must be willing to take that time. **(APP3)**

4.3.5 Patient needs

All interviewees identified the need to deliver cost-effective healthcare to patients. They discussed that decreasing waiting times reduced downstream effects on patients such as disability, pain, time off work, and psychosocial impact. Interviewees believed that the APP role improved patient outcomes. Interviewee ST5 asserts:

> So, I think what we should always be coming back to is what is the patient experience? Where are the gaps in service? And where can we and what can we do to lead to a significant piece of outcomes. So, whether that is an improvement in the timeliness of services that they receive, or workforce gap the quality of care or better outcomes for the patient, reducing unnecessary risk. **(ST5)**

Interviewee PBNZSP-4 stated that there were multiple drivers associated with enhancing patient care. These stemmed from insurance providers, surgeons, and doctors wanting better care for their patients and also patients themselves who were seeking physiotherapists who would best rehabilitate them. Interviewee PBNZSP-4 commented:

> So, there is a driver to improve standard of care for their patients from an insurance company provider. Also, drivers, I guess from outside our profession but within the medical community looking for better standards of care for the patients. I think then there are probably drivers from the patients themselves … who have had substandard levels of care and they are looking for experts. **(PBNZSP-4)**

In Australia, four documents describe the burden of care for the country in managing chronic conditions and provide drivers for APP role development. These are: '*The National Strategic Action Plan for Arthritis*,' '*National Strategic Action plan for Osteoporosis*,' '*National Strategic Framework for Chronic Conditions*,' and '*National Strategic Action Plan for Pain Management.*' These four documents outline a preventative focus that would significantly reduce the volume and severity of chronic conditions and provide long-term cost savings and better health outcomes (Australian Government Department of Health, 2019a, 2019b, 2019c; Australian Health Ministers' Advisory Council, 2017). The Australian strategic plan for arthritis and pain management specifically highlights multidisciplinary professionals' role in effectively managing chronic conditions, multimorbidity, complications, and associated disabilities. Similarly, in NZ, the '*BSMC*' policy focusses on the delivery of effective, timely care by multidisciplinary professionals by providing examples of innovative practices in different settings.

4.3.6 Access to care

The majority of interviewees discussed drivers such as lack of access to care due to workforce shortages, reduced access to surgeons or GPs in rural areas, and geographic limitations within

NZ. The interviewees recognised that introducing the APP role would improve the entry point into the funnel. Interviewee ST1 identified the opportunities to improve access and entry point into the funnel. Interviewee ST1 suggested that improving access to care, early intervention from APP might facilitate the patient receiving timely appropriate assessment and treatment. Interviewee ST1 commented:

> There is a clear opportunity to improve access by improving the entry point into the funnel. Many patients end up on an orthopaedic surgeon's list, maybe when they never need to be there so triaging. And you know there are a lot of patients that get surgery who don't need surgery, so I think that kind of preventing patients from ever getting to a surgeon. **(ST1)**

Stakeholder ST4 identified that it took ten years to train a consultant to manage specialised workloads. The majority of stakeholders believed that physiotherapists possessed skills to manage a wide range of health and wellness issues. They thought it was essential to work smarter, not just harder; hence it made sense to work collaboratively with APPs who could assess, investigate, and treat patients facilitating surgical vs. non-surgical pathways. All stakeholders also discussed the push for equity and access to care. Interviewee ST4 defined the role of APP in detail:

> Not so much in Auckland, but certainly, there is a long wait time to see the orthopaedic specialists in other parts of the country… Advanced scope practitioners would probably lessen the time for some of these people being seen, being imaged, being investigated, and determining whether they can go down the surgical pathway or the non-surgical pathway. They can be rehabilitated and got back to work early. So, I think that there is definitely a role for these roles in the private sector. **(ST4)**

All interviewees working in private practice and two stakeholders felt that the APP role in the private sector enabled patients to have equitable outcomes. All interviewees thought these roles were cost-effective for insurance companies due to decreased surgical conversion and reduction of high-cost imaging.

One of the College of Physiotherapy recognised APPs (COP1) also identified the population's cultural needs and the importance of matching suitable APP conversant with this cultural need. Interviewee COP1 stated:

> We are a multicultural society where we need to adapt and provide for all the different cultures within New Zealand. I think that is something that we should be thinking about in more detail and potentially something that we could have advanced practitioners with a Māori ethnic background and Pacific as well**. (COP1)**

4.3.7 Profession-led

PBNZ surveyed the physiotherapy profession to gain their perceptions of developing an APP role. Nearly 93% of survey respondents suggested the advantages of developing APP roles by considering its impact on service delivery and career development opportunities. These PBNZ survey respondents commented on the likelihood of cost savings to the DHB, private sector, and the MoH. The PBNZ survey respondents thought that the APP role would fit well with the demands of future health needs and be made up of a highly skilled workforce who would meld new knowledge. The survey respondents believed that the development of these APP roles would benefit patients, provide cost savings due to decreased waiting times, improved onward referral, early diagnostics, and improved access to appropriate treatment options. The PBNZ survey respondents outlined that this role development would provide recognition for clinicians with considerable experience and qualifications striving to excel clinically, develop career pathways for the profession, and clinical leadership opportunities. This opinion was reiterated in the PNZ survey and semi-structured interviews. Interviewee ST2 also stated:

> The general drivers are quite organic, and they come out of people's desire to learn, to do something different, to be able to provide better services to more complex patients, to work in a narrower field of practice with a greater level of expertise …or doing a more advanced role and freeing the surgeons to operate. **(ST2)**

4.3.8 Summary of drivers

Data triangulation for the drivers in the NZ context suggests that the development of APP roles in NZ is shaped by the burden of healthcare, governmental and legislative policies, access to care, patient and professional needs, and NZs geography. Overall, this accountability to deliver timely healthcare appears to be the primary driver for developing the APP role. Responsibility for healthcare provision has led the funders of healthcare to explore avenues that offer cost-effective outcomes. Government documents provide details of strategies and goals for improving healthcare provision, which act as drivers for creating APP roles in NZ and lay the strategic foundations for workforce development of the physiotherapy profession. The PBNZ survey and interview respondents further expounded these drivers from their own experiences and knowledge of the NZ health systems. Triangulation of all data has flagged some unique drivers relevant to the NZ context, such as surgeon as a driver, legislative drivers, and profession-led drivers. This data guides us to explore the reasons why there are so few APP practitioners in NZ. For this, we will need to review the barriers covered in chapter five.

4.4 Sub-category 2: Scope of practice

The majority of the data for this sub-category were sourced from documents. Data gathered from interviews and surveys relating to the scope of practice connected to working practices of APP has been included in chapter six. This sub-category examines the scope of general physiotherapy and advanced practice. This section presents the stance of various Regulatory Authorities (RA) and professional bodies on the scope of physiotherapy practice. Internationally, there has been a development of innovative physiotherapy roles in the form of APPs, ESPs, and clinical specialists to meet the evolving healthcare requirements. These role developments have introduced a degree of complexity, advancement, and extension of the scope of practice. The scope of practice for a healthcare practitioner in its broadest sense relates to the set of activities that the practitioner is authorised to perform within their individual practice boundaries to ensure safety for the patient and the health care provider.

Document analysis suggests that the scope of practice of physiotherapists varies in each country. Some countries like Australia and Canada have provincial jurisdictional regulations. In addition to government policies providing strategic directives, RA or professional bodies have also endeavoured to define the scope of practice. The sub-sections below provide detail on the position statements from RA and professional bodies relevant to countries that have taken the lead to develop APP roles.

4.4.1 United Kingdom

APP roles have been in existence in the UK since 1980. The term 'ESP' was prevalent in the UK from 1980 until 2008, when the term 'APP' replaced it. In 2008, the CSP defined the scope of practice as follows:

> The scope of practice of physiotherapy is defined as any activity undertaken by an individual physiotherapist that may be situated within the four pillars of physiotherapy practice where the individual is educated, trained and competent to perform that activity. These activities should be linked to existing or emerging occupational and/or practice frameworks acknowledged by the profession and be supported by a body of evidence (**Chartered Society of Physiotherapy, 2016a, p. 5)**

The CSP aligned the physiotherapy profession's scope of practice with the four pillars of practice: movement, massage, electrotherapy, and kindred treatments. In 2016, the CSP clarified to the physiotherapy profession in the UK through their '*Advanced practice in physiotherapy'* document that the extension of scope in an APP role drew on core elements from physiotherapy practice. The CSP stated that the skills and knowledge that enabled an individual to autonomously use their critical thinking to enhance patient care and service

delivery were positioned under the description of the fourth pillar of practice, 'kindred treatments.' The CSP advocated that the advanced clinician demonstrated this advanced ability by undertaking complex decision making, advanced clinical reasoning, and managing risk in unpredictable contexts (Chartered Society of Physiotherapy, 2016a).

The development of a '*Multi-professional framework for advanced clinical practice*' in England superseded the above document. The framework is a collaborative piece of work between multiple professional bodies and the Royal Colleges of GPs, nursing, and medicine to define the capabilities and competencies of allied health '*advanced clinical practitioner.'* In 2017 the combined professional bodies and Royal Colleges representing the health workforce published a joint professions statement to define advanced scope as follows:

> Advanced clinical practice is delivered by experienced, registered health and care practitioners. It is a level of practice characterised by a high degree of autonomy and complex decision making. This is underpinned by a master's level award or equivalent that encompasses the four pillars of clinical practice, leadership and management, education, and research, with demonstration of core capabilities and area specific clinical competence. **(National Health Service, 2017b, p. 8)**

> Advanced clinical practice embodies the ability to manage clinical care in partnership with individuals, families, and carers. It includes the analysis and synthesis of complex problems across a range of settings, enabling innovative solutions to enhance people's experience and improve outcomes. **(National Health Service, 2017b, p. 8)**

This document provided a generic template of definitions, scope, and competence for the advanced practitioner roles across various professions, causing a further change in the terminology from APP to 'A*dvanced Clinical Practitioner*' (National Health Service, 2017b). The framework now positions an advanced clinical practitioner's core capabilities across the four new pillars of clinical practice, leadership and management, education, and research.

4.4.2 Australia

Document sources from Australia indicate that the APA position statement refers to the definition of the physiotherapy scope of practice as follows:

> Definition of the rules, the regulations, and the boundaries within which a fully qualified practitioner with substantial and appropriate training, knowledge, and experience may practice in … a specifically defined field. Such practice is also governed by requirements for continuing education and professional accountability. **(Australian Physiotherapy Association, 2009, p. 1)**

As the physiotherapy practice has evolved across Australia, the APA has supported the definitions below for advanced scope of practice and extended scope of practice, respectively:

> Advanced Scope of Practice -A role that is within the currently recognised scope of practice for that profession, but that through custom and practice has been performed by other professions. The advanced role may require additional training as well as significant professional experience and competency development. **(Australian Physiotherapy Association, 2009, p. 1)**
>
> Extended Scope of Practice –A role that is outside the currently recognised scope of practice and one that requires some method of credentialing following additional training, competency development and significant professional experience, as well as legislative change. **(Australian Physiotherapy Association, 2009, p. 1)**

The APA views the scope of practice as being dependant on legislative requirements in each state. It positions the advanced scope *within* the recognised scope of practice in contrast to the extended scope. The APA also recognises that the scope of practice might be limited due to local customs and practices. In 2019, the APA created their '*APA National Advanced Musculoskeletal Physiotherapy Competency Framework: Standard of Practice'* document. This framework provided a recognisable, reproducible, and nationally transferable training and assessment document for advanced musculoskeletal physiotherapy credentialling (Australian Physiotherapy Association, 2019).

4.4.3 Canada

The CPA describes the scope of general physiotherapy practice as follows:

> A profession's scope of practice can be defined as the services in which its practitioners are educated, competent and authorized to provide. **(Canadian Physiotherapy Association, 2012, p. 13).**

The CPA does not offer a specific definition for APP. The CPA highlights that "the actual scope of practice of individual practitioners is determined by factors such as their continuing professional education, practice settings, workplace requirements, and patient or client needs" (Canadian Physiotherapy Association, 2012, p. 13). Due to Canada's provincial jurisdictional restrictions, all physiotherapists across Canada cannot practice the same skills. To practice skills currently under another profession's authority, such as ordering investigations or blood or plastering, the physiotherapist must undertake what is known as *delegated tasks* (Martinello et al., 2017). The delegation of tasks shifts the authority and responsibility of duties to the physiotherapist; however, this is under the auspices of the surgeon or GP supervision.

4.4.4 World Physiotherapy

The World Physiotherapy (WP) (formerly known as World Confederation for Physical Therapy) wishes to harmonise and co-ordinate advanced physical therapy practice by developing

consistent descriptions and guidelines regarding competencies and global sharing of these developments. In 2019 the WP released a position statement on APP competencies. The WP identified common emerging themes related to advanced physiotherapy competencies such as a higher level of practice, responsibilities, functions, activities, and capabilities (World Physiotherapy, 2019, p. 1). The WP recommended its members to create a framework for APP in their countries by considering legal, regulatory, professional, and organisational aspects. In 2018 the WP described the APP role in three areas. One group of clinicians might undertake advanced clinical care or complex patient management. The second group of clinicians might undertake role substitution by ordering investigations, prescribing, or injecting. Finally, a group of physiotherapists might undertake role enhancement in triage in a consultant-led or physiotherapy-led clinic (World Confederation for Physical Therapy, 2018).

4.4.5 New Zealand

The PBNZ articulates four scopes of gazetted practice: generalist, specialist, special purpose scope of practice for post-graduate physiotherapy students, and special purpose scope of practice for visiting presenter /educator (Physiotherapy Board of New Zealand, 2012). The last two scopes do not apply to clinicians working within NZ; thus, there are only two scopes of practice for a practising physiotherapist in NZ, *generalist* and *specialist*. In 2015, the PBNZ developed the document '*Physiotherapy practice thresholds in Australia & Aotearoa New Zealand*' to describe the threshold competence required for initial and continuing registration as a physiotherapist in Australia and Aotearoa NZ. This document drew on the principles of the CanMEDS framework from Canada to describe the crucial competencies at the beginning of, and throughout, a practitioner's career (Physiotherapy Board of New Zealand, 2015c).

Unlike other countries, PBNZ does not provide a standardised definition of physiotherapy scope of practice; however, it defines its general scope of practice by elaborating on care settings and provision of services (Physiotherapy Board of New Zealand, 2018a):

> Physiotherapy provides services to individuals and populations to develop, maintain, restore, and optimise health and function throughout the lifespan. This includes providing services to people compromised by ageing, injury, disease, or environmental factors. Physiotherapy identifies and maximises quality of life and movement potential by using the principles of promotion, prevention, treatment/intervention, habilitation and rehabilitation. This encompasses physical, psychological, emotional, and social well-being. **(Physiotherapy Board of New Zealand, 2018a, p. 100).**

This definition describes the components within general practice in NZ. It is modelled on the WP definition of the scope of physiotherapy (World Physiotherapy, 2011). On the other hand,

the definition of the specialist scope of practice (gazetted 2012) describes the competence and field of application:

> Physiotherapy specialists are expert physiotherapists who have advanced education, knowledge and skills to practise within a specific area of clinical practice. **(Physiotherapy Board of New Zealand, 2018a, p. 87)**

In 2014, the PBNZ proposed a definition for extended scope of practice; however, this document has been withdrawn to introduce the newer terminology of APP in the NZ context (Physiotherapy Board of New Zealand, 2014a). In October 2020, PBNZ approved the introduction of an advanced scope of practice subject to a feasibility study and business case.

4.4.6 Summary for scope of practice

Document analysis demonstrates that the definitions for scope of practice for physiotherapists across these four countries encompass safety in healthcare delivery and have a common thread of competence, training, continuing professional development (CPD), credentialling, autonomy, and legislative regulation. On the other hand, the definitions for extended or advanced practice scope are broad due to the clinical and analytical complexity within the APP roles and overlap of boundaries with other professionals. These definitions position the advanced scope within legislative parameters and extended scope under the auspices of delegated duties encompassed within the legislative boundaries. In NZ, the definition for physiotherapy scopes proposed by the PBNZ focusses on the settings of practice and engagement with the consumer and their family. The NZ definition for ESP is now obsolete. Overall, these definitions include autonomy and governance principles embedded within this role delivery, which will be discussed in the next section.

4.5 Sub-category 3: Governance

Documents and interviews contributed to this sub-category. Many factors impact the individual physiotherapist's scope of practice, such as the regulations set by the Regulatory Authorities (RA), the professional organisations, and the service organisations employing the therapist. The individual clinician also has a responsibility to determine and understand their scope of practice based on the RA's rules. Legislative governance legislates and endorses the scope of practice of a health professional through a regulatory framework. Clinical governance improves clinical practice through education, clinical audit, clinical effectiveness, risk management, and research and development. The governance for APP's legal position and judgement from peers was discussed in chapter two.

This section reports the governance requirements and mechanisms to support current and evolving scopes of physiotherapy, which is the key to facilitating strong professional growth. It also discusses strategies adopted to minimise clinical liability within the APP role.

4.5.1 Legislative governance

Position statements and documents reviewed from professional bodies show that the scope of physiotherapy practice depends on the country's legislative regulations (Australian Physiotherapy Association, 2009; Canadian Physiotherapy Association, 2012). Recognising the increase in APP clinicians, the RA's have tried to provide governance frameworks to underpin their advanced or extended scopes of practice. The UK has been a forerunner for the physiotherapy APP roles. The document '*Advanced practice in physiotherapy'* underpinned this advanced scope of practice by defining and discussing APP's scope and competence. As the physiotherapy profession's scope has evolved, legislative sanctions have been lifted in certain countries. Tasks that were initially outside the scope of practice have become embedded within the current scope of practice. An example of this in the UK is injection therapy and independent prescribing. Initially, these tasks were outside the scope of physiotherapy practice; however, they were legislatively included in the scope of practice in 1997 and 2013, respectively. Supplementary prescribing was introduced in 2005 as a precursor to developing independent prescribing (Chartered Society of Physiotherapy, 2016a).

Three documents provide further prescribing governance for the APP in the UK: '*The use of medicines with injection-therapy in physiotherapy services*,' '*Medicines, prescribing and physiotherapy*,' and '*Practice Guidance for Physiotherapist Supplementary and/or Independent Prescribers*.' (Chartered Society of Physiotherapy, 2016b, 2016c, 2018b). In Australia and Canada, the APA and CPA respectively have provided their professions with some advocacy documents showcasing the role and its applications. The '*Assessment of Prescribing in health*' (ASPRINH) project in Australia offers an evidence-based guideline to assess prescribing skills (Cardiff, 2017).

Two questions were posed in the current semi-structured interviews to identify governance requirements: '*How do you envisage the clinical governance for this role?*' and '*How do you envisage the legislative governance for this role?*'

There was consensus from interviewees that PBNZ, in its regulatory function, registered physiotherapists annually and ensured that a practitioner was competent to meet their registration requirements. All interviewees stated that PNZ advocated for the profession.

Interviewee ST3 clarified that PNZ advocated for the physiotherapy profession and supported its on-going education and learning. Interviewee ST3 states:

> Where PNZ's role comes into it is to support that through making education available or SIG's working with universities. Like 'hands' did by moving those courses into the university, like NZMPA did. So, that is the educational side that PNZ can do. **(ST3)**

Interviewees highlighted that as a legislative body, the impetus for PBNZ is to develop and regulate the APP role to stop clinicians from promoting themselves and advertising skills under false pretences and safeguard public health and safety. The Board's function is to comply with the HPCA Act 2003. Its purpose is to protect the health and safety of members of the public by providing mechanisms to ensure the lifelong competence of health practitioners. The PBNZ created the document *'Accreditation standards for physiotherapy practitioner programmes in Aotearoa New Zealand'* to provide a baseline of standards expected from registered physiotherapy professionals who are expected to undertake autonomous, ethical, and culturally sensitive practice (Physiotherapy Board of New Zealand, 2017a). The PBNZ developed the document '*Physiotherapy standards framework'* in 2018 to benchmark minimum standards expected from the NZ registered physiotherapists. The framework has three main sections: '*The Aotearoa NZ Code of Ethics and Professional Conduct*,' the '*Physiotherapy Standards*,' and the '*Physiotherapy Practitioner thresholds of Australia and Aotearoa NZ*.' Together these sections describe what the public and the profession expect of a competent physiotherapist. These documents have been developed in discussion with the public and the profession.

Interviewee ST2 clarified that the PBNZ safeguarded the public's health and safety and raised awareness of ethical and medico-legal practice to physiotherapists. The stakeholder described that the PBNZ liaised with Universities that offered undergraduate and post-graduate training and audited the profession. The stakeholder stated that a physiotherapist would be unable to use gazetted titles unless they were registered. Clinical governance was integral to the scope of the role and linked to CPD and annual certification. ST2 identified that legislative changes were needed around prescribing; however, injections were included within the scope of practice. Interviewee ST2 stated:

> Within our legislation, you are correct in that we cannot prescribe, but we can and do inject within our scope of practice. That is not outside our scope of practice. What we have is a position statement that says you know if you are working in a defined area of practice, you need sufficient training skills, knowledge competencies and maintain them into your CPD. **(ST2)**

Interviewees indicated that PBNZ placed the onus of CPD and on-going training requirements on the physiotherapist who is advancing or extending their scope of practice. All interviewees outlined the role of standing orders and functions of the clinicians involved in delivering the APP role and extension to the scope of practice. As the profession is evolving and physiotherapists are working in new or emerging fields of practice, the PBNZ has published a position document *'New Zealand registered physiotherapists practising in a defined field'* to guide the profession. The document states that a physiotherapist practising in a defined field is deemed competent in that area of practice when they demonstrate relevant and appropriate education and training specific to that field of practice (Physiotherapy Board of New Zealand, 2015b). The Board's approach is one of self-regulation. It places the responsibility for competence on the physiotherapist and their employer to ensure that the physiotherapist's CPD activities support their defined field or area of practice.

Prescribing is currently out of the scope of practice for NZ physiotherapists. Sports physiotherapists and ED physiotherapists, however, administer medication under the guidance of a medical practitioner. This aspect of the extended scope practice is currently underpinned in NZ by the document 'S*tanding order guidelines'* created by the MoH in 2016. Providing patients with timely access to their drugs is the sole objective of the standing order. A standing order intends to provide written authorisation to a clinician who currently does not have the right to administer or supply drugs (Ministry of Health, 2016e). This regulation highlights the parameters for safe practice and extension of the scope of practice for clinicians.

The guidance document '*Giving advice to patients about medication/medicines'* provides physiotherapists advice against endorsing or recommending medication that can be purchased without a prescription. This document tries to provide clarity regarding the rights and responsibilities of advising patients about medication. It advises the physiotherapist against potential risks by informing them to refer patients to their GP or pharmacist. It safeguards the public by limiting the physiotherapist's advice to appropriate content (Physiotherapy Board of New Zealand, 2015a).

The next section discusses clinical governance, which is the key to developing and maintaining high-quality, safe care in everyday clinical practice, focussing on patient-centred care.

4.5.2 Clinical governance

Interviewees identified that surgeons, nurse practitioners, and other APPs acted as mentors to provide clinical governance. Interviewees APP1 and APP3 discussed that their triage role in the DHB was associated with increased responsibility; hence they required a suitable mentor for

their clinical governance. Their CPD needed to reflect their role requirements. These interviewees recognised that the autonomy in their role came from identifying boundaries of individual practice, clinical risk management, escalation of care, and ensuring competency. ST4, one of the mentors, explained that the clinical governance for the APP role came from the orthopaedic consultant working closely with the APP. Interviewee ST4 explains:

> The governance actually comes from effectively me but wider from our department and from our manager. If you are talking about maybe setting it up in a private sector situation where that person may be and working independently, then I think it takes you down a whole different governance pathway, and that probably comes down to the physio board in a legislative pathway. And ultimately not governance but ultimately, the pathway would have to be different, like the HDC escalating care and complaints and things. But ultimately, that comes down to a legislative element. But within the public hospital, it is very easy to include the physio as part of the oversight and the wider team. **(ST4)**

All interviewed stakeholders and APPs emphasised the importance of escalating care, supervision, and monitoring of clinical activities to ensure that they provided safe clinical practice. All PBNZ specialists highlighted the importance of maintaining high standards and providing a benchmark for the profession by engaging in peer review through their special interest group. All interviewees stressed the importance of governance pathways and identified that the peer review process should be visualised as a non-threatening self-monitoring process. Interviewee PBNZSP-3 stated:

> Find a colleague your level of peer and meet them regularly. Send them information, so it is a two-way thing. It becomes seamless; it becomes non-threatening but ultimately, what we need to remember is that this is for the patient. You are talking about complex roles, complex patients. **(PBNZSP-3)**

Some APPs referred to the clinical governance role of the former COP and expressed for it to be reinstated. Interviewees COP1, COP2, and PBNZSP-3, who were previously accredited as APP through the COP, reported that they still undertook external peer review in keeping with the College's guidelines.

Interviewees APP6 and COP 2 described the Health and Disability Commissioner's requirements and reiterated the need to demonstrate sound governance practices. Interviewees COP1, COP2, and PBNZSP-3 explained the clinical governance requirements in private practice and their barriers. Interviewees APP4 and ST2 pointed out that ACC had recently introduced a clinical director role in their new contractual agreement with the physiotherapy profession in private practice. These interviewees envisaged that small practices would have to collaborate to have a named person as a clinical director to maintain their ACC

contracts. The clinical director's role would be to provide clinical governance, clinical oversight and comply with the wide-ranging requirements of supervision and staff induction. The interviewees anticipated that this clinical director's role development would overcome the barriers to clinical governance in private practice by enabling practices to collaborate.

4.5.3 Clinical Liability

The clinical liability in an APP triage role varies depending on the role's scope, autonomy, and area of specialisation. The current semi-structured interviews gauged the APP's awareness of the clinical liability within their role by asking, '*How should the clinical liability in this role be managed?'* In response to this, all interviewees indicated that the APP was accountable and clinically liable for their decision-making. Interviewee ST2 advocated:

> You need to build mechanisms for monitoring clinical activities to monitor and keep an eye on any adverse events and incidents and anything that might potentially go wrong. **(ST2)**

Interviewees expected the APP to manage their clinical risk by keeping abreast of their CPD by attending courses and through external peer reviews and supervision mechanisms. Interviewees APP1, APP2, APP3, APP5, and APP6 referred to the role of organisational vicarious liability and the importance of working with standing orders to manage their clinical liability. These APPs ensured that their clinical liability was covered by appropriate documentation following discussion with the consultant and medical team. Letters to GPs, referring sources, and patient detailing discharge summaries, the outcome of the presentation, and management options were other strategies they employed. Injection therapy was undertaken under standing orders as required by the PBNZ and MoH guidelines underpinned by suitable organisational documentation.

All interviewed APPs working in private practice highlighted that the APP role increased the clinician's clinical liability, and hence the professional indemnity insurance should be tailored appropriately. The APP had to be safeguarded through appropriate means of insurances and disclosure of practices. They highlighted increased complexity within diagnosis when triaging in APP roles as the patients seen by an APP presented with complexity and several comorbidities. The risk of an APP missing something had a greater health impact. They suggested that the APP clinician be cognisant of clinical liability issues and undertake steps to mitigate them. ST2 reiterated the importance of maintaining professional liability insurance in addition to the vicarious liability offered by the employing organisation.

4.5.4 Summary of Governance

Data triangulation revealed that clinical governance, legislative governance, and clinical liability were important influences for the APP scope. Interviewees and survey respondents highlighted that blurring of boundaries through extending the scope of practice made the APP vulnerable. Strategies were suggested to manage the clinical risk in practice through adherence to clinical governance requirements, appropriate escalation of care, communication with referring sources and patients, and appropriate liability insurance cover. It was identified that a legislative body's principal function was to protect and safeguard the public. To provide support for the evolving APP professionals and help minimise risk to the public and practitioners, the PBNZ has developed documents to provide a safety mechanism. The documents analysed in this section supported and provided legislative governance to physiotherapists who were beginning to work at the top of their scope and competency.

4.6 Summary of Chapter 4

Chapter four has discussed the development of the physiotherapy profession as it adapts to align with strategic drivers such as government policies and strategies, funder's healthcare expenditure, legislative and clinical governance, and meets future healthcare demands. To enable a physiotherapist to meet these requirements, the various professional and legislative bodies internationally have provided position statements on the scope of practice and outlined the boundaries of practice. In NZ, the legislative body PBNZ has underpinned the extension to scope through documents commensurate with the HWF plans for workforce development. Understanding that this extension of scope would blur boundaries and potentially put the APP's at risk professionally, the MoH and PBNZ have provided safeguards through documents that support these practices and provide a safety valve. There are high expectations from the APP by the PBNZ, physiotherapy profession, wider health profession, and the public regarding their ethical, autonomous practice. This expectation, therefore, needs to be underpinned with appropriate supervision, mentoring, and clinical governance practices. In addition to the three sub-categories highlighted above, this chapter also referred to elements of supervision, communication, escalation of care, and inter-professional inter-dependence to ensure safe practice.

Chapter 5 Results – Service Development

5.1 Introduction

Chapter five is the second of the three results chapters, and it includes findings for the second category, 'service development.' Service development is an on-going activity that helps health care organisations meet governmental requirements of improving patient care outcomes, enhancing patient experience, and managing timeliness of care. Health services must work with the challenges of dealing with multiple stakeholders, managing pressure for change coming from multiple directions, funding constraints, and providing service quality, flexibility, and patient-driven targets (Bessant & Maher, 2009). This complexity of care provision generates both drivers and barriers to the development of healthcare roles. The 'service development' category highlights the APP engagement in the broader health context, delivering organisational service objectives by exploring three sub-categories: healthcare systems, barriers, and career pathways, as shown in Figure 7 below. A discussion of these sub-categories provides information on the impact of healthcare systems and the challenges involved in aligning the strategic and service changes in developing APP roles in NZ. All data sources contribute to this category.

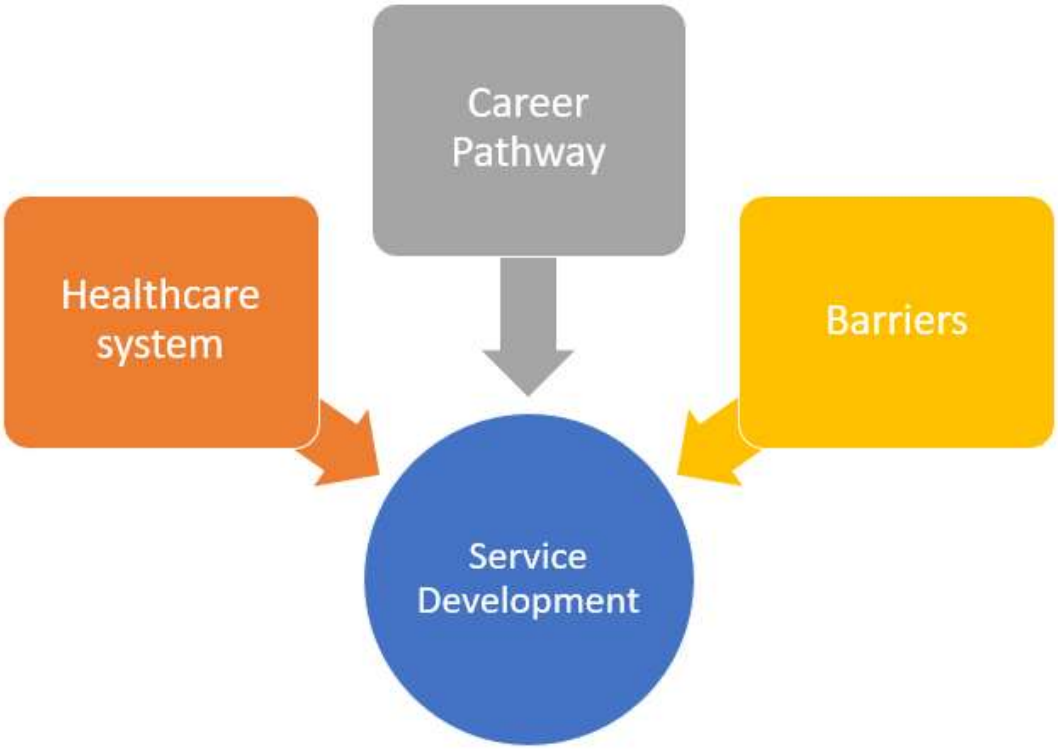

Figure 7 Service development sub-categories

5.2 Sub-category 1: Healthcare systems

The sub-category healthcare systems emerged from all documents and interviews. A review of international documents shows that the UK, Canada, and Australia have a universal health care system. The UK physiotherapy workforce projections from 2017 to 2020 indicate that nearly 50%-60% of its workforce are employed in the NHS, and 5% -10% work in the private sector, 10% work for 'other' employers, and the employment status for the remaining 20%-30% are unknown (Chartered Society of Physiotherapy, 2020a). More physiotherapists work in the private sector than the public sector in Australia, and there is a 50% split in Canada (Canadian Physiotherapy Association, 2017b; Health Workforce Australia, 2014). Health systems structure and workforce employment status are relevant when considering APP roles' development, as the drivers across the sectors may vary. The APP roles in the UK and Australia appear to be pioneered in the public sector to meet the service needs and tackle long waiting lists (Blackburn et al., 2009; Brismée et al., 2018).

NZ is a small country with an ethnically diverse population of five million residents. Its health system's strength lies in its commitment to universal health care and public funding. The commitment towards universal health care combined with strong social policy and social service provision contributes to its favourable health statistics such as life expectancy and low communicable diseases (Goodyear-Smith & Ashton, 2019). NZ also has a nationally led health workforce planning system focussing on training, robust regulation, and quality and safety protections (Rees, 2019). A workforce survey commissioned by PNZ in December 2018 indicated that 58% of the PBNZ registered physiotherapists worked as private providers, and 25% worked for the DHBs (Physiotherapy New Zealand, 2018). The other 17% worked in academia, education, and other institutions.

A review of documents provided details that explained the role of ACC and DHBs in the NZ health system. As described in chapter one, the ACC is an NZ crown entity set up under the Accident Compensation Act 2001 ('the Act'), responsible for providing accident insurance (Ministry of Health, 2015). In the document '*Who we are*,' ACC states that its primary purpose is to promote injury prevention measures and provide rehabilitation and fair compensation for those eligible under the Act (Accident Compensation Corporation, 2018). As physiotherapists are some of the primary providers of rehabilitation services in NZ, ACC funds a significant part of their work (Reid & Larmer, 2007).

Twenty DHBs are responsible for providing or funding health services in their district (Ministry of Health, 2020a). Public hospitals are owned and funded by DHBs. These DHBs are financed and monitored by the MoH through health targets. DHBs objectives under the directives from

MoH include promoting and protecting people and communities' health, integrating primary and secondary health services, and seeking optimal arrangements for delivering effective and efficient care to meet local, regional, and national health needs. Additionally, their brief is to reduce health disparities by improving health outcomes for Māori and other populations and providing equity of care.

The impact of the dual health systems is discussed below through their influence on physiotherapists (includes working practices and remuneration) and impact on patient care.

5.2.1 Impact on physiotherapists

Eleven out of the 19 interviewees included in this study worked in private practices. Two worked full-time in a DHB, and two others worked part-time in both the DHB and private sector. Although none of the interview questions focussed specifically on health systems, the majority of interviewees commented on the differences between the two sectors. One of the specialists, PBNZSP-6, is an experienced clinician with historical knowledge of NZ healthcare. Interviewee PBNZSP-6 explained that since the creation of ACC in the 1970s, the bulk of accident-related musculoskeletal care was transferred to the private sector. PBNZSP-6 described that this altered the physiotherapy structure within NZ, resulting in the private physiotherapists focussing on delivering ACC-funded care. The shift in workload enabled the DHBs to reduce their waiting lists by transferring the accident-related cases to ACC care while the non-accident-related chronic care continued to be managed within the DHB sector. Interviewee PBNZSP-6 surmised that this had led to a fragmentation of services, and the private sector got busy managing this accident-related workload without generating a waiting list. On the other hand, as the DHBs provided universal healthcare, this had created a waiting list. The specialist compared the APP role in the UK with the NZ health system. PBNZSP-6 stated that the UK's long waiting lists provided some of the impetus for creating an APP role. The specialist saw similarities between the public health drivers in the UK and NZ DHB sector but did not see the necessity for the APP role in the private sector as there were no waiting lists to target. Interviewee PBNZSP-6 states:

> One can see clearly from the UK perspective what the drivers are. Those drivers are not strong here in New Zealand, those same drivers from my understanding. Yes, there are drivers from within the public health system here, but we do have a dual system, particularly in musculoskeletal, and that is because of the ACC. Having ACC completely changes the structure of regular physiotherapy in New Zealand. They did that back in the 70s. So basically, because the public health service could literally divorce itself away from musculoskeletal conditions and hand them over to the private sector. It did. And so, the vast majority of musculoskeletal services now or if you feel like things that can be put down to some sort of accident are handled

> by the private sector, and you will notice that there is no real major waiting list problem**. (PBNZSP-6)**

All physiotherapy interviewees acknowledged that the distinct care and funding models in the two sectors impacted their career pathways, job titles, remuneration, working practices, and training opportunities. Interviewees working in the private sector consistently reported a lack of career pathways and poor remuneration for their roles. Interviewee APP4, who worked in private practice and undertook service development for the practice, explained the private sector's payment structure to the researcher. Interviewee APP4 clarified that most private physiotherapists were contracted and therefore funded by the ACC. As a funder, ACC does not recognise individual physiotherapist's years of experience, clinical expertise, or qualifications. Consequently, all physiotherapists were paid a flat rate.

Interviewees APP1 and APP3, who primarily worked in triage roles in the DHB, also reported funding issues. They indicated that their APP roles had been created to meet local service needs and address the MoH health targets. Their role freed up consultant time to assess patients requiring orthopaedic input and met the organisation's unmet need with patients unable to access healthcare due to high waiting lists. Interviewee APP3 stated that the current APP role had no succession planning or permanency as it did not have a defined funding stream assigned to it. Both these APPs reported that their roles helped enable their organisation to meet governmental health targets but that their role lacked recognition, titles, and appropriate remuneration. The sustainability of their role depended on the funding stream of the employing service. APP1's role was funded by the physiotherapy department, whereas the orthopaedic service funded APP3's role.

Interviewee PBNZSP-3 was another specialist who worked in the private sector. The specialist had a historical knowledge of the NZ health system and appeared to be cognisant of governmental policies and healthcare strategies. Interviewee PBNZSP-3 identified that the DHB had a well-structured and remunerated managerial pathway but lacked a similar clinical path. Interviewees PBNZSP-1 and PBNZSP-3 highlighted that the two different sectors in NZ had two distinct career paths for physiotherapists. The uniqueness of the health systems between various universally funded countries and NZ was also reiterated by stakeholder ST2. This stakeholder expressed bewilderment at the expectation of a unified career pathway for physiotherapists working in the two different sectors as each sector presented its own unique environment. Interviewee ST2 stated that the DHBs had a defined salary scale and designated roles for APP; however, this same pathway was lacking in the private sector. Interviewee ST2 explained:

> The majority of our profession in New Zealand works in private practice, not in the DHBs. The DHBs, now all have these roles, which they are calling as advanced roles in terms of the description on the MECA. Nothing like that exists in private practice, so what the private practitioners are saying is that we want recognition and a career structure. That does not exist in private practice, so for many private practitioners, the only way they can get that recognition is by having that scope of practice. A formal scope of practice potentially. **(ST2)**

5.2.2 Impact on patient care

Interviewee PBNZSP-1, who worked in both sectors, reiterated both sectors' uniqueness by discussing the payment options for ACC-funded patients compared to the DHB sector. This PBNZ specialist postulated that the long outpatient and surgical waiting times in the DHB sector compounded a patient's disability and wellness compared to ACC patients. ACC patients had shorter waits than patients seen in DHBs, and they were entitled to specific treatment session allocation through ACC. However, through ACC funding, there was a restriction on treatment modalities such as injection therapy, sometimes limiting the patient's options. If ACC did not cover a patient, there were financial implications if a patient used private physiotherapy. This specialist also highlighted that the DHBs saw more complexity with multiple comorbidities.

A significant number of interviewees discussed how the dual health system altered the patient's access to healthcare, affected waiting lists across services, and drove professional's and patients' behaviours and attitudes. Interviewees explained that if a patient met the criteria for accident-related care, they were accepted by ACC. However, their care was funded through the MoH public system if they did not meet ACC criteria. Interviewee APP5, who worked in a governmental organisation, identified the existing healthcare provision as a barrier to care. Interviewee APP5 felt that patients were grouped and treated depending on whether they fulfilled accident-related criteria. Interviewee APP5 stated that this duality encouraged unhealthy behaviours in both the patients and clinicians to capitalise on the funding streams. Interviewee APP5 states:

> There is a barrier, and it drives behaviours and how health systems are set up. Absolutely drives behaviours, and that goes for the professionals, and for the patients, the users, and the services are driven by the funding models and the structures that we put in place. **(APP5)**

References to an inconsistent standard of physiotherapy care and the different funding models as an incentive for physiotherapists, surgeons, and GPs came from interviewee ST1, who worked in the private sector. Interviewee PBNZSP-4, who also

worked in the private sector, outlined the poor standard of physiotherapy care in this sector due to ACC's treatment provision. Interviewee PBNZSP-4 stated:

> It is really disillusioning because these people are not particularly complex, but the standard of physiotherapy that they have received is below par. I would say you know some of that is facilitated by an ACC approach where if you are complex, then you get a bulk package, and then you get this in the gym, and then you're not really ready for it, and you haven't really responded to it, but then you get a pain program when you are not really ready for it, and then you haven't responded to that, so you get all these different programs, and then people fall through the gaps**. (PBNZSP-4)**

APP2, who had previously worked in a DHB but now worked in a private setting, described a new proposed service for the APP role in the private sector. This was to overcome the resistance from GPs referring patients to surgeons in the private sector. This interviewee planned to deliver an APP-led triage service under the auspices of a consultant who would also see the patient after the APP saw them. The APP stated their inability to triage a patient in the current private system, similarly to the DHB model, as patients were referred to a private consultant. However, by extending the session time to 60 minutes, the APP triaged, educated, and treated patients for 45 minutes, and then the surgeon saw the patient for the last 15 minutes. The purpose of this service was to deliver an APP-led triage service in the private sector. This APP was aware that a patient would not pay for two treatments; hence, the funding for this service was being sourced through a specific research proposal to identify whether there was a role for an APP in the private sector. APP2 also stated that patients sometimes did not access appropriate care due to different funding models in both sectors. APP2 indicated that because ACC patients often had to pay an additional payment for care, they were unwilling to fund further costs of APP assessment and treatment through private APP clinics.

5.2.3 Summary of healthcare systems

From the data triangulation, it is clear that there is a dual healthcare provision in NZ. This unique NZ health structure influences the practices of physiotherapists and healthcare professionals. This duality alters the healthcare provided to patients, models of care, remuneration, and working practices. ACC providers manage musculoskeletal conditions which are accident-related. The remainder of the population presenting with general musculoskeletal complaints and multiple comorbidities are predominantly managed in the public sector. According to some interviewees, this alters the working practices of some clinicians who offer inconsistent care without using sound physiotherapeutic clinical reasoning and intervention.

Patient behaviours are also altered in this dual healthcare, with patients seeking ACC care for accident-related claims in the first instance followed by public healthcare if ACC declines their treatments. The dual healthcare appears to create different career pathways for physiotherapists. The development of an APP role within the DHB is guided by shortages of workforce and facilities, increased volumes of referrals, unmet demand for musculoskeletal services, and increasing waiting lists. However, due to the expectations for prompt care for accident-related injuries funded by ACC, there are small or no waiting lists in the private sector. The development of an APP role in the private sector is influenced by referrers, the relative ease of access, and the cost of treatment provision. This duality of healthcare poses the question of the placement (niche) for the APP role in both sectors in an NZ context.

5.3 Sub-category 2: Barriers

Barriers to the development of APP roles were a clear sub-category that emerged from all data sources. As detailed in chapter two, barriers for the inception of APP roles can be categorised as structural (existing legislation, organisational rules, or regulation), cultural (differences between professions and organisation), and administrative (boundaries which professionals find difficult to cross). The 2015-2016 HWF annual report to the Minister identified issues that affected NZ's ability to ensure a sustainable allied health workforce (Ministry of Health, 2016b, p. 13). These issues were: 1) a lack of public awareness of the range of allied health professions, 2) a lack of clarity of education and career pathways, 3) a lack of co-ordination between educational programmes and competencies and skills required in workplaces, and 4) a lack of training opportunities and funding, based on historic decisions. The report indicated that allied health professionals would need to engage with a range of stakeholders to build a responsive and flexible workforce.

The PBNZ survey respondents reported fewer barriers to APP roles as the questions were targeted to gauge the profession's interest in developing the APP role. Only 7% of the PBNZ survey responders expressed their concerns about the role development. Others identified a lack of recognition, career pathways, and lack of training options as some of the barriers. PBNZ survey respondents also identified limited career opportunities for physiotherapists compared to other professions and outlined inter-professional barriers.

One of the interview questions for the current study asked, '*What are the barriers to APP role development in the New Zealand context?* After data analysis, the r*esponses* from interviewees were grouped into six themes: lack of funding, lack of title, inter-professional barriers, intra-professional barriers, lack of recognition, and lack of training. These sub-headings were then

used to group data from all other sources. Lack of recognition and lack of training are covered in chapter six.

5.3.1 Lack of funding

Nearly all interviewees and some PBNZ survey respondents referred to the lack of adequate funding for the development of APP roles from the funding body, either the ACC or DHB. Interviewee COP1 stated:

> There would need to be an incentive in terms of financial incentives to cover this role as an advanced practitioner. I know that has come into fruition with the specialist. However, if you are spending more time in terms of consultation or reporting or advancing your professional development in terms of having to attend courses, there should be potentially some financial reward for that time that you have invested into it and the cost that you have invested. **(COP1)**

Several interviewees, APP1, APP3, PBNZSP-1, and ST4, who worked in the DHB, commented on the lack of control that surgeons have on the DHB budget. Despite support from surgeons who recognised the APP clinician's expertise and value, they could not fund these roles. Interviewees APP1 and APP3 highlighted the underfunding of resources and low pay within their roles compared to nursing or sub-grade orthopaedic surgeons. They reported recruitment difficulties due to a lack of funding and sustainability for the role. They reported issues with their training budgets, hours of work, remuneration, and recognition of skills.

Meanwhile, interviewees APP6 and APP4, as private practice owners, recognised the increased pressure on the funder due to a new role creation. Interviewee APP6 identified that the ACC funding pressure translated into fixed-term contracts or the development of contractor roles, which impacted the sustainability of the APP roles. Most interviewees recognised that other professions such as nurses or doctors had a tiered career ladder, which was suitably remunerated. APP6 remarked that as APP was a small subset of the physiotherapy profession, this impacted the funder's ability to respond efficiently. Interviewee APP6 stated:

> The DHB probably has more appetite because it can clearly define the values to apply the funding. Whereas the ACC system does not do well. It is not easily built around that, which is why they want to contract people, as it is easy to build it around contracts simply so that you can build it into the Act. It goes without saying that we should have more remuneration, but it is pretty tough to define someone as being advanced because their skills are better than others. ACC will say we will give you x more you define who receives the money. It is a tough balancing act. DHBs can differentiate their rungs of the ladder; they can do it for doctors and nurses. **(APP6)**

All interviewed physiotherapists thought that the training and Continuous Professional Development (CPD) for APPs was arduous, and a lack of remuneration and training for the APP role further disincentivised some clinicians from training into an APP. Interviewee COP2 commented on the difficulties of staff undertaking post-graduate training on the private employer. Interviewee COP2 explained the challenges in organising locum covers and payment for the employee's training costs. Interviewee COP2 outlined the administrative costs and overheads in the private practice, which limited the practice owner's ability to let a clinician train and undertake tiered CPD when there was no remuneration within the system.

Interviewee PBNZSP-3 stated that the funding constraints and the short tenure of governments impacted the completion of strategic health plans and the implementation of policies. This, in turn, impacted the APP role development as the strategies supporting this role creation was side-lined for a more pressing agenda and other funding needs.

5.3.2 Lack of Title

All physiotherapy interviewees discussed the lack of an APP title. Interviewed physiotherapists generally felt frustrated with the current system and a lack of scope to register as an APP. Interviewees identified that the PBNZ recognised 'specialist' title posed a restriction on its use by other physiotherapists trying to advertise their skills in specialised areas. Interviewee APP2 indicated that the titles accredited by PBNZ might create confusion in other healthcare professions and the public who were getting familiar with the nursing titles of 'specialist,' 'practitioner,' and 'consultant.' The nursing continuum for advanced roles extend from nurse specialist, nurse practitioner and the consultant nurse being at the top of the profession. Whereas the physiotherapy continuum had only the specialist title, which was positioned at the top of the continuum. APP2 felt that the titling in the physiotherapy profession was asynchronous with what is currently prevalent in other occupations.

Interviewees PBNZSP-2 and ST2 outlined that if the APP title were gazetted and added to the PBNZ scopes of practice, this would restrict its use within the DHB environment and disqualify current DHB APPs who had not achieved the title through suitable credentials. Interviewee PBNZSP-2 stated:

> There has to be a scope there first for people to get registered under. I think one of the barriers is going to be that there are people working within the roles that are defined as being advanced, particularly in DHBs. Some of them may not qualify for the competencies defined by the Board for who can be an advanced practitioner. **(PBNZSP-2)**

Interviewees ST2 and PBNZSP-2 identified that if an employer did not need the titled APP on its workforce, the physiotherapist could still be registered as an APP and physiotherapist under the PBNZ register; however, they would not be remunerated suitably for their advanced skills through their funding body. They suggested that there might be greater remuneration for PBNZ accredited APP clinicians in the private sector than DHB; if the ACC contract also awarded a higher pay band to the APPs as it had to the PBNZ approved specialists. Alternatively, the employer may offer titled APP role on its workforce but not the remuneration:

Interviewees PBNZSP-2 and PBNZSP-3 stated that NZ titles differed from their UK counterparts, where a clinician was appointed to an advanced role instead of being credentialled by their legislating body. They perceived that the titled APP role would create difficulties for the DHB employment contracts as the terminology within the contracts referring to advanced physiotherapists might not be congruous with the PBNZ protected title's scope. This would mean that the DHBs would have to cease using this terminology. If the post within the DHB required, an APP the physiotherapist would have to undergo the rigorous accreditation process outlined by the PBNZ to qualify for the title. This might pose a barrier for the DHB APPs.

Interviewees APP4, APP6, APP5, and PBNZSP-4 and some PBNZ survey respondents raised concerns about the PBNZ assessment process for titling of the APP role. As there were very few APP clinicians or specialists in NZ, they had concerns about the small pool of assessors for these competencies. Some physiotherapists also raised concerns about the cost of the assessment process and fees to continue with the registration status if there was no adequate remuneration for these roles.

5.3.3 Inter-professional barrier

There were some mixed feelings about inter-professional barriers from both interviewees and PBNZ survey respondents. Interviewees PBNZSP-4 and PBNZSP-5 thought that the surgeons were ambivalent towards the physiotherapy profession as long as APP scope did not encroach into the surgeon’s territory. All interviewees described the pushbacks and attitudes of some surgeons, GPs, and non-medical professionals. Interviewee APP4 stated that the medical profession felt safe within its practice and preferred to refer to another doctor rather than an APP. An APP role could be perceived as disruptive by other professionals who had not worked with the role before. They described that the surgeon's willingness (or lack of) to engage in an alternative care model was one of the main drivers and barriers. Interviewee PBNZSP-1 explained:

> Some surgeons are very open to it, and some who are not very open to it at all and, in fact, are overtly obstructive to the process. Yes, so there is a spectrum, and that is one of the barriers. **(PBNZSP-1)**

Nearly half of the interviewed respondents thought that sports physicians would also perceive the APP role as a barrier within the NZ landscape. Currently, private physiotherapists regularly refer their patients to sports physicians for assessment, opinion, and requests for high-tech imaging. However, if the APP and PBNZ specialists could order these investigations, it was anticipated that it would impact the sports physicians' business. Interviewee PBNZSP6 states:

> The barrier almost certainly is the sports medicine practitioners. Maybe orthopaedic surgeons would have a problem with that, but particularly the sports medicine doctors. Right now …when a physiotherapist wants an MRI, who is the person they can get to at the easiest to get an MRI; it's the sports medicine specialist. If we, as a physiotherapist we can do MRI, where are the physiotherapists going to send their patients? Not to sports medicine doctors, no, but they will send them to us, and the sports medicine doctors know that. They are going to lose a substantial portion of their business simply if we get high-tech imaging. It's a no-brainer. **(PBNZSP-6)**

Interviewees ST1, COP2, PBNZSP-6, PBNZSP-5, ST4, APP3, APP6, and ST5 described the medical profession's territoriality in terms of the development of new scope for APP role. Interviewee ST4 explained that as long as the orthopaedic surgeons and APP worked complementarily, there would be no pushbacks; however, if it were perceived that there was encroachment in this professional boundary, there might be resistance to APP roles. Interviewee ST5 states:

> Every professional group wants to maintain their special status and wants to advocate for more status. Some of this actually the status is in for their role security and its income. I don't think that there is a desire to, so there will always be a resistance to people wanting to extend scope if you are going into what is seen as a scope of someone else because there is an automatic threat to that professional group's role and their own identity and their purpose and then ultimately their financial security around that. **(ST5)**

Interviewee APP6 commented that some surgeons and GPs valued physiotherapists; however, they were unwilling to share their budgets or offer physiotherapists a seat at the policy-making or decision-making table. Few interviewed physiotherapists believed that medical representation in the highest echelons of government dictated the policies and shape of healthcare delivery and professional development. They alluded to historical hierarchy in the medical profession and patch protection. The current study's findings also reflect the comments from the PBNZ survey.

5.3.4 Intra-professional barriers

An unexpected barrier for APP role in the NZ health landscape was described primarily by interviewees. There is no mention of this barrier in the literature review undertaken so far. Interviewees COP1, COP2, APP4, PBNZSP-6, and ST4 described possible barriers from within the profession where they anticipated peer resistance to clinicians forging ahead towards the APP roles. These interviewees believed that private physiotherapists were resistant to seeking second opinions as they feared that colleagues and patients would lose confidence in their skills. Interviewees thought that this hesitancy and defensiveness on the part of their colleagues stemmed from their desire to save face. Interviewee APP4 states:

> I think there is always that fear in the process that if I send the patient to another physio, they will keep hold of the person kind of thing, and I will lose them as a patient. Possibly again, that fear of passing somebody to someone else that person is going to lose their confidence in me and then might not come back and see me. **(APP4)**

Interviewee PBNZSP-6 warned of the potential of professional jealousies and turf wars within the profession if the APP role was established. In contrast, this specialist felt that the PBNZ accredited specialist pathway's academic component was a deterrent for the professional turf wars. Interviewee PBNZSP-6 states:

> The advanced role is going to get a lot of problems, I think, from the regular physiotherapists because the regular physiotherapists will either have to become an advanced practitioner to get the higher rate of pay or have to accept the lower rate of pay, and they are not going to like that too much. You are going to find that is going to be an issue…I think there will be competition if you like between the basic physiotherapists and the advanced practitioners. **(PBNZSP-6)**

5.3.5 Summary of barriers

Triangulation of data sources reveals that despite drivers, there are barriers to the development of APP role in NZ. These barriers are reflective of its healthcare system, the composition and distribution of its physiotherapy workforce, funding constraints, and interactions with the wider health community. The health system in NZ shapes the funding streams in each sector, its clinician's practices, and patient expectations of care in individual sectors. The operational and fiscal constraint within each sector shapes the behaviours of its physiotherapists and treatment options provided to patients. Lack of funding and remuneration for the role reduces the physiotherapist's willingness to train to become an APP. Lack of funding also affects the APP role's establishment, implementation, and sustainability in both sectors. Other barriers, such as the inter-professional barrier, have been articulated

extensively in the literature, and it was also discussed in the NZ context. The interaction of the medical professionals in each sector influences the scope of practice of physiotherapists, for example, the limitation of the investigative scope of practice. Other barriers relate to professional jealousies and turf wars within its professional community. These intra-professional barriers are surprisingly unexpected to the NZ context and not discussed elsewhere in the international literature.

An overview of the relationship between the drivers and barriers across the three categories in the NZ context is presented in Table 6 below.

Table 6 Drivers and barriers across the three categories

Categories	Drivers	Barriers
Workforce Development	Strategic Legislative Governance Fiscal constraints Workforce shortages Improved access to care	Lack of clinical and legislative governance Lack of scope to register Lack of funding Lack of policies or vision to create role Lack of recognition of skills Lack of accredited training modules Lack of critical mass of APP
Service Development	Waiting lists Unmet demand Health targets Fiscal constraints Workforce shortages Reduce waste and inefficiency	Cultural resistance Legislative barriers Inter-professional barriers Lack of trained APP clinicians Lack of remuneration Lack of funding for the role Lack of recognition Lack of succession planning Lack of training Lack of sustainability Lack of clinical governance
Professional Development	Desire Recognition Training opportunities Reduce attrition Create career pathways Remuneration Placement (niche)	Intra-professional barrier Inter-professional barrier Overlapping scopes and professions Lack of professional identity and drive Lack of recognition Lack of resilience Lack of remuneration Lack of career pathway Lack of training Lack of governance Lack of funding

5.4 Sub-category 3: Career pathway

Career-pathway was a clear sub-category that emerged from all data sources. This sub-category was consistently mentioned in the literature related to drivers, barriers, training

aspects, and working practices. International document analysis shows that various professional bodies have developed documents to support the development of career pathways for the physiotherapy profession in their respective countries. In the UK, the CSP published a '*Physiotherapy framework*' to promote and develop physiotherapy practice. This framework describes the behaviours, knowledge, and skills required by the current physiotherapy workforce to grow across a spectrum of roles in various settings and environments across all nations of the UK (Chartered Society of Physiotherapy, 2020b). Similarly, the APA White paper '*Physiotherapy Career Pathway*' has published a flexible, transparent career pathway to suit its profession's needs. This pathway discussed the role of titling and specialisation as sentinel points on physiotherapy career pathways. The White paper anticipated the space between entry-level and titling as the largest activity area with its members (Australian Physiotherapy Association, 2016, 2017). This was based on the premise that a small number of physiotherapists would seek specialisation in contrast to the larger numbers of practitioners wishing to follow formal titling from an entry-level. Likewise, the CPA outlined the steps for a '*Clinical Specialisation*' program for physiotherapists keen to pursue clinical pathways (Canadian Physiotherapy Association, 2017a). In NZ, the PBNZ has developed a *'Specialisation information sheet,'* which provides an assessment process for gaining specialisation competencies in NZ (Physiotherapy Board of New Zealand, 2018b).

The PBNZ survey included a question that asked, '*Are there any other elements you would consider useful in a framework for extended scope?*' In response to this question, 20% of respondents commented that 1) structured career pathways, 2) regulation of scope of practice, 3) availability of suitable training options, 4) sustainability of roles, and 5) liaising with other stakeholders were all important elements in a framework for extended scope. Survey respondents commented on the need for suitable career pathways supported by appropriate training modules which would provide a credible APP role for the physiotherapists. The respondents elaborated on the need for robust regulation and advocacy for the profession. Respondents envisioned the importance of engagement with the wider health professionals to develop collaborative practice within the APP role.

One of the interview questions from the current study explored this concept further and asked, '*How do you foresee the clinical pathway for this role development*?' All the APPs and PBNZ specialist interviewees identified that the physiotherapy profession lacked a measurable definitive structured career pathway compared to other professions. The survey respondents and interviewees perceived the APP role as bridging the gap between the generalist and specialist competencies. All interviewees were aware that a lack of a structured pathway acted as a barrier to the profession's progression. Interviewee APP2 states:

> The majority of physios that I trained with aren't physios anymore. Most people drop out after only a few years because there is not that career progression in terms of advanced practice and also in terms of pay. So, I think that is why people are leaving the profession. So, having that for career progression, I think, is really important. **(APP2)**

All interviewees recognised the attrition within the physiotherapy profession. They cited that a physiotherapist's average clinical career was less than seven years based on the publication of the PNZ workforce survey in 2018 (Physiotherapy New Zealand, 2018). They attributed this attrition to several reasons: 1) lack of training options, 2) lack of peer review, 3) lack of time and finance to train, 4) lack of support and advocacy for the profession from the legislative and professional body, 5) lack of engagement with the stakeholders, 6) lack of recognised critical mass of APP to drive this forward and 7) lack of a career pathway with suitable options for succession planning for these APP roles. Interviewees PBNZSP-5, PBNZSP-1, and PBNZSP-3 also recognised the limited number of supportive roles for new graduates and believed that an excellent supportive first job facilitated the development of excellent therapists. Interviewees ST1 and ST4 referred to underutilisation of physiotherapy skills and boredom as other reasons for attrition.

The sections below discuss the current career pathway in physiotherapy and its complementary nature with the wider health care sector.

5.4.1 Current physiotherapy career pathway

Interviewee PBNZSP-3 elaborated on the existing pathways in the public and private sectors. According to this specialist, currently, clinicians possessing advanced physiotherapy rehabilitative skills in the private sector relied on word of mouth for recognition of their skills. There were limited pathways for senior clinicians in the private sector who had reached the top of their professional ceiling. Within the DHB, although there was a more defined career ladder, it was applied at the employer's discretion, making these triage posts transient and ad-hoc in nature with no permanency in their roles. This lack of sustainability has been cited by all DHB interviewed physiotherapists as a cause for attrition within the public sector.

Interviewee APP4 discussed two triage role developments that private physiotherapists have been contracted to provide, which enhance and highlight APP skills. The first one was the MoH triage role through Mobility Action Program (MAP) pathways to align best practice guidelines and intervention programs to manage musculoskeletal complaints. The MAP pathways utilised the rehabilitative skills of physiotherapists and their ability to triage surgical versus non-surgical musculoskeletal conditions. The second role was initiated by ACC through Escalated Care Pathways (ECP) to assess knee, shoulder, and spinal conditions. The purpose of the ECP

was to triage musculoskeletal conditions and optimise rehabilitation before seeking any surgical opinion. The physiotherapist felt that both these roles utilised the physiotherapy skills of assessment and management in a conservative pathway in addition to their ability to identify surgical versus non-surgical patients. Interviewee APP4 states:

> If I look at things like the Escalated Care Pathway roles coming in and the MAP programs from the Ministry of health. I guess having those kinds of programs makes sense for the physios to lead it. Obviously, to be triaging acting some degrees like a filter between seeing the specialist and rehab kind of journey. **(APP4)**

5.4.2 Complementary pathway

All interviewees were incredibly positive about the concept of APP role development. Interviewees ST-1, ST-4, PBNZSP-1, and PBNZSP-5 perceived the APP roles as complementary to the surgeon's role. They reasoned that the APP worked closely and collaboratively with the surgeons, GPs, multidisciplinary, and inter-disciplinary teams within both sectors. Interviewee PBNZSP-5 equated personal clinical practice to international colleagues practice and mentioned the surgeons' respect for the rehabilitative ability. This specialist considered their working practice with their surgical peers as complementing their respective roles. Interviewees ST4, ST-1, PBNZSP-1, and PBNZSP-5 believed that as physiotherapists offered a rehabilitative pathway and triaged appropriate patients to the surgeons, they were not encroaching on the surgeon's territory. According to interviewee ST4, the surgeons wanted the surgical patients, and the physiotherapists wanted the ones who would respond to rehabilitative intervention. The stakeholder felt that the APP identified patients who were most suitable for surgical opinion and intervention. Hence the surgeon and the APP clinicians could co-exist without pushbacks and medical dominance. Interviewee ST4 stated:

> If you, do it as a complementary element, we can work together from an orthopaedic perspective, and then there will not be patch protection. … We are looking at different cohorts of patients, and if you work at it properly, it could be a conduit to making your life as a surgeon better. You do not need to see the patients that you actually can't help and or don't need surgery, and you can see the patients who do need surgery. So, if you do it as a complementary pathway, you do not get the pushbacks. **(ST4)**

Interviewee ST4 described the pathway that is currently being used in their local practice. The access point for patient entry into the public hospital is based on information provided by the referrer. Patients are channelled appropriately to the most appropriate clinician to increase the likelihood of best clinical outcomes. The triage pathway diverts the appropriate patients to the surgeons and APP. Interviewee ST-1 explained the collaborative working relationships and inter-dependence between the multi-disciplinary team members to offer the patient the best

outcome. Interviewees ST1 and ST4 felt that the APP role worked best in public hospitals as a triage role extending the scope of practice. They envisaged APP working in a multidisciplinary team in the private sector, complementing the existing health care delivery pathway.

Some interviewed physiotherapists COP2, PBNZSP-6, and PBNZSP-3 explained that the former COP tried to address these career development issues some years ago by creating competency pathways and developing a route towards recognition and better remuneration for the profession. COP2 shared paperwork with the researcher, which outlined the purpose of the College of Physiotherapy. (Documentation about the COP cannot be accessed on the PNZ website). Interviewee APP2 also referred to the COP's role in providing governance and facilitating career pathways for the physiotherapy profession. Several interviewees and respondents believed that as the College was now obsolete, the profession needed strong advocacy and leadership from PBNZ and PNZ to recognise different layers of clinicians and create a career pathway.

Most interviewees who discussed the profile of an APP and their competencies reported that the profession was divided about whether it needed to be a Master's degree underpinning this advanced scope of practice or whether it was acceptable to have post-graduate diplomas, certificates, and additional training demonstrating a commitment to the cause. They felt that the APP role needed a degree of credibility and measurable standards consistent with our medical colleagues.

5.4.3 Summary of career pathway

Triangulation of all data sources demonstrates the profession's desire for a structured, measurable pathway for NZ physiotherapists analogous to other professional pathways. International documents have detailed a career framework for physiotherapists in their countries to progress their career pathways. Respondents and interviewees believed that the APP role bridged the gap between the two current physiotherapy scopes. Interviewees outlined the need for a career pathway and highlighted the complementary nature of their role with the surgeons, which enhances skill sets. Interviewees highlighted the attrition within the physiotherapy profession due to a lack of structured career pathways. Stakeholders and physiotherapists envisaged different pathways for APP in both sectors. Interviewees highlighted the need for mentors to develop APP roles in each sector. Respondents and interviewees suggested the need for advocacy for the physiotherapy profession and the importance of engagement with the wider health professionals to pave the career pathway for physiotherapists.

5.5 Summary of Chapter 5

This chapter has outlined the issues of service development impacting APP role creation by considering the health structure of NZ through the working experiences of the physiotherapy workforce. It has outlined the drivers from the DHB perspectives such as waiting lists, unmet demand for musculoskeletal care, and need to meet government targets. This chapter has also highlighted the barriers to APP role development in NZ. It has identified barriers such as lack of funding, lack of title, inter-professional barriers, intra-professional barriers, lack of recognition, and lack of training. These barriers currently appear to be stronger than the drivers. Nevertheless, the physiotherapy profession sampled through surveys and interviews appears to be united in its desire for a career pathway across both sectors of the profession. The interviewees perceive the APP role as a complementary pathway to orthopaedic surgeons. The profession expects the PBNZ and PNZ to advocate the profession's niche and expertise to the wider health systems. The physiotherapy profession also perceives the need to align itself with the strategic drivers and prepare its workforce to deliver future healthcare needs and improve patient access and experience. This professional development category will be further examined in the next chapter, which will analyse the characteristics for developing the APP role.

Chapter 6 Professional Development

6.1 Introduction

This chapter is the third results chapter. It focusses on the results for the third category, 'professional development,' which explores the physiotherapy profession's views on the APP roles at a professional development level. Richardson (1998, p. 464) explains that the term 'professionalisation' refers to the professional activities that show the character and spirit of a profession working dynamically towards achieving goals in response to competition or changes. Paechter (1996) explains that professional development describes an activity in which the individual or group interact to preserve the best of professional autonomy while promoting a reflective culture that encourages constructive, co-operative change. This chapter reflects how professional development applies to the APP role by exploring three sub-categories such as placement (niche) of the APP role in the physiotherapy profession, advanced working practices to include the clinicians' training, and recognition for the role (see Figure 8 below). All document sources contributed to this category.

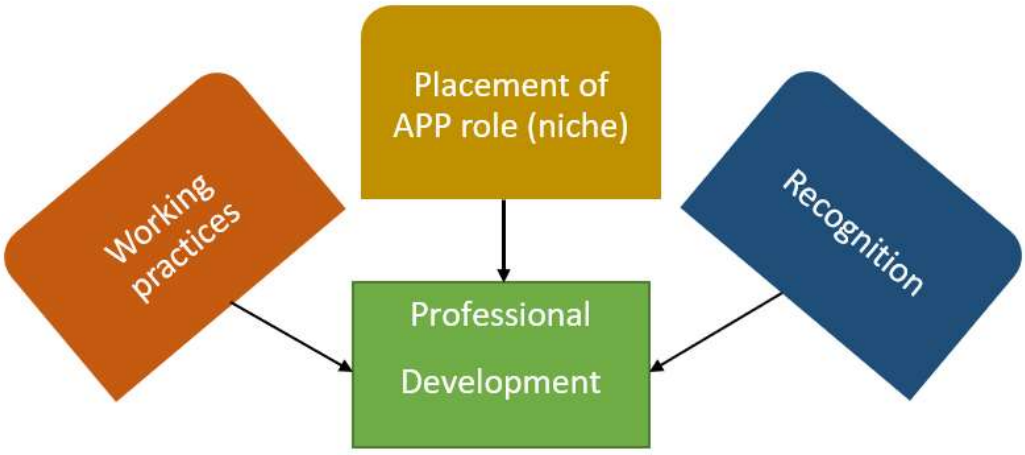

Figure 8 Professional development category and its sub-categories

6.2 Sub-category 1: Placement of APP role (Niche)

This sub-category has been a key question for all data sources. The purpose of this question was to explore a suitable placement or niche for the APP roles. In doing so, the question tried to ascertain the perceived need for an APP role. If the response were affirmative, the next purpose was to investigate where the respondents or interviewees would position this role.

One of the questions asked in the current interviews tried to identify a potential placement (niche) for an APP role within the NZ context. All interviewees thought that there was a niche

for the role. They discussed it through the concept of the *'stepping-stone.'* All APP considered the PBNZ specialist title unachievable. They felt that the apparent need for high research and academic component associated with the specialist title was unattainable for a physiotherapist working in a clinical setting (out of ten current PBNZ specialists, eight have PhDs or doctorates). Interviewee PBNZSP-4 states:

> In the past, even I looked at the specialist role, and my biggest question was, well, I am not an academic, I have got my Masters, I don't have a Ph.D., and at this stage in life, it doesn't interest me. So, what are my chances of becoming a specialist when every other specialist seems to have a Ph.D. or works alongside a university or whatever else? I think there are a huge number of practitioners out there that would admit to thinking the same thing**. (PBNZSP-4)**

However, the majority of interviewees perceived that creating an APP role was an attainable role for a senior clinician. The profession believed that the APP role would be the 'top of the ladder' between both scopes. They visualised the role needing a high level of qualification such as a Master's and experience but not necessarily the requirement to publish or work in academia. Interviewee APP4 expressed that these roles were a way of showing that the physiotherapist had reached the peak of clinical practice without giving them the specialist title. Interviewee APP4 stated:

> So, I cannot see myself on the road to being a specialist, but I am almost at the top of the ceiling as it is at the top of my senior type ceiling. That is where the extended scope practitioner role is. **(APP4)**

The PBNZ annual reports from 2012-2019 indicate that the PBNZ has reviewed the physiotherapy profession's scope of practice over the last decade. In 2013, the PBNZ considered developing an APP (referred to as ESP in the survey) scope and surveyed the profession (Physiotherapy Board of New Zealand, 2014b). This survey focussed on gaining information on the physiotherapy respondents' opinions about the potential development of APP roles. The survey explored concepts of the scope of practice for APP roles, the rationale for considering the roles to be 'extended' scope of practice, and the respondent's willingness to develop the role and titles. The respondents to the survey came from varied backgrounds and represented different clinical specialties within NZ. The representation within the survey included 47% clinicians from private practice, 20% clinicians from DHB, 3% Leaders or administrators from DHB, 2.5% Leaders or administrators from other health sectors, 5.5% academics, 17% who did not work in NZ, and 13% who identified themselves as 'Other category.' Out of the 983 physiotherapists who responded to the PBNZ survey, 93% supported

the development of an APP role. The other 7% were either ‘undecided,’ ‘did not know,’ ‘did not support,’ or had ‘fears’ over the role’s development.

6.2.1 Support for APP role

PBNZ respondents in favour of the role stated that the role needed careful consideration in its definition and implementation. Some respondents reported that the APP role worked well in the UK. These respondents suggested that NZ follow the UK lead and implement an APP scope of practice to benefit patients, decrease costs, decrease waiting lists, and allow better healthcare access. Data obtained via this survey suggested that physiotherapists considered that they were expert diagnosticians and had a specific skill set and position within the healthcare community that could be developed further to improve service delivery, efficiency, and stewardship of resources. PBNZ survey respondents highlighted that physiotherapists’ role had changed to become first contact practitioners in modern healthcare delivery in NZ. The respondents acknowledged that physiotherapists were ideally positioned to work as APP to reduce demand for health services whilst improving population health.

PBNZ survey respondents commented that despite the high level of post-graduate education and clinical expertise of many senior clinicians, there were limited opportunities for career progression or development in the physiotherapy profession compared to other healthcare branches such as medicine or nursing. Many PBNZ respondents placed the APP role in the intermediary stage between the generalist and specialist scope so that physiotherapists with an advanced scope could be clearly identified and recognised by the public, profession, and funders. Several respondents also referred to the importance of a suitable niche for the role in the individual health sectors and associated funding streams while developing and sustaining the APP role.

In 2017, PNZ also surveyed 53 members from the former COP (which became obsolete in 2015). The COP was established in 1989 with the twin aims of promoting and coordinating continuing education for physiotherapists and establishing a route to specialisation. The COP representation included 7% Life members, 17% Fellows, 46% Advanced practitioners, and 28% members. The PNZ survey sought the respondent’s opinion of the APP role. Respondents thought that the APPs could undertake first specialist assessments and offer expert second opinions. Respondents believed that creating an APP role added value to the delivery of physiotherapy services in NZ. They envisioned that the APP role would impact the stakeholders by providing appropriate treatment choices, reducing waiting times, enabling cost-efficiencies, reducing the doctor’s caseload, improving rehabilitation, and health outcomes for patients, thereby improving patient satisfaction. The responders considered that developing and

implementing new health service models, such as an APP role, would help employers and funders distinguish quality care, competence, and cost-effectiveness. The role was also perceived to enhance patient choice. Respondents considered that the APP role could strengthen inter-disciplinary and collaborative practice, stimulate intra-professional referral, and augment physiotherapy practice and culture. They perceived that it would provide the profession with a career pathway, enhance retention of the workforce, and provide a forum for mentorship, professional leadership, and advocacy.

6.2.2 Reservation against APP role

Interviewee APP5, however, disagreed with the concept of the role. In APP5's opinion, the APP role was a reflexive piecemeal attempt at tackling the more significant issues of chronic underfunding of services, lack of resources, and shortages of doctors. APP5 voiced reservation to the role creation indicating a preference to work as a physiotherapist and be competent in the current role rather than being vulnerable and novice working in another profession's domain. APP5 felt that funding decisions drove the decision to replace the medical workforce with APPs. It was more a reactive patchwork, and APP5 was concerned that this approach would fail over time. Interviewee APP5 commented:

> What worries me is that we are trying to do something cheaply and replace something. I felt that way in the UK too, but it was driving waiting lists, so we needed more doctors, and we needed people that could do the job, but actually, either funding was driving the decision or numbers, lack of capacity and lack of resource. So, it is a little bit of a reactive patchwork, and usually, those little sticky plaster approaches fail after a while**. (APP5)**

PBNZ survey respondents who had reservations about the role believed that the profession should not be deskilling itself and physiotherapists should not spend time narrowing their focus. These responders considered physiotherapy to be a low-paying job in comparison to the skills and training needed. Responders also objected to the development of elite clinics that would then gain scopes, contracts, and additional funding. Some responders highlighted the difficulties in maintaining CPD in private practice and felt that the extension to scope would further impact APP clinician's time and finances. Similar to interviewee APP5, some respondents mentioned the vulnerability of the APP clinician. A few reiterated that the public had difficulties understanding the breadth of the physiotherapist's current role.

6.2.3 Perceived placement (niche) for APP role

All physiotherapists agreed that there was a niche for the APP role in both the public and private sectors and primary and secondary care. In their view, regardless of the sector, the APP role offered the entire profession a staged career pathway along the continuum of scopes.

Interviewed physiotherapists and stakeholders envisaged the APP clinician working in a triage role in a DHB setting or undertaking complex patient management or offering a second opinion in the private sector. The interviewed physiotherapists thought that having an additional advanced practitioner scope was an essential step for the profession. Interviewee COP2 visualised the APP's role in undertaking more complex management, supporting lone, isolated practitioners within the profession. All the physiotherapists who worked in the private sector and interviewees ST2 and ST3 believed that the system currently fell short in not providing sufficient access for patients or other physiotherapists seeking higher expertise, additional support, or advanced opinions. It was also hard for those patients who required more complex rehabilitation to identify physiotherapists who had those skill sets and could provide that level of expertise.

Within the DHB, APP s are being utilised as triage clinicians to undertake clinical assessments, diagnostics, and decision making for referring patients for specialist opinion and differentiating between conservative and surgical options. Interviewee ST4 equated the triage APP role to a Senior Registrar's role:

> To me, how I see it is they are equivalent to a senior registrar to me. Where you know, my senior registrar, he can order investigations; he can do injections; he is diagnostic. But obviously, they [APP] would not have the surgery element of it because that is a whole different pathway, but in terms of that outpatient management, then I think of [redacted] as my senior registrar equivalent. The added advantage is [redacted] can implement a different range of treatments, rehab-based, and that. So, [redacted] could take those patients from diagnosis, investigations, and treatment down a non-operative pathway. **(ST4)**

Some of the PBNZ specialists highlighted another niche for utilising the APP's clinical expertise. There are currently only ten specialists accredited by the PBNZ; there are not enough clinicians to undertake complex assessments and guide rehabilitation in the private sector. The introduction of a new ACC contract for PBNZ specialists from August 2019 limits the PBNZ specialist's sessions for patient assessment, management, and intervention. The PBNZ specialists, therefore, see this as a niche for the APP role in the private sector. They perceive the APP as possessing the clinical expertise to backfill the clinical gap. Interviewee PBNZSP-1 stated:

> I think the role in musculoskeletal for another level of practitioner, an advanced practitioner, is going to be really important. They will be the ones where if we feel there is a complex patient that we don't have the facility to take on the on-going management, we can refer to [APP] for that added level of advanced clinical skill**. (PBNZSP-1)**

Some PBNZ specialists felt that the APP would be the credible clinical practitioner who could provide evidence-based care for the complex groups of patients and those who had failed other physiotherapy interventions. Both stakeholders and physiotherapists expressed their frustrations over the inconsistencies of care offered by physiotherapists. Several interviewees highlighted some medical doctors' reluctance to refer to physiotherapy due to inconsistent care provision. Interviewee PBNZSP-5 states:

> To be honest, it is really disheartening the number of people that I see who have had really rubbish physiotherapy. It is disconcerting that sometimes the basics have not been done. You know, sometimes I wonder what is happening out there. So, having somebody within the profession to raise the bar to raise the lower level of practice. **(PBNZSP-5)**

Interviewees COP1 and COP2 explained that the COP accredited APP title did not achieve the purpose of the title as other physiotherapists did not utilise these COP accredited APP clinicians for complex patient reviews, peer reviews, or support. This title also lacked both funding and recognition. However, the physiotherapists who participated in this study anticipated that if the PBNZ created a new advanced practice scope, it might provide a potential career pathway.

The representative sample in the PBNZ survey predominantly included clinicians from musculoskeletal specialty; however, there was representation from other specialities. This survey also explored the respondent's opinions on elements suitable to consider in setting up APP practice. The respondents discussed ten concepts: 1) drivers for role creation, 2) creating structured career pathways, 3) career trajectory, 4) titles for the roles, 5) description of the scope of practice, 6) training, 7) impact on stakeholders, 8) pay and recognition, 9) outcomes, and 10) cost-benefit analysis of creating APP roles. Respondents felt that there were drivers for the development of APP roles; however, there was a distinct lack of career pathways or recognition for these APP roles. Respondents also referred to the lack of appropriate training or funding for the role, which limited physiotherapists from training to become an APP. Interviewees from the current study have also echoed these opinions. Physiotherapists in the survey and interviews have been reiterating the same issues for the last seven years. This might partly explain the attrition within the physiotherapy profession.

PBNZ respondents also wanted to know about the strengths and weaknesses of this role creation in other countries and its applicability to NZ. They wanted further research on the benefits and advantages of having an APP role, its purpose, cost-effectiveness, and barriers. They also inquired about whom the role would benefit, whether it would be the public, medical profession, or physiotherapists themselves. Others queried whether it was a public or

private sector initiative. Respondents supporting the APP role shared the rationale for endorsing the role; nevertheless, they wanted clarity on its scope in an NZ context. Due to the lack of NZ research, respondents felt confused about APP's scope of practice, and they were concerned about the lack of a clearly defined career pathway designed to enable progression into this role.

6.2.4 Summary of placement for APP role (niche)

Respondents to both PBNZ and PNZ surveys demonstrate overwhelming support for the APP role. Both survey respondents identified the positive impact of the role; however, a small percentage of physiotherapists were also apprehensive and reluctant about this role creation due to scepticism about the role and its impact on the profession and wider healthcare. The interviewees perceived this role as a stepping-stone or a bridge on the existing continuum of NZ scope of practice. All interviewees acknowledged the clinical expertise within the role and visualised a placement for the APP role (niche) in both the public and private sectors. A majority of survey responders and interviewees envisioned that the APP role had the potential to impact the health outcomes for New Zealanders by providing appropriate treatment choices, reducing waiting times, enabling cost-efficiencies, reducing the surgeon's and GP's caseload, and improving rehabilitation. The responders and interviewees considered that the development and implementation of new health service models, such as an APP role, would help employers and funders in both sectors distinguish quality care, competence, and cost-effectiveness. The interviewees envisioned two types of APP roles unique to each sector to add value to patient care and experience.

6.3 Sub-category 2: Working practices and training

All data sources incorporated detail on the working practices of APP. Analysis of documents sourced from other countries shows that the scope of practice of APPs is wide-ranging depending on their specialty (McPherson et al., 2006; Moloney et al., 2009; Stanhope et al., 2012). APP clinicians undertake complex case management or role enhancement or role substitution and work under delegated authority. APPs can request injections (articular or soft tissue), investigations (x-ray, ultrasound, MRI, bone scans, nerve conduction studies), prescribe medication (analgesic, anti-inflammatory), refer to other specialities (orthopaedics, rheumatology, pain clinics, neurologists), and sometimes refer for surgery (Fennelly, Desmeules, O'Sullivan, Heneghan, & Cunningham, 2020; Ng Fuk Chong et al., 2015; World Confederation for Physical Therapy, 2018). The working practice of APP includes a high degree of clinical reasoning, critical analysis, and clinical risk analysis (Langridge et al., 2015).

PNZ has been profiling physiotherapists undertaking APP roles in NZ (Cadogan, 2019, February; Hames & Exton, 2010, November; Physiotherapy New Zealand, 2018, November, 2019, October). There have been some conference presentations where physiotherapists practising these roles have presented their advanced working practices (Naik, 2016). However, there were no peer-reviewed studies that have described the working practices of APP in the NZ context.

The PBNZ survey enquired about tasks that could be considered extended scope and sought feedback from the respondents on any other elements they would consider beneficial in a framework for extended scope. Respondents in the PBNZ survey comprised of clinicians from varied physiotherapy specialities. Therefore, the results of this survey offered a unique glimpse into the extension of practice in specialist physiotherapy areas. All respondents reported that the advanced clinical elements of APP practice comprised clinical reasoning, the autonomy of decision-making, triage, and management of an entire episode of care for non-surgical patients, managing complexity within cases, assessing, planning, and offering expert or second opinion. Respondents who answered the PBNZ survey also clarified that the APP role's extended aspects were not covered either at an undergraduate, diploma, or degree level in NZ. All respondents identified that supervision and training were required for the extension of scope.

The PNZ survey respondents also revealed the essential competencies for an APP role. In addition to reiterating the advancement of practice, they highlighted the need to maintain CPD, undertake research, educate, and teach both physiotherapists and wider professions. Being advanced practitioners themselves, they suggested that the APP should undertake service and quality development projects, engage in research, disseminate skills, knowledge, and publish audit findings and research. See Appendix 27, which details the extension of physiotherapists' scope of practice in all specialities in NZ.

One of the interview questions for the current study tried to ascertain the current working practices of physiotherapists working in extended and /or advanced scopes within NZ. Another probed the training requirements for the role to gain this clinical expertise. All interviewees thought that the clinical expertise and ability to be a reflective clinician distinguished the APP.

6.3.1 Clinical expertise

The CSP publication *'Advance practice in Physiotherapy'* clarifies the clinical expertise in advanced practice by linking APP's skills, competencies, and attitudes to the complex decision-making process in unpredictable contexts (Chartered Society of Physiotherapy, 2016a). It

refers to the ability to use critical thinking to manage complex patients safely and competently. It refers to the skills required to identify clinical risk in workload, escalation points, the ability to recognise individual boundaries of competence and seek support for safe, effective delivery of patient care. In our study, all interviewees agreed that the APP role embodied clinical expertise in the profession. Interviewee PBNZSP-2 states:

> Certainly, of what I would think of as being the role of the advanced practitioner would be that ability to utilise a higher level of clinical reasoning and apply that to more complex or complicated presentations. And also, to have a higher level of expertise or providing you know therapeutic interventions … I do not necessarily like to use the term diagnostic because I think it goes beyond, you know, a biomedical diagnosis as to the source of skill sets someone would bring to that role. But to be able to make sense of more complex presentations and either provide recommendations back to a general scope physiotherapist or necessarily provide a higher level of expertise themselves**. (PBNZSP-2)**

This clinical expertise was highlighted by interviewee ST4, who believed that physiotherapists' musculoskeletal skills were higher than GPs:

> Physios have a strong musculoskeletal background … The exposure that physios have and your experience with musculoskeletal are far higher than GPs. Their [APP] diagnostic skills, although they have a range of skills and abilities in general, probably are at a higher level than GPs. **(ST4)**

All interviewed physiotherapists visualised the APP possessing sound knowledge of anatomy, pathology, differential diagnosis, clinical reasoning, and knowledge of management options. The interviewees thought that a relevant Master's qualification and additional sub-speciality training would prepare a clinician for an APP role. Hands-on training and educational courses, clinical supervision, detailed questioning, and clinical reasoning would further shape this role development. They described that the post holder's additional skills included understanding medical conditions, pathological and systemic presentations, and understanding its complexity when applied to patients with multiple comorbidities. They highlighted that the complexity within the APP role would need collaboration and supervised training. As some of the triage physiotherapists order high-tech imaging, blood tests, blood gases and undertake other extensions to scope such as injecting or prescribing, it was thought that collaborative practice with the medical profession would pave the way to acquire these skills. Interviewee ST4 described:

> If you are looking at an advanced practitioner role extended scope practice, they should be able to order high-tech imaging, and they should be able to order; physios can order injections now, but they probably should be able to perform injections. I do not see why they should not prescribe certain drugs with appropriate training, but the drugs they are likely to be

> prescribing are things like anti-inflammatories or pain-type medications. **(ST4)**

Interviewees APP5 and APP6, however, thought that they did not need to extend their scope of practice as they worked closely enough with the physicians in their field of expertise, and they had standing orders to support their prescribing practice. The rehabilitative element within their role provided these physiotherapists with the edge in their niche sports field. They felt clinicians working in sporting areas needed the ability to detect subtle variations in an athlete's performance. They also needed to be cognisant of chronic pain, anxiety, and depression experienced by this highly motivated group of athletes. So, the APP skills varied depending on their field of specialisation, the individual scope of practice, the needs of the individual sector, and the targeted patient group.

All interviewed physiotherapists thought that the APP role should be assessed based on the weighting of their clinical competence rather than leadership or research skills. Interviewees COP2 and APP4 perceived the need for a strong leadership component within the role, and they felt that this could be achieved through engaging with PNZ, PBNZ, or special interest groups. Teaching, training, educating physiotherapy, and the wider healthcare profession were other skills that were identified as essential. Interviewees PBNZSP-2 and PBNZSP-5 felt that the scope of practice evolved as one moved towards specialisation, incorporating complex psychosocial conditions. The exposure to rare conditions started becoming a norm as the level of clinical expertise developed and matured.

Interviewee APP1 suggested plastering, wound care, suturing, injections, and prescribing as an additional extension of the scope of practice. The decision for hospital discharge, surgery, referring to other services, and undertaking joint arthroplasty clinics were other areas that were identified. The assessment skills within specialties were unique to each specialty. All interviewees indicated that the clinician should possess technical and non-technical skills and know evidence-based care, algorithms, and stratification of care.

6.3.2 Training

In this context, the terms training, education, and CPD are used synonymously. Documents and interviews contributed to this section. Document analysis reveals a lack of standardised training for APP (McPherson et al., 2004; Moloney et al., 2009). Nearly all interviewees reflected that an APP role is currently an employer-based role in a DHB where the employer has developed the APP roles in an ad-hoc manner to meet local needs. Hence, they perceived that the training for this role would be in-house from the surgeon. Additionally, interviewees

identified the need for training and mentoring from other APP in the role and support during clinics from other medical colleagues.

There are still no clear-cut guidelines on how an individual might acquire extended scope of practice skills. In response to this on-going lack of training and competency framework, the APP occupational interest group in the UK released the document '*Resource manual and competencies for extended musculoskeletal physiotherapy roles*' in 2009. This resource manual provided a toolkit for 1) practitioners working as an APP, 2) those wanting to undertake the APP roles, and 3) managers and stakeholders keen on establishing the roles (Syme, Rutter, Suckley, Payne, & Russell, 2013). This document defined the various training tasks undertaken by an APP, their liability and responsibility, and enhanced awareness of legislation that underpins this practice. This document was revised in 2013 to incorporate training at different stages through the novice to the expert APP. The new framework describes knowledge and skills relating to advanced and expert practice, aligning with the '*Knowledge and Skills framework'* (KSF) adopted in the UK. (The KSF describes the functions that individuals carry out in their work, enabling them to plan their personal development. The KSF also provides a benchmark of reference for the UK workforce.) The advanced skills are spread across clinical expertise, leadership, research, education, and integrated capabilities to include professionalism. The toolkit provides a process whereby advanced practice skills can be examined. In this assessment process, the competency assessor agrees on a learning plan with the APP based on the current level of the APP. Both assessor and APP plan subsequent assessment steps for the current and future levels and agree on the method of assessment.

In the UK, university courses are also offered to candidates to upskill into APP practitioners (University College London, 2021). These post-graduate programmes offer advanced clinical, academic, and research components of advanced practice. The learnings on these courses are set out to encompass the four new pillars of clinical practice, leadership and management, education, and research, required by APP working in the UK.

The interviewees in the current study elaborated that in the NZ context, there was a lack of relevant education modules, training opportunities, and a lack of suitable courses offering an extension to the scope of practice (such as requesting investigations, blood tests, plastering, and wound care). Interviewees APP1, APP3, APP2, APP5, PBNZSP-1, and PBNZSP-4 highlighted the lack of suitable training modules, Master's courses, and the accreditation process for APP in NZ. Interviewee APP1 states:

> If the training is not there, how can we train because we are already at basic level funding? We cannot access training within New Zealand and

> even Australia. It is difficult because our department says that we cannot just throw you over to Australia every time you want to do some training. It is not financially feasible, so again, that limits. So, finally … we cannot do the training to build the foundations**. (APP1)**

The majority of interview respondents reported the need for credible training and competency frameworks to underpin the APP roles. Interviewees reported that at graduation, physiotherapists had baseline competencies prescribed by the PBNZ. The APP developed clinical skills, clinical reasoning with practice, repetition, and pattern recognition. All interviewees considered that the APP role needed university-approved post-graduate qualifications. They suggested that robust training was essential, and a relevant Master's degree would be necessary to provide critical thinking, critical reasoning, and appropriate training. Interviewee PBNZSP-4 identified that their special interest group offered them credentialling courses but did not offer them the relevant Master's level training in NZ.

Interviewees thought that DHBs managed more complex chronic presentations. Hence, they considered that the triage APP in a DHB needed an advanced understanding of the complexity of presentation, multi-morbidity impacting the patient's health, interactions of medications, and the effect of surgical interventions. Interviewees identified that some DHB APPs could undertake diagnostic imaging, prescribing, and injecting under standing orders. They suggested that training for these practices should be in-house. Interviewees PBNZSP-1 and APP3 pointed out that the PBNZ only supported injection therapy undertaken in a hospital setting where medical backup and emergency procedures were available, and therefore clinicians worked in a defined area of practice.

ST4 was the only interviewee who suggested combining online, interactive, and didactic modules. The stakeholder suggested establishing processes to obtain theoretical and practical training and suggested training in the appropriate use of radiology and interventional elements, injection, and prescribing. The stakeholder suggested that the surgeon initially works with the APP to undertake joint assessments, review cases, and investigations, gradually reducing the oversight by being less hands-on but continuing with APP review at least once a month.

Interviewees COP2, PBNZSP-1, and APP1 highlighted barriers to APP training. In their opinion, physiotherapy was a female-dominated profession, and family commitments limited the physiotherapist's ability to undertake a Master's qualification or dedicate time and money to tiered training. Interviewee PBNZSP-1 felt that it was an onerous task for some experienced physiotherapists to train further due to difficulties with computer literacy, library skills, and fluency with other learning tools. Interviewee PBNZSP-1 suggested:

> If there were more supportive pathways along the way and options available for even supporting people into a Master's degree, which is the minimum basic requirement for specialisation and identifying what those barriers are, then I think we would probably see a lot of people moving down that pathway if it was a bit more clearly spelled out and supported for them. **(PBNZSP-1)**

In addition to the clinician's ability and willingness to undergo further training, employers also found it challenging to let staff undergo long-term structured training. Interviewee PBNZSP-1 suggested that supportive pathways were needed to empower clinicians to undertake postgraduate courses leading to a Master's degree, enabling clinicians to apply for an APP role.

6.3.3 Summary of working practices and training

Triangulation of data sources reveals that clinicians' working practices were varied and based on their areas of specialism. Clinical expertise, complex decision-making, and critical reflective ability in unpredictable contexts were the hallmarks of the APP role. The increasing norm of managing complex cases with the ability to assess and manage multi-morbidity in acute and community settings highlighted the advanced practice. They recommended that the APP undertake professional leadership roles, research, and training and get involved in their special interest groups and professional bodies. Both interviewees and respondents emphasised the importance of relevant training for APP roles to ensure their competence and safety in delivering healthcare. They suggested developing appropriate educational programs, courses, and training through Universities to provide credibility for the role. Mentoring, peer-review, in-house training related to developing specific advanced skills and competencies were also recommended.

6.4 Sub-category 3: Recognition

Lack of recognition was a consistent sub-category from the respondents in the PBNZ survey and interviewees. It was discussed in the interviews in the context of 'lack of recognition of expertise' and 'general lack of recognition within the wider healthcare.'

6.4.1 Lack of recognition of expertise

All interviewees and most survey respondents believed that the APP needed a high level of training, clinical expertise, and skills for recognition within the profession. The APP role also required a formalised credentialled program and an accredited measurable pathway for wider professional recognition. To gain recognition, interviewee APP5 explained that an APP role should be positioned at a level where it would command respect from the profession. So, the APP title should not be easy to attain, and although there was a tussle between elitism and

inclusivity, the APP required to be recognised for having a skill that had the highest level of quality and rigour in the process of credentialling. The title in the role provided the NZ public with confidence that the APP was clinically competent, knowledgeable, and adhered to safe working practices. Interviewee APP5 explains:

> So, it shouldn't be easy to attain it should be hard, and it should be a level which is respected by others. So, I do think it does take a bit of work to get to that advanced practitioner level, and it's not given, but I'm not sure we tussle with this whole inclusivity and then elitism well, actually, in a way that's the point of it is you've actually got to be recognised as having a skill that everybody else has not got. (APP5)

Interviewees APP1, APP2, and APP3 identified that patients perceived the APP as gatekeepers to the consultant list. Interviewee APP4 commented that the public lacked awareness of the physiotherapist's role, their scope of practice, specialisation, or expertise continuing along traditional pathways due to customary practice. He felt that GPs also lacked recognition and understanding of generic physiotherapists compared with APP roles. Interviewee APP4 also argued that the media glamorised medical inventions and cutting-edge technologies without giving rehabilitation its rightful accolades. Interviewees APP1 and APP3 indicated the lack of recognition of their role in the wider healthcare resulted in pushbacks for investigative scope or onward referrals.

Interviewee PBNZSP-2 indicated that the medical profession was receptive to the concept of the specialist role and APP role. Interviewee ST4 believed that APP roles needed to be recognised similarly to the nurse practitioner roles as the funding streams aligned to competencies and skills. Interviewees felt that currently, there was minimal recognition for the APP role by wider healthcare. Interviewee PBNZSP-1 thought that regulation of APP title by PBNZ underpinned by standards of assessment lent credibility to the physiotherapy professional amongst other professionals' The APP role also had to be communicated to the general public to safeguard them and offer them clarity of care.

6.4.2 Lack of recognition within the wider healthcare

Interviewee COP1 stated that in the 1980s, when physiotherapists were allowed to see musculoskeletal patients without referrals, GPs were unaware of the musculoskeletal assessment skills of the physiotherapists (There was also an additional element of patch protection). Interviewee COP1 explained:

> Other barriers may be from other health professionals such as GPs or maybe specialists if they do not have the confidence in physiotherapists taking on more extended roles. Certainly, I know when ACC allowed

> physiotherapists to refer for x-rays and ultrasound that there was a wave through the GPs stating that potentially there will be too many referrals from physiotherapists for imaging and these sorts of things. Again, when physiotherapists were allowed to see patients without a referral which happened back around 20 years ago. Again, I know that there were issues in terms of GPs concerned about patients going directly to physio's that potentially they were going to miss diagnosis and red flags and things, and I don't think that any of that has really come to fruition **(COP1)**

Interviewees and survey respondents discussed that due to NZ physiotherapy professions' relatively flat career structure, physiotherapists lacked titles or roles that made them recognisable to the wider community, patients, or medical colleagues. This lack of recognition impacted their ability to progress in their careers, funding for their roles, and remuneration. Interviewees ST1, APP1, APP2, APP3, APP4, APP6, and PBNZSP-1 and ST4, suggested further engagement with wider stakeholders such as the New Zealand Orthopaedic Association and other professional bodies to ensure that these APP roles had support and recognition from the wider health sector. Respondents to the PBNZ survey indicated that the APP role required recognition from the funders, stakeholders, insurers, physiotherapy profession, wider health profession, and the public. Recognition was also needed from PBNZ, PNZ, ACC, and DHB funding bodies. Interviewees echoed similar statements as the PBNZ survey respondents. All interviewed private physiotherapists and stakeholders ST1 and ST4 indicated that better integration of physiotherapists in multidisciplinary teams was required in the private sector.

The interviewees indicated that different stakeholders expected different things from role recognition, e.g., physiotherapists wanted recognition of their skills, but patients wanted clarity of caregivers; on the other hand, funding bodies wanted credentialled clinicians who would offer value for money to deliver their service priorities. All stakeholders stated that education and advocacy within the profession and outside the profession were necessary to understand the role, its opportunities, and referral pathways. Aligning APP pathways with the medical pathways gave it credibility and support from the medical fraternity, which in turn would strengthen the APP roles. Interviewee APP4 commented:

> I think for a lot of people, doctors have a lot of power; white coats have a lot of power, probably in terms of trust. So, hearing from the medical fraternity that we strongly support the ESP pathway, we are part of it, we communicate with it, we agree with it, and these people are trusted and knowledgeable, and experts in the area are all types of things that would be very helpful, I guess. We can bang drums as much as we want, but I think that it needs that for the public to support it. It needs acceptance from the medical fraternity as well**. (APP4)**

6.4.3 Recognition and remuneration

Recognition and remuneration for the role were considered synchronous and discussed at length by all interviewed physiotherapists and stakeholders. Interviewee APP1 reported that the APP practice was sometimes undervalued as cheap labour compared to their medical and nursing counterparts. Interviewee APP1 stated:

> We kind of get called as primary contact physio now. Our job description is … physio, so it is given that these people need title recognition, obviously depending on what they do. There is hopefully a career progression and pay scale as well. They do find it quite funny in [redacted] they say that we are the cheap labour down there. We do the same things, but we are cheap to employ. So again, it is just putting it in line with what we do and the context that we work in. **(APP1)**

Interviewee PBNZSP-2 indicated that the image of the APP role was someone who had the skills and expertise to direct a patient's journey effectively and efficiently rather than being utilised as an inexpensive clinician to deliver an expensive service. Interviewee PBNZSP-5 offered similar views and expected to be reimbursed on par with the surgeons as an expert in rehabilitative skills. All interviewees stated that developing a credible pathway would promote the APP role and offer it the appropriate recognition and, therefore, the remuneration to be on par with colleagues from other specialities: Interviewee PBNZSP-5 commented:

> Okay, so that is one of the barriers, you know, being funded. I am an expert in conservative rehabilitation like they are experts in managing surgical problems, so we are both experts in our field. Why are we not funded and remunerated at the same level? **(PBNZSP-5)**

6.4.4 Summary of recognition

Triangulation of data sources suggested that the APP was a highly skilled clinical physiotherapist, and recognition of the APP role would offer it credibility. It would also safeguard the public and meet legislative requirements and governance. Legislative recognition provided the role with recognition in the wider health sector from other stakeholders and the public. The interviewees believed that the APP role recognition by key funding bodies such as the ACC and DHBs would align it with appropriate remuneration.

6.5 Summary of chapter 6

This chapter discussed professional development concepts by identifying whether there was a placement (niche) for the APP role in the profession and its position in NZ healthcare. The survey respondents and interviewees indicated that they could perceive a role for the APP in both public and private sectors. According to interviewees, the role for APP in the DHB

included orthopaedic triage for musculoskeletal conditions, whereas the role in the private sector involved second opinions and undertaking complex rehabilitation. Interviewees described the APP as a clinical expert. This chapter also described the working practices and training for the APP role. Survey respondents and interviewees provided an insight into advanced working practices for musculoskeletal speciality. Additionally, there was representation in both PBNZ and PNZ surveys from other specialities such as pelvic health, cardiorespiratory, paediatrics, neurology, vocational rehabilitation, academics and education, sports, and mental health, which provided a glimpse of advanced practice in other physiotherapy specialities in NZ context. Recognition of the APP expertise and its acceptance by the wider health community was discussed with recommendations for PBNZ and PNZ to advocate for the role and raise its profile. This chapter aligned the concept of professional development and growth of the profession to develop an APP workforce.

6.6 Summary of all results chapters

In summary, the results chapters have analysed all data sources to reveal the multifaceted dimensions in creating an APP role in the NZ context. Chapter four focussed on workforce development of the physiotherapy profession to align with strategic drivers and legislative drivers, policies and governance requirements, and funder's healthcare burden to meet future healthcare demands. Chapter five captured the service needs, the impact of health systems on work practices of physiotherapists in both sectors and flagged up unexpected barriers such as intra-professional barriers. Lastly, chapter six provided a glimpse into the working practices of physiotherapists in both sectors. The interviewees and respondents identified the clinical expertise within the APP role and its ability to work complementarily with surgeons and GPs. Interviewees and respondents positioned the APP as a stepping-stone in the physiotherapy continuum between generalist and specialist competencies. The case study research surmised that APPs have the potential to offer effective, efficient care to NZ patients, funders of healthcare, organisations, and health systems. There is a perceived niche for the APP role to add value to the clinical and operational demands of health care in the face of growing complexity, workforce shortages, and fiscal burden. However, achieving this potential in the APP role will require strategic commitment, funder awareness of the effectiveness of the APP role, support from PBNZ and PNZ, and a breakdown of barriers.

Chapter 7 Discussion

7.1 Introduction

This chapter presents the main findings relating to the research question, 'What are the drivers and barriers to the development and recognition of APP roles in NZ?' The study's findings are compared to the current literature on APP roles. The strengths and limitations of this research are considered with reflections on the research process. Finally, the thesis offers further suggestions for future directions and overall conclusions.

This doctoral thesis is the first study investigating the drivers and barriers to the development of APP roles in the NZ context. The study's results provide a unique multi-perspectival insight into the APP roles and their working practices in the NZ landscape, which may be valuable to the stakeholders, organisations, and physiotherapists. A case study methodology was adopted, and the 'APP role' was identified as the 'case.' The case study's boundaries were shaped by its two research aims. The first aim was to identify the drivers for and the barriers against APP's formal recognition in NZ and the second aim was to describe the current work practices of the physiotherapists engaged in APP roles in NZ. The study was confined to the musculoskeletal domain and temporally bound from '2013-2021'. Study participants included physiotherapists and stakeholders. Documents, qualitative survey data analysis, and semi-structured interviews were included. These data sources were analysed separately, assembled, reassembled, and finally triangulated in chapter three. The results from all data sources were presented in chapters four to six. The research aims were analysed through three categories: workforce development, service development, and professional development, as illustrated in figure 3 in chapter three.

The results of this current research identified drivers for APP role development in NZ, such as access to care, service needs, government drivers, fiscal constraints, legislative drivers, surgeon-led drivers, and profession-led drivers. Interviewees from our study identified that APP role development barriers relate to NZs dual healthcare system with different funding models for ACC and MoH delivered care, lack of recognition, lack of training, lack of career pathway, inter-professional barriers, and intra-professional barriers. These barriers currently constrain the drivers. Interviewees stated that addressing barriers to APP development may ensure that the clinician practices to the full extent of their competence. This would optimise their impact on the healthcare burden by reducing waiting times, improving access to care, streamlining care packages, and addressing the unmet need of the organisation. Lastly, this study has demonstrated that the APP working practices in NZ align with international practice

in terms of their clinical practice. Still, it is shaped by the public or private health sector in which the clinician works.

The section below provides an overview of the current musculoskeletal healthcare problem and reviews the drivers and barriers to the development of APP roles in the NZ context.

7.2 Overview of current model of musculoskeletal healthcare provision

NZ healthcare is described as dual, where the MoH funds the public sector (DHBs) fully and the primary sector (GP practices) through subsidies. Additionally, NZ has ACC, a quasi-governmental body and an insurer that offers early access to care to patients identified as accident-related cases. When a patient with a musculoskeletal complaint presents to the GP or other health providers (ED, Accident, and injury departments), the referrers divert the patients to ACC-funded providers if the presentation is accident-related. This ACC referral results in early access to care; however, the treatment sessions are capped according to the ACC criteria (Accident Compensation Corporation, 2017). On the other hand, referrers choose multiple pathways to manage their patients if the presentation is not accident related. Some referrers refer patients to physiotherapists for conservative treatment. Others refer them to public-funded providers, primarily orthopaedic surgeons. However, they sometimes make concurrent referrals to multiple providers such as rheumatologists, pain clinic services, or physiotherapy resulting in multiple entry points (Figure 9 below).

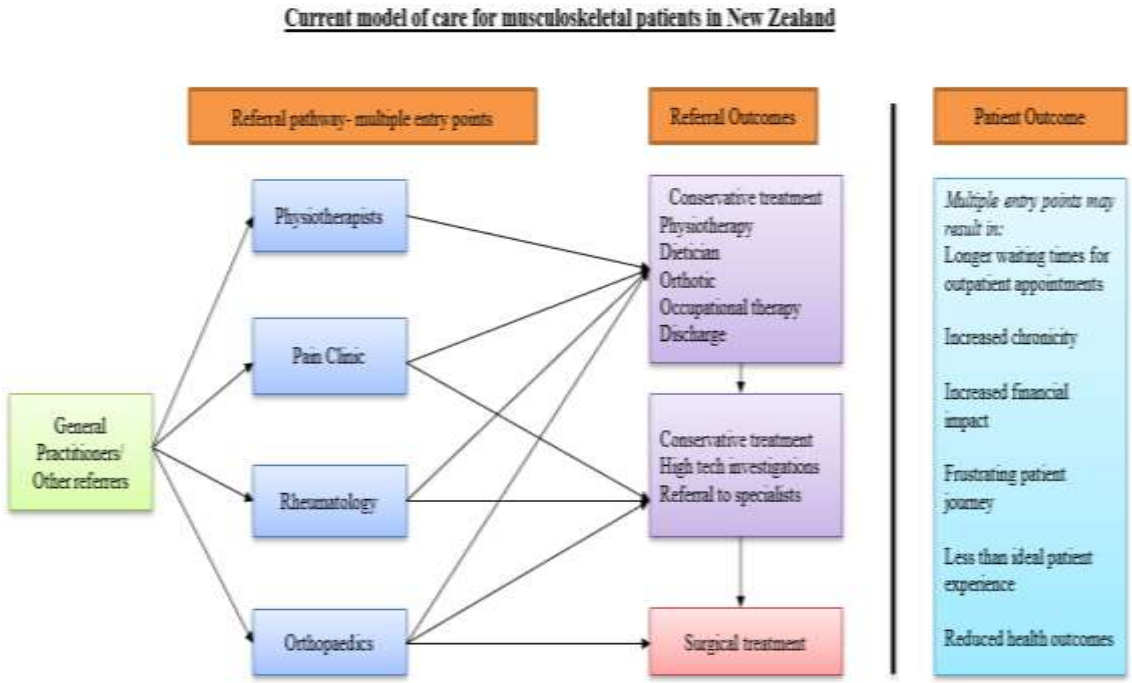

Figure 9 Current model of care for musculoskeletal patients in New Zealand

The patients referred to the orthopaedic surgeons for consideration of surgical opinion have sometimes not engaged in any conservative treatment or not completely optimised these options before the referral; hence they are allocated a low priority for orthopaedic assessment (Brand, Ackerman, Bohensky, & Bennell, 2013 ; Hunter, 2011). This leads to increased volumes of patients waiting on long waiting lists to see a surgeon in the public sector, where surgery might not be an option. This causes inefficiencies in service delivery for organisations and does not reduce the demand for orthopaedic services (Aiken et al., 2009). Additionally, the current MOH health targets towards access to elective surgical lists impact the service delivery. Add to this the chronicity of long-term conditions, multimorbidity of patients, an ageing population, and the problem amplifies. This potentially affects the patients' physical function, psychological state and leads to financial implications due to lack of ability to work (Maddison et al., 2004; Saxon et al., 2014). A change is clearly required at various levels to deliver timely, convenient care, which fits the vision of '*BSMC*' policy and '*Health strategy'* of New Zealand.

Globally, APPs are increasingly being appointed to take on activities and roles traditionally performed by orthopaedic surgeons to meet local and national service demands and improve patient flow and outcomes through the health system (Thompson et al., 2017). The following section discusses the drivers for establishing APP roles in the NZ context. This is followed by the barriers to APP role development in NZ and value-added by introducing APP role in the management of musculoskeletal presentations to optimise the health gains for patients and improve their experience with service delivery.

7.3 Drivers for development of APP roles in New Zealand

Different healthcare delivery systems, strategic, organisational, cultural, and professional issues dictate opportunities and drivers for the growing number of APP roles internationally (Aiken et al., 2008; Burn & Beeson, 2014; Durrell, 1996; Kersten et al., 2007; MacKay et al., 2008; Marks et al., 2017; Ministry of Health, 2016c). This current study identified that the drivers in NZ that contribute to the development of APP roles are access to care, fiscal constraints, legislative drivers, service needs, government drivers, surgeon-led drivers, and profession-led drivers. These drivers provide the impetus for the development of policies and governance frameworks for developing APP roles.

7.3.1 Access to care

Interviewees and survey respondents highlighted that the shortage of GPs and specialists impacted patients' access to care. Internationally, this workforce shortage and lack of access to GPs and specialists have contributed to the development of APP roles (Desmeules et al., 2012;

Goodwin & Hendrick, 2016). NZ has 70% of the average number of doctors per capita compared with other OECD countries (Gorman & Brooks, 2009). Furthermore, there is a decrease in the number of GPs in primary care, increasing the burden on the already stretched services (The Royal New Zealand College of General Practitioners, 2019). These GPs are disciplinarily, culturally, and demographically not well distributed to meet the population's needs (Gorman & Brooks, 2009).

The Association of Salaried Medical Specialists indicates that the estimated shortfall of medical specialists in DHBs in 2019 was 21.8%, with heavy reliance on overseas-trained staff, poor retention rates amongst newly recruited specialists, and a surge of doctors going overseas to qualify as specialists (Association of Salaried Medical Specialists, 2019). Moreover, this report referred to an ageing workforce, issues of retention, and burnout amongst medical specialists. Some interviewed stakeholders highlighted the medical workforce shortage resulting from difficulties in recruitment and long training timeframes. They highlighted that the ever-increasing demand for specialist medical opinion with a lack of trained doctors created a demand for medical services and an unmet need within the organisation. The surgeon's time was diverted from patients requiring a specialist opinion, away from surgical lists, to manage less complex patients. Interviewees proposed developing the APP role in an NZ context as a solution to its evolving musculoskeletal health needs due to the APP's clinical expertise, ability to work across sectors and manage patients holistically.

The '*BSMC'* policy from the MoH supports the development of innovative roles in NZ to use the most appropriate clinician in a timely manner. It endorses the transformational changes occurring in primary care through collaboration between varied professionals co-designing the pathway to improve patient access and journey within the health system (Ministry of Health, 2011). Equally, the '*Musculoskeletal Workforce Review'* suggests that due to their clinical expertise in managing musculoskeletal conditions, APPs can complement doctors by providing assessment and management of musculoskeletal patients.

The Health and Independence Report 2017 highlights stark inequalities between Māori and non-Māori communities (Ministry of Health, 2018). There is awareness of Māori health inequity in a broader socio-political context, which impacts all aspects, including healthcare access (Hobbs et al., 2019). As a founding document in bi-cultural NZ, the Treaty of Waitangi is recognised to promote health equities among Māori and non-Māori populations (Came, Cornes, & McCreanor, 2018). The principles of Te Tiriti o Waitangi provide a framework for how we meet our obligations under Te Tiriti in our day-to-day work. The tenets of Tino rangatiratanga (self-empowerment), equity, protection, partnership, and participation

embedded in the Te Tiriti enable a physiotherapist to deliver equitable and culturally responsive practice. Creating an APP role is anticipated to improve the accessibility of healthcare and provide equality and equity of healthcare to Māori populations. Interviewees in our research also referred to the development of Māori, Pacific Island APP physiotherapists to meet the treaty obligations and implement Māori health strategy (He Korowai Oranga).

7.3.2 Fiscal constraints

The economic drivers in NZ align with those observed in the international context, where the APP role development is influenced by fiscal constraints, complexities of healthcare, workforce shortages, waiting list management, and developing technologies. (Aiken et al., 2008; Burn & Beeson, 2014; Durrell, 1996; Kersten et al., 2007; MacKay et al., 2008; Marks et al., 2017; Ministry of Health, 2016c). There is consensus amongst stakeholders that future workforce planning is a critical issue and the roles of the health professionals within the existing workforce need to change to meet the demands of the future healthcare and economic burden (Duckett, 2005). The fiscal burden due to rising demand for musculoskeletal care, increased incidence of long-term conditions, lack of access to care, increasing ageing population, and expensive technologies prompted the HWF to review the burden of musculoskeletal care. This resulted in the publication '*Musculoskeletal Workforce Review,'* which recommended upskilling options and utilising advanced practitioner roles to undertake assessment and management of musculoskeletal disorders to address these needs. This workforce report recommended that the most appropriate clinician should initially assess and manage a patient (Health Workforce New Zealand, 2011). This is supported by the vision of the '*Health Strategy,'* which envisages the development of innovative roles to break the cycle of spiralling costs and meet population needs in a timely, effective manner (Ministry of Health, 2011).

Although difficult to generalise (due to lack of standardisation of roles, pathways, variables embedded in the APP role), there is some evidence in overseas literature to support the cost-effectiveness of the APP role (Belthur et al., 2003; Comans et al., 2014). Trostrup et al. (2020) systematically assessed the cost-effectiveness of the APP roles and concluded that the healthcare cost savings were 27%-49% following the implementation of an APP role. The cost savings of the APP role were ascribed to their lower salaries, reduced APP referral for investigations, and reduced surgical conversion (Daker-White et al., 1999; Morris et al., 2011). There is no literature or research in NZ on the clinical or cost-effectiveness of APP roles.

7.3.3 Burden of long-term conditions

The need for rehabilitation in musculoskeletal conditions has been highlighted by a systematic review by Ceiza conducted for the Global Burden of Disease (GBD) study in 2019, which revealed that one in three patients with musculoskeletal conditions needed rehabilitation at some point in their illness or injury. The GBD study recommended that rehabilitation services become an integral part of primary care to impact more people in need (Cieza et al., 2020). Similar to other countries, the NZ '*Health Strategy*' visualises healthcare transformation through preventative, rehabilitative approaches empowering patients and communities (Ministry of Health, 2016c). Physiotherapists are seen as a pivotal workforce, especially in managing musculoskeletal and chronic long-term conditions (Australian Health Ministers' Advisory Council, 2017; Health Workforce New Zealand, 2011; Martinello et al., 2017; National Health Service, 2017a). Interviewees in the current study stated that APPs were well-positioned to ease this healthcare burden due to their skill set in managing musculoskeletal conditions. This rehabilitative, preventative approach embedded within advanced physiotherapy practice aligns with the NZ '*Health Strategy*' mandate (Ministry of Health, 2011).

7.3.4 Profession-led drivers

Apart from workforce and service drivers, some professional drivers seek the development of APP roles, as highlighted in McPherson et al. (2006) study. These include professional aspirations, career development, job satisfaction, and autonomy in practice. This current study data demonstrates the desire of the physiotherapy workforce in NZ to embrace APP roles as nearly 47% of PBNZ survey respondents, and 73% of interviewees reported that their work currently involved advanced scope of practice.

7.3.5 Legislative Drivers

Legislative drivers in NZ are distinctive. Document analysis in the current study revealed that the regulation of APP roles in the international context is deficient. Although APP roles have been established in the UK over the last thirty years, the Health and Care Professions Council (HCPC) has not regulated this scope. This process is currently under review, and the HCPC has initiated a survey to support a policy project exploring advanced practice regulation (Health and Care Professions Council, 2020). Instead, over the last decade, the PBNZ has discussed the options of extending the scope of practice for the physiotherapy profession and regulating it (Physiotherapy Board of New Zealand, 2014a). In 2012, PBNZ gazetted the 'specialist' scope of practice and appointed its first physiotherapy specialist in 2013. Document analysis indicated how the PBNZ supports the APP roles to develop their extension of scope in a defined field by

using standing order mechanisms and focussing on CPD (Physiotherapy Board of New Zealand, 2015b). This current case study commenced in 2017. Since this time, the PBNZ created a working party to discuss the need and competence of an APP. In 2019 PBNZ engaged with the physiotherapy profession to discuss the profession's interest in creating an APP scope of practice. In October 2020, the PBNZ approved the proposed APP scope of practice (Physiotherapy Board of New Zealand, 2020b). The PBNZ now plans to undertake a feasibility study and approve a business case before gazetting the APP scope (Physiotherapy Board of New Zealand, 2020b).

The findings from the current study suggest that legislative drivers in NZ for the APP role creation originate from PBNZ, aiming to protect public health and safety by prohibiting physiotherapists from misleading the public and falsely promoting their skills. Interviewees stated that APP roles had been created in NZ in a reactive manner to meet the local needs rather than being guided by a national policy designed to enhance healthcare delivery in a planned way. In the UK and Australia, regulatory mechanisms and practice regulations enable APP practice. It is worth noting that although NZ and Australia share their physiotherapy practice thresholds, under the NZ legislation, the PBNZ is required to describe a scope of practice, unlike Australia, where the Board regulates the title (Physiotherapy Board of Australia, 2020). The PBNZ, as a regulatory authority (RA) under section 118 of the HPCA Act, sets standards, monitors competence, and legislates the physiotherapy profession in NZ (Physiotherapy Board of New Zealand, 2020a; Skegg et al., 2015). Interviewees stated that PBNZ has a crucial role in protecting public health and safety due to its regulatory function. As the APP roles are currently developing in NZ in an ad-hoc way, the PBNZ plans to legislate these roles to standardise and benchmark them.

The data from this current study indicate that the APP scope would be a 'stepping-stone' for experienced physiotherapists. Once the PBNZ formalises and gazettes the APP scope, NZ would be the first country to legislate the scope. The impact of this legislative change requires accreditation to ensure the quality of the APP role is maintained. Under the legislation, this title is protected. This titling of a physiotherapist will be unique to NZ as internationally; it refers to the physiotherapist's job title and practice. In creating the APP scope, the PBNZ has met a strategic goal of ensuring the health and safety of the NZ public. The next steps need to explore its implementation in NZs distinctive health system. The evaluation of APP competency has been raised in this current study by the interviewees and PBNZ survey respondents, to which the PBNZ would need to find solutions.

Strong drivers support the development of APP roles in the NZ context to reduce the burden of musculoskeletal care. Nonetheless, the current study has identified some barriers against the development of APP roles in NZ, which are discussed in the next section.

7.4 Barriers

The '*Musculoskeletal Workforce Report*' has highlighted the importance of promoting the ability of APPs to practice to the full extent of their education and training and upskill to deliver high-quality care. Nevertheless, it is well recognised that barriers exist with respect to APP being able to practice to the full extent of their capabilities. A number of challenges exist regarding the increasing numbers of APPs globally, as identified by Wiles and Milanese (2016). The authors state that APP roles experience structural, cultural, and administrative barriers in existing legislation, organisational rules, regulations, differences between professions and organisations, and administrative challenges.

This current research identified barriers such as lack of recognition, lack of training, lack of career pathway, and inter-professional barriers, which mirror international barriers (McPherson et al., 2006; Milligan, 2003; Wiles & Milanese, 2016). However, in the current study, there were some unique differences with overseas literature. These were the dual health systems between the MoH and ACC, intra-professional barriers, and funding barriers identified by interviewees. Inter-professional obstruction is a commonly reported barrier; however, the private sector's intra-professional barrier appears specific to NZ. None of the DHB APPs highlighted the intra-professional barrier as their representation was small and focussed primarily on working relationships and barriers from other clinicians. Legislative barriers were not referred to by interviewees, which might be due to the profession currently undertaking this practice through delegation.

7.4.1 Health System

This research highlights how distinctive healthcare systems in different countries are important when implementing an innovation of practice. The drivers and barriers for creating APP roles in NZ are shaped by its distinct dual healthcare system and its healthcare burden, and there is no international literature to compare it with. The funding models exclusive to this dual health system were perceived to alter the behaviours of the clinicians and patients accessing this system. The philosophy of these two funding sectors, public vs. private healthcare, drives the working practices of physiotherapists. A few interviewees stated inconsistent treatment approaches from physiotherapists. These interviewees believed that some physiotherapists tried to optimise the treatment session allocation of ACC by utilising

integrated care packages rather than using sound physiotherapeutic clinical reasoning. Whereas access to ACC and public health care drove the patients' behaviours accessing care in both sectors. This dual health system impacts APP role creation in the NZ context due to its distinctive drivers, service measurables, service outcomes, and patient expectations of the service.

7.4.2 Funding Barriers

Workforce projections in NZ indicate that more physiotherapists work in the private sector than the public sector (Physiotherapy New Zealand, 2018). Whilst the ACC funding models have provided financial stability to the private physiotherapy workforce, it has a flat remuneration structure with one pay scale for all contracted physiotherapists (Accident Compensation Corporation, 2017). This pays scale does not consider the clinical expertise of the physiotherapist or years of experience. Meanwhile, the DHB remuneration recognises years of clinical experience; yet the pay structure is capped at specific points. The 'designated' role of APP and its remuneration is thus, at the discretion of the management rather than being reflective of their expertise. This funding issue related to the funding body's lack of recognition of APP skill sets and roles has created some professional barriers towards training and developing into APP roles. Public or private funding for APP roles has not been referred to in international literature probably because the funding organisation creates the APP job, whereas, in NZ, it will be the PBNZ who will confer the clinician's title. Interviewees explained that titling of the physiotherapist does not guarantee the APP to a designated role in NZ, supported by suitable remuneration.

7.4.3 Lack of career pathway

The results of this research have highlighted that the career progression of physiotherapists in NZ is varied and appears to lack a structured pathway in both the private and public sectors. Study interviewees perceived the APP role as an opportunity for personal career progression and enhancement of senior physiotherapists enabling them to develop an advanced skill set and stay patient-focussed instead of progressing into managerial roles or leaving the profession. Interviewees alluded to the nursing roles that had a clear career structure in the form of nurse specialists, nurse practitioners, and nurse consultants.

A nursing literature review identifies that under the Act, the Nursing Council of New Zealand registers three scopes of nursing practice enrolled nurse, registered nurse, and nurse practitioner (Nursing Council of New Zealand, 2021). The New Zealand Nursing Organisation (NZNO), the professional body for nursing, describes two advanced practice roles, 'Nurse

Practitioner' and 'Clinical Nurse Specialist' (New Zealand Nursing Organisation, 2020). The NZNO describes nurse practitioner involvement in direct patient care to include tasks such as triaging, diagnosing, interpreting diagnostic tests, and performing procedures whereas, they visualise a clinical nurse specialist role supporting clinical excellence. The NZNO references Bryant-Lukosius, DiCenso, Browne, and Pinelli (2004) who presented a model illustrating the continuum of clinical nurse specialists and advanced practitioners showcasing their scopes of practice and advanced practice elements. The NZNO also references a diagrammatic representation of the 'health care context model for nurse specialist' in its position statement for 2020 and presents the registered nurse at the bottom of the pyramid, followed by speciality nurse, clinical nurse specialist, and nurse practitioner at the top of the pyramid. The nurse practitioner has a defined scope of practice. There was no mention of registered scope for nurse consultants in the Nursing Council of New Zealand website. On comparing the nursing and physiotherapy scopes of practice, the PBNZ places the 'Specialist' scope of practice at the top of the physiotherapy scopes of practice. This titling is not analogous with the nursing titles, and it might potentially create confusion in terminology for service users and stakeholders.

Some interviewees suggested a similar alignment of career pathways for physiotherapists to enhance APP recognition to stakeholders and the public. All interviewees highlighted that attrition of the physiotherapy profession in NZ could be attributed to several factors; however, lack of structured clinical pathways, recognition, and remuneration was key. These opinions echoed the workforce assessment findings undertaken by PNZ in 2018 which indicated that currently the average clinical length for a physiotherapist working in the profession is less than seven years (Physiotherapy New Zealand, 2018). A report by Health Workforce Australia emphasised the need for extended scope and advanced practice roles to improve career progression and retention of senior physiotherapists in Australia (Health Workforce Australia, 2014). This Australian report is consistent with the overwhelming support shown by 97% of PBNZ survey respondents and 95% of interviewees for developing an APP scope.

7.4.4 Lack of recognition

The findings from this study emphasised the physiotherapy profession's perception of lack of recognition of their unique skillsets within NZ. These opinions were echoed in Milligan's (2003) study, which reported a lack of recognition of physiotherapy skills by orthopaedic registrars. Similarly, interviewees in our study stated that the GPs challenged the physiotherapy profession working as autonomous practitioners in NZ due to their limited awareness of physiotherapy skills. Additionally, a recent study by Goodwin et.al (2020) in the UK highlighted

that one of the obstacles to optimising first contact practitioner roles was a lack of patient awareness and understanding of physiotherapy roles. To bring about a cultural shift in public perception, stakeholders, and wider healthcare perception, respondents and interviewees suggested that PNZ actively advocate, showcase, and promote the physiotherapy profession.

7.4.5 Lack of training

Interviewees identified a lack of relevant training for the 'advanced' or 'extended' aspects of the APP role in NZ, impacting its creation and sustainability. Some interviewees reported a shortage of appropriately trained, skilled APPs who could 'hit the ground running.' The clinical skillsets for APP identified by the interviewees fall under the auspices of medical assessment and management. This opinion coincides with Brook and Rushforth (2011), who state that the APP is a highly skilled clinician who has acquired additional medical triage skills, such as diagnostic assessments, ordering, interpreting investigations, making an independent diagnosis, and managing a patient's medical presentation. Service needs such as long waiting lists, access to care, unmet need in NZ healthcare are the drivers for APP roles; therefore, the training component within these roles is not considered when developing them. Similarly, early international literature identifies that the 'extended' part of the APP role had minimal educational support (McPherson et al., 2006). As the PBNZ looks to developing APP competencies, a credible accredited pathway needs to be instigated to meet these needs.

Interviewees consistently commented on the lack of training opportunities for APP roles in NZ. Training modules have been developed in the UK and Australia to advance and extend physiotherapy practice (Government of Western Australia, 2015; University College London, 2021). Health Education England (HEE), the national leadership organisation for education, training, and workforce development in the UK health sector, is currently overseeing the workforce transformation of multi-professional advanced level practice in England. Through the process of programme accreditation, supporting and recognising education and training equivalence through portfolio routes, creation of advanced practice directory, meeting HEE credentials, and creating workforce solutions, the HEE is trying to grow and embed the advanced and consultant practice workforce in the UK (National Health Service, 2017b).

In NZ, the physiotherapy profession lacks access to relevant training modules. The majority of interviewees reported training opportunities to be ad-hoc, requiring a considerable investment of the physiotherapist's time and finance to source and access these opportunities. Interviewees stated that physiotherapists keen to undertake these courses would either need to go abroad or tap into nursing or medical courses to acquire the additional skills. However, this raises issues of accreditation, competency, accountability, and governance. The PBNZ

identifies that the scope of APP qualifications would be a post-graduate Master's degree relevant to physiotherapy practice. Nevertheless, there is a lack of relevant Master's degrees available to physiotherapists in NZ pertinent to their specialisation areas, such as cardiorespiratory, neurology, or sports therapy. There is also a lack of relevant Master's degree modules or accredited courses, which offer bespoke APP training directed towards medical triage, investigative, and other relevant APP extended skills. Some stakeholders and physiotherapists proposed solutions to this dilemma in the form of the surgeon supervising the advanced or extended scope aspects of medical triage and investigative training of the APP in the initial instance supported with interactive tools and didactic training.

The issue of training for APPs has been discussed in literature within various countries by establishing panels and advisory boards that have looked at ways of providing advanced knowledge with adequate legislative support (Government of Western Australia, 2015). However, there is no standard prescription for this issue, as this is complex and involves a lot more than just the training of these clinicians (Brook & Rushforth, 2011). A recent study by Fennelly et.al. (2020) into the development of education curriculum for APPs highlighted that an APP needed training in relevant dimensions of:1) research and evidence-based practice, education, and clinical mentoring 2) assessment and diagnosis, pharmacology, radiology, and injection therapy 3) leadership and service management, 4) clinical reasoning and decision making, 5) profession related matters, and 6) communications and interpersonal skills. These results are consistent with findings from this current study. It is anticipated that the standardisation of training for these APP would result in greater credibility for the role, enhanced role clarity, improved clinical governance, and succession planning as identified by Pryor (2012). The development of new courses to cover the specific competencies embedded in the APP role would likely enhance the APP role's acceptability, recognition, and remuneration in the NZ context.

7.4.6 Inter-professional barriers

Abbot (2014) states that professions are made up of interdependent systems. The jurisdictional control for the exclusivity of its professional activities creates disputes and generates obstacles to workforce development. This inter-professional barrier was echoed by interviewees, who discussed pushbacks to APP role development due to organisational and jurisdictional barriers from other inter-dependent professions. Interviewees viewed the surgeon as both a champion and a barrier to change. In Dawson and Ghazi's study (2004), the authors stated that physiotherapists' success and satisfaction in the APP post depended on their relationship with the consultant and the medical team. The authors concluded that with

adequate training and support, the obstacles in the APP role could be minimised. This pivotal partnership between the APP and the surgeon provided the APP with the recognition, backing, and support of the surgeon and the team. However, a lack of this led to frustrations, dissatisfaction, and anxiety. As triage clinicians, APPs undertake medical triage, and this clinical component of their role needs supervision and mentoring from the orthopaedic clinicians. Interviewees highlighted that lack of supervision and support due to organisational or jurisdictional disputes between professions increased the APP's vulnerability and clinical risk.

7.4.7 Intra-professional barriers

A surprising finding in the current study was the presence of intra-professional barriers. International research makes no mention of the physiotherapy profession acting as a barrier to APP role development. Nevertheless, in the NZ context, physiotherapists working in the private sector were described as being resistant to peer review, supervision, and seeking APP advice on managing complex patients. Some interviewees commented on their defensiveness as stemming from the private practitioner's own perception of clinical inadequacies and impact on their business if they referred the patient to an APP for a second opinion. However, these clinicians refer complex patients to surgeons and musculoskeletal specialists for a second opinion. These findings are somewhat challenging, given that research shows that the education, support, and development of colleagues is one of the capabilities embedded in the APP role (Suckley, 2012).

Although the barriers against the APP role development are much stronger than the drivers, there is a perceived niche for the APP role to add value to the musculoskeletal burden in the face of growing complexity, workforce shortages, and fiscal burden. This role has the potential to offer timely access to care whilst ensuring quality and safety of care. This, in turn, is perceived to impact on patient journey and their experience impacting health outcomes. Achieving this potential in the APP role will require strategic, funder, and legislative commitment to breaking down the barriers.

7.5 Adding value to patient pathway

Physiotherapists possess skills in both exercise prescription and non-pharmacological chronic pain management, which are crucial to delivering conservative care to patients (Baldwin et al., 2017). Literature review in chapter two suggested the clinical concordance of APPs with orthopaedic surgeons (Desmeules et al., 2012). Clinical expertise, complex decision-making, critical reflective ability in unpredictable contexts were the key characteristic of an APP role. The capability of managing complex cases with the ability to assess and manage multi-

morbidity in both acute and community settings highlighted the advanced practice (Chartered Society of Physiotherapy, 2016a). Respondents and interviewees described that extending or advancing the scope of APP practice also included requesting specific investigations, prescribing, undertaking injections, and complex procedures. They also emphasised advanced skills such as professional leadership, research, and training which formed a part of the multi-layered APP profile. These unique competencies and profiles of APP roles are depicted diagrammatically in Figure 10 below.

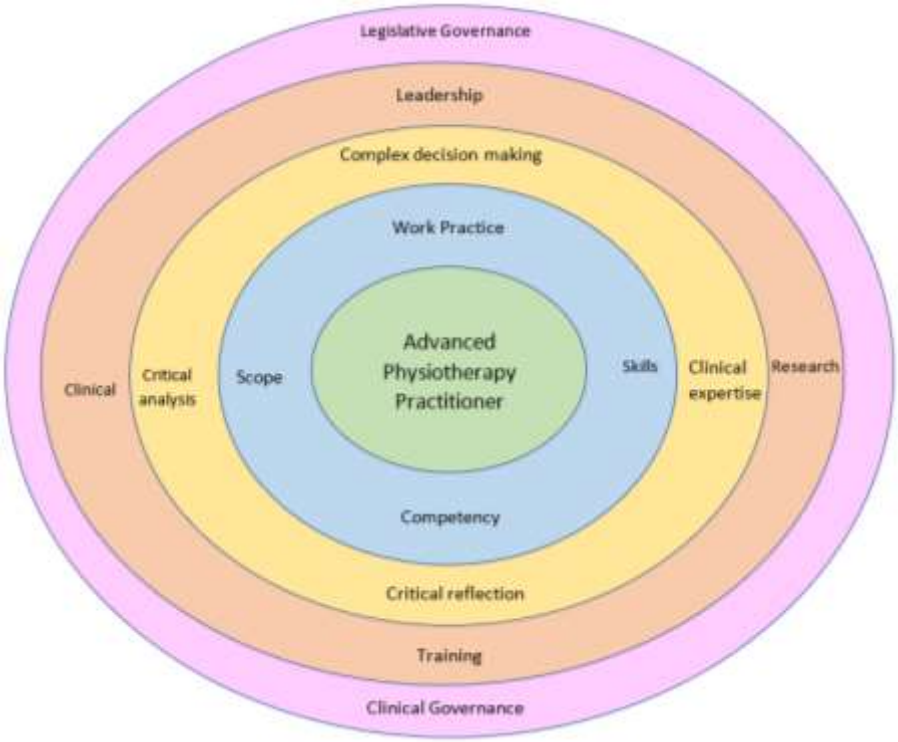

Figure 10 Competencies of APP in New Zealand context

Interviewees and survey respondents stated that APPs have the potential to differentiate between non-surgical and surgical pathways and institute appropriate management options. These findings are consistent with other global studies reviewing the efficacy of APPs in managing osteoarthritic joints (Aiken et al., 2008; Desmeules et al., 2013; MacKay et al., 2008). The current study results and interviewees' opinions on APP's expertise in managing musculoskeletal conditions align with evidence from literature where studies demonstrated clinical effectiveness of the APP role (Desmeules et al., 2013; Dickens et al., 2003; MacKay et al., 2009; Razmjou et al., 2013).

Consistent with literature findings, this current study suggested that APPs reduced the downstream effects of delay in care due to timely intervention. APPs work in different settings; and have the potential to improve efficiency across pathways and settings while raising the quality and maintaining the continuity of care (Goodwin & Hendrick, 2016; Hussenbux et al.,

2015). A systematic review by Desmueles (2012) suggested that the APPs can provide equal or better care in terms of diagnostic accuracy, treatment effectiveness, patient satisfaction, use of healthcare resources, and economic costs when compared to traditional care from physicians in the management of musculoskeletal conditions. Survey respondents and interviewees described APP's potential to improve access to care, reduce waiting lists, optimise surgical conversion, and referral for diagnostics.

The findings of this research showed that APPs have the potential to add value to the patient pathway by providing holistic care to patients, supporting acute and chronic illness management, and delivering continuity of care in a timely manner. These findings echoed the opinions of the international community of physiotherapists, who stated that APP role development aims are patient-focused (World Physiotherapy, 2019). The World Physiotherapy's recent policy statement stated that the growing body of evidence for APP roles suggested that the role is clinically effective, economical, and delivered desirable improved outcomes to patients (World Physiotherapy, 2019). Interviewees argued that APP roles should be created, particularly where the professional boundaries complement to enable the development of new models of care.

The section below elucidates the interviewee's proposals of models of care for the management of musculoskeletal conditions and the APP placement (niche) in both sectors. This model of care has the capability to offer the best pathway of care to enable early optimisation of conservative treatment and improve patient flow.

7.6 Proposed model of care for the management of musculoskeletal conditions

Due to the duality of healthcare in NZ and the different funding mechanisms across sectors, interviewees perceived a need for different APP roles in different sectors in the NZ health landscape. They categorised these roles as triage roles, roles providing a second opinion, or those undertaking advanced physiotherapeutic interventions or managing complex chronic musculoskeletal presentation. This categorisation is analogous to the nurse practitioner roles within the primary and secondary care sector (Koskinen et al., 2012). Within primary care, the nurse practitioner works as a first contact practitioner for people with long-term or chronic conditions such as asthma or diabetes. In secondary care, in hospital and outpatient settings, they provide advanced nursing care to an acutely unwell group of patients (MacDonald-Rencz & Bard, 2010).

7.6.1 DHB model

In the DHB, interviewees envisaged APPs performing triage roles with the ability to assess, request diagnostics, manage, and influence the entire pathway of care. This scope would include undertaking injections, prescribing medications, managing complex, chronic presentations, and performing physiotherapeutic interventions. This role development was perceived to enable the organisation to meet its demands of outpatient and surgical waiting times, MoH targets, organisational unmet needs, and provide an effective and timely pathway for patient care. Descriptions of these models in the NZ context resemble roles described in the literature as practice innovations for waiting list management (Kerridge-Weeks & Langridge, 2016; McPherson et al., 2006). Additionally, due to the inherent complexity of DHB patients, the ability to manage complex, long-term conditions is essential for DHB clinicians. Involvement with falls programs, bone health, rheumatology, and other varied specialities would be areas where APP clinicians could lead.

For clinicians working in ED, the ability to triage and discharge complex hospital admissions is essential, as is the need to reduce repeated admissions or presentations. These models replicate studies that have analysed APP roles in EDs (Anaf & Sheppard, 2007a). Interviewees also described the APP as an educator and researcher translating theory into clinical practice and providing training to physiotherapists and wider health professionals. Within their roles, APPs undertake service development, audit, and communicate results to funders of healthcare. Providing second opinions to colleagues within DHBs, assisting and mentoring colleagues with complex case management, undertaking clinical governance activities, CPD, and professional and clinical supervision underpins their competence. This categorisation of APP roles is consistent with the WP vision, which described three categories of APP roles: task substitution, role substitution, or role enhancement (World Confederation for Physical Therapy, 2018).

7.6.2 Private/ ACC model

There is very minimal literature pertaining to the role of APP in the NZ private sector. Most international studies have focussed on the APP role rather than the sector. This section is based predominantly on the feedback from the interviews conducted for this research. In NZ, the private physiotherapy sector works on a business model promoting their practice and skills. Due to their contractual agreements with ACC, they have positioned the ACC as its main source of funding (Reid & Larmer, 2007). The working practices of clinicians within this model reflect the ethos of private practice. In their role as clinical experts, the physiotherapy profession in NZ anticipates that the APP would provide second opinions and guide the clinical

care for musculoskeletal patients and provide supervision, peer support, and training to their professional colleagues and wider health profession. This component of the APP role addresses the need for clinical governance and support in the private sector.

Additionally, PBNZ specialists identified APPs backfilling the clinical void left by the ACC specialist contract, limiting the rehabilitation that a specialist can offer. APPs were also perceived to provide supervision and clinical governance to lone physiotherapy clinicians working in the community. Newer triage models initiated by ACC, such as the Escalated Care Pathways, encouraged collaborative working for the APP in private practice utilising their diagnostic triage skills in addition to undertaking physiotherapy treatment; however, it is unclear if this triage model undertakes elements of orthopaedic triage similar to the DHB triage model. The orthopaedic triage model in the private sector could threaten GPs or musculoskeletal specialists, or orthopaedic surgeons as it might impact their business.

7.7 Implications of study, recommendations, and contribution

This case study suggests that APPs might have the potential to add value to the health system by improving patient access to quality musculoskeletal care across various sectors within the NZ context. With respect to identifying the drivers and barriers to developing the APP roles in NZ, this study has implications for the patients accessing APP care, physiotherapy profession, physiotherapy practice, healthcare organisations developing APP roles, legislative and professional bodies, stakeholders, higher education providers, and research.

7.7.1 Implications for patients

The APP role has the potential to impact health care by offering timely access to patients presenting with musculoskeletal conditions. This role is believed to provide the patient an opportunity to access the right clinician with the right skills at the right time to deliver the high-quality care they deserve. Through their ability to triage surgical vs. non-surgical presentations, the APP can optimise conservative treatment options prior to considering surgical intervention. Working in partnership with the participating patient and family, the APP could institute suitable management strategies for long-term conditions, multimorbidity, and complex presentations. Within emergency departments, the APP has the potential to impact musculoskeletal presentations offering patients early advise and management strategies that could reduce its chronicity. Interviewees suggested that through their ability to assess biopsychosocial barriers to care, the APPs can likely institute appropriate pain management approaches. Working in the multidisciplinary team, the APP has the potential to improve patient experience and satisfaction with their care. Some interviewees stated that the PBNZ

credentialling of the APP role would provide regulatory assurance and hence the credibility of the APP to the patient.

7.7.2 Implications for the physiotherapy profession

This study highlights that creating an APP role would provide 1) a career pathway for the experienced physiotherapists ensuring their retention and reducing attrition. 2) a raised physiotherapy profile within the healthcare landscape 3) a critical mass of clinicians who could inform healthcare design and finances 4) physiotherapists with an opportunity to upskill and undertake advanced or extended aspects of the role, such as injecting and prescribing, and 5) recognition and opportunities for appropriate remuneration

Engagement with stakeholders and their professional bodies would enhance wider health awareness of the APP roles. Undertaking and publishing research on current APP roles to demonstrate their clinical and cost-effectiveness would provide further credibility to the role. Presenting the impact of APP roles on healthcare at medical conferences and study days would further raise the profile of the roles. The development of an APP special interest group within physiotherapy will support APPs education and offer peer review and governance options.

Enhanced awareness of the working practices and drivers and barriers should steer the physiotherapy profession to add further value to patient care. The current study's findings direct the physiotherapy profession to demonstrate its relevance and align with the strategic health drivers. The profession needs to seek opportunities and raise its profile showcasing its strengths and skills to improve clinical pathways that are cost-effective and clinically effective. Therefore, the physiotherapy profession requires cohesion, resilience, and flexibility to respond to these transformational changes.

7.7.3 Implications for practice

Data from this current study referred to the clinical expertise of the APP clinician in the NZ context. It also described the role as a stepping-stone for the profession and a complementary pathway to other professions. The physiotherapy profession visualised the APP as a credible clinical practitioner delivering high-quality patient care, providing second opinions, and undertaking advanced or extended scope of practice dependant on the local needs. Interviewees believed that the APP could function as the single-entry access point in the triage role to reduce fragmentation of services. The single entry would offer timely care to patients by diverting their care to appropriate resources and management streams, optimise conservative strategies of care prior to consideration of specialised investigations or surgical interventions. They suggested that this pathway improved the patient journey, their

experience of health care, and satisfaction. This proposed model for musculoskeletal care is depicted in Figure 11 below.

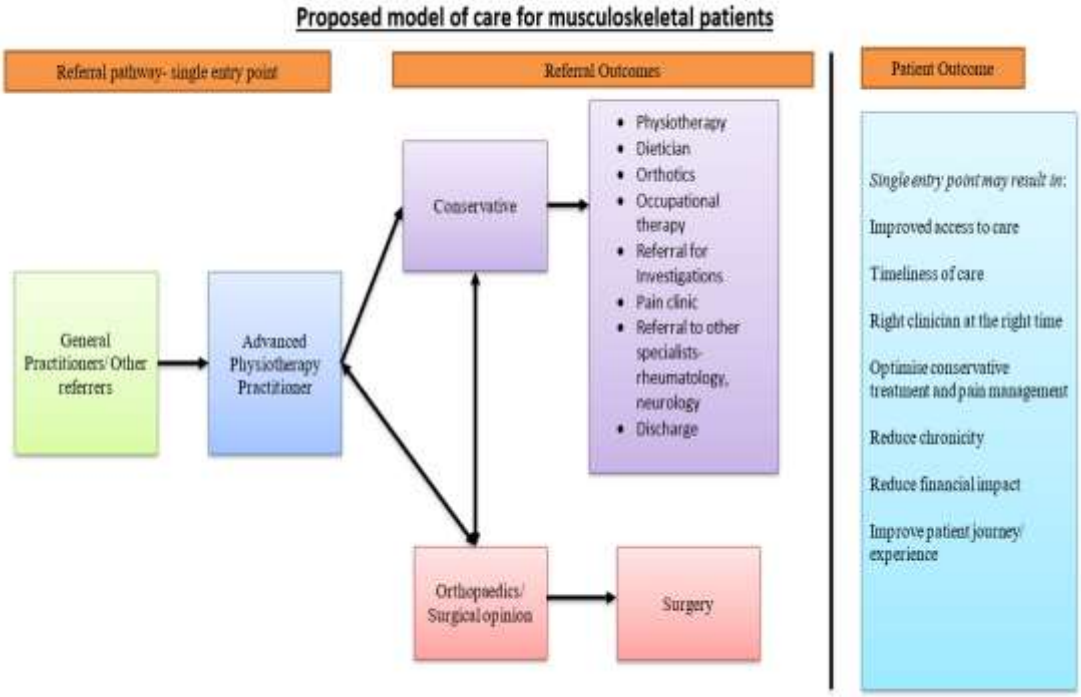

Figure 11 Proposed model of care for management of musculoskeletal patients in NZ

Physiotherapists keen to develop into these roles should be cognisant of their patient's needs and build advanced skills and capabilities required to deliver this patient-centric care. APPs need to be resilient, reflective practitioners with strong clinical, leadership, research, audit, education, and training skills. Their role places them in a unique position where they serve as clinical, ethical, and cultural role models for the profession. Practising evidence-based working practices, sharing resources and experiences will therefore strengthen the profession.

7.7.4 Implications for organisations

This research outlines the implications for the stakeholders and funders planning to introduce the APP role. The health sector workload and workforce issues have been the key drivers for the growing international trend to develop APP roles. Successful, meaningful implementation of these APP roles within a multidisciplinary team is a complex, time-consuming process. Considering where the APP role can be best positioned within the pathway to maximise its impact on the service user and address a clear purpose and service objective is crucial for each entity within the NZ health sector. APPs in triage roles appear to offer more conservative management options, reduce surgical referrals with better surgical conversion rates for those

referred. APPs can deliver significant benefits to patient care at primary, secondary, or interface services, reducing unnecessary diagnostic imaging, reducing increased volumes of referrals to secondary care, and reducing the workloads of surgeons and GPs alike. Within emergency departments, they reduce pressures on the service as well as providing high-quality care. Creating an APP role would enable the health providers to address their waiting lists, unmet needs and improve compliance with the MoH targets. Similarly, it offers ACC a pathway to deliver streamlined musculoskeletal care cost-effectively. Within primary care, it presents stakeholders an opportunity to access timely musculoskeletal care. Service delivery changes, therefore, need to focus on patient-centred goals, articulate APP roles, its boundaries, its scope of practice, and identify ways of working complementarily with other health providers. Introducing the APP role in the NZ context, therefore, requires clarity of its position in the organisation supported by protocols and governance mechanisms. APP positions and funding support should be protected following role implementation to ensure sustainability and stability and the potential for long-term service evaluation. Addressing the barriers and challenges would facilitate the successful implementation of these services.

7.7.5 Legislative and professional bodies

This study offers the PBNZ and PNZ an insight into the interviewed physiotherapists and survey respondent's views. As a professional body, the PNZ should collaborate with strategic policymakers, MoH, wider health professions groups such as the New Zealand Orthopaedic Association, College of GPs, and the public to create a strategic vision that would clearly articulate the APP role and its value-added benefits to healthcare. The physiotherapy profession requires the PNZ to lobby and advocate for the APP role to ensure the recognition and appropriate remuneration for the profession. As a legislative body, the PBNZ should develop a robust accreditation process to address the implementation barriers to the APP role. These assessment processes should be available to all physiotherapists across all sectors within NZ to address concerns about administrative processes for APP roles.

7.7.6 Implications for stakeholders

APPs have the potential to impact waiting lists through the triage of surgical versus non-surgical conditions, therefore freeing surgeon's time to undertake more surgery or manage appropriate patients. Building strong collaborative relationships with orthopaedic surgeons, GPs, and other stakeholders and negotiating and positioning the advanced practice role is vital to its successful implementation and integration. Complementary practice with doctors will provide a collegial forum for sharing skills and increasing mutual respect and recognition of skills. For funders such as ACC or DHB, it offers a cost-effective solution to manage

musculoskeletal presentations. Nevertheless, funders need to recompense APPs suitably to ensure their sustainability. As APP has been identified in the literature to request fewer clinical investigations, this may introduce further cost-saving (Daker-White et al., 1999).

7.7.7 Implications for Education providers

With respect to training, the interviewees suggested a need to develop credible, standardised transferrable, recognisable relevant training to promote recognition of the APP role's core capabilities to the wider healthcare. After reviewing all data sources in the current study, a list can be drawn up to demonstrate the key competencies and skills that APP clinicians should possess and the tasks they should undertake regardless of their speciality. Table 7 below depicts the competencies required by an APP in the NZ context.

Interviewees suggested developing relevant Master's level courses and modules to impart appropriate extension of scope for the APP. These training needs have implications for educators to create a curriculum to support the 'extended practice' needs of the APP professional to develop a credible workforce. Work also needs to be done to augment the physiotherapy post-graduate degree to introduce APP components and familiarise the profession with the APP role, its responsibilities, and governance issues. An education strategy should be developed in collaboration with stakeholders, regulatory and professional bodies to educate the physiotherapy workforce to evolve into APP.

Table 7 List of competencies for APP in NZ context

Competencies	Skills	Description
Cultural		Align practices to be culturally competent to meet the bi-cultural requirements of New Zealand
Clinical	Assessment/Triage	Provide assessment/ triage, act as the first point of contact, perform highly advanced clinical assessment stretching the recognised scope of physiotherapy practice. This includes patients who present with complex and/or chronic presentations. Understand the role of surgery and differentiate between conditions amenable and not amenable to surgery. Aspects of APP triage falls within the remit of orthopaedic triage rather than physiotherapeutic triage.
Clinical	Formulate a differential diagnosis	Analyse or interpret clinical and non-clinical facts using advanced/expert clinical reasoning and specialist skills to assess and form an accurate diagnosis. Possesses knowledge of the pathoanatomical systems (neurology, cardiovascular, endocrine, respiratory, genitourinary, and gastrointestinal). Awareness of the masqueraders, inflammatory versus non-inflammatory presentations, red and yellow flags, and the biopsychosocial model of disease.
Clinical	Undertake extended diagnostics	Demonstrate knowledge of indications, contra-indications prior to ordering investigations and use their results to formulate diagnosis and treatment plans.
Clinical	Undertake interventions	Demonstrate ability to inject, aspirate joints, remove pins within fracture clinics, plaster, undertake wound care or other interventions dictated by their service needs.
Clinical	Manage episode of care	Undertake management of patients by offering evidence-based effective physical, pharmacological, or therapeutic treatment interventions to ensure the most appropriate treatment.
Clinical	Refer patients to other health care providers	Use advanced theoretical and practical knowledge to make referrals to other health disciplines as appropriate, for further treatment or specialist consultant opinions.
Clinical	Second opinion	Offer second opinion to colleagues, third-party providers, and wider health workforce.
Communication		Possess excellent verbal and nonverbal skills to convey salient points to referrers, patients, and family. Understand a patient's beliefs and expectations from treatment and tailor assessments and treatment options appropriately. Share results of audit and research with funders, physiotherapy, and wider health workforce.
Autonomy	Clinical risk management	Assess clinical risk continuously within own caseload and develop strategies to manage this. Awareness of personal competency, limitations of the role, escalation points, and onward referral when appropriate.

Competencies	Skills	Description
Governance	Awareness of legislation/ governance principles	Prior to undertaking APP roles, the practitioner needs to be aware of their responsibility, liability, vicarious liability issues, legislation issues covering diagnostics, interventions, and prescription.
Governance	CPD/ competency requirements	CPD using self-education, reflective practice, attendance at post-graduate courses and conferences. To keep abreast of new clinical practice and maintain a CPD portfolio.
Education and research	Training	Educate students, physiotherapists, wider health professionals, medical colleagues, patients, and their families. Grow others. Share knowledge, results of service audits, and service development.
Leadership		Provide local and strategic leadership.

7.7.8 Implications for research

This thesis is one step among many that will contribute to NZ and international research on APP roles. This research lays the foundations for a body of knowledge for APP roles in NZ and internationally on which the physiotherapy profession can build on. It also contributes unique knowledge about the NZ health care system, its physiotherapy profession, aspirations, and voice. Further methodologically robust research should be conducted to explore the impact of the APP role on healthcare, patients, and stakeholders. This research can also be expanded to analyse the working practices of physiotherapists in other specialities. Methodologically robust research is also required to evaluate the clinical and cost-effectiveness of current APP roles in NZ and their impact on waiting lists and healthcare. The context of education, profile, skills, and competencies should also be addressed in future research.

7.8 Methodological strengths and limitations

7.8.1 Strengths

The aim of this case study was to provide an in-depth perspective of the 'APP role' encompassing it in its contextual conditions, specifically the NZ context. The unit of analysis and its context were clearly articulated to demonstrate that the case was bounded. Some of the strengths in this study lie in its pre-emptive nature of identifying potential drivers and barriers prior to implementing the APP roles. Several other methodological considerations strengthened the current exploratory single embedded case study research design. Four components of the research design, such as the research question, unit of analysis, data sources, and data analysis, provided a logical strategy to conduct this case study. The exploratory case study reflected the ontological, epistemological, and research paradigm alignment towards realism, constructivism, and relativism through adhering to research design application of Yin and use of qualitative principles of Merriam (Merriam, 2016; Yin, 2018). Interpretive analysis of data by the researcher through construction of meaning from participant voices further strengthened the epistemological leanings and use of research paradigm.

The research questions and the interview protocol questions were based on the synthesis of relevant published literature, PBNZ, and PNZ surveys, and after discussion with supervisors from AUT. The PBNZ survey had a wider representation from multiple specialities, whereas the PNZ survey included a niche sample of APP. Merriam's sampling strategy was adopted for semi-structured interviews. Purposive sampling of APPs and stakeholders was implemented in the semi-structured interviews for the current study to illuminate issues and perspectives, thus enhancing the transferability and dependability of findings. The majority of the small APP

population in NZ wholeheartedly shared their experiences and thoughts on the APP role with the researcher, thereby enriching the study. Each participant brought their unique perspective to the study. Ethical considerations were applied to ensure the anonymity of the small pool of niche participants. Data were collected by audio recording, and the primary researcher made additional field notes as required. The participants checked verbatim transcripts. Data saturation was reached.

A case study inquiry uses multiple sources of data that are triangulated. This case study used document analysis, qualitative survey data analysis, and semi-structured interviews out of the six data sources suggested by Yin. All data were recorded on a database. All data sources and field notes were triangulated to provide a multi-perspectival in-depth analysis of the case, as suggested by Meriam and Yin. Data gathering and analysis happened concurrently, enabling the researcher to develop codes, sub-categories, and categories that were assembled and reassembled to allow inductive interpretation, pattern-matching, and acknowledging alternative explanations. The researcher acknowledged their reflexivity and reflected on their experiences during data gathering and at various stages in the research process, ensuring that the rigour was maintained within the study whilst still conducting a qualitative piece of research. The research supervisors reviewed the chapters, questioning and challenging, contributing their unique blend of knowledge and strengths to the final thesis and ensuring its rigour through peer debriefing. See Table 8 below, which outlines the quality and rigour of the case study.

Table 8 Quality and rigour in case study research

Qualitative term	Strategy employed	Strategy met
Credibility	Triangulation	Used multiple sources of evidence: documents, qualitative PBNZ survey analysis, semi-structured interviews.
	Data Saturation	Data Saturation reached
	Peer debriefing	Supervisors checked written thesis providing peer review
	Member checks	Verbatim transcripts checked by interviewees. Notes and reflexive diary used.
Dependability	Purposive sampling	Purposive sampling used in semi-structured interviews.
	Researcher Reflexivity	Reflexivity identified in chapter 1 introduction and discussed as relevant in chapter four, finally completing reflection in chapter seven.
Conformability	Create an audit trial	Created a case study database to record data sources
	Code-recode strategy	Data analysis followed cycles of coding and recoding through repeated rounds of analysis.
	Triangulation	Data was analysed by assembling and reassembling all data sources and regrouping and analysing it in accordance with Yin's principles of qualitative data analysis.
Transferability	Triangulation	Triangulation of all data sources.
	Thick description	Identified in chapter 1 introduction and discussed as relevant in results chapter, finally completing reflection in chapter seven.

7.8.2 Limitations

The literature review in chapter two highlighted the scarcity of research on the APP roles in the NZ context. This scarcity emphasised the need for more research in the NZ domain, investigating the multiple facets and contributing to the body of knowledge. The international body of research suggested that the methodological rigour of some studies was low, and hence this data needs to be interpreted in the relevant context. Also, studies focusing on assessing the cost-effectiveness of APP roles could not be generalised due to the use of different models of calculation and embedded variables. Few studies addressed concepts of barriers, governance, or training embedded in APP roles.

Specific to the current study, as a researcher who has worked extensively in different countries with different health systems, this inherent reflexivity and lens needs to be acknowledged and may be a limitation of this study. The researcher has predominantly worked in public healthcare and lacked insight into the workforce issues in the NZs private sector and how it impacts the profession at the beginning of the current study. This case study used survey interviews from PBNZ and PNZ. The use of these surveys was advantageous but also caused limitations as these survey questions were not created by the researcher specifically for addressing the research question and its aims. The responses from these surveys were still pertinent; nevertheless, the general limitations in using surveys such as respondent discomfort in answering questions or lack of responses, misinterpretation of the question, or discrepancy in recall accuracy needs to be recognised. These tensions generated in using the analysed qualitative findings from predesigned surveys should therefore be acknowledged. Future work might benefit from designing tailored survey questions aimed to address specific research questions and their aims. The use of surveys designed by PBNZ and PNZ also bound the study temporally from 2013 until 2021, when the recent interviews were conducted.

This case study research purposively sampled APPs from musculoskeletal speciality as this area has the most concentration of APPs. However, in the future, this research can be expanded to include other specialities such as cardiorespiratory, neurology, or pelvic health. The findings of this study are therefore limited to the population sampled and cannot be extrapolated entirely to other specialities in physiotherapy or differing health systems. The case study had a small sample of stakeholders and APPs working within DHB and no patient perspective, which might be a limitation. Although there was a diverse range of survey respondents, the interviewed participant numbers were limited; hence care should be taken about generalising the results of these findings. Future work may benefit from including a wide range of stakeholders, sampling different specialities, and analysing the clinical and cost-effectiveness of APP roles in the NZ context.

7.9 Reflections

This doctoral journey has been a professional and personal milestone for me as I completed my Master's degree 30 years ago using a quantitative paradigm. Most physiotherapy research is also conducted in a quantitative paradigm; therefore, the thinking processes and mind mapping for qualitative research have been stimulating and demanding at the same time.

Each phase of the research process, such as choosing the research question, case study methodological approach, and data analysis choice, was not straightforward. Decision-making throughout each research phase required me to verify my choices to align them with the

methodological choice and time frames of the DHSc research process. To strengthen my choice of case study methodology, I was fortunate to be introduced to two nursing Ph.D. students using case study methodology. They shared their ideas, experience, and fundamentals of case study research with me. To create a database and analyse this study's findings, NVivo was initially considered for qualitative data analysis. However, due to my familiarity with Microsoft Word and Excel programs, I nearly completed analysing my data systematically before using NVivo. I might hopefully have other opportunities in the future to use qualitative paradigms and NVivo.

My doctoral research is closely related to my working practice, and as an emerging qualitative researcher, I have tried to reflect on my assumptions and reflexivity while conducting this research. As I read more about interviewing and questioning techniques, I had to make a conscious effort not to vocalise my thoughts during interviews and let the participants engage. This process also provided me with insights into the interviewee's assumptions and their world view around the research project, which was fascinating. This whole process of the doctoral journey has strengthened my skills in clinical leadership and influenced a change to clinical practice. Additionally, it has provided me with an insight into my strengths and weaknesses and areas where I need to improve. My supervisors have been knowing of this and have encouraged me to capitalise on my strengths through this journey.

7.10 Conclusions

A precedent has been created for APP roles internationally to meet service needs and fulfil government recommendations. Currently, the APP roles in NZ are ad-hoc and opportunistic, dependent on the reactive needs of the organisation. This timely case study research set in the NZ context provides a thought-provoking analysis of the current APP roles in NZ by examining their working practices and drivers and barriers for creating these roles. At present, the drivers for creating APP triage roles are stronger in a government-funded healthcare system delivered by DHB due to the inherent issues of waiting list management, unmet need, and staff shortages. These drivers are not applicable to the private sector. Instead, the profession visualises the APP role in the private sector as a means to offer second opinions and backfill the clinical void created by the ACC PBNZ accredited specialist contract. The APP in the private sector will provide an advanced pathway of care for musculoskeletal management rather than triage and extension of the scope of practice in a DHB sector due to the lack of available specialist medical supervision in the private sector. This research, therefore, comes at a critical juncture in the evolution of the physiotherapy profession in NZ health services, evolving towards creating more APP roles.

This case study data highlights the shortcomings of the current model of care offered to musculoskeletal patients in NZ, resulting in multiple entry points in the system. There is a resultant compromise of patient flow, leading to long waits, increased chronicity, and financial burden. Interviewees perceive that introducing an APP role in either sector would lead to improvement of patient flow, patient journey, and patient experience. This research has explored the reasons for the limited uptake of the APP roles in the NZ context despite strong drivers, such as access to care, fiscal constraints, the burden of long-term musculoskeletal healthcare conditions, unmet need in organisations, long waiting lists, profession-led drivers, legislative drivers, and workforce shortages. This is potentially due to the lack of recognition, lack of career pathways, lack of training, and the dual healthcare system in NZ, impacting the clinician's practices and funding. These findings need to be considered by the stakeholders when considering the development and implementation of the APP roles in the NZ context.

The role requires recognition in the wider healthcare, as currently, the wider healthcare and public are unaware of the nuances of skill sets between a generalist physiotherapist and an APP. The physiotherapy profession, therefore, requires the PNZ to advocate and lobby to raise its APP workforce profile. Currently, the PBNZ is in the process of accrediting the APP title. This titling would provide the physiotherapy profession with a career pathway, accountability, and responsibility whilst protecting public safety. This needs to be clearly articulated to the wider health professionals and stakeholders. Appropriate education and relevant training for the APP role are essential to be accountable and responsible in clinical decision-making and healthcare delivery which the higher education providers should develop. Currently, the triage roles are more prevalent in the public sector, but as funders realise the role's efficacy as demonstrated by the proposed musculoskeletal pathway led by APP, it is envisaged that the uptake across both public and private sectors will increase. There is potential for the APP role to impact both sectors and enhance the vision of the MoH, '*Health Strategy*,' and '*BSMC*' policy to provide quality musculoskeletal care to New Zealanders.

The future for APP roles in NZ appears to be promising for three key reasons. One reason is these roles are currently being developed, albeit on an ad-hoc basis. Secondly, the PBNZ is considering titling for the roles, and finally, there are strategic drivers for this role development. Nevertheless, in the event that the APP role does not gain support, there are several implications. It could perpetuate strategic issues such as lack of access to care, unmet need, and increased waiting lists, resulting in the escalation of inequities of care to our growing population and an increased economic burden (Ministry of Health, 2002). It may further increase the workloads of the doctors and GPs who are currently experiencing workforce shortages. This will impact patient access to musculoskeletal care and health

outcomes resulting from delayed assessment and management. The hesitancy to implement APP roles may have health and economic implications for patients and stakeholders. The reservation on the development of APP roles may increase the attrition within the physiotherapy profession, which could play a vital role in providing timely musculoskeletal care. The arguments speak for themselves that there are strong drivers for establishing APP roles. Nevertheless, the barriers will need to be overcome for the APP roles to be adopted widely within NZ.

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Appendices

Appendix 1 Search terms and strategies for searches carried out between 2017 and 2020

Search April 2017 with health librarian- Database CINAHL, Medline, Sports Discus S1- "advanced practic*" OR "extended scope practic*" OR ESP OR "physician assistant*" OR "clinical specialist*" OR “physiotherap*” OR "physical therap*" S2-"extended scope" OR "advanced scope" OR "clinical specialist*" S3- physiotherap* OR "physical therap*" S4- S2 AND S3 Out of 382 search results 51 articles were selected

Search in 2017 with health librarian- Database: CINAHL, MEDLINE, Sports Discus S1- ("advanced practic*" OR "extended scope practic*" OR ESP OR "physician assistant*" OR "clinical specialist*" OR "advanced physiotherapy practice" OR APP) N6 ("cost effective*" OR "clinical effective*" OR "patient satisf*" OR "stakeholder view*" OR "clinical govern*" OR barrier* OR facilitator* OR legislat*) S2- physiotherap* OR "physical therap*" OR rehabilitat* S3- S1 AND S2 Out of 379 search results 25 articles were selected

Search on 1/12/2017 with health service librarian- database- CINAHL S1- (MH "Physiotherapy Evidence Database") OR (MH "Physical Therapy Practice, Research-Based") OR (MH "Physical Therapy Practice, Evidence-Based") OR (MH "Canadian Physiotherapy Association") OR (MH "Australian Physiotherapy Association") OR (MH "Physical Therapy+") OR (MH "The Chartered Society of Physiotherapy") S2- Physiotherap* OR "physical therap*" S3- S1 OR S2 S4- "extended scope" OR "advanced scope" S5-S3 AND S4 Out of 60 search results 43 articles were selected

Search on 1/12/2017 with health librarian-Google scholar search- Search terms – “systematic review” OR “physiotherapy” OR physical therapy” OR cost-effectiveness” OR “advanced scope practitioners” resulted in 10 articles being selected
Search on 1/12/2017- Database- CINAHL S1- "extended scope practitioner*" OR "extended scope physiotherap*" S2- TI "extended scope practitioner*" OR "extended scope physiotherap*" Out of 61 search results 17 articles were selected

Search on 1/12/2017- Database- MEDLINE S1- (MH "Physical Therapy Specialty") OR "physiotherapy" S2- "extended scope practice" S3- “extended scope practitioner” S4- “advanced scope practice “OR “advanced scope practitioner” S5- “physical therapy “OR “physiotherapist “OR “physiotherapists” OR “physical therapists” S6- S2 OR S3 OR S4 S7- S1 OR S5 S8- S6 AND S7 Out of 161 search results 6 articles were selected

Search on 3/07/2018 with healthcare librarian- Databases searched- Medline. “Extended Scope practitioners” resulted in 13 searches
Search on 5/07/2018 with AUT librarian- Database- EBSCO -CINAHL, MEDLINE, Sports Discus S1- "advanced practic*" OR "extended scope practic*" OR ESP OR "physician assistant*" OR "clinical specialist*" OR physiotherap* OR "physical therap*" S2-"extended scope" OR "advanced scope" OR "clinical specialist*" S3- physiotherap* OR "physical therap*" S4- S2 AND S3 Out of 360 search results 20 articles were selected

Search on 2/12/2019 with health librarian- Google scholar search

“physiotherapy”, Physical therapy”, “advanced practitioner”, “advanced Physiotherapy” “extended scope Practitioner”, “clinical specialist”, “Consultant physiotherapist competencies”, “scope of practice” “training”, “clinical governance”, “legislation”

Out of 67 search results 18 articles were selected

Search on 27/02/2020 with AUT librarian- Databases- EBSCO- CINAHL, MEDLINE, Sports Discus

physiotherap* OR "physical therap*" OR rehabilitat*

("advanced practic*" OR "extended scope practic*" OR ESP OR "physician assistant*" OR "clinical specialist*" OR "advanced physiotherapy practice") N6 ("cost effective*" OR "clinical effective*" OR "patient satisf*" OR "stakeholder* view*" OR "clinical govern*" OR barrier* OR facilitator* OR legislat*)

S1 AND S2

Out of 202 search results 15 articles were selected

Appendix 2 Narrative literature review references

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Systematic review				
Desmueles et.al. 2012	To describe diagnostic accuracy, treatment effectiveness, economic efficiency, and patient satisfaction of APP	Systematic review (n=16)	Physiotherapists in APP roles provide equal or better than usual care in comparison to physicians in terms of diagnostic accuracy, treatment effectiveness, use of healthcare resources, economic costs, and patient satisfaction.	Strengths- Systematic review, broad search strategy with inclusion of relevant studies. Limitations- lack of methodological rigour in included studies, inability to do meta-analysis.
Marks et.al. 2017	To establish the impact, of substituting doctors with physiotherapists upon patients and health services	Systematic review (n=15)	Physiotherapists provide a professional alternative to doctors for management of musculoskeletal disorders, but the health economic implications of this model are presently unclear.	Strengths-Systematic review, observational design excluded therefore reducing bias. Limitations- methodological shortcomings in studies, Professional scope of APP not defined, and limited health economic analysis.
Hussenbux et.al. 2015	To describe intermediate care pathways, evaluate effectiveness, describe outcomes, and identify gaps in the evidence.	Systematic review (n=23)	Intermediate care consistently improves patient outcome, typically results in appropriate referral and management, reduces waiting times, and increases patient satisfaction.	Strengths- Systematic review, highlighted need for more embedded evaluation and RCTs. Limitations- low quality of studies

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Kersten et.al. 2007	To explore the range, drivers, and perspectives of extended or enhanced practitioner roles	Systematic review (n=7)	Review demonstrates overwhelming support for extended scope of practice, the vast majority of resources were supportive despite being largely descriptive or discursive in nature.	Strengths-Systematic review used Cochrane methodology, extensive coverage of search. Limitations- lack of robust studies. included in sample which offered limited value in some instances.
McPherson et.al. 2006	To synthesise the evidence about the impact of ESP roles in five groups of allied health practitioners	Systematic review (n=21)	There is little evidence as to how best to introduce such roles, or how best to educate, support and mentor these practitioners.	Strengths- Systematic review, extensive search coverage. Included range of allied health practitioners providing glimpse into working practices. Limitation-review highlighted lack of knowledge of impact of APP role on junior staff, lack of analysis of cost-effectiveness, confusion in terminology impacting on search strategy.
Oakley et.al.2015	To appraise the evidence on the diagnostic ability of ESPs in MSK triage, and patient and GP satisfaction when seen by an ESP.	Systematic review (n=14)	The evidence suggests that ESPs are clinically effective. However, there were methodological short comings in the reviewed studies.	Strengths-Systematic review. Identified publication bias, recommends using larger data sets and same patient cohorts marked against a gold standard for robust synthesis of data Limitations- methodological shortcomings in the reviewed studies, lack of detail to generalise conclusions.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Saxon et.al. 2014	To examine evidence relating to the impact ESP roles have on health care services.	Systematic review (n=21	Available evidence suggests that extended scope practice allied health practitioners could be a cost-effective and consumer-accepted investment that health services can make to improve patient outcomes.	Strengths- Systematic review, critical appraisal of all papers prior to data extraction. Included range of allied health practitioners Limitations- built on previous research by McPherson et.al. noted ongoing low-quality research with lack of improvement over time.
Stanhope et.al.2012	To updated systematic review conducted in 2008 into ESP in physiotherapy in orthopaedics.	Systematic review (n=12)	Despite the positive results, there is generally low level of evidence and range of outcome measures reported. There is, constrained clear conclusion regarding the health, process, and cost implications of ESP physiotherapy roles in orthopaedic settings. The need for formalised, widely recognised training was highlighted, to give ESP roles credibility.	Strengths-Systematic review, Studies in levels I, II, or III_1 were critically appraised using a purpose-built critical appraisal tool. Limitations- included research continued to have lower evidence-based hierarchy. Threatened by bias and site-specificity.
Thompson et.al.2017	To review the current literature, with particular emphasis on the decision-making process, patient/clinician interaction and clinical outcomes of ESP roles.	Systematic review (n=25)	Clinical decisions made by ESPs correlate well with those of medical colleagues, although there is a lack of detail explaining the ESP decision-making process itself and the influences and mechanisms by which this occurs.	Strengths- Systematic review, included qualitative and quantitative studies which were analysed with mixed-methods synthesis. Limitations- heterogeneity of literature which limited meta-analysis.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Trostrup et.al. 2020	To evaluate the effectiveness of the diagnostic musculoskeletal assessment performed by ESP compared to Orthopaedic surgeon	Systematic review (n=32)	Diagnostic assessments performed by ESP may be as beneficial as or even better than assessment performed by OSs in terms diagnostic agreement, costs, and satisfaction.	Strengths-Systematic review included 1 RCT and 31 observational studies. Bias was analysed using SIGN 50 checklists. Limitations- risk of bias in included studies.
Randomised control trial				
Daker- White et.al. 1999	To evaluate the effectiveness and cost effectiveness of specially trained physiotherapists in the assessment and management of defined referrals to hospital orthopaedic departments.	RCT	Orthopaedic physiotherapy specialists are as effective as post-fellowship junior staff and clinical assistant orthopaedic surgeons in the initial assessment and management of new referrals to outpatient orthopaedic departments and generate lower initial direct hospital costs.	Strengths- RCT, stratified block randomisation was used. Pragmatic feature of study reflects reality of service provision. Limitations- study was not blinded introducing some bias in measurement and outcomes. Short follow up time with different selection criteria at two hospitals.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Samsson et.al 2016	To evaluate patients' perceived quality of care in a physiotherapist-led orthopaedic triage in primary care, compared with standard practice.	RCT	Patients in both groups reported that they perceived good quality of care, with the patients in the physiotherapist-led triage reporting significantly higher perceived quality of care than those in the standard practice group.	Strengths-RCT, block randomisation used, large sample size, originality of study. Limitations- Neither subjects nor clinicians were blinded. Bias in analysis and interpretation of data. Selection bias. Few APP clinicians thus limiting breadth of assessment and possibly introducing interpersonal bias between clinicians.
Delphi study				
Suckley 2012	To identify core clinical competencies for primary-care-based ESPs working in the field of adult musculoskeletal medicine.	Delphi	The expert Delphi panellists identified 104 core clinical competencies for primary-care-based musculoskeletal ESP practice, and they reached a consensus view on 85 competency items.	Strengths-Anonymisation of experts for Delphi study Limitations-lack of more iterative rounds. For the current study the anonymity of experts limited the richness of the outcome.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Diagnostic effectiveness				
Trompeter et.al. 2010	To compare the accuracy of clinical diagnosis made by trained physiotherapists and orthopaedic surgeons when seeing elective patients in the outpatient clinic	Retrospective case note analysis	The accuracy of clinical diagnosis by trained surgeons is better than that of physiotherapists, although not statistically significant. It is, therefore, justifiable to place patients on theatre lists based only on clinical examination by either physiotherapists or surgeons.	Strengths- process of case allocation randomised. Standardisation of procedure. Limitations-none acknowledged in study; however, retrospective studies can include variances of inaccurate, incomplete, or illegible documentation, or variance in the quality and location of the information recorded by clinicians.
Kerridge-Weeks et.al 2016	To determine if a clinical specialist could allocate patients into distinct diagnostic triage categories in line with national and international guidelines. A second aim was to describe their clinical decision making.	Prospective study	This study suggests that clinical specialists can manage a significant number of patients with spinal conditions whilst providing high-quality referrals to surgical colleagues.	Strengths-Prospective study enabling options of being tailored to collect specific data. Limitations- Risk of bias in selection and analysis through one of the clinicians being the lead author and researcher.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Langridge et.al. 2015	To explore the processes by which ESPs clinically reason their decisions regarding patients reporting low back pain in a musculoskeletal outpatient setting.	Multiple case study design	ESPs reported experiencing greater stress due to higher levels of perceived accountability, safety requirements and internal drivers for competence than non-ESPs.	Strengths -qualitative case study design informed by grounded theory methodology. Limitations-limited generalisability as sample limited to spinal patients Mixed ESP/ non-ESP in focus groups may have caused restraint. Same researcher as author and researcher introduces potential bias.
Gardiner et.al. 2002	To compare the accuracy of clinical diagnosis of internal derangement of the knee by the ESPs with their medical counterparts, including consultant and sub-consultant doctors and surgeons.	Retrospective Audit	ESP showed a greater agreement between clinical diagnosis and arthroscopic diagnosis than her medical counterparts.	Strengths- analysed arthroscopic findings and clinical decision making. Limitations-potential for bias due to lack of external auditor, arthroscopies were performed by multiple surgeons limiting comparison.
Sephton et.al. 2010	To evaluate the clinical effectiveness of a primary care musculoskeletal clinical assessment service.	Prospective observational cohort study	Preliminary study shows the possible benefits of adopting this model of care and identifies the need for further research.	Strengths- evaluated short- and long-term changes in general health and pain levels of patients, Limitations-lack of comparator group, limited ability to conduct RCT. Unable to collect outcome data of patients referred to secondary care.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Goodwin et.al.2016	To evaluate the clinical effectiveness, patient satisfaction and economic efficacy of a physiotherapy service providing musculoskeletal care, as an alternative to GP care.	Service evaluation	The physiotherapy service appears to provide a safe and efficacious service. The service is well received by patients. There appear to be potential financial implications to the health economy.	Strengths- evaluated clinical and economic effectiveness of first contact practitioner role in primary care in UK. Limitations-use of pragmatic approach and inherent weakness. Lack of comparator group limited analysis of cost-effectiveness.
Hattam 2004	To evaluate effectiveness of ESP role by judging the specificity and appropriateness of referral.	Cross-sectional study	A high degree of consistency was noted in the accuracy, specificity, and appropriateness of ESP referral across anatomical regions indicating their effectiveness in the overall management of the orthopaedic patient.	Strengths-study analysed triage component of ESP role. Limitations- cross-sectional design of the study limited monitoring of patient's management probably contributing to the ESP effectiveness being understated. Using the outcome of consultant management as a measure was limiting as doctors may not always instigate the most appropriate management.
Wood et al. 2016	To evaluate spinal orthopaedic triage service in the third largest spinal unit in the UK.	Retrospective service evaluation	ESP services in a specialist spinal service are effective in managing spinal conditions conservatively and identifying surgical candidates appropriately.	Strengths- reviews the rate of independent management and surgical conversion in the specialist spinal centre by spinal ESPs. Limitations- Lack of time limited analysis of data and its longitudinal evaluation.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Rabey et al. 2009	To highlight the extent and appropriateness of surgical and radiological referrals by ESPs working in an adult orthopaedic service.	Audit of ESP service	This paper reinforces published data on ESP management of the entire episode of care of the majority of referrals to orthopaedics, and on the highly appropriate nature of onwards referrals. Documented for possibly the first time, data regarding investigations for lumbar and knee disorders highlight low referral rates.	Strengths- first study to analyse investigation referral rates for knee and lumbar complaints. Limitations- limited generalisability of ESP service to other environments. Potential benefit of second opinion not recognised.
Cost Effectiveness				
Belthur et.al 2003	To review the outcome at a minimum of 12 months of referrals assessed in the physiotherapy specialist clinic and to analyse the effectiveness of the clinic.	Retrospective study	The average cost per patient managed in the physiotherapy clinic was less than cost incurred in the consultant clinic. By reducing total number of patients seen by consultant it freed up surgeon time to assess more complex and urgent cases.	Strengths-first study to review ESP role in paediatric orthopaedic clinic. Analysed cost-effective analysis for physiotherapist and consultant. Suggests GP education to reduce referrals to secondary care. Limitations-no limitations acknowledged in the study.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Burn et.al. 2014	To Investigate cost effectiveness, diagnostic rates, surgical percentage and appropriateness for orthopaedic referrals and number of patients able to be seen in orthopaedic triage from GP orthopaedic referrals.	Prospective study	The study demonstrated a 27.3% cost saving from the normal orthopaedic route with 86 % of patients able to be managed by an ESP without requiring orthopaedic assessment.	Strengths-Cost-analysis was conducted across ESP delivered patient pathway. Limitations-Probable bias as the researcher is the author of the study. Clinical outcomes were not collected when patients were referred to other services.
Impact on waiting lists				
Razmjou et.al. 2013	To examine the role of an APP with respect to (1) agreement with an orthopaedic surgeon on diagnosis and management of patients with shoulder problems; (2) wait times; and (3) satisfaction with care.	Prospective study	Using experienced physiotherapists in an extended role reduces wait times without compromising patient clinical management and overall satisfaction	Strengths- Demonstrates impact of APP role in the management of shoulder pathology Limitations-Lack of collection of demographic and disability level of patients. Single location and one ESP affected external validity. Use of standardised form limited decision making.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Desmueles et.al. 2013	To assess the diagnostic agreement of an APP compared to orthopaedic surgeons as well as to assess treatment concordance, healthcare resource use, and patient satisfaction in this new model.	Prospective study	The diagnosis and triage recommendations for patients with hip and knee disorders made by the APP were similar to the orthopaedic surgeons. These results provide evidence supporting the APP model for orthopaedic care.	Strengths-methodologically robust, contained large sample of patients, Limitations-limited sample of hip patients. Study did not report impact of new APP model on APP / surgeon waiting times.
Byles, et.al. 1989	To examine the extent to which patients referred to orthopaedic out-patient clinics could be managed by a physiotherapist.	Service evaluation	The introduction of this system enabled the consultant orthopaedic surgeon to substitute one operating list monthly for one out-patient session. It represented one way forward in tackling the chronic problem of orthopaedic out-patient waiting lists, while simultaneously allowing the orthopaedic surgeon to employ time more effectively.	Strength- Seminal study to review ESP practice. Sought GP feedback post ESP management of patient. Patient opinion was surveyed. Limitations-no limitations identified in study. Few GPs resisted due to medicolegal implications. Few patients with chronic recurrent problems were reassessed however it is unclear who assessed them.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Hockin et.al. 1994	To assess effectiveness of the physiotherapist with additional in treating general practitioner out-patient orthopaedic referrals primarily.	Descriptive audit	The cost of training physiotherapists is very much less than for orthopaedic surgeons and the preliminary study suggested that physiotherapists were effective as medically qualified personnel in out-patient departments.	Strengths- seminal articles which discusses scope of ESP and specialised training needs. Limitations- none identified. Inherent weaknesses of descriptive studies include bias, inability to generalise study or lack of causal relationships.
Hourigan et.al. 1994	To assess the impact of a specially trained physiotherapist in reducing waiting times and costs, for back pain patients referred by GPs to a spinal clinic.	Descriptive report	As a result of the initial screening by the trained physiotherapist only a small proportion (24%) eventually needed to be seen by the surgeon.	Strengths- All cases discussed with surgeon. Seminal study on use of ESP in assessing spinal patients. Limitations- none identified. Inherent weaknesses of descriptive studies include bias, inability to generalise study or lack of causal relationships.
Stakeholder views				
Anaf et.al. 2010	To investigate the perceptions of ED physiotherapy practice by emergency patients in metropolitan and regional Australia.	Qualitative investigation	Participants at ED had a general, but limited, awareness of the role of physiotherapy. Among multiple themes identified were six key domains which participants could recognise as being both the role of general physiotherapy and relevant to the emergency setting.	Strengths- First qualitative study in Australia which analysed perceptions of stakeholders for physiotherapy roles in emergency departments and made recommendations for advocacy of professional skills. Limitations-Limited sample from two hospitals. Researcher reflexivity and succinct nature of survey limited qualitative nuance.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Desjardins-Charbonneau et.al. 2016	To assess the perceptions of a university community sample within Quebec about physiotherapists as primary care practitioners and APPs for the treatment of patients with musculoskeletal disorders.	Descriptive study	Respondents were satisfied and had confidence in physiotherapists as primary care practitioners; they also supported the intended new roles of the APPs in the health care system.	Strengths-Large sample size, first study to report APP perception and acceptability in primary care in Canada. Limitations- small participation rate and closed-ended survey questions. Sample composed of 18–29-year-old highly educated Quebec university members hence generalisability is limited.
McClellan et.al 2006	To evaluate the effect of introducing an ESP service on patient satisfaction, and to measure the functional outcome of patients with soft tissue injuries attending an adult ED.	Observational study	Adding an ESP service to the interdisciplinary team achieves higher levels of patient satisfaction than for either doctors or ENPs	Strengths-Study discussed time allocation to patients in ESP clinics, patient's preconceived perception of service delivery. Limitations-single centre and single ESP study hence limited generalisability. Additional observational study bias.
Kennedy et.al. 2010	To measure and compare patient satisfaction with follow-up care in APP and orthopaedic surgeon clinics for patients following total hip or knee replacement.	Cross sectional study	Patients are highly satisfied with the care provided by APPs in follow-up clinics after joint replacement.	Strength- measured satisfaction in post-operative clinics in Canada. Limitations-Early implementation of satisfaction survey which might limit feedback. Modified Visit-Specific Satisfaction Instrument hence altering some psychometric properties of earlier version.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Reeve et.al. 2009	To establish the dimensions of quality that were important to patients referred to spinal service	Qualitative study	Data analysis revealed five key themes that were important to the participants in the quality of the service: provision of information, professional skills, interpersonal skills, outcome, and patient care pathway.	Strengths- established the dimensions of quality important to patients attending a spinal screening ESP physiotherapist. Limitations- identifies small sample size, issues with generalisability and lack of reflection of the cultural diversity in the city.
Williams et.al. 2019	To investigate the impact of advanced physiotherapy on healthcare efficacy, efficiency, service design or perceptions (consumers or health professionals) of these advanced roles.	Narrative literature review	Overall, evidence suggested that advanced physiotherapy roles may provide benefits to the public and health system when implemented in innovative, interdisciplinary, and non-traditional ways.	Strengths- first peer reviewed study in New Zealand investigating APP role. Limitations-inconsistencies of terminology. Most studies included relate to musculoskeletal domain and therefore have limited generalisability.
Crane et.al. 2013	To discuss the need for the physiotherapy profession to develop evidence-based regulatory, ethical, and educative frameworks to keep pace with the changing clinical environment and service delivery in ED.	Debate article	Suggestions for education in areas of clinical skills, ethical understanding and legal and professional knowledge are highlighted as important areas to support physiotherapists moving into this area of practice.	Strengths- discusses training, regulatory frameworks related to ED physiotherapy practice in Australia. Limitations- none identified. However, the findings may not be generalisable to other health contexts.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Milligan 2003	To investigate perceptions of orthopaedic specialist registrars to the role of ESP.	Qualitative study	ESP physiotherapy background provides additional skills and merit to the clinic. Majority expressed concern that ESP role is vulnerable to the risk of litigation and encouraged accurate documentation, support, and supervision to minimise the risk.	Strengths- qualitative study used grounded theory approach to generate data and analyse it. Limitations- researcher reflexivity, managed by recruiting one nominated specialist registrar from one NHS hospital.
Drivers				
Aiken et.al. 2008	To assess the role and the extent to which the expanded practice physiotherapist and surgeons will make similar diagnoses and recommend similar courses of action for preoperative patients.	Service evaluation	This study demonstrates that a physiotherapist is the appropriate non-physician healthcare provider to screen patients referred to orthopaedics for THR or TKR surgery.	Strengths- Reviewed role of physiotherapy in assessing and listing joint arthroplasty patients. Limitations-- none identified in study.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Durrell 1996	To assess ESP roles	Professional issues analysed	The roles of the physiotherapist and doctor complement each other's in many ways and multi-professional; teams working mor effectively together are benefit to patient.	Strengths- addresses inception, implementation, governance issues within ESP roles Limitations- none identified in study.
MacKay et.al 2008	Primary objective of this study was to a) examine the range of models of care that deliver specialist services using a medical/surgical specialist and at least one other health care provider and b) document the strengths and challenges of the identified models. A secondary was to identify key elements of best practice models of care for arthritis.	Semi-structured interviews	A range of models of care for arthritis have been developed. This classification can be used as a framework for discussing care delivery. Areas for development include integration of care across the continuum, including primary care.	Strengths-Qualitative data analysed using constant comparative method. Large sample with representation from international countries with similar health systems. Limitations- use of snowball sampling which might provide informants from similar perspective. Limited recruitment of primary care physicians. Unable to capture all evolving models.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
de Gruchy et.al. 2015	To provide quantitative data regarding patient demographics, time efficiency, resource utilisation, and management out-comes to examine the APP role in the ED.	Prospective observational study	When comparing similar diagnostic groups, the APPs were significantly more time-efficient than ED physicians in their patient management.	Strengths- detailed description of the caseload managed by an APP service in the ED, with quantitative data to support the service delivery. Limitations-limited to one centre in Melbourne which receives specialised workload hence generalisability limited. Unable to compare complexity in consultant triage cases with ESP. Inherent biases.
Hattam et.al. 1999	To describe the impact on the management of orthopaedic caseload in a GP clinic resulting from screening prior to referral to secondary care by a physiotherapist with secondary scope of practice.	Audit of orthopaedic screening service	These findings suggest that a large proportion of patients with orthopaedic disorders do not need to be seen in the hospital orthopaedic department but can be managed effectively within the primary care environment.	Strengths-situated in primary care and study demonstrated analogous practice to previous studies Limitations-limited time period for service development, secondary care referrals incur further waits
Barriers				
Dawson et.al 2004	To understand ESP experience of the role and what recommendations they would make for future practitioners.	Qualitative, case study approach	The results suggested that success and satisfaction in post is dependent on the relationship with the consultant and the medical team; most ESP experienced similar difficulties and had the same outstanding training needs.	Strengths- Qualitative case-study approach was used. Identified perceptions of ESP working in these roles. Limitations-Small sample due to time constraints, lack of member checks.

Authors	Research Aims	Methods	Results/ Conclusions	Strengths and Limitations
Moloney et.al. 2009	To evaluate the role of an experienced, especially trained physiotherapist reviewing patients with uncomplicated fractures in a clinic setting for 6 months.	Audit of ESP role in fracture clinic	Feedback from patients and the orthopaedic team was that the Clinical specialist was a desirable addition to fracture clinic.	Strengths-Identified strengths, weaknesses, opportunities, and threats within Clinical specialist roles. Limitations-limited time span recognised.
Wiles et.al. 2016	To understand the perceptions of a range of key stakeholders on the ESPP role in Australia	Semi-structured interviews	There was general consensus of the value of ESPP in improving the efficacy and efficiency of health service delivery, achieving positive patient outcomes, and offering opportunities for interdisciplinary learning among colleagues.	Strengths-identifies barriers to development of ESP roles in Australia. Limitations- exploratory, work not positioned within a specific or theoretically driven qualitative framework.
Lefman et.al. 2014	To investigate the perceptions of doctors, nurses, and physiotherapists of ED physiotherapy for acute patients	Qualitative research	Issues explored included defining the role of physiotherapists, uncovering organisational themes from the introduction of physiotherapy into the established ED setting, and conflicts around preserving and expanding an allied health identity in a highly- medicalised clinical environment.	Strengths-Outlined trustworthiness and credibility of findings. Limitations-small sample of ED physiotherapists.

Appendix 3 Search strategy for data source document

Search on 3/7/2018 with health service librarian- Database CINAHL

S1- (MH "Physical Therapy+") OR "physiotherapy"

S2- “advanced practitioner*” OR “advanced physiotherapy practitioner*” OR “extended scope practitioner*” OR “advanced physical therapy practitioner*” OR “extended scope physiotherap*” OR “clinical specialist” OR “consultant physiotherapist” OR “consultant physical therapist” OR “advanced physical therapist”

S3- “competency” OR “competencies “OR “training” OR “clinical governance” OR “legislation” OR “regulations” OR “scope of practice”

S4-S1 AND S2

S5- TI physiotherap# OR TI physical therap#

S6- S2 OR S3

S7-S5 AND S6

S8- “Australia” OR “new Zealand” OR “ireland “OR “Scotland” OR “uk” OR “united kingdom” OR “england” OR “wales “OR “european” OR (european union or eu)

S9-S8 AND S6

Out of 276 search results 35 articles were selected

Appendix 4 Example of document record

	World Confederation of Physical Therapy
Title of document	Advanced Practice Physiotherapy in the European Region of the WCPT Position Statement.
Year of publication	2018
Source of retrieval	General meeting minutes of the European region of the WCPT.
Web address	https://www.erwcpt.eu/file/215
Authors	Helen French, lead author, with contributions from the other members of the Education Matters Working Group: Esther-Mary D'Arcy, Charlotte Häger, Silke Gruber, Carmen Suarez Serrano and Nikolaos Strimpakos.
Type of document	Position statement
Audience	All countries subscribed to WCPT
Purpose	This document aims to support physiotherapists in the European Region in their endeavours to advance physiotherapy practice and ultimately to protect the public and ensure patient/client safety. This paper can be used by Member Organisations (MOs) to support discussions with physiotherapists, other healthcare professionals, educators, and appropriate authorities and organisations in their own countries.
Evidence to authenticate document use quotes	The ER-WCPT definition was created and agreed by the MOs as part of the EU Commission's European skills, competencies, qualifications, and occupations framework (ESCO). It defined advanced physiotherapists as being highly specialised making complex decisions and managing risks in unpredictable contexts and within a defined area. They may focus on a specific area of clinical practice, education, research, or professional management.
Background	This briefing paper built on the information on Specialisation presented in the 2012 document. Further development of this document took place following discussion with the EU Matters and Professional Issues Working Groups at the ER-WCPT Joint Working Groups' Meeting in Dublin, Ireland in September 2017. These included a change to the title of the document, recognition of the broader context of advanced practice than specialisation, consideration for the key attributes of an advanced practice role which includes the use of advanced clinical reasoning, management of patients with complex needs using advanced skills and maintenance of core competencies along the development of advanced competencies.
Author's bias	To provide a standardised guideline for evolving physiotherapy practice around member countries.
Unanswered questions	How will this be integrated and applied in the different countries? Do drivers exist in all countries? How are they impacted on by the individual health systems of their country?
Information within document	The drivers for development of advanced practice in physiotherapy include inappropriate referrals to consultants resulting in increased waiting times, implementation of the European Working Time Directive for junior doctors and increased presentation of patients with multi-morbidity and resultant complex needs across healthcare settings. Summary- Advanced Practice in Physiotherapy refers to a level of clinical practice where physiotherapists make complex decisions and manage risk in unpredictable contexts using advanced clinical reasoning. It can potentially improve patient/client outcomes, health-system processes, and health care costs. There are many ways to obtain formal recognition as an advanced practice physiotherapist through a MO or accredited agent, but ER-WCPT strongly supports formal programmes (e.g., postgraduate master's programmes) to develop the role in a country. Advanced Practice roles should be competency-based and ER-WCPT recommends that MOs follow a recognised standardised competency framework such as the European Qualifications Framework. The concepts of CPD and specialisation although related are not the same. It defined advanced physiotherapists as being highly specialised making complex decisions and managing risks in unpredictable contexts and within a defined area. They may focus on a specific area of clinical

	World Confederation of Physical Therapy
	practice, education, research, or professional management. Due to diversity among the different European MOs, it is important to have a standardised competency framework for advanced practice that can be considered and used by MOs when developing a process for the formal recognition of advanced practice and /or specialisation. There was clear evidence of the benefits of physiotherapists working in a substitution role. These clinicians worked in settings such as orthopaedic, rheumatology clinics or emergency department settings, working alongside medical practitioners to triage patients into appropriate management pathways, including surgical or non-surgical management options. Patient satisfaction reduced waiting lists for consultants and waiting times for surgery, resulting in lower direct hospital costs have been demonstrated. Physiotherapists have also demonstrated similar diagnostic and management decisions to consultants. In paediatric settings, physiotherapy-led surveillance clinics improved access to services for children with cerebral palsy.
Significance of document	This document tries to provide the WCPT position on the emergent APP roles in various countries. It tries to standardise terminology and define concepts of advanced practice and advanced/specialist roles.
Limitations of document	The position statement of WCPT is not binding on individual countries that form part of the WCPT. They can choose to accept the guidance or reject it.
Supports or challenges research question	This document discusses the drivers for APP roles, their educational requirements and qualifications across wider contexts and different countries. It attempts to provide guidance to the physiotherapy profession worldwide and at the same time it tries to ensure safeguards for public.
Implications	This document summarises drivers, qualifications, expectations from practice, and competency requirements on the KSF for APP practice.
Comments	This document is a valuable resource. Review other position statements from WCPT pertaining to this topic.

Appendix 5 Physiotherapy New Zealand survey questions

Physiotherapy New Zealand survey questions

Q1 Please select the category of NZCP membership that you held? [life member; fellow; advanced practitioner; member]

Q2 Can you describe your current physiotherapy roles in your practice setting and community?

Q3 Which aspects of your current roles do you consider to be advanced practice?

Q4 Does your practice differ from that of other physiotherapists?

Q4b How does your practice differ from that of other physiotherapists?

Q5 In which area of physiotherapy do you practice?

Q6 What relevant qualifications do you have and when did you gain these?

Q7 How many years of clinical experience do you have?

Q8a Do you think the role of advanced physiotherapy practice could add value to the delivery of physiotherapy services within NZ healthcare?

Q8b How do you think the role of advanced physiotherapy practice could add value to the delivery of physiotherapy services within NZ healthcare?

Q8c What do you think are the key competencies required to be an advanced practitioner?

Q8d Suggestions re how to achieve this?.

Q9 How many years of experience do you think are required to practice at an advanced level?

Q10 What qualifications do you think are necessary to practice at an advanced level?

Q11 What title do you think a physiotherapist practicing at an advanced level should hold to best communicate the role/level of practice to the public, health professional colleagues, and other physiotherapists?

Q12 Do you think that any titles for advanced practice should be tagged to vocations or sub-specialities (for example, pain management, cardiorespiratory, sports etc.)?

Q13 Please add any further thoughts or comments.

Appendix 6 Physiotherapy Board of New Zealand survey questions

Physiotherapy Board of New Zealand survey questions

Q1 Do you currently hold a Physiotherapy Board of New Zealand annual practising certificate (APC)?

Q2 Do you wish to answer the survey questions even though you do not have a current APC, or you are not a physiotherapist?

Q3 Which of the following best describes your current work situation?

Q4 Are there any other elements you would consider useful in a framework for extended scope?

Q5 Do you support the development of an extended scope framework for physiotherapists?

Q6 Do you wish to continue with the survey which asks about possible 'extended scope tasks'? For those who answered NO to Q.5

Q7 In your current area of practice, if you think you currently perform tasks that could be called 'extended scope', what are these?

Q8 What is it about these tasks that makes them an extended scope?

Q9 What tasks or activities would you see as potentially being covered by an extended scope for physiotherapists? Tick as many as you wish and/or add more.

Q10 If you are currently working in an area of special interest, what 'extended scope tasks' could enhance your job? Please give details of what and why.

Q11 In which areas of practice can you envision the use of extended scope? Tick as many as you wish.

Q12 The implementation of an extended Scope would require an application process and recertification. If the Board were to proceed with developing an extended scope would you be likely to apply for it?

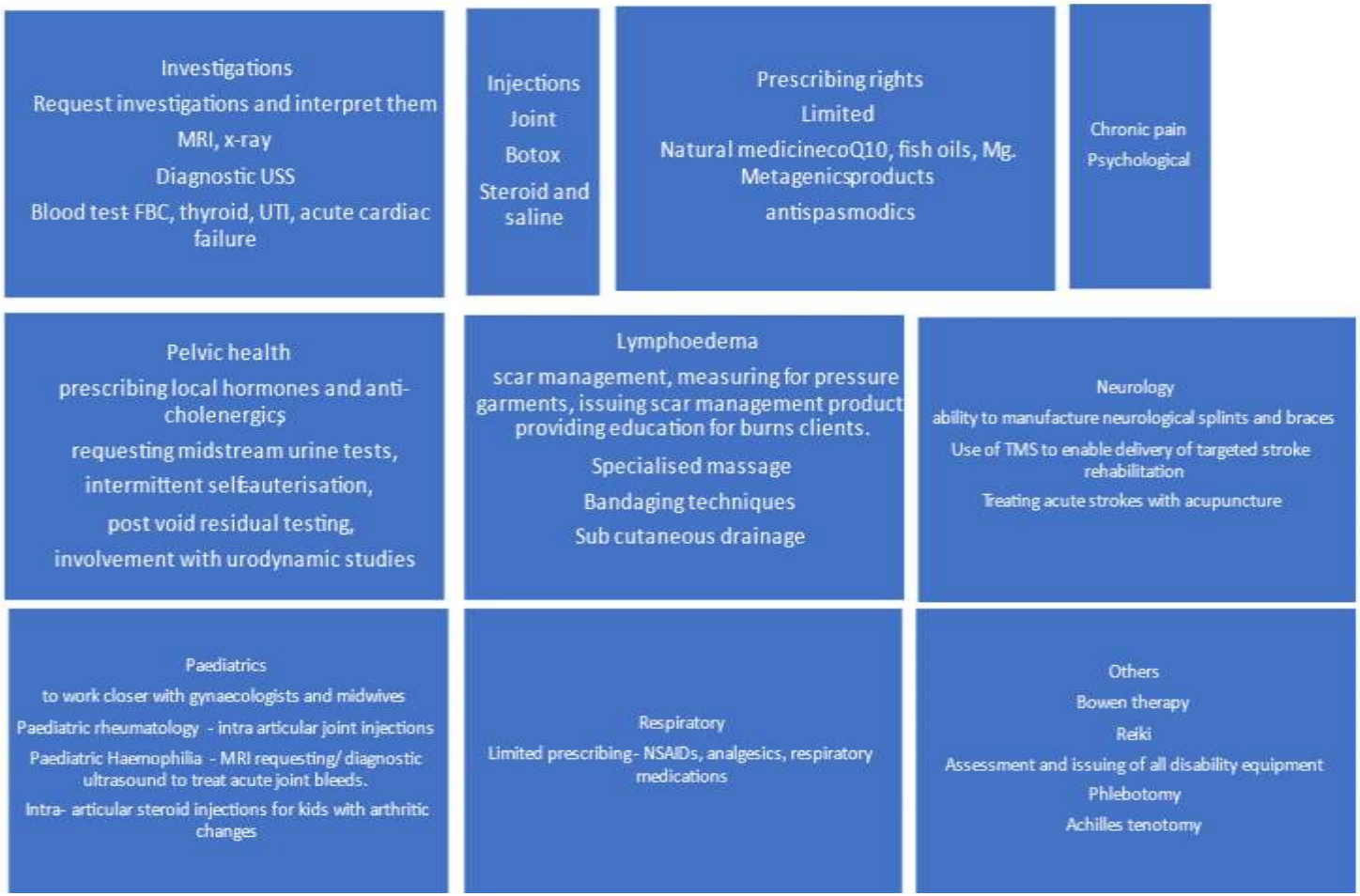
Q13 Do you agree with the term "Extended Scope"?

Q14 Do you have an alternative term? You may give more than one answer.

Q15 Please add any other comments or concerns

Appendix 7 Analysis of Physiotherapy Board of New Zealand question

10.If you are currently working in an area of special interest, what 'extended scope tasks' could enhance your job? Please give details of what and why.



Appendix 8 Analysis of Physiotherapy Board of New Zealand question to identify acceptance of APP role

Q5: Do you support the development of an extended scope framework for physiotherapists

Appendix 9 Responses to Physiotherapy Board of New Zealand question and Physiotherapy New Zealand question on advancement/ extension of scope of practice

7. In your current area of practice, if you think you currently perform tasks that could be called 'extended scope', what are these?

PBNZ

Differential diagnosis/ Triage
Prescribing rights
Injections- steroids, Botox
Investigations- bloods, scans, urine, sugars
Service development/ project management
Public health promotion
Application of legislation based decision to policy
Document review/ decision making
Airway management
Rehabilitation skills, elite sports
Trauma/ wound care,
Casting, splinting, Orthotics, providing equipment
Airway management, ventilation, tracheostomy care
Acupuncture
Visceral/ Cranio sacral mobilisations/ Manipulations
Aged care
Homeopathy
Ponsetti/ CTEV management
Work task analysis
Sensory/ cognitive/ psychological screen

PNZ

Clinical area,
Complexity of cases,
Advanced knowledge,
Clinical oversight/ leadership,
Expert/ second opinion,
Interdisciplinary or collaborative practice,
Extended scope,
Service development, improvement, planning, supervisior
Mentoring, peer review,
Teaching training,
Research, authorship, peer review, review grant applications,
Strategic involvement, prof leadership/ advice

Appendix 10 Semi-structured interview questions

Semi-structured interview questions

1. Tell me about your current extended/ advanced physiotherapy practitioner role/ practice? OR Tell me about your current role? And how it impacts on the physiotherapy profession?
2. Tell me your thoughts about the extended/ advanced physiotherapy practitioner role/ practice?
3. What do you think should be included in the scope of practice of an extended/ advanced physiotherapy practitioner role?
4. What are the facilitators to this role development in New Zealand context?
5. What are the barriers to this role development in New Zealand context?
6. How do you foresee the clinical pathway for this role development?
7. Do you anticipate the extended/ advanced physiotherapy clinician needing additional training? If so, how should the training be delivered?
8. What are your thoughts on recognition of the role?
9. How do you envisage the clinical governance for this role?
10. How do you envisage the legislative governance for this role?
11. How should the clinical liability in this role be managed?
12. How should the autonomy in this role be managed?
13. Do you perceive a niche for this role in New Zealand? If yes, state where; if no, explain why?
14. What are your thoughts on remuneration for the role?

Appendix 11 Ethics Approval

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

8 May 2019

Duncan Reid
Faculty of Health and Environmental Sciences

Dear Duncan

Re Ethics Application: **19/141 Extended scope and advanced physiotherapy practitioner roles in New Zealand: An exploratory case study**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 8 May 2022.

Standard Conditions of Approval

1. A progress report is due annually on the anniversary of the approval date, using form EA2, which is available online through http://www.aut.ac.nz/research/researchethics.
2. A final report is due at the expiration of the approval period, or, upon completion of project, using form EA3, which is available online through http://www.aut.ac.nz/research/researchethics.
3. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form: http://www.aut.ac.nz/research/researchethics.
4. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
5. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.

Please quote the application number and title on all future correspondence related to this project.

AUTEC grants ethical approval only. If you require management approval for access for your research from another institution or organisation, then you are responsible for obtaining it. You are reminded that it is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard.

For any enquiries, please contact ethics@aut.ac.nz

Yours sincerely,

Kate O'Connor
Executive Manager
Auckland University of Technology Ethics Committee

Cc: leena.naik08@googlemail.com; Steve White; Stephen Neville

Appendix 12 Introductory email

Hi/ Kia Ora

Thank you for expressing your interest to participate in my research project 'Extended Scope and Advanced Physiotherapy Practitioner roles in New Zealand'.

My name is Leena Naik, and I am currently undertaking this research as a part of my Doctor of Health Sciences qualification at Auckland University of Technology. My supervisors for this research are Dr Duncan Reid, Dr Steve White, and Dr Stephen Neville. My doctoral research is focussed on Extended Scope/ Advanced Physiotherapy Practitioner roles in New Zealand. I have a growing interest in these roles and how they are currently being developed within New Zealand.

I would like to invite you to participate in a semi-structured interview, your contribution will provide the physiotherapy profession with an increased insight into these roles. The knowledge gained from this study will be disseminated to health professionals and health researchers, via publications and conference presentations.

Prior to commencing the interview, I will need you to complete a written consent form which will be provided to you with a participant information sheet which is attached to this email. Please contact me on my email leena.naik@aut.ac.nz or call me on 0210345432 within one month to register your interest and provide your consent for participating in this project.

Thank you for your assistance / ngā mihi

Regards

Leena Naik

Appendix 13 Participant information sheet for physiotherapists

AUT
TE WĀNANGA ARONUI O TĀMAKI MAKAU RAU

Participant Information Sheet- Physiotherapist

Date Information Sheet Produced:

19/04//2019

Project Title

Extended Scope and Advanced Physiotherapy Practitioner roles in New Zealand.

An Invitation

Hi/ Kia Ora

My name is Leena Naik, and I am currently undertaking research as a part of my Doctor of Health Sciences qualification at Auckland University of Technology. My doctoral research is focussed on Extended Scope/ Advanced Physiotherapy Practitioner roles in New Zealand. I have a growing interest in these roles and how they are currently being developed within New Zealand. I would like to invite you to participate in this research because your contribution will provide the physiotherapy profession with an insight into these roles.

What is the purpose of this research?

The New Zealand health system is currently weighed down due to the convergence of rising health care costs, increasing ageing population, increased burden of chronic musculoskeletal conditions, and physician shortages. Internationally these drivers have led to a health care transformation resulting in the emergence of new models of care that have led to the extension of the scope of practice for allied health professionals.

These physiotherapy Extended Scope Practitioner or Advanced Physiotherapy Practitioner roles have been shown to reduce orthopaedic waiting lists, investigative costs and improve timely patient access to specialist care and services optimising surgical conversion. Although extended scope practitioner roles were first piloted in New Zealand in 2002 and despite recommendations from Ministry of Health and policies such as 'Better Sooner More Convenient pathways' and 'Health Strategy' it appears that there are still very few physiotherapists working in such roles.

This research aims to assess the barriers and facilitators to the development and recognition of physiotherapy Extended Scope/ Advanced Physiotherapy Practitioner roles by assessing their 'current work practices,' and identifying drivers, facilitators, and barriers for and against this role development in a New Zealand context.

This research will be written up in a doctoral thesis and presented in relevant libraries and digital repositories. Findings from this research will be disseminated through peer reviewed journals in form of papers, publications, and conference presentations.

How was I identified and why am I being invited to participate in this research?

Two groups have been invited to participate in this semi- structured interview. Group A includes physiotherapists and Group B includes other stakeholders. You belong to Group A which means that you have a current annual practising certificate. You are an experienced clinician working more than five years in musculoskeletal speciality and you belong to either of these inclusion criteria:

- Musculoskeletal specialist physiotherapist credentialled by the Physiotherapy Board of New Zealand
- A generalist physiotherapist working in designated extended/advanced practitioner role or undertaking extended/ advanced practice working in musculoskeletal background (inclusive of outpatients, sports therapy, and emergency department).
- A musculoskeletal advanced practitioner physiotherapy as per the College of Physiotherapy (obsolete)

You have been invited to participate because you have either read the advertisement in a professional journal or Special interest group newsletter or because your name has been passed on to me as someone who may be able to contribute and wish to participate in this study and you meet the study inclusion criteria. At present the focus is on confining the sample selection to physiotherapists working as an Extended Scope Practitioner or Advanced Physiotherapy Practitioner in the musculoskeletal field to include outpatient, emergency department and sports therapy. I have excluded staff from Waitemata DHB due to my professional role within the organisation.

How do I agree to participate in this research?

Prior to commencing the face-to-face interview, I will need you to complete a written consent form which will be provided to you with this information sheet. If your interview is conducted on Skype, I will use a consent protocol prior to the interview. Your signed and completed consent form will then be stored in the first supervisor's office at AUT.

Your participation in this research is entirely voluntary. You can refuse to participate or decline to answer any questions and withdraw from the study at any time prior to the completion of data collection. If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

What will happen in this research?

Participating in this phase of research will involve an interview arranged at a time and place convenient to you This interview will likely take about 60- 70 minutes. Your written consent will be recorded on the appropriate consent form and verbally on the tape. The interview questions will explore your knowledge of extended/ advanced scope of practice and role. It will also enquire about facilitators and barriers to this role development within New Zealand context. The interview will be recorded and transcribed verbatim. I will construct a draft of the interview report based on the recordings and notes taken. This will be given to you to confirm that I have accurately noted your responses and check for factual errors. This will provide you with the opportunity to remove anything that you do not wish to disclose. The interview transcript will then be analysed by using qualitative content analysis technique. This data will then be triangulated with information received from other data sources such as documents.

What are the discomforts and risks and how will they be alleviated?

It is not anticipated that any harm will come to you from participating in this research. However, you may experience some discomfort discussing barriers to the extended scope /advanced physiotherapy practitioner role development. Everything that you say will be treated with the highest confidence. As New Zealand is a small country there is a small risk of being able to be identified in the final report, but all possible steps will be taken to protect your confidentiality. You will be able to withdraw from the project at any stage. Participation is voluntary. You can refuse to participate at any time without any penalty. You can also refuse to answer any questions at any time. A draft of the interview report based on the recordings and notes taken will be given to you to confirm the accuracy of your responses and check for factual errors. You can also remove any information from the transcript if you wish to do so. During the later stages of data analysis, it may not be possible to fully extricate your contribution from the analysis.

What are the benefits?

These research findings would be helpful to illuminate important aspects of the development of extended scope/ advanced physiotherapy practitioner roles such as: clinical pathways, accountability, risk management, clinical governance, competencies, or framework to support the role development in a New Zealand context. The results of this research will be also be valuable to the stakeholders, policymakers and health professionals considering the development and implementation of extended scope/ advanced physiotherapy practitioner roles in New Zealand.

Your input will also contribute towards the completion of my Doctor of Health Sciences thesis.

How will my privacy be protected?

Various steps will be implemented to protect your privacy

- Your confidentiality will be maintained.
- Pseudonyms will be used where needed to de-identify information within the transcripts.
- Recordings and written transcripts will be kept in password protected computer files.
- Data documents will be securely stored in locked location.
- The data will be deleted after six years.

What are the costs of participating in this research?

The cost of participating in this research will be the time involved for the interview which would be about 60 minutes. Some time will also be required to review the draft of your interview, this should not be more than 45 minutes.

What opportunity do I have to consider this invitation?

If you are interested in participating in this study could you, please email me within one month of receiving this invitation. We can then arrange a time suitable to you over the following one to two months for the interview to take place. Please remember that your participation is voluntary. If you need further information or clarification of any aspect of the project, please contact the researcher or the researcher's supervisor. Contact details are given below.

Will I receive feedback on the results of this research?

Yes. You will receive a summary of the study. You may also receive a copy of any papers that are generated from this study on request.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Duncan Reid, email: Duncan.reid@aut.ac.nz

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, ethics@aut.ac.nz, 921 9999 ext. 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Leena Naik

Email: gtn1556@autuni.ac.nz

Phone: 0210345432

Project Supervisor Contact Details:

Dr Duncan Reid

Email: Duncan.reid@aut.ac.nz

Phone 09 921 9999 ext. 7806

Approved by the Auckland University of Technology Ethics Committee on *07/06/2019*, AUTEC Reference number *19/141*

Appendix 14 Participant information sheet for stakeholders

Participant Information Sheet- Stakeholders

Date Information Sheet Produced:

19/04/2019

Project Title

Extended Scope and Advanced Physiotherapy Practitioner roles in New Zealand.

An Invitation

Hi/ Kia ora

My name is Leena Naik, and I am currently undertaking research as a part of my Doctor of Health Sciences qualification at Auckland University of Technology. My doctoral research is focussed on Extended Scope/ Advanced Physiotherapy Practitioner roles in New Zealand. I have a growing interest in these roles and how they are currently being developed within New Zealand. I would like to invite you to participate in this research because your contribution will provide the physiotherapy profession with a deeper insight into these roles.

What is the purpose of this research?

The New Zealand health system is currently weighed down due to the convergence of rising health care costs, increasing ageing population, increased burden of chronic musculoskeletal conditions, and physician shortages. Internationally these drivers have led to a health care transformation resulting in the emergence of new models of care that have led to the extension of the scope of practice for allied health professionals.

These physiotherapy Extended Scope Practitioner or Advanced Physiotherapy Practitioner roles have been shown to reduce orthopaedic waiting lists, investigative costs and improve timely patient access to specialist care and services optimising surgical conversion. Although extended scope practitioner roles were first piloted in New Zealand in 2002 and despite recommendations from Ministry of Health and policies such as 'Better Sooner More Convenient pathways' and 'Health Strategy' it appears that there are still very few physiotherapists working in such roles.

This research aims to assess the barriers and facilitators to the development and recognition of physiotherapy Extended Scope/ Advanced Physiotherapy Practitioner roles by assessing their 'current work practices,' and identifying drivers, facilitators, and barriers for and against this role development in a New Zealand context.

This research will be written up in a doctoral thesis and presented in relevant libraries and digital repositories. Findings from this research will be disseminated through peer reviewed journals in form of papers, publications, and conference presentations.

How was I identified and why am I being invited to participate in this research?

Two groups have been invited to participate in this semi- structured interview. Group A includes physiotherapists and Group B includes other stakeholders. You belong to Group B which includes stakeholders who have knowledge of their specialised areas and extended scope/advanced physiotherapy practitioner roles. Within this group you are either of the following:

- A medical or surgical clinician working with an Extended Scope Practitioner or Advanced Physiotherapy Practitioner.
- Administrator or manager from District Health Board or Health services or Accident Compensation Corporation.
- Staff from Physiotherapy New Zealand (professional body of physiotherapists) or Physiotherapy Board of New Zealand (legislative body of physiotherapists).

You have been invited to participate because you responded to the email sent out to you and consented to be interviewed or your colleagues have recommended you as someone who may be able to contribute and wish to participate in this study and you meet the study inclusion criteria. I have excluded staff from Waitemata DHB due to my professional role within the organisation.

How do I agree to participate in this research?

Prior to commencing the face-to-face interview, I will need you to complete a written consent form which will be provided to you with this information sheet. If your interview is conducted on Skype, I will use a consent protocol prior to the interview. Your signed and completed consent form will then be stored in the first supervisor's office at AUT.

Your participation in this research is entirely voluntary. You can refuse to participate or decline to answer any questions and withdraw from the study at any time prior to the completion of data collection. If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

What will happen in this research?

Participating in this phase of research will involve an interview arranged at a time and place convenient to you This interview will likely take about 60 minutes. Your written consent will be recorded on the appropriate consent form and verbally on the tape. The interview questions will explore your knowledge of extended/ advanced scope of practice and role. It will also enquire about facilitators and barriers to this role development within New Zealand context. The interview will be recorded and transcribed verbatim. I will construct a draft of the interview report based on the recordings and notes taken. This will be given to you to confirm that I have accurately noted your responses and check for factual errors. This will provide you with the opportunity to remove anything that you do not wish to disclose. The interview transcript will then be analysed by using qualitative content analysis technique. This data will then be triangulated with information received from other data sources such as documents.

What are the discomforts and risks and how will they be alleviated?

It is not anticipated that any harm will come to you from participating in this research. However, you may experience some discomfort discussing barriers to the extended scope /advanced physiotherapy practitioner role development. Everything that you say will be treated with the highest confidence. As New Zealand is a small country there is a small risk of being able to be identified in the final report, but all possible steps will be taken to protect your confidentiality. You will be able to withdraw from the project at any stage. Participation is voluntary. You can refuse to participate at any time without any penalty. You can also refuse to answer any questions at any time. A draft of the interview report based on the recordings and notes taken will be given to you to confirm the accuracy of your responses and check for factual errors. You can also remove any information from the transcript if you wish to do so. During the later stages of data analysis, it may not be possible to fully extricate your contribution from the analysis.

What are the benefits?

These research findings would be helpful to illuminate important aspects of the development of extended scope/ advanced physiotherapy practitioner roles such as: clinical pathways, accountability, risk management, clinical governance, competencies, or framework to support the role development in a New Zealand context. The results of this research will be also be valuable to the stakeholders, policymakers and health professionals considering the development and implementation of extended scope/ advanced physiotherapy practitioner roles in New Zealand.

Your input will also contribute towards the completion of my Doctor of Health Sciences thesis.

How will my privacy be protected?

Various steps will be implemented to protect your privacy

- Your confidentiality will be maintained.
- Pseudonyms will be used where needed to de-identify information within the transcripts.
- Recordings and written transcripts will be kept in password protected computer files.
- Data documents will be securely stored in locked location.
- The data will be deleted after six years.

What are the costs of participating in this research?

The cost of participating in this research will be the time involved for the interview which would be about 60 minutes. Some time will also be required to review the draft of your interview, this should not be more than 45 minutes.

What opportunity do I have to consider this invitation?

If you are interested in participating in this study could you, please email me within one month of receiving this invitation. We can then arrange a time suitable to you over the following one to two months for the interview to take place. Please remember that your participation is voluntary. If you need further information or clarification of any aspect of the project, please contact the researcher or the researcher's supervisor. Contact details are given below.

Will I receive feedback on the results of this research?

Yes. You will receive a summary of the study. You may also receive a copy of any papers that are generated from this study on request.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Duncan Reid, email: Duncan.reid@aut.ac.nz

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, ethics@aut.ac.nz, 921 9999 ext. 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Leena Naik

Email: gtn1556@autuni.ac.nz

Phone: 0210345432

Project Supervisor Contact Details:

Dr Duncan Reid

Email: Duncan.reid@aut.ac.nz

Phone: 09 921 9999 ext. 7806

Approved by the Auckland University of Technology Ethics Committee on *07/06/2019*, AUTEC Reference number *19/141*.

Appendix 15 Consent form for face-to-face interviews

Consent Form

For use when interviews are involved.

Project title: Extended Scope and Advanced Physiotherapy Practitioner roles in New Zealand

Project Supervisor: Dr Duncan Reid, Dr Steve White, Dr Steven Neville

Researcher: Leena Naik

- ○ I have read and understood the information provided about this research project in the Information Sheet dated dd mmmm yyyy.
- ○ I have had an opportunity to ask questions and to have them answered.
- ○ I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.
- ○ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.
- ○ I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.
- ○ I agree to take part in this research.
- ○ I wish to receive a summary of the research findings (please tick one): Yes○ No○

Participant's signature : .....

Participant's name : .....

Participant's Contact Details (if appropriate) :

.....

.....

.....

.....

Date :

Approved by the Auckland University of Technology Ethics Committee on 07/06/2019 AUTEC Reference number 19/141

Note: The Participant should retain a copy of this form.

Appendix 16 Consent form for Skype interviews

Consent Protocol for Skype

For use when interviews are involved.

Project title: Extended scope and advanced physiotherapy practitioner roles in New Zealand

Project Supervisor: Dr Duncan Reid, Dr Steve White and Dr Stephen Neville

Researcher: Leena Naik

- I have read and understood the information provided about this research project in the Information Sheet dated dd mmmm yyyy.
- I have had an opportunity to ask questions and to have them answered.
- I understand that the skype interview will be both audio and video recorded using skype technology. However, only the audio recording will be used.
- I understand that the notes taken during the interviews will be transcribed.
- I understand that once the transcription has been approved by me the skype recording will be deleted.
- I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.
- I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.
- I agree to take part in this research.
- I wish to receive a summary of the research findings (please tick one): Yes○ No○

Participant's signature: .....

Participant's name: .....

Participant's Contact Details (if appropriate):

.....

.....

.....

.....

Date:

Approved by the Auckland University of Technology Ethics Committee on 07/06/2019 AUTEC Reference number 19/141

Note: The Participant should retain a copy of this form.

Appendix 17 Locality agreement for Canterbury DHB

Research Office Project ID	RO# 19194

RESEARCHER TO ORGANISE APPROVAL FROM RESPECTIVE MANAGERS

CDHB Coordinating Investigator or CDHB Principal Investigator:

- ☑ I hereby confirm that all information contained within this application is true and correct.
- ☑ I will take professional responsibility to conduct this research at CDHB and ensure all consents and approvals are obtained and sighted by the Research Office before research commences.
- ☑ Further, I confirm that conducting this research at CDHB will have no adverse effect of the provision of publicly funded health care at this locality.

(Must be CDHB staff)

Signed: [signature] Date: 4-10-19

Name: [redacted]

RESEARCHER TO ORGANISE APPROVAL FROM RESPECTIVE MANAGERS

5. Approval From All Areas Where Resources are Accessed

Approvals: I hereby authorise this application to undertake this research within this CDHB Department and guarantee the availability of adequate facilities, equipment, staff and any special support which may be required as detailed in the application. I confirm that it is in accordance with current CDHB policy.

Department name:	1. EMERGENCY	2.	3.
Clinical Director - Name	[redacted]		
Signature	[signature]		
Date	3-10-2019		
Service Manager - Name			
Signature			
Date			
Other Approving Manager Name	Canterbury Health Labs [redacted]	Pharmacy [redacted]	[redacted]
Title	General Manager	Manager	Clinical Manager, Physiotherapy
Signature			[signature]
Date			28/8/2019

RESEARCH OFFICE USE ONLY

General Manager sign-off

I approve this research to be undertaken within the CDHB departments as listed:

Hospital 1	[redacted] General Manager Christchurch Campus	Signature: [redacted]	Date: 23/10/19
Hospital 2	Name:	Signature:	Date:

Locality Authorisation Form, January 2019 Page 6

Research Office | Canterbury District Health Board & University of Otago, Christchurch | PO Box 4345, Christchurch Mail Centre, Christchurch 8140, New Zealand Tel +64 3 364 0237 • Email cdhb.researchoffice@otago.ac.nz www.otago.ac.nz/christchurch/research

RO# 19194

CR CDHB Research Office <cdhb.researchoffice@otago.ac.nz>
To 'leena.naik08@gmail.com'
Cc CDHB Research Office

You replied to this message on 31/10/2019 11:09.

FINAL signed Locality.pdf
508 KB

Dear Leena,

Based on the information you provided to the Research Office the study **"Extended Scope and Advanced physiotherapy practitioner roles in New Zealand: an exploratory case study."** is authorised to be conducted within CDHB (from the date of this email).

Please find attached the following documents as confirmation:

- Fully signed CDHB Locality Authorisation Form.

We ask that you inform us of any outputs/publications from your study.

All the best for the study. Please don't hesitate to get in touch if we can assist further.

Kind regards,

James

Appendix 18 Locality agreement for Counties Manukau DHB

COUNTIES MANUKAU HEALTH

Research & Evaluation Office
Level 1, Ko Awatea, Middlemore Hospital
100 Hospital Road, Otahuhu; Private Bag 93311, Auckland – 1640
cmdhb.org.nz – koawatea.co.nz

06 September 2019

For the attention of: [redacted]

Thank you for the information you supplied to the CM Health Research Office regarding the following research proposal:

Research Registration Number: 1061

Ethics Reference Number: 19/141

Research Project Title: Extended Scope and Advanced Physiotherapy Practitioner roles in New Zealand

I am pleased to inform you that the CM Health Research Office has received all the required service lead approvals and the Chief Medical Officer's final sign-off for this research project, which has Leena Naik named as the Principal Investigator and you named as the CM Health Facilitator.

This CM Health locality approval is valid until 30 April 2021, which is the date you have specified on your registration information.

All external reporting requirements must be adhered to. Please note that failure to submit amendments and Annual Progress reports may result in the withdrawal of Ethical and CM Health Organisational approval.

FINAL REPORT: It is a requirement of the CM Health Research Policy that all research and audit projects conducted within CM Health should have a written final study report submitted no later than 3 months following completion of the study. This report is to be uploaded to your study file on the Registry and is viewable by CMDHB staff. Contact us for the report template or download it from the Registry.

Yours sincerely

Angela Bennett
Research Coordinator
Counties Manukau Health
Under delegated authority from CM Health Research Committee and the Chief Medical Officer

Appendix 19 Interview protocol template

Interview protocol

Starting interview

Check consent-

- written and verbal consent form
- to record and transcribe interview

Inform- duration of interview

Provide overview of project and purpose

Interview

Indicative Interview questions: Physiotherapists

1. Tell me about your current extended/ advanced physiotherapy practitioner role/ practice?
2. Tell me your thoughts about the extended/ advanced physiotherapy practitioner role/ practice?
3. What do you think should be included in the scope of practice of an extended/ advanced physiotherapy practitioner role?
4. What are the facilitators to this role development in New Zealand context?
5. What are the barriers to this role development in New Zealand context?
6. How do you foresee the clinical pathway for this role development?
7. Do you anticipate the extended/ advanced physiotherapy clinician needing additional training? If so, how should the training be delivered?
8. What are your thoughts on recognition of the role?
9. How do you envisage the clinical governance for this role?
10. How do you envisage the legislative governance for this role?
11. How should the clinical liability in this role be managed?
12. How should the autonomy in this role be managed?
13. Do you perceive a niche for this role in New Zealand? If yes, state where; if no, explain why?
14. What are your thoughts on remuneration for the role?

Ending interview

Thank participant

Check-

- anyone else who I should talk to about this topic
- specific documents that participant recommend
- Participant aware of verbatim transcript
- Transcript will be sent to participant for correction and approval
- Can I come back to you if I need further clarification

Appendix 20 Ethics approval amended

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

7 June 2019

Duncan Reid
Faculty of Health and Environmental Sciences

Dear Duncan

Re: Ethics Application: **19/141 Extended scope and advanced physiotherapy practitioner roles in New Zealand: An exploratory case study**

Thank you for your request for approval of amendments to your ethics application.

The amendment to the research protocols (use of Nivo and Dragon software) is approved.

I remind you of the **Standard Conditions of Approval**.

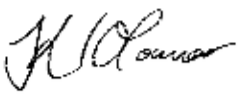
1. The research is to be undertaken in accordance with the Auckland University of Technology Code of Conduct for Research and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using form EA2, which is available online through http://www.aut.ac.nz/research/researchethics.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using form EA3, which is available online through http://www.aut.ac.nz/research/researchethics.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form: http://www.aut.ac.nz/research/researchethics.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.

Please quote the application number and title on all future correspondence related to this project.

AUTEC grants ethical approval only. If you require management approval for access for your research from another institution or organisation then you are responsible for obtaining it. If the research is undertaken outside New Zealand, you need to meet all locality legal and ethical obligations and requirements.

For any enquiries please contact ethics@aut.ac.nz

Yours sincerely,



Kate O'Connor
Executive Manager
Auckland University of Technology Ethics Committee

Cc: leena.naik08@googlemail.com; Steve White; Stephen Neville

Appendix 21 Coding template based on Graneheim and Lundman's template

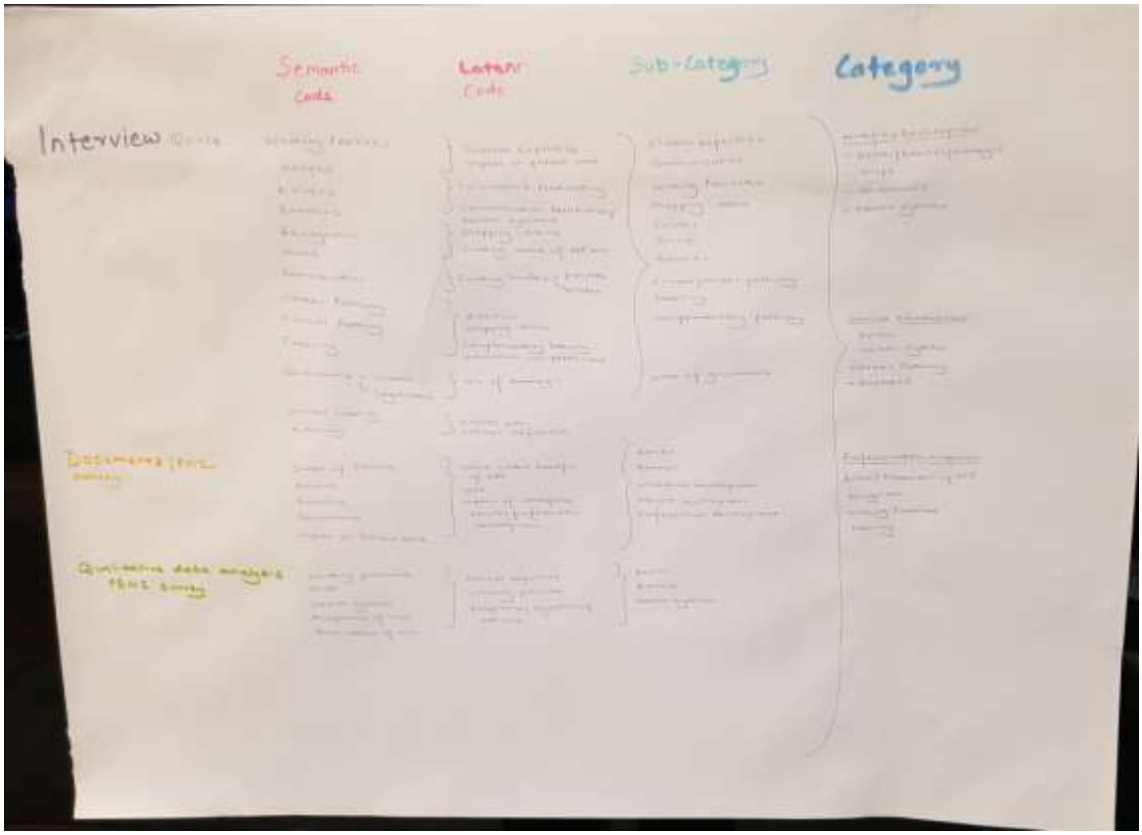
Meaning units
Condensed meaning unit
Code
Subcategory
Category
Quote

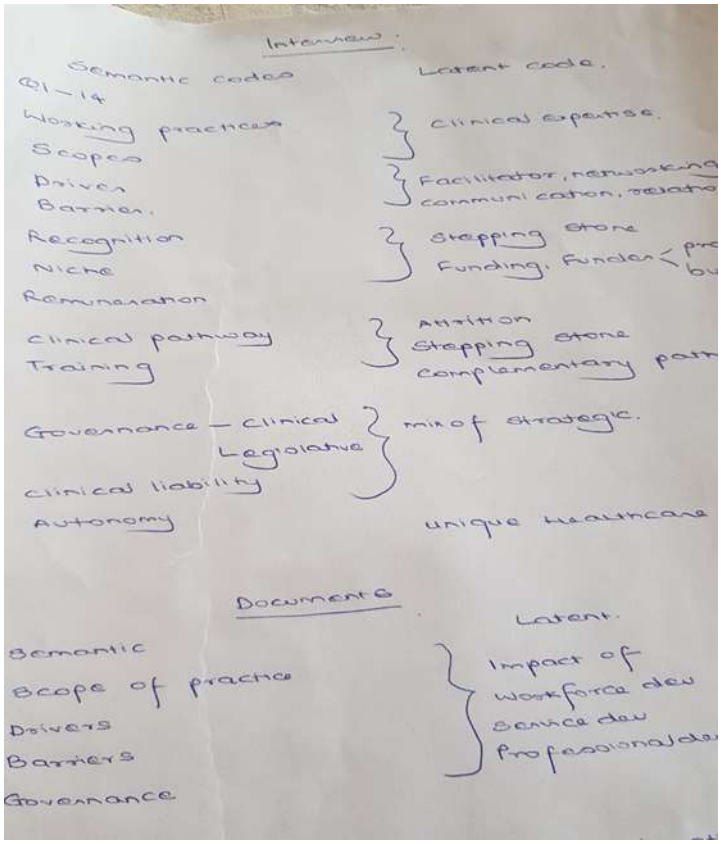
Appendix 22 Abstraction of codes, sub-categories, and categories

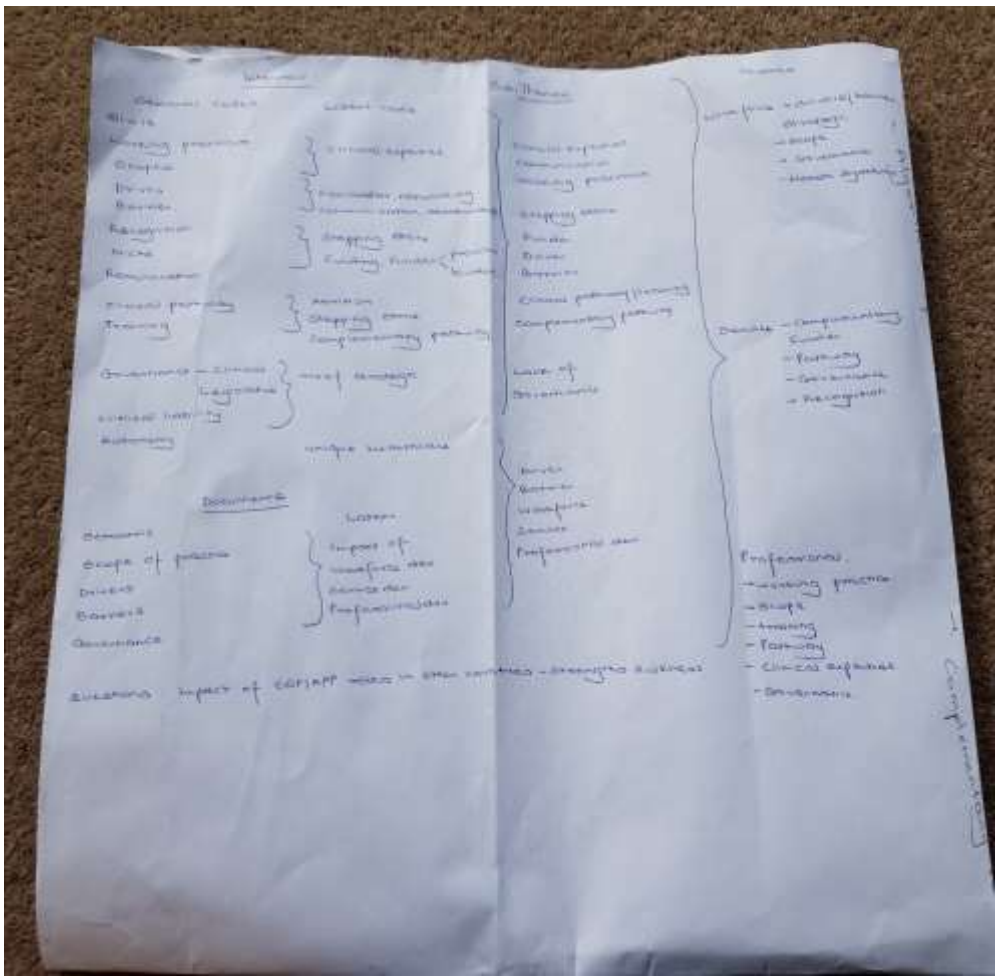
Codes	Sub-categories	Categories
ACC, private, DHB, healthcare, impact on remuneration, impact on training, impact on development of roles	Unique health system	Service development
government drivers, legislative, patients, organic, system/service, medical profession, visionaries, access to care, profession led, workforce shortages, facilitators, networking, need for recognition, patient experience, management of chronic conditions, career pathways, surgical /outpatient waiting times, patient care, healthcare issues, rehabilitation skills, delivery of care, timeliness, effective	Drivers	Workforce development
role, settings, affiliations, clinical expertise, education, research, peer review, assessment, management, profile, qualifications, experience, training time, CPD, knowledge and skills, leadership skills	Working practices	Professional development
clinical expertise, holistic care, individualise care, identify chronic conditions, complex conditions, triage skills, scope of practice, prescribing, investigations, injecting, second opinion, distinguish operative and non-operative conditions, differential diagnosis, identify pathologies, terminology, communication, behaviour, research, risk assessment, training PG and UG	Scope of practice	Professional development
liability, escalation points, insurance, impact on clinicians, boundaries of care, professional supervision, responsibility, employer-based role	Clinical liability	Workforce development
on-job training, internships, credible pathway, courses, credentialled training, SIG, lack of courses in NZ, expensive training, international training, female dominated profession, lack of funding for training, Master's degree, time to train	Training	Professional development
generalist competency, specialist role, lack of career pathway, PBNZ driven pathway, leadership skills, increased complexity in workload, structure of pathway, drivers, sectors of care, professional pathway, two pathways, recognition of pathway	Clinical pathway	Professional development
recognition from funders, wider professional recognition, patient recognition, lack of recognition, communication of role, support from medical fraternity, credible career structure	Role recognition	Service development
stepping- stone, complementary pathway, DHB triage role, private second opinion, manage clinical void of PBNZ specialist, work alongside surgeon, different cohort of patients, MAP, ECP -ACC, skilled workforce, rehabilitative skills, advance practice	Niche	Professional development
PBNZ legislator, protect public, certification, monitor adverse incidents, escalation of care, collaborate, induct staff, documentation review, clinical review, supervision, governance pathways, competency documents, clearly define role, College of Physiotherapy, discussion with surgeon, peer review	Governance	Workforce development

Codes	Sub-categories	Categories
medical workforce, trained APP, funding, time to train, training opportunities- courses, career progression, succession planning, recognition, professional awareness	Lack of/ shortage	Service development
political, health strategies, funding, remuneration, training, career pathways, titling, specialisation, inter-professional, intra-professional, defensive profession, administrative process for APP accreditation, standard of care, busyness in clinic, administrative costs, patient expectations, lack of recognition, lack of knowledge	Barrier	Service development
cheap labour, philosophical struggle, role substitution, working in isolation, acquisition of competencies, supervision, oversight, hierarchies, status	Fear	Service development

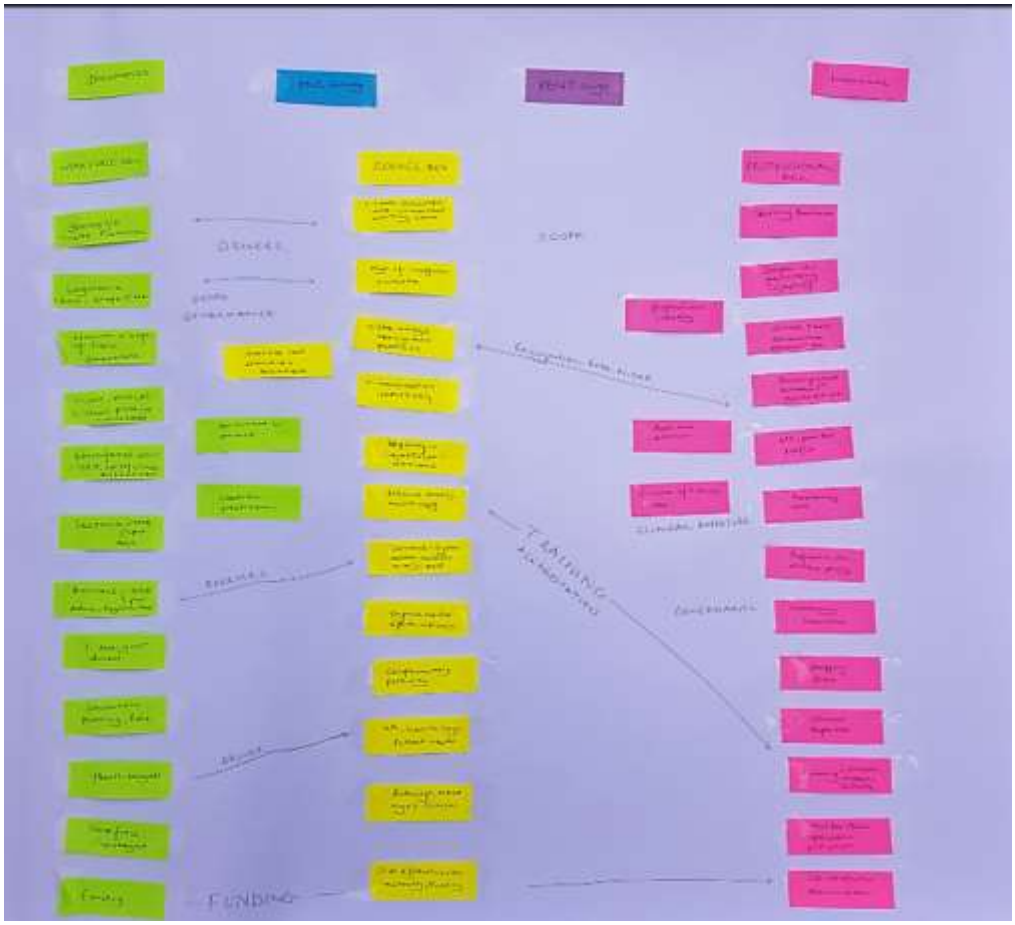
Appendix 23 Semantic and latent codes







Appendix 24 Assembling and reassembling of data



Appendix 25 Assembling of new perspectives

Appendix 26 Ideas on flowcharts

Appendix 27 Extension of scope for all specialities

Data	Physiotherapy Board of New Zealand Survey-2013	Physiotherapy New Zealand survey -2017	Semi-structured interviews 2019-2020
Respondents	Out of 983 respondents: 765 respondents- did not undertake extended tasks, 364 respondents - undertook extended tasks.	53 respondents answered question.	19 respondents answered question.
Clinical	**Core tasks**- Differential diagnosis and triage, initial assessment and management in orthopaedics, rheumatology, and chronic pain setting. Decision making and diagnostics investigations (bloods, x-rays, MRI/USS scans, urine, sugars, cystometry, post void USS, spirometry, lung function, treadmill tests). Prescribing (carrying medication for sports teams, dispensing- EpiPen, analgesics, NSAIDs. Pharmaceuticals advise- analgesia, nutrition, BP management). Injections (steroid/ Botox), identifying botulinum toxicity. Decision for hospital discharge. Decision for surgery. Referring to other services. Joint arthroplasty clinics. **Cardio-respiratory care** -ventilation, advise on oxygen, nebulisation/ tracheostomy insertion, re-cannulation, thoracic ultrasound scans, bronchoscopy, intubation, extubation, BALS, cardiology tests, weaning off ventilator, ICU management, CPAP, IPPB, check aspiration status, feeding issues, assess chest pain- 24-hour Holter, echocardiography. Nasal/ oral airway insertion. Respiratory assessment when advising positioning aids- sleep systems. **Pelvic health management** -vaginal and perineal exam, insert pessaries, urodynamics, internal exam, fitting vagina supports, POPQ measurements for POP, perineal tear clinics, suture care, perineal exams, speculum exams, continence services and catheterisation. **Chronic pain management** -CBT, psychology, provide education for chronic pain, ACT, navigating through complex history, multiple concurrent diagnosis, social history, making recommendations. **Sports management** -airway management, post-concussion psychometric tests, rehabilitation skills, educate sports shops on fitting particular equipment, implementing neuropsychological baseline, injury medical screening of athletes, design rehabilitation and conditioning program for elite athletes, triage on field,	Clinical reasoning, managing complexity within cases, assessment, and planning, offering expert or second opinion and extended scope.	Autonomy of decision making, triage, requesting investigations (bloods, x rays, scans, blood gases), prescribing/ injecting under standing orders, managing complex presentations/ entire episode of care in triage roles undertaking role substitution, complex assessment, treatment. Decision making, offering second opinions, clinical reasoning, and algorithm-based practice

Data	Physiotherapy Board of New Zealand Survey-2013	Physiotherapy New Zealand survey -2017	Semi-structured interviews 2019-2020
	drug free sports education, travel plans and travel medicine program. **Emergency department care -**trauma care, plastering, fracture, discharge co-ordination, casting, splinting, wound care. **Ergonomics -**worksite, task analysis, manual handling, ergonomics, sign off return to work programs, SAW contracts and assessments, certification of time off work assessors for accreditation, functional job demands analysis and vocational rehabilitation. **Paediatrics** -Ponsetti, CTEV management, support needs assessment, early oral function and feeding with preterm babies **Lymphodeoma** -perform manual lymphatic massage, laser therapy, compression bandaging, compression garment, prescription, lymphodeoma and cancer care. **Other extended tasks** -orthotics, acupuncture, visceral, cranio sacral therapy, homeopathy, and sensory/ cognitive screen. **Mental health**- Sensory modulation, CADS, smoke free, sleep hygiene, post detox support groups, psychological and emotional counselling, cognitive and psychological screening. **Neurology**- Waterlow, Tinetti screens, swallowing screen, spasticity assessment pre- and post-Baclofen or phenol, consultancy in Botox clinics, database of patients with poliomyelitis.		
Education	Supervision, mentoring, teaching, and training graduate and post-graduate students, Coaching.	Supervision, mentoring or peer review, teaching, training.	Teaching, training for the physiotherapy and wider healthcare profession.

Data	Physiotherapy Board of New Zealand Survey-2013	Physiotherapy New Zealand survey -2017	Semi-structured interviews 2019-2020
Research	Clinical education and research, participating in University research as an employed researcher, teacher on a specific research project. Writing and publishing a paper. Involved in creation of teaching video for medical students. Clinical research and clinical consultation. Research, training and educating post-graduate students.	Research, authorship, and review of grant applications.	Undertaking research activities.
Advisory	Decision based on file review and ACC knowledge. Writing medico legal reports. Interpretation of clinical reports.		Communication to GP and referring sources. Specialist reports to ACC.
Service/ policy development	Service development/ project management, application of legislation-based decision making to policy, and document review. Documentation. Review national accreditation, policy development. Application of legislation-based decisions incorporating clinical information, applying clinical evidence to policy	Service development, improvement, planning.	Service development, audit activity, developing standing orders, protocols.
Leadership	Public health promotion.	Interdisciplinary or collaborative practice, clinical oversight or leadership, strategic involvement, professional leadership, and advice.	Through affiliations with professional or legislative bodies, special interest groups, disciplinary tribunals, primary health organisations