

Developing a competency profile for international standardization of Advanced Practice
Physiotherapy

by

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ABSTRACT

Background: Advanced practice physiotherapy has been developed as an innovative model of care to manage the rising impact of musculoskeletal conditions. There is evidence that advanced practice roles have improved patient outcomes, improved wait times for patients, and reduced the cost of care. However, there is currently no internationally agreed-upon competency framework to shape the direction and training of advanced practice physiotherapists. This lack of a competency framework has resulted in confusion and inconsistencies with the development and training of practitioners.

Objective: The overall aim of this thesis was to develop a competency profile as a framework to support the development of international competencies for advanced practice physiotherapy. The specific objectives were to investigate the status of advanced practice physiotherapy within the global physiotherapy community, identify the currently available literature (published or grey) on advanced practice physiotherapy competencies, seek the opinion of stakeholders on the competencies, and validate the competencies for advanced practice physiotherapist.

Method: The process of developing the competencies involved three distinct but interrelated studies. Study 1 was a scoping review of the available literature (published and grey) on the competencies of advanced practice physiotherapists. The scoping review followed the Arksey and O'Malley framework by searching four online databases (CINAHL plus, MEDLINE Ovid, PubMed and Scopus). Additionally, websites of national physiotherapy associations and government agencies were screened for additional documents. The scoping review resulted in a first draft of competencies.

Study 2 was a qualitative study with four focus groups to generate feedback on the first draft of competencies. This study used a qualitative descriptive approach with a thematic analysis of the data. The findings from the focus groups led to the development of a refined version of the competencies (Second draft).

The final study (Study 3) was a cross-sectional online survey to validate (face validity) the second draft of competencies. Participants rated the importance of each competency on a five-point agreement Likert scale (“strongly disagree”, “disagree”, “neither disagree nor agree”, “agree”, “strongly agree”). Each competency was then ranked as either “high”, “medium,” or “low” based on a cumulative ranking of participants who answered “agreed” or “strongly agreed”. All the competencies ranked as “high” were and considered validated. The survey produced a list of validated competencies. The competencies developed after each study were reviewed by subject matter experts before proceeding to the subsequent study.

Results: In Study 1, 19 documents were retrieved with 13 reports and 6 research papers. Six documents (4 reports, 1 research paper, and 1 doctoral thesis) were from England. One policy document each was from Northern Ireland, Scotland, and Wales. Five documents (3 research papers and 2 reports) were from Australia, and one report was from Wales. Finally, 3 documents (2 reports and 1 research paper) were from Canada. The similarities and differences between the documents retrieved were mapped out to develop the first draft of 27 competencies under 7 domains.

In Study 2, 16 participants from the United Kingdom, Ireland, Australia, New Zealand, and Canada participated in the focus groups. Participants were advanced practice physiotherapists, researchers, and administrators. Five themes were generated from the analysis of the data: (1) Clinical expertise, (2) Experienced communicator, (3) Strong leadership skills,

(4) Collaboration, and (5) Knowledge creation and dissemination. A refined version (second draft) of the competencies, comprised of 24 competencies grouped under 6 domains, was developed based on the findings from the focus groups.

Study 3 had 99 participants, with 25% from Australia or Canada, 18% from New Zealand or the United Kingdom, 9% from Ireland, and 4% from other countries (Switzerland and Argentina). All the competencies presented were validated with a “high” ranking. Additionally, the competencies associated with patient care (i.e., clinical expertise, communicator, and collaborator) were ranked relatively higher than those not associated with patient care, such as leadership, advocacy, scholar and professional.

Conclusion: This thesis work provides 24 validated competencies under six domains (Clinical expertise; Communicator; Collaborator, Leader and Health Advocate; Scholar and Professional). Competencies directly related to clinical practice and patient care were central to the advanced practice role, compared to those not directly related to clinical care. The competencies developed from this thesis work can serve as a framework towards the international standardization of advanced practice physiotherapy.

PREFACE

This thesis is an original body of work by Andrews Tawiah under the supervision of Dr. Linda Woodhouse, Director of Faculty Development at Tufts University, Adjunct Associate professor at the University of Alberta, and Dr. Marguerite Wieler, professor, and Chair of the Physical Therapy program at the University of Alberta. The University of Alberta's Health Research Ethics Board approved the research studies in this thesis (No: Pro00073988, October 25th, 2017, and Pro00099692, May 20th, 2020).

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DEDICATION

“I dedicate this thesis to my wonderful family for their support, kindness, and encouragement throughout this journey. To my wife, Eva Tawiah and my sons, Jason and Jayden Tawiah.”

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LIST OF ABBREVIATIONS

ACPAC – Advanced Clinical Practitioner in Arthritis Care

AMP – Advanced Musculoskeletal Physiotherapy

APA – Australian Physiotherapy Association

APP – Advanced Practice Physiotherapy

COREQ – Consolidated Criteria for Reporting Qualitative Studies

CSP – Chartered Society of Physiotherapy

ESP – Extended Scope Physiotherapist

GP – General Practitioners

MO – Member Organisation

MSK – Musculoskeletal

NHS – National Health Services

NPAG – National Physiotherapy Advisory Group

PT – Physiotherapist

QALY – Quality Adjusted Life Year

SME – Subject Matter Experts

SRQR – Standards for Reporting Qualitative Research

WP – World Physiotherapy

GLOSSARY OF TERMS

Advanced Practice Physiotherapy: Is a combination of advanced skills, knowledge, and attitudes that enables physiotherapists to address complex problems and manage risk; it is the use of advanced critical thinking to deliver care to patients with complex needs safely and competently following a training process at the post-licensure level.

Competency: Is an observable ability of a health professional related to a specific activity that integrates knowledge, skills, values, and attitudes.

Competency Profile (Framework): Is an organized and structured representation of a set of interrelated and purposeful competencies.

Scope of Practice: The full spectrum of roles, functions, responsibilities, activities, and decision-making capacity that individuals within the profession are educated, competent and authorized to perform.

Specialization: Physiotherapist specialization is the result of in-depth knowledge, skills and competence attained by a physiotherapist qualified in a specific area, within the scope of practice recognised as physiotherapy. This usually results from defined training and educational pathways, associated with a formal process for testing and recognising the higher level acquired, but it may also be demonstrated as a result of informal learning and experience.

CHAPTER 1

INTRODUCTION

1.1 Introduction (Thesis format)

The overall aim of this thesis was to develop a competency profile as a framework to support the development of international competencies for advanced practice physiotherapy. Chapter 1 provides background information on the evolution of advanced practice physiotherapy, the importance of and the need for developing a competency profile for the role. Chapter 1 also outlines the process (conceptual framework) used to develop the competency profile.

Chapter 2 describes an international survey conducted in collaboration with World Physiotherapy (WP) to explore the stage of development and training for advanced practice physiotherapy roles globally. The findings from the survey provided vital background information and a foundation for developing the international competency profile for advanced practice physiotherapy. This survey has been published in the journal “Physiotherapy”.

Chapter 3 presents the findings from a scoping review aimed at identifying the available literature (published and grey) describing various competencies of advanced practice physiotherapists. The scoping review was the first step (Study 1) towards developing an international competency profile for advanced practice physiotherapy. The findings from the scoping review led to the development of a first draft of the proposed competencies.

Chapter 4 describes findings from a qualitative study that used a series of four focus groups (Study 2) to ascertain feedback from advanced practice physiotherapists, researchers, and administrators on the first draft of competencies developed in Study 1. In addition, the focus groups provided an opportunity for participants to suggest new competencies or modify the

presented competencies. A second draft of competencies was developed based on the feedback from the focus groups.

Chapter 5 is a presentation of the findings from a multinational online survey (Study 3). The survey aimed to validate (face validity) the second draft of competencies developed in Study 2 by reaching out to a much wider community of advanced practice physiotherapists. Additionally, the survey provided the advanced practice physiotherapy community with an opportunity to give feedback on the competencies. The findings from the survey produced a list of validated competencies for advanced practice physiotherapists.

Chapter 6 provides an integration of the summary and discussion of the main findings from each of the studies, along with the final version of the international competency profile for advanced practice physiotherapy. While musculoskeletal (MSK) practice is the predominant area for advanced practice physiotherapy, the competency profile developed from this thesis is not confined to MSK area of practice only. The final version of the competency profile was compared to that of entry-to-practice physiotherapy and advanced practice nursing. Finally, the strengths, limitations, and future implications of the competency profile are presented in Chapter 6.

1.2 Background

MSK conditions are the most prevalent health-related conditions globally and the leading cause of years lived with disability, affecting approximately 1.17 billion people.¹ The prevalence of MSK conditions is rapidly rising due to population increase and an ageing population.¹ The need to address the rising impacts of MSK conditions, reduce healthcare costs, and improve access to healthcare resulted in healthcare organizations developing new and innovative models of care.^{2,3} This need is further exacerbated by the long-term impacts of post Sar-CoV-2 (COVID

– 19) on health (Long – COVID) and healthcare systems (cancellation of elective surgeries, a backlog of cases, shortage of personnel) that are expected to increase the global burden of MSK conditions.^{4,5}

One of the solutions that has been operationalized over the past decade or so is a model of interprofessional care that utilizes the skills of advanced practice physiotherapists at the primary, secondary, or tertiary care level or the interphase between these levels of care.^{6,7} An example is that of advanced practice physiotherapists working collaboratively in an interprofessional model of care to triage patients referred for surgery.⁸⁻¹⁰ These advanced practice physiotherapists work with orthopedic surgeons, radiologists, primary care physicians, nurses, and other health professionals to optimize patient care.

1.3 History of advanced practice physiotherapy

The early framework for advanced practice began with the nursing profession in rural regions of the United States of America (USA) in the 1970s.¹¹ Following a similar approach, advanced practice roles in physiotherapy were developed in the USA military during the 1970s to address the insufficient physician capacity to manage large numbers of injured soldiers. Advanced practice physiotherapists in the military triaged injured soldiers, tended wounds, and other orthopedic cases previously managed by physicians and nurses.¹¹

In the United Kingdom, advanced practice physiotherapy was developed in the 1980s in response to the need to manage higher volumes of non-surgical cases and the increased complexity of patients.^{8,12} These advanced practitioners in physiotherapy were initially called “Extended Scope Physiotherapists” (ESP) because they extended their scope to include activities such as therapeutic injections, ordering diagnostic imaging and other laboratory investigations, listing patients for surgery and prescribing medications.^{8,12} In 2008, the title ESP was replaced

with “advanced practice physiotherapy” to accurately reflect that the activities previously considered outside of the scope of physiotherapy practice are now considered within the scope.^{8,12} In addition, in 2013, advanced practice physiotherapists in the United Kingdom were allowed to independently prescribe medications after completing appropriate training.¹³

In Canada, the role of the extended scope/advanced practice practitioner was first introduced in 1995 with the development of a program to train physical and occupational therapists at the Hospital for Sick Children in Toronto as specialists in pediatric rheumatology.^{14,15} Subsequently, in 2005, advanced practice physiotherapists were trained as part of the Advanced Clinical Practitioner in Arthritis Care (ACPAC) program.^{3,16} The ACPAC program was a model of an interdisciplinary approach to managing patients with arthritis to improve access and reduce wait times.^{3,16} In the same year, advanced practice physiotherapy was developed at the Sunnybrook Holland Orthopedic and Arthritic Center in Ontario – Canada, to deliver accessible, high-quality, and cost-effective healthcare services for patients referred for surgery.^{15,16}

In Australia, the advanced practice physiotherapy role began with the development of the Advanced Musculoskeletal Physiotherapy (AMP) services in 2012 by the Victorian Department of Health.^{17,18} The role was developed to address the disability of MSK conditions and the negative impact on economics within the community.^{17,18} These examples represent the development of advanced practice physiotherapy over time across different countries. The development of advanced practice physiotherapy has been a bottom-up approach as healthcare organizations identified the need to address escalating costs and limited access to healthcare by training physiotherapists and placing them in models of care designed to address these challenges.

1.4 Definition of advanced practice physiotherapy

It is difficult to provide a single definition for advanced practice physiotherapy because the role has been developed and described based on the context of the country creating the role. However, WP has described advanced practice physiotherapy based on common themes from the countries with established roles.¹⁹ According to WP, “advanced physiotherapy practice” includes the following: “higher level of practice, functions, responsibilities, activities and capabilities”; “requires a combination of advanced and distinctly increased clinical and analytical skills, knowledge, clinical reasoning, attitudes and experience”; “applies advanced level skills and knowledge to influence service improvement and achieve improved patient outcomes and experience, as well as the provision of clinical leadership” and “results in the responsibility for the delivery of care to patients/clients commonly with complex needs or problems safely and competently and to manage risk”.¹⁹ In addition, advanced practice physiotherapists are often trained in skills and competencies by disciplines outside the physiotherapy profession, such as surgeons, rheumatologists, pharmacists, and radiologists.^{8,20}

The difference between an advanced practice physiotherapist and a specialist physiotherapist has been another source of confusion within the physiotherapy profession. WP and most national physiotherapy associations have described/defined the specialist physiotherapist role. While the career pathway from entry-to-practice to specialization is well defined, that of an advanced practice physiotherapist is not. The confusion may be attributed to the fact that advanced practice physiotherapists are classified as specialists in some countries and vice versa.

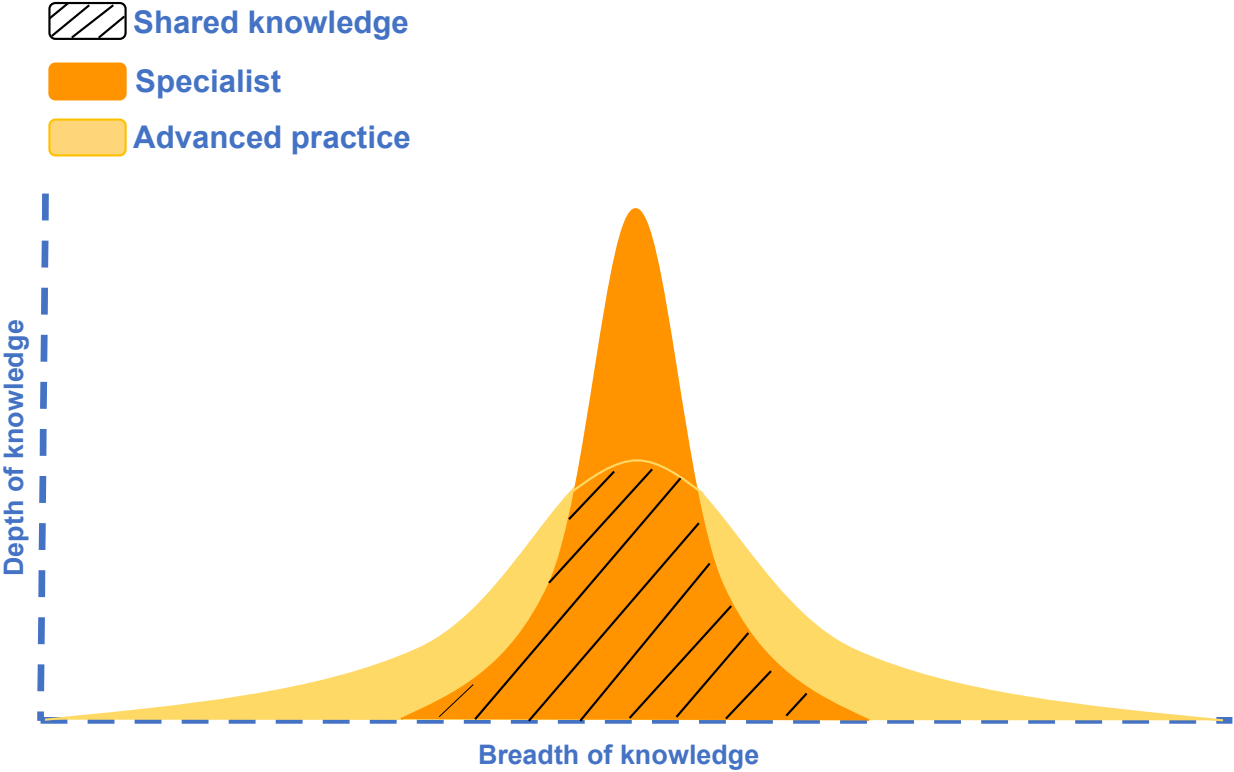
According to WP, “physiotherapist specialization is the result of in-depth knowledge, skills and competence attained by a physiotherapist qualified in a specific area of physiotherapy practice, within the scope of practice recognized as physiotherapy. This usually results from

defined training and educational pathways, associated with a formal process for testing and recognizing the higher level acquired, but it may also be demonstrated as a result of informal learning and experience”.²¹

Comparing the WP definition of “specialist” and “advanced practice physiotherapist”, the difference between the two roles relates to the depth and breadth of knowledge and skills required for each practitioner (Figure 1.1). The specialist physiotherapist has in-depth knowledge and skills in a particular area of specialization, such as sports, pediatrics, neurorehabilitation, or manual therapy. However, the advanced practice physiotherapist has broader knowledge and skills in managing complex patients, often with multimorbidity.¹² However, they have an area of shared knowledge through their training as physiotherapists. Another difference between the two roles is that advanced practice physiotherapy includes skills that require training from disciplines beyond physiotherapy, while specialization includes skills and training from within the physiotherapy profession.

Although there are differences between the advanced practice physiotherapist and the specialist physiotherapists, these roles complement each other. They can be classified as being on the same level on the development continuum for physiotherapists. The differences outlined in this chapter reflect only the knowledge, skills and training required for each role and do not place one role as important over the other.

Figure 1.1 Relationship between advanced practice physiotherapist and physiotherapist specialist.



Adopted from Nursing, Midwifery and Allied Health Professions (NMAHP) Development Framework²²

1.5 Scope of practice for advanced practice physiotherapist

Advanced practice physiotherapy has evolved and has become a widely accepted part of the physiotherapy profession in a number of countries.¹⁹ However, because advanced practice physiotherapy is often developed to address local and regional needs, there is no international consensus on the scope of practice. The debate on whether the activities of advanced practice physiotherapists are within or outside the scope of physiotherapy practice has been addressed through recent changes to the nomenclature (i.e., from extended scope practice to advanced practice physiotherapy) and changes to the definition of the scope of practice for some countries.^{12,23}

The earlier title ‘extended scope practice’ meant that physiotherapists within these roles were extending their scope into other areas such as requesting and interpreting diagnostic imaging, injection therapy and prescribing.¹² The expansion of scope for physiotherapists was not supported by most professional associations, healthcare institutions and regulatory bodies. However, the title changes to ‘advanced practice physiotherapist’ meant that practitioners are advancing their scope rather than extending their scope. Earlier activities, such as requesting and interpreting diagnostic imaging, listing patients for surgery, performing therapeutic injections, and prescribing, which were initially considered outside the scope of practice, are now considered within the scope of physiotherapy practice for practitioners with the appropriate training or through medical delegation.^{12,24} Medical delegation occurs when a medical practitioner authorizes an advanced practice physiotherapist to perform specific activities (e.g., requesting diagnostic imaging or listing for surgery) under their authority, usually through a written authorization.²⁵

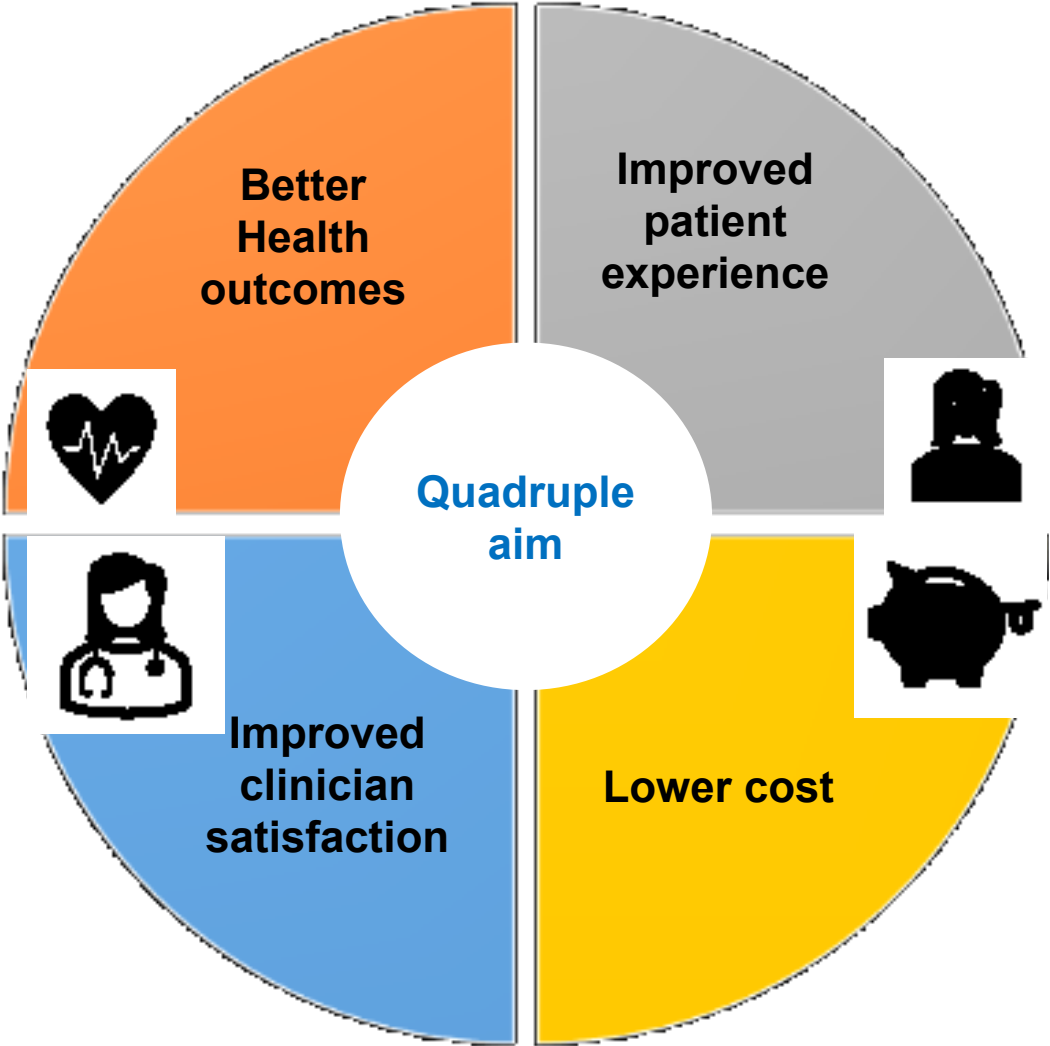
In 2008, the Chartered Society of Physiotherapy (CSP) in the UK reviewed the physiotherapy scope of practice to reflect the additional activities performed by advanced

practice physiotherapists such as injection therapy.¹² Physiotherapists in the UK define their scope of practice based on the four pillars for which the profession gained charter (manual therapy and therapeutic handling; exercise, movement, and rehabilitation; therapeutic and diagnostic technologies; allied approaches). Including ‘allied approaches’ meant that associated activities such as injection therapy and prescribing are linked to the traditionally understood pillars.¹²

1.6 Importance of advanced practice physiotherapy

The importance of advanced practice physiotherapy can be categorized using the quadruple aim framework (Figure 1.2). The America-based Institute for Healthcare Improvement developed the quadruple aim framework to measure and optimize health performance.²⁶ The importance of advanced practice physiotherapy will be categorized as follows; improving health outcomes, enhancing the patient experience, reducing the cost of care, and improving provider satisfaction.

Figure 1.2 Quadruple aim framework for evaluating the importance of advanced practice physiotherapy²⁶



1.6.1 Improving health outcomes

Improving health outcomes can be further categorized into patient outcomes and process outcomes. Advanced practice physiotherapy has been reported to result in improved patient outcomes.²⁷⁻²⁹ A review by Desmeules et al.²⁰ on advanced practice physiotherapy triage roles in out-patient orthopedic clinics and emergency departments found that patients who accessed the advanced practice roles had equal or better outcomes than usual care. A more recent review by Samsson et al.³⁰ on the effects on health and process outcomes of a physiotherapist (PT)-led orthopedic triage for patients with musculoskeletal disorders identified low to moderate evidence that PT-led orthopedic triage provides similar outcomes with lower cost compared to usual care.

In a review of General Practitioners (GPs) clinics in the UK, patient outcomes were equal or better for patients with MSK conditions who visited an advanced practice physiotherapist compared to usual care.³¹ Findings from these studies suggest that patients with MSK conditions demonstrated equal or better outcomes with advanced practice physiotherapy compared to usual care.

Additionally, advanced practice physiotherapy has been reported to improve the delivery of care for patients with MSK disorders.^{27,28,32} One of the primary process outcomes for the advanced practice physiotherapy role is reducing wait times for patients to see specialists (Surgeon or Rheumatologist).³²⁻³⁵ A study by Ahluwalia et al.³⁶ on the use of advanced clinical practitioners in arthritis care found a 40% reduction in time-to-treatment-decision for patients referred to the advanced practitioner model of care compared to those referred to the solo rheumatologist model. Razmjou et al.³³ evaluated the impact of advanced practice physiotherapists in a specialty shoulder clinic. The authors found a shorter wait time to assessment for patients accessing the advanced practice model of care compared to the surgeon model of care and an overall reduction in surgeon wait time over three years. These studies

suggest that advanced practice physiotherapy improves process outcomes (decreased wait times) compared to usual care.

1.6.2 Enhancing patient experience of care

Another important metric of advanced practice physiotherapy is the patient experience of care. Patient experience of care can be measured using patient-reported experience measures (PREMs) and patient satisfaction with care.^{29,32} Samsson et al.³⁰ in their systematic review, reported that PT-led triage provides a higher or equal perceived quality of care compared to standard care in 7 studies. Fennelly et al.³⁷ reported a positive patient experience with advanced practice services with fewer wait times. Robarts et al.¹⁵ also reported higher patients' satisfaction with advanced practice physiotherapists for triage and post-op follow-up care. Patient experience of care is vital to developing new models of care, and findings from these studies suggest that patients are very satisfied with their experiences with advanced practice physiotherapists.

1.6.3 Reducing cost of care

Economic outcomes or resource utilization of advanced practice physiotherapists can be measured with cost-savings through either a cost-effectiveness approach or a cost-utility approach.^{7,38,39} The cost-effectiveness approach compares the cost of the advanced practice physiotherapy model of care against the effectiveness (patient outcomes). The cost-utility approach compares the cost of the advanced practice physiotherapy model of care per utility value (measured through Quality Adjusted Life Years – QALYs).^{7,38,39}

A review of the cost-effectiveness of a PT-led triage in a GP clinic in Sweden identified that patients seen by the PT had slightly larger gains in QALYs and lower costs than the usual care.³⁸ A cost-minimization analysis by Ó Mir et al.³⁹ on advanced practice physiotherapy in pediatrics in Ireland found a cost saving of 43% for the advanced practice pathway compared to

usual care. Similarly, Burn et al.⁷ also found a 27.3% cost saving for patients using the advanced practice pathways compared to standard care in the UK. In Australia, Harding et al.⁴⁰ reported decreased wait times and a reduced pathway cost of 44% for patients using advanced musculoskeletal physiotherapists pathway compared to usual care.

1.6.4 Improving provider satisfaction

A recent survey of advanced practice physiotherapists in the UK found that about 85% of practitioners are satisfied with the role.⁴¹ The authors stated that this high level of satisfaction could be attributed to an improved professional identity or satisfaction with patient interaction. Additionally, the survey identified some of the negatives associated with the advanced practice physiotherapist role, including the stress and pressures of the role, issues on pay or remuneration, lack of organizational support, and restrictions to further expansion of the role.⁴¹

Practitioner satisfaction is another important aspect of the quadruple aim framework, but it is not adequately assessed. Advanced practice physiotherapy can provide an essential career progression strategy for senior physiotherapists to improve retention and provide opportunities for career enhancement. However, additional studies are needed in this area of advanced practice physiotherapy to support the practitioner's well-being.

The continual reporting of the positive effect of advanced practice physiotherapy roles on patient outcomes, patient experience of care, and cost-savings supports the role's implementation, acceptance, and sustainability. Although the importance of advanced practice physiotherapy has been highlighted in the papers presented above, there is still the need for more robust evidence to support the role. Thus, the need for high-level clinical trials and economic evaluation studies comparing the cost savings to other new and innovative models of care within

the health system are needed. These types of studies can address the limitations of low-quality evidence in the previous studies presented.

1.7 Pathways to advanced practice physiotherapy

The career pathway of physiotherapists from entry-to-practice to specialist has been clearly defined in most countries by their national physiotherapy association.⁴² However, because advanced practice physiotherapy has been implemented with a bottom-up approach from health care organizations, most professional physiotherapy associations have not clearly outlined the career pathway. Additionally, there is no internationally agreed-upon pathway or consistency with becoming an advanced practice physiotherapist.

A common consensus among the countries with advanced practice physiotherapy is the need for post-licensure training.^{12,17} There is a need for a master's level training to become an advanced practice physiotherapist in the UK, Canada, and Australia.^{9,12,17} Although this pathway is generally accepted in most countries, post-licensure training is not clearly outlined. What constitutes the post-licensure training and what level of clinical, research, and leadership skills are all varied in these countries. For countries with an entry-to-practice physiotherapy degree already at the master's level, such as Canada, training advanced practice physiotherapists is even more difficult.

Another area of discrepancy is the number of years required in clinical practice before a physiotherapist can be trained as an advanced practice physiotherapist. Based on the model developed for advanced practice nursing, there is a consensus among the countries with already developed roles that a physiotherapist will need at least five years of post-licensure experience with two years within a particular specialty to be considered for advanced practice

physiotherapy.^{9,12,17} For example, since MSK and orthopedics are the most developed advanced practice roles, physiotherapists must have five years of experience in this area of practice.

Another important consideration is the model or approach to training advanced practice physiotherapists. There are discrepancies in the model and duration of the training, where the training takes place (hospitals or universities) and the method for assessing the practitioner's competence. There are several training models used in different countries; however, the two most widely accepted are:

A) Combination of university education and on the job training

B) Residency model (on-the-job training and mentorship).^{12,17}

Under model A, a physiotherapist takes and passes a number of advanced-level courses (i.e., master's level) at a university, including research training. After that, the physiotherapist takes a series of advanced level training on-the-job activities over a period (3 – 6 months) with supervision from a more senior advanced practice physiotherapist or a specialist physician (e.g., orthopedic surgeon, rheumatologist).^{17,43}

In model B, physiotherapists are paired with a more senior advanced practice physiotherapist or physician/surgeon. The physiotherapist is trained, mentored, and coached by these practitioners to support their development as advanced practice physiotherapists. At the end of the residency period, they are examined by a physician/surgeon who was not involved in their training.^{12,17} Despite these models, there are many disparities, inconsistencies, and a lack of standardization in the career pathway and training, impacting the transferability of skills and sustainability of advanced practice physiotherapy.

1.8 Problem statement

To date, health care organizations and institutions delivering care have been the driving force for implementing advanced practice physiotherapy. Thus, the definition, training and implementation of the role have been mainly institution-based. This is similar to the early stages of the development of the advanced practice nursing role, when the implementation was in an ad-hoc manner, with no consistencies and no coordination.⁴⁴ Currently, there are no internationally agreed and consistent competencies for the training and evaluation of advanced practice physiotherapists. Different countries and organizations have proposed various competencies. However, currently, these competencies are locally driven and, as such, not transferable to other jurisdictions.

The lack of a standardized and internationally accepted set of competencies and training of advanced practice physiotherapists has resulted in inconsistencies and confusion within the physiotherapy profession and the public about the role. Beyond the profession of physiotherapy, the lack of consistent competencies has led to misunderstandings among regulators and health care organizations interested in implementing advanced practice physiotherapy. The lack of consistent competencies also affects the sustainability of the role.

The need for a consistent and internationally accepted set of competencies has been highlighted in recent studies.^{41,45,46} Developing internationally accepted competencies will ensure that advanced practice physiotherapists can deliver consistent, safe, and high-quality services that are effective and sustainable. These international competencies will also ensure consistency in the training of advanced practice physiotherapists and that these practitioners can transfer their skills across countries, jurisdictions, and institutions.

The overall aim of this thesis is to address the existing gap in knowledge on advanced practice physiotherapy by developing a competency profile as a framework to support the

development of international competencies for advanced practice physiotherapy. This thesis will develop competencies that are generally applicable to all areas of advanced practice physiotherapy (example MSK, rheumatology and cardiorespiratory). Additionally, this thesis will focus on five countries (i.e., United Kingdom, Ireland, Australia, New Zealand, and Canada). These countries have well-established advanced practice physiotherapy roles over the last two decades and provide valuable insights on developing an international competency profile.

1.9 Research process (Conceptual framework)

A systematic and comprehensive conceptual framework was developed as the process for developing the competencies (Figure 1.3). Three different methods previously used in developing competencies were integrated to develop a more comprehensive process for this thesis. The “Three-phase iterative process” (Bonham et al.⁴⁷), the “Step-based approach” (Harding et al.¹⁷) and the “Delphi study approach” (Chance-Larsen et al.⁴⁸) were integrated to develop the process for this thesis. Integration of the three previously used methods ensured that the methodology used in this thesis was systematic, robust, and comprehensive.

The “Three-phase iterative process” for developing competencies profile by Bonham et al.⁴⁷ was integrated into the process used for developing the competencies in this thesis. In the three-phase process, phase 1 is research and development, phase 2 is a consultation with stakeholders to validate the profile, and phase 3 is refinement and write-up. Phase 1 and phase 2 of the three-phase process were included in the integrated process for this thesis.

The “Step-based approach” used in developing the advanced MSK physiotherapy clinical education framework in Australia was integrated into the process for developing the competencies in this thesis.¹⁷ The “Step-based approach” begins with a literature review, then focus groups and the drafting of the clinical education framework. The next step is consultation

with subject matter experts (SMEs) to develop the competencies and, finally, implementation and evaluation of the competencies. The consultation process with SMEs was adopted as part of the process used to develop the competencies in this thesis.

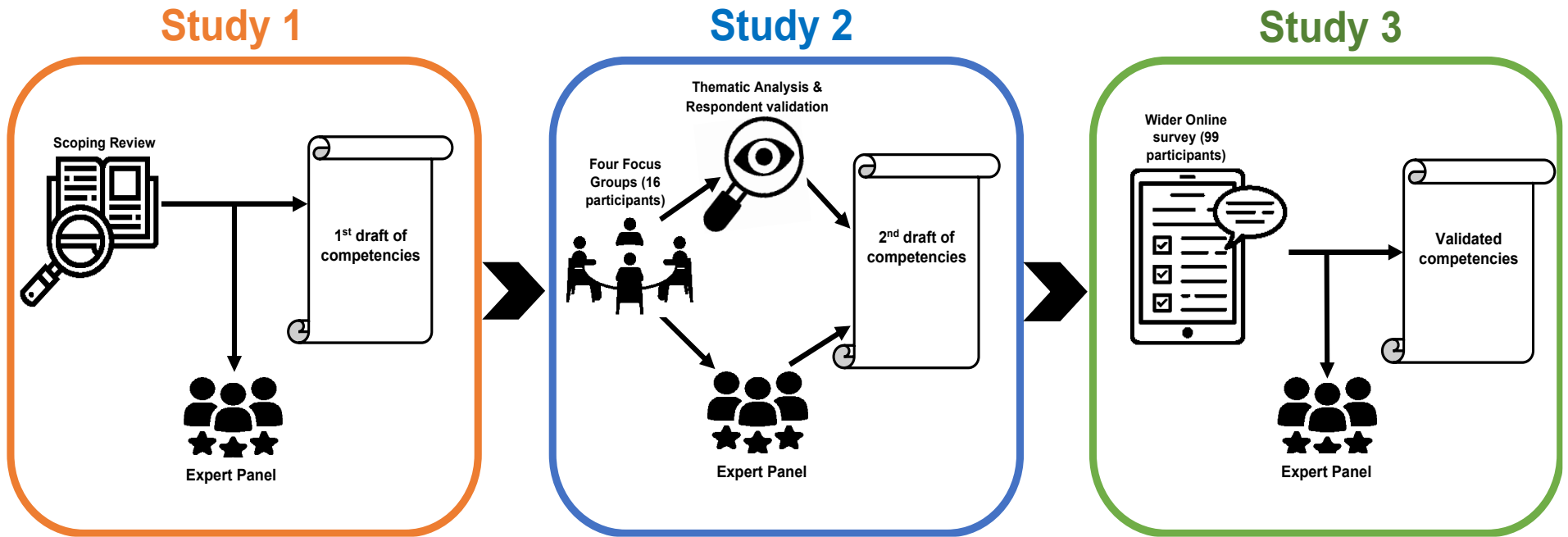
Six SMEs from 5 countries (UK, Ireland, Australia, New Zealand, and Canada) were consulted. The experts had different physiotherapy and advanced practice physiotherapy backgrounds ranging from consultant physiotherapists to leaders in international and national physiotherapy associations and researchers. The SMEs provided comments, feedback, and suggestions for improvement at each stage of the development process, as shown in Figure 1.3. The SMEs were asked to respond to three questions as part of the review process for each stage: (1) What additional competencies would you add to this list? (2) What competencies would you exclude from the list provided? And (3) What suggestions or comments would you provide to the research team to support the study going forward?

Finally, the “Delphi study” process used in developing the national MSK core capabilities framework for the first point of contact practitioners in the UK was integrated into the process for developing competencies in this thesis.⁴⁸ Chance-Larsen et al.⁴⁸ conducted a modified three-round Delphi study with a multi-professional panel. The diagram of the process used by Chance-Larsen was modified and integrated into the process for developing the competencies in this thesis. The modified chart used in this thesis (Figure 1.3) provides a process map that links activities, inputs and expected outcomes for each study.

The integration of the “three-phase iterative process,” the “step-based approach,” and the “Delphi study” resulted in the development of a comprehensive and robust process for developing the international competencies for advanced practice physiotherapy (Figure 1.3). The advantages of the integrated approach include qualitative and quantitative data, consultation with

both stakeholders and SMEs and reaching out to a much wider advanced practice physiotherapy population. In addition, integrating the three processes highlighted the advantages of using a combined process and reduced the limitations of using a single approach.

Figure 1.3 Process for developing the competencies (Conceptual framework)

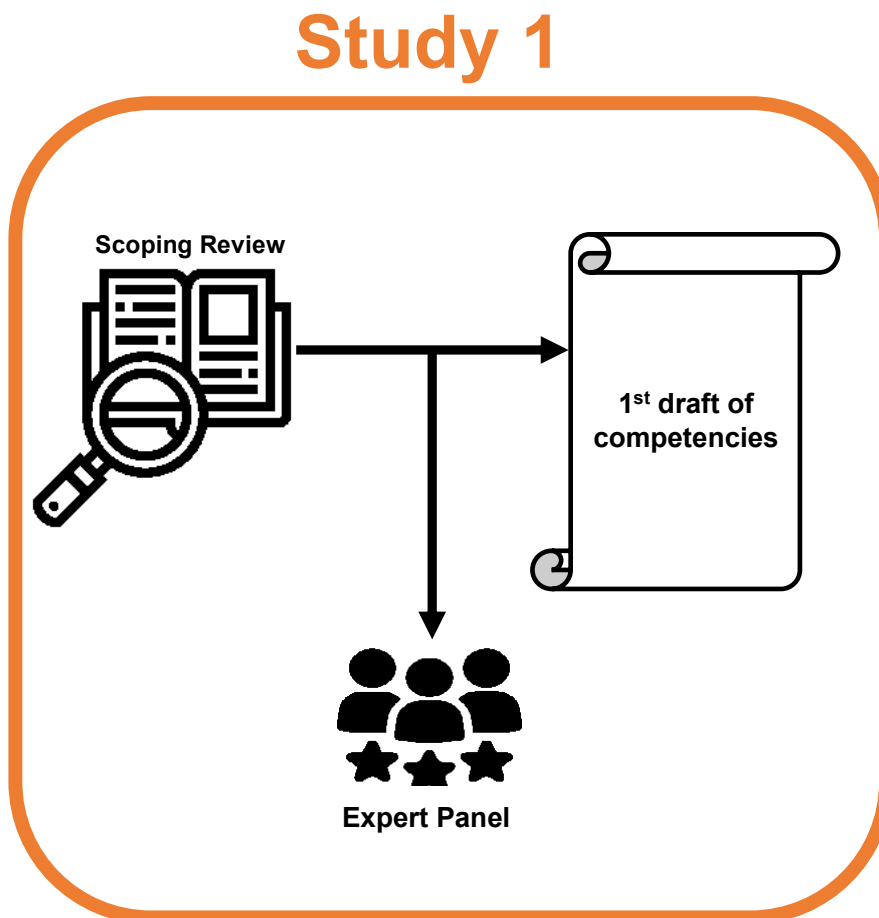


1.10 Aims of specific studies outlined in the process of developing competencies

1.10.1 Study 1

Study 1 (Chapter 3) was a scoping review of available literature (published and grey) on the competencies of advanced practice physiotherapists. The scoping review aimed at identifying the available competencies developed by different countries, government agencies and professional groups. Identifying and mapping out these competencies resulted in establishing their similarities and differences. The findings from the scoping review led to the development of the first draft of competencies, which were reviewed by SMEs before proceeding to the next stage (Figure 1.4).

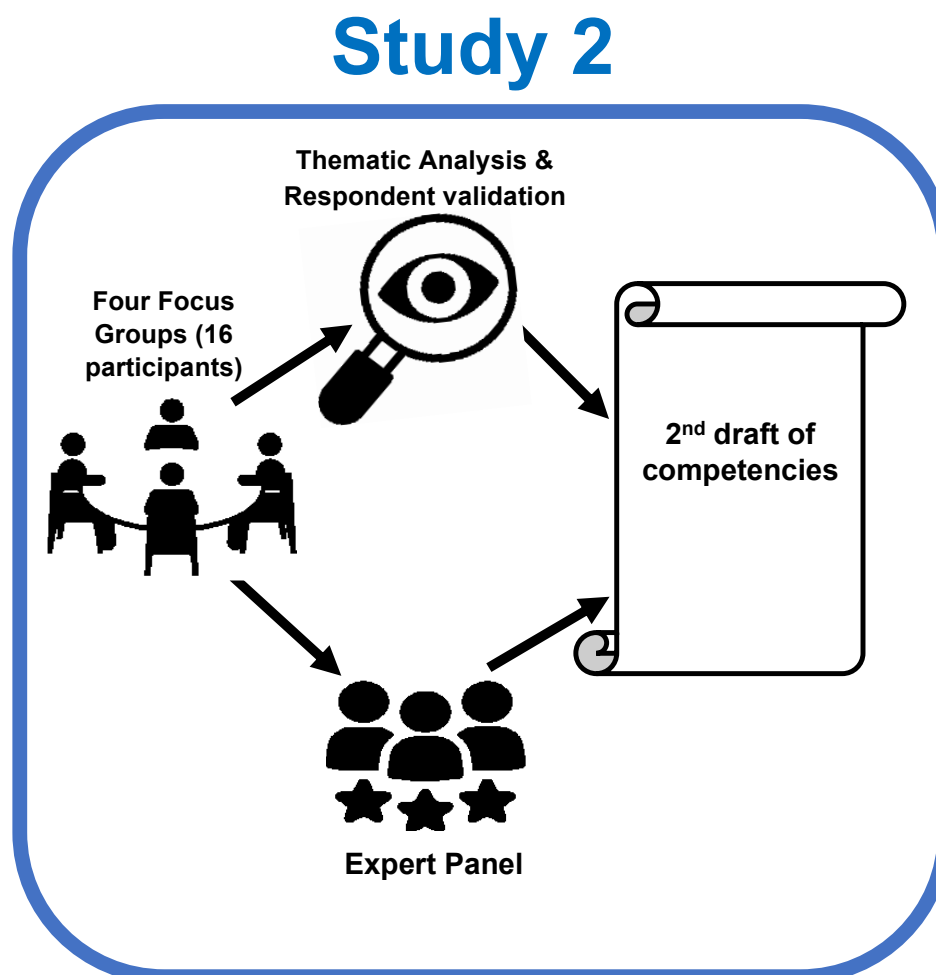
Figure 1.4 Description of study 1



1.10.2 Study 2

Study 2 (Chapter 4) was a series of four focus groups conducted with participants from 5 countries (United Kingdom, Ireland, Australia, New Zealand, and Canada). The focus groups aimed at generating feedback from advanced practice physiotherapists and other stakeholders on the first draft of competencies. In addition, the focus groups provided an opportunity for participants to suggest new competencies or revise the competencies presented. SMEs reviewed findings from the focus groups to develop the second draft of competencies (Figure 1.5). Study 3 was based on the second draft of competencies.

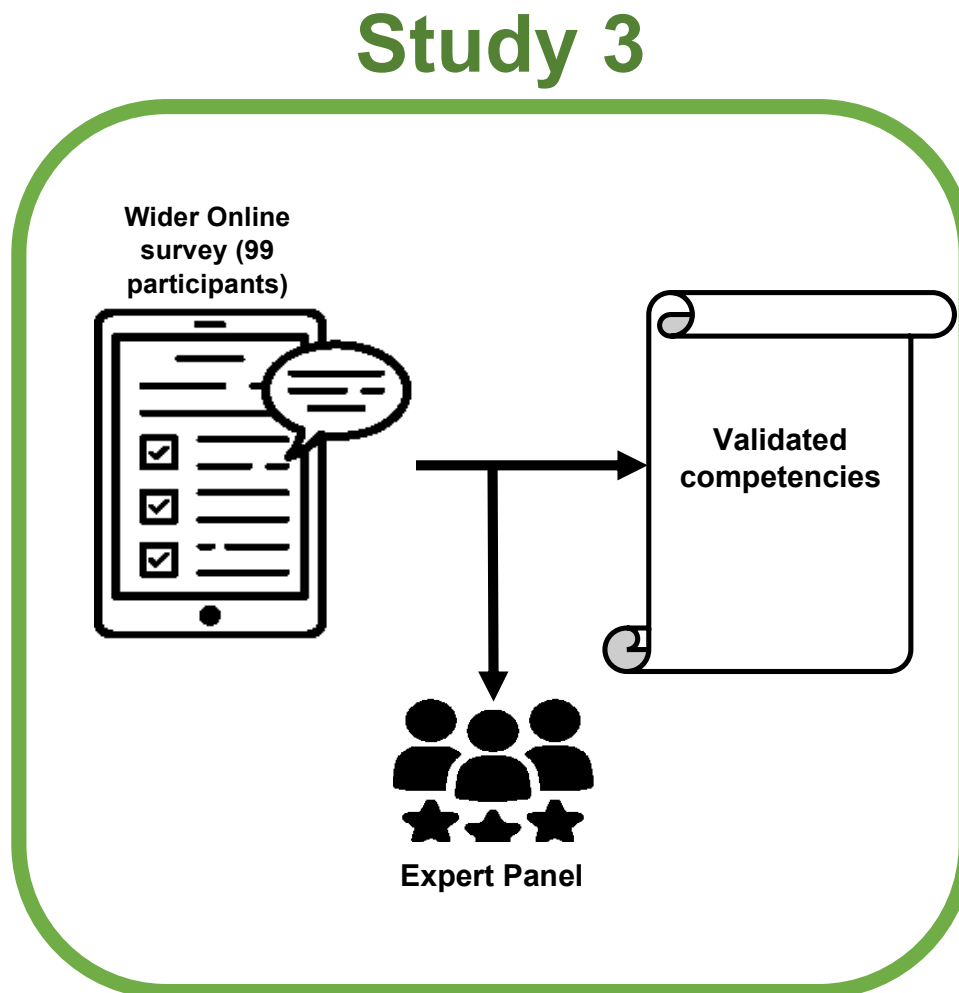
Figure 1.5 Description of study 2



1.10.3 Study 3

Study 3 (Chapter 5) was a wider global survey of advanced practice physiotherapists to validate (face validity) the second draft of competencies and generate additional feedback. The questionnaire for the survey was developed based on the second draft of competencies and with consultation with SMEs. The results from the survey were reviewed by SME, and a final list of competencies was developed.

Figure 1.6 Description of study 3



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CHAPTER 2

ADVANCED PRACTICE IN PHYSIOTHERAPY: A GLOBAL SURVEY

2.1 Introduction

In the early days of the profession, physiotherapists received referrals from physicians with defined parameters for specific treatment. As with all professions, over time, the scope and independence of physiotherapy practice changed, and, in many countries, physiotherapists synthesized the best contemporary evidence, facilitated with clinical reasoning, and became autonomous practitioners. This resulted in legislative changes in many jurisdictions that enabled direct access to physiotherapy services.

Further professional evolution has seen the emergence of advanced practice in physiotherapy, i.e., physiotherapists who work beyond entry-to-practice levels. Defining advanced practice physiotherapy and the competencies of those practitioners is complex, requires global consultation and agreement, and terminology may need to align to already regionally recognized professional standards such as “registrar” and “consultant” levels as practised, for example, in medicine in the United Kingdom (UK).

The Chartered Society for Physiotherapy (CSP) definition of advanced practice was adopted for this paper. According to CSP, advanced practice physiotherapist synthesizes knowledge and skills to support comprehensive clinical reasoning to manage patients (often with complex, recurring, challenging and unusual presentations) in an unpredictable and often high-risk situation such as in the emergency department.¹

Professional frameworks for advanced practice in healthcare were developed in the 1970s for nursing in the rural regions of the United States of America (USA), and at the same time, for physiotherapy in the US military during the Vietnam War.^{2,3} For physiotherapy, advanced

practice roles were developed in response to insufficient physician capacity to adequately manage a large number of injured soldiers. Physiotherapists triaged injured soldiers and assumed responsibilities, including direct wound care and orthopedic case management that had previously been managed by physicians or nurses.^{2,3} In the 1980s, the UK developed new models of care provided by an advanced practitioner in physiotherapy in response to the need to deliver higher volumes of the non-surgical and increased complexity of care. The model has since evolved from hospital-based care to include primary and community-based care.

Initially, the term Extended Scope Physiotherapist (ESP) was used to describe the new model of practice, which included injection therapy, ordering imaging and blood tests, listing for surgery and eventually prescribing pharmaceutical medicines; activities once considered outside the traditional scope of physiotherapy practice.^{1,4} In 2008, the term ESP was replaced with “advanced practice”, a term more accurately reflecting that activities performed under the old “ESP” designation are now considered within the scope of physiotherapy practice in many jurisdictions but delivered by a physiotherapist with advanced training and skills.¹

2.1.1 Reasons for the introduction of advanced practice physiotherapy

Multiple factors, including an ageing population, the need to improve efficiency and reduce costs and waiting times, and improve access to healthcare, have resulted in the need to develop advanced clinical practitioners across a range of healthcare professions.⁴ Advanced practice physiotherapy models of care have now been developed in many countries, including the UK, Canada, Norway, New Zealand, and Australia. The scope of practice across and within countries varies but often includes: requesting diagnostic imaging (including Magnetic Resonance Imaging [MRI], ultrasound and X-rays), ordering blood tests, performing soft tissue and intra-articular injections (including ultrasound-guided), independently prescribing (including

de-prescribing) medication to support patient care, and using diagnostic ultrasound.^{4,5} Advanced practitioners also perform orthopedic triage, including the initial screening of patients in emergency departments and those referred to an orthopedic surgeon for a surgical consult.^{4,5} The advanced practice physiotherapy role is to optimize non-surgical care, appropriately refer on for surgical consult or list patients for surgery (in some countries) and review with patients after surgical procedures. These roles require significant clinical experience and expertise that are considered to be beyond entry-to-practice skills, including the ability to address complex problems and manage risk.^{4,5}

Although advanced practice physiotherapy is integrated and accepted in the countries listed above, many countries have not implemented these roles. Multiple factors prevent the adoption of this role, including; the lack of an understanding of what the role entails or of the potential patient and system-wide benefits these roles bring to healthcare systems.^{6,7} Other factors include confusion regarding the terminology used to describe the practitioners across and within countries, requirements of statutory regulatory bodies, concerns about the impact on insurance companies and remuneration, and, most appreciably, the concern of the challenge and perceived encroachment on traditional providers of these services, especially medical practitioners.^{6,7}

Published systematic reviews have reported that advanced practice physiotherapists provide equal diagnostic accuracy and appropriately identify patients who will benefit from surgery when compared to orthopedic surgeons.^{8,9} Similarly, there is a high level of evidence that patients seen by advanced practice physiotherapists in the emergency department reported improved short-term outcomes compared to routine care.^{10,11,12} There is also a high level of evidence for improved patient satisfaction with advanced practice physiotherapist-led care in the

emergency department.^{13,14} Advanced practice roles have led to improved process outcomes in healthcare delivery, including reduced wait times for patients in orthopedic, rheumatology and emergency care departments.^{15,16}

Although advanced practice contributes to the provision of healthcare in primary, secondary, and tertiary settings, no study has been published that describes:

- (i) The current state of advanced practice in physiotherapy across different countries,
- (ii) The range of professional titles being used to describe practitioners,
- (iii) The scope of practice, and
- (iv) The statutory frameworks that regulate advanced practice physiotherapy.

The purpose of this study was to describe the current state of advanced practice physiotherapy across the global physiotherapy community. This study was conducted by World Physiotherapy (WP) and the Faculty of Rehabilitation Medicine, University of Alberta.

Specifically, the objectives were to:

- Investigate the extent to which advanced practice is present in the health services of the member organizations of WP Member Organizations (MOs)
- Document the different titles used by advanced practitioners in physiotherapy internationally.
- Describe pathways – professional development and/or education - to becoming an advanced practice physiotherapist.
- Identify if competencies for the roles have been developed or described by MOs or other organizations.
- Ascertain if MOs have policies or guidelines on the scope of advanced practice in physiotherapy within their country.

- To investigate the extent to which advanced practice physiotherapy is desirable for those MOs who report it does not exist in their health services.
- To investigate the barriers and facilitators to the development of advanced physiotherapy practice.

2.2 Method

2.2.1 Study Design

This study involved a web-based (online) cross-sectional survey of the MOs of WP, using SurveyMonkey™ in 2018. Ethics approval was sought and obtained from institutional ethics committees at the University of Alberta [AT, LW] (Appendix 2.1) (Ethics ID Pro00073988) and Trinity College Dublin [ES].

2.2.2 Participants

WP is a confederation of MOs, currently representing more than 625,000 physical therapists worldwide with the stated goals of furthering the physiotherapy profession and improving global health. At the time of the study (2018), WP circulated the survey to all its 112 MOs. Each MO has one designated primary contact person registered with the organization. Therefore, only one response per organization was permitted. The designated contact within each MO was asked to consult with the other appropriate individuals within their organization to collate the requested information before completing the survey. This was done to ensure a national perspective was provided on behalf of each MO.

2.2.3 Questionnaire

The survey questionnaire comprised 14 questions (Appendix 2.2). The questions were developed based on a review of the evidence on advanced practice in physiotherapy and discussions with an expert group of consultant physiotherapists, physiotherapy educators and researchers, and leaders in physiotherapy professional practice. The face and construct validity of the questionnaire was assessed by the authors. To ensure a balance between data acquisition and clarity of language for respondents for whom English was not the first language, WP staff provided input and technical expertise.

The questions were categorized to address each of the research aims, including the definition of advanced practice physiotherapy, titles being used, the roles performed, and the scope of practice. Other questions focused on the competency required to practice and the authority regulating the practice.

For clarity, at the outset, respondents were provided with working definitions of “advanced practice” and “scope of practice” drawn from the position statements and policy documents of a number of World Physiotherapy MOs. The definitions provided were as follows:

Advanced practice is a combination of advanced skills, knowledge and attitudes which enable physiotherapists to address complex problems and manage risk; it is the use of advanced critical thinking to deliver care to patients with complex needs safely and competently¹⁷.

Scope of practice is the full spectrum of roles, functions, responsibilities, activities and decision-making capacity that individuals within the profession are educated, competent and authorized to perform¹⁸.

2.2.4 Inclusion criteria

Only current MOs of WP at the time (2018) were included in the study. This survey targeted MOs directly and sought information at the organizational level rather than at the level of individual physiotherapists.

2.2.5 Procedure

The survey was circulated by the Secretariat of WP to the primary contacts of each MO; information provided by MOs is publicly available on the WP website. The designated contact person for each MO was emailed an invitation to participate in the survey, provided with the study information and a copy of the survey as an attachment to the email, as well as a link to complete the online survey. Two reminders were sent, two weeks and one month, after the initial contact. Additional emails were sent out to MOs to provide further clarification on the responses that were provided.

2.2.6 Data Analysis:

Descriptive statistics were used to analyze the data. Data are presented in tables, charts and graphs to depict participants' responses (i.e., MOs).

2.3 Results

2.3.1 General characteristics of participants

A total of 82 of the 112 MOs responded to the survey, representing a (73%) response rate. WP has five regions, and each region presented different response rates – Africa (16/82, 19%), Asia Western Pacific (18/82, 22%), Europe (32/82, 39%), North America Caribbean (9/82, 11%) and South America (7/82, 9%). Table 2.1 provides details on the regional response rate.

Table 2.1 Regional response rate

	World Physiotherapy Regions					Totals
	Africa	Asia/ Western Pacific	Europe	North America/ Caribbean	South America	
Responders	16 (19%)	18 (22%)	32 (39%)	9 (11%)	7 (9%)	82 (100%)
Non-responders	3 (10%)	8 (27%)	11 (37%)	5 (16%)	3 (10%)	30 (100%)
	19 (17%)	26 (23%)	43 (38%)	14 (13%)	10 (9%)	112 (100%)

2.3.2 Advanced practice physiotherapy in member organizations

Participants were asked to indicate if there were formal advanced practice roles within their country/territory. Fourteen MOs (14/82, 17%) indicated that they had formal roles in their country/territory. Figure 2.1 is a geographical representation of the MOs that reported advanced practice. World Physiotherapy MOs who reported having formal advanced practice physiotherapy roles included: Australia, Canada, Hong Kong, Ireland, Israel, Jordan, New Zealand, Norway, Peru, Switzerland, Taiwan, Trinidad and Tobago, United Kingdom, and the USA. Figure 2.2 illustrates member organizations with and without advanced physiotherapy practice categorized by World Physiotherapy Region. Figure 2.3 is an illustration of MOs with advanced practice based on the level of income. Eighty-six (12/14, 86%) percent of the MOs with advanced practice are from high-income countries. All the respondents who did not have advanced practice roles in their countries considered the development of the roles to be desirable for the profession.

Figure 2.1 Geographical presentation of World Physiotherapy member organizations with advanced practice physiotherapy

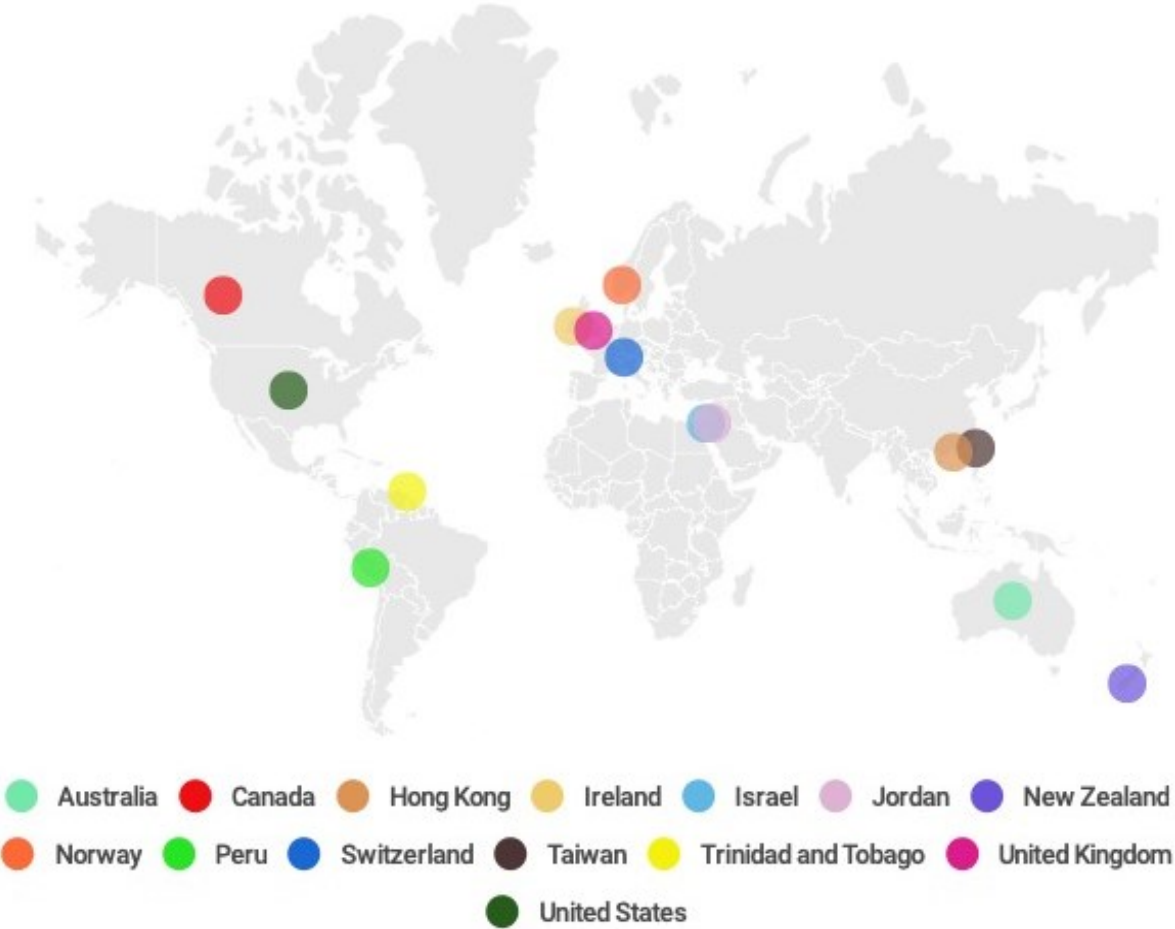
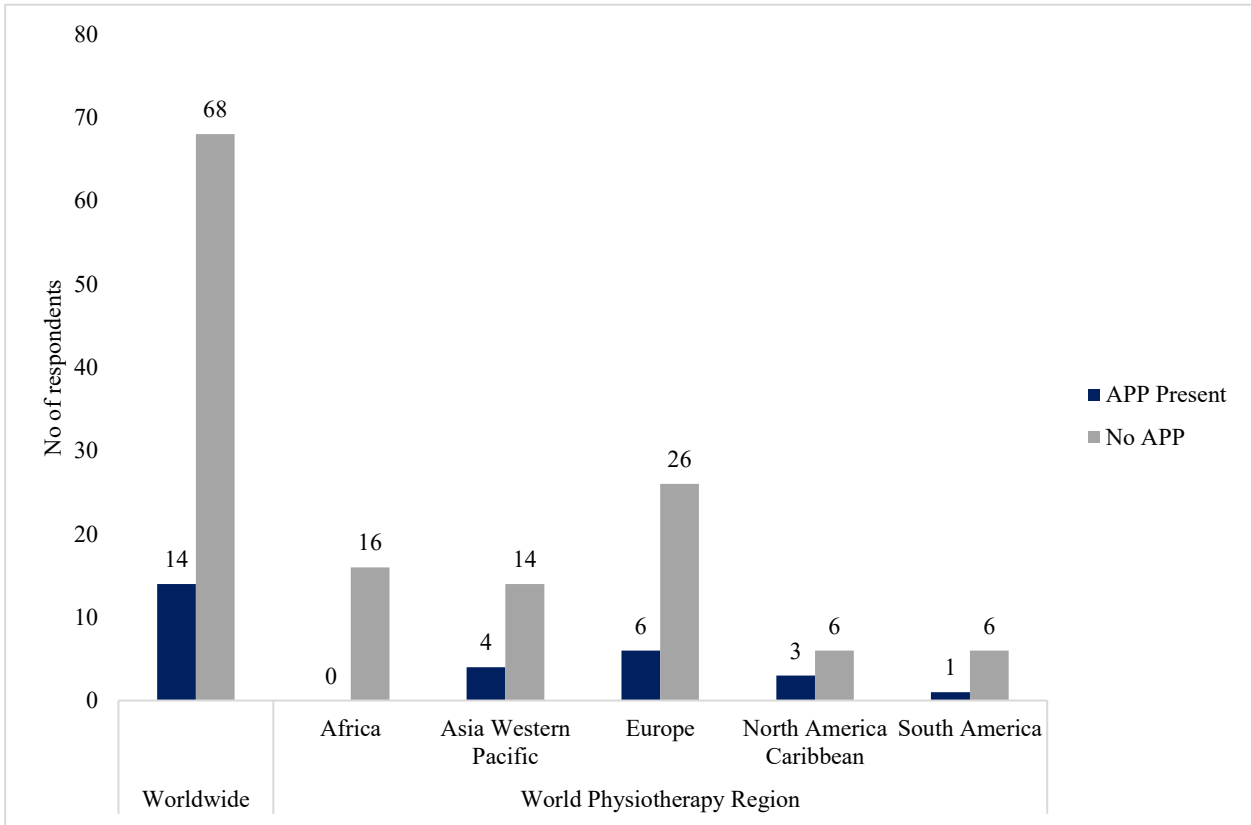
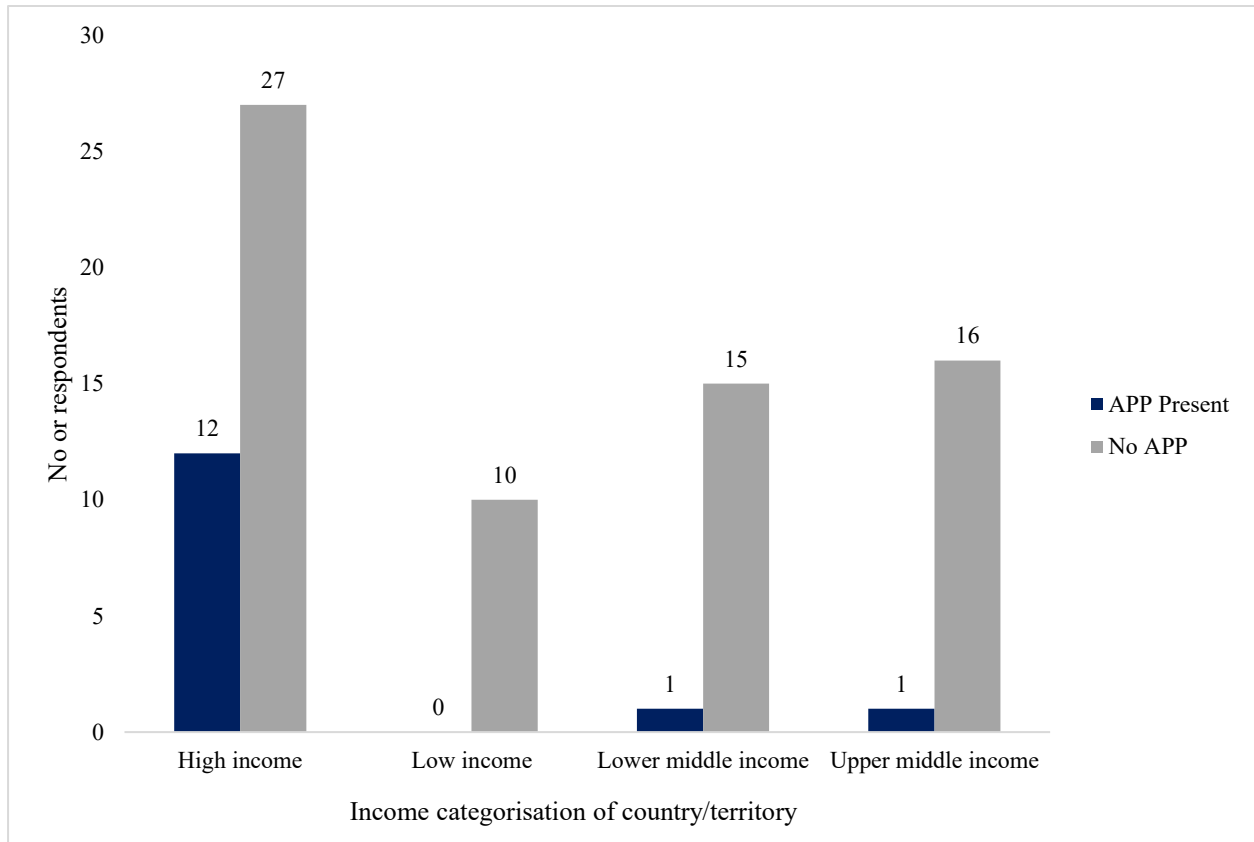


Figure 2.2 Regional breakdown of World Physiotherapy member organizations with and without advanced practice physiotherapy.



Advanced Practice Physiotherapy - APP

Figure 2.3 World Physiotherapy member organizations with and without advanced practice physiotherapy categorized by country income status.

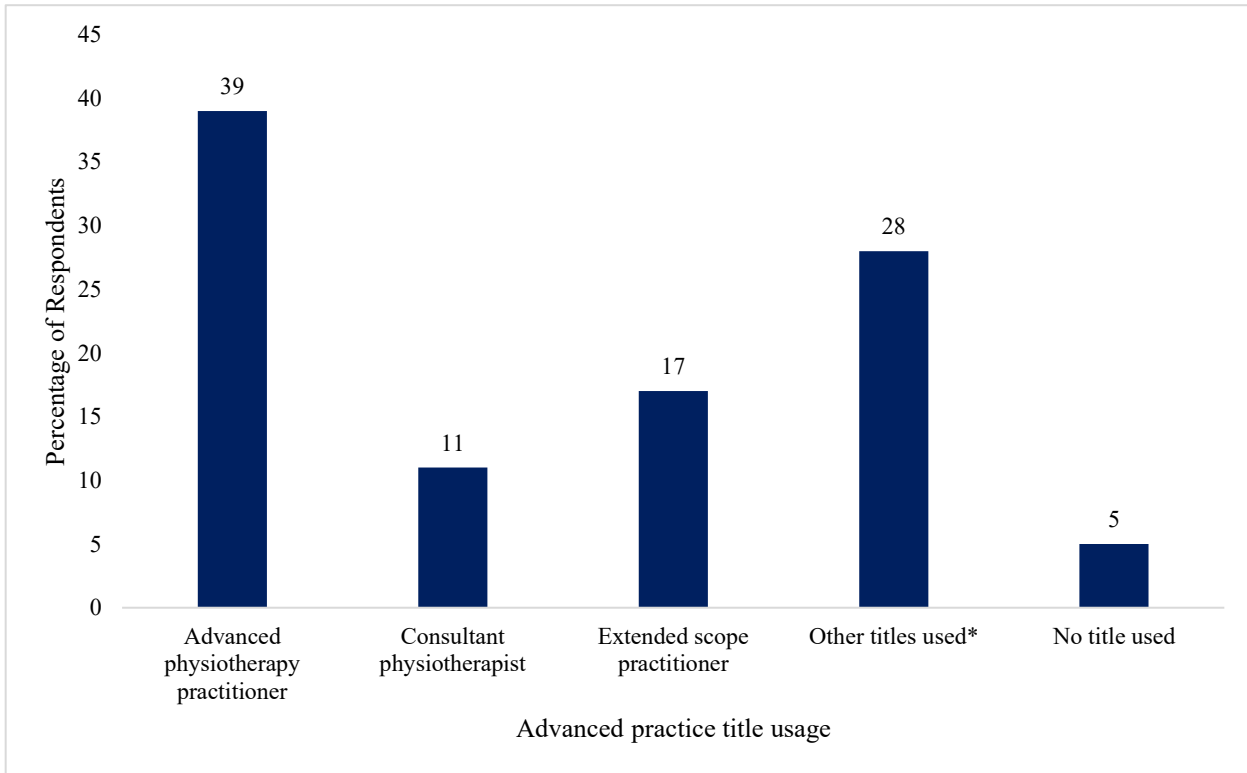


Advanced practice physiotherapy – APP

2.3.3 Titles used to describe advanced practice physiotherapy

MOs with formal advanced practice roles were asked to report the titles used by these practitioners. MOs could select more than one option. ‘Advanced Physiotherapy Practitioner’ was used by 39% (7/18) of respondents. In addition, ‘Consultant Physiotherapist’ (2/18, 11%) and ‘Extended Scope Practitioner’ (3/18, 17%) were also used. Other titles were reported by 28% of respondents (5/18) and included ‘Specialist Physiotherapist’, ‘Highly Specialist Physiotherapist’, ‘Advanced Physiotherapist’, ‘Manual Therapists’, ‘Military Physician Extender’ and ‘Senior Physiotherapist Fellow’. Five (1/18) percent of responders reported no specific title. Figure 2.4 details the different titles used for advanced roles.

Figure 2.4 Different titles used to describe advanced practice physiotherapy



Advanced Practice Physiotherapy – APP

2.3.4 Fields of advanced practice physiotherapy

Table 2.2 presents the different fields of practice as reported by the MOs. Twenty-six percent of respondents (31/117, 26%) reported advanced practice in the field of musculoskeletal disorders (in and outpatient orthopedics and sports physiotherapy). Other fields of practice reported include neurology (10/117, 9%), cardiorespiratory physiotherapy (10/117, 9%), and pediatrics (9/117, 8%).

Table 2.2 Number of MOs reporting different fields of practice in advanced practice physiotherapy

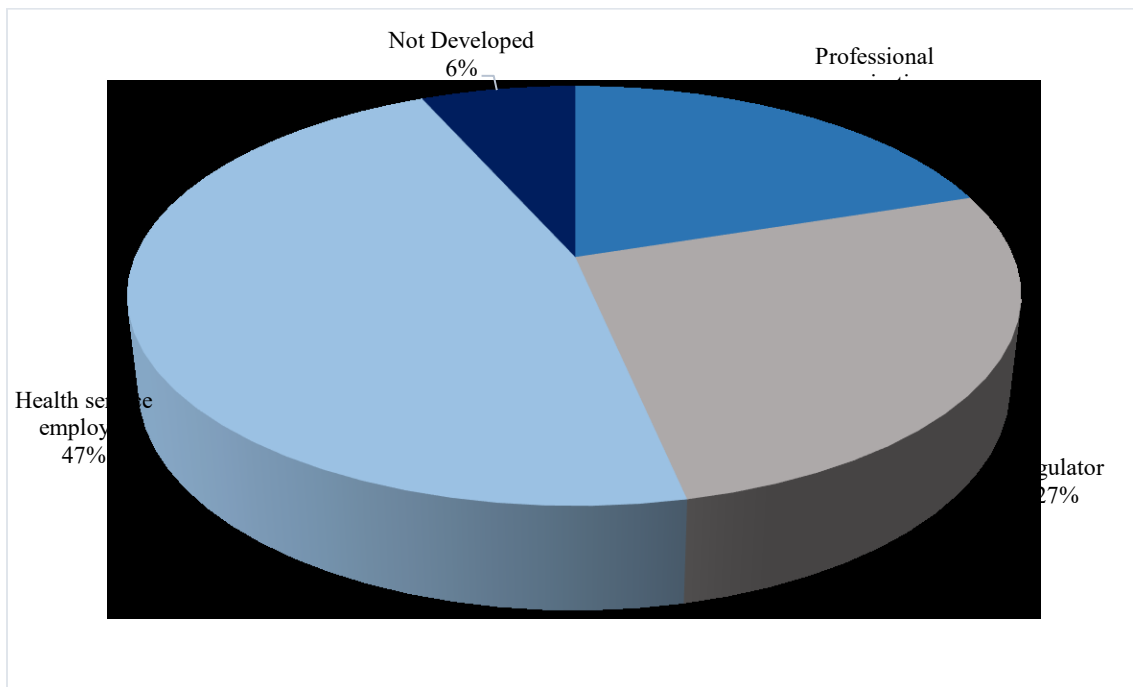
Fields of practice	Responses	
	N	Percent (%)
Neurology	10	8%
Cardiorespiratory physical therapy	10	8%
Sports physical therapy	12	10%
Outpatient Orthopaedics - musculoskeletal - rheumatology	11	9%
Pediatrics	9	8%
Inpatient Orthopaedics - musculoskeletal - rheumatology	8	7%
Older people	9	8%
Women's health	8	7%
Pelvic rehabilitation	8	7%
Occupational health and ergonomics	7	6%
Oncology/palliative care	6	5%
Amputee rehabilitation	5	4%
Pain (includes pain management, pain research)	6	5%
Mental health	3	3%
Men's health	0	0%
Other	3	3%
Intellectual disability	2	2%
Total	117	100%

2.3.5 Advanced practice physiotherapy competency and policy description

Respondents were asked to comment on whether an agreed-upon set of competencies and policies supported advanced practice roles. Findings are illustrated in figure 2.5. Fifty-seven percent (8/14, 57%) responded that there was an agreed-upon competency and policy in place, whereas (6/14, 43%) reported not having such competencies and policies. Of the respondents who reported having agreed upon competencies, 47% (7/15) reported that the competencies were developed by their health services employers, while 27% (4/15) and 20% (3/15) reported that the competencies were developed by their regulator and professional organization, respectively. Six

percent (1/15) indicated that the competencies had not been described. Eight MOs (8/14, 57%) reported a policy guideline on advanced physiotherapy practice (Australia, Israel, New Zealand, Norway, Switzerland, Taiwan, UK and the USA).

Figure 2.5 Description of organizations that developed competencies for advanced practice physiotherapy

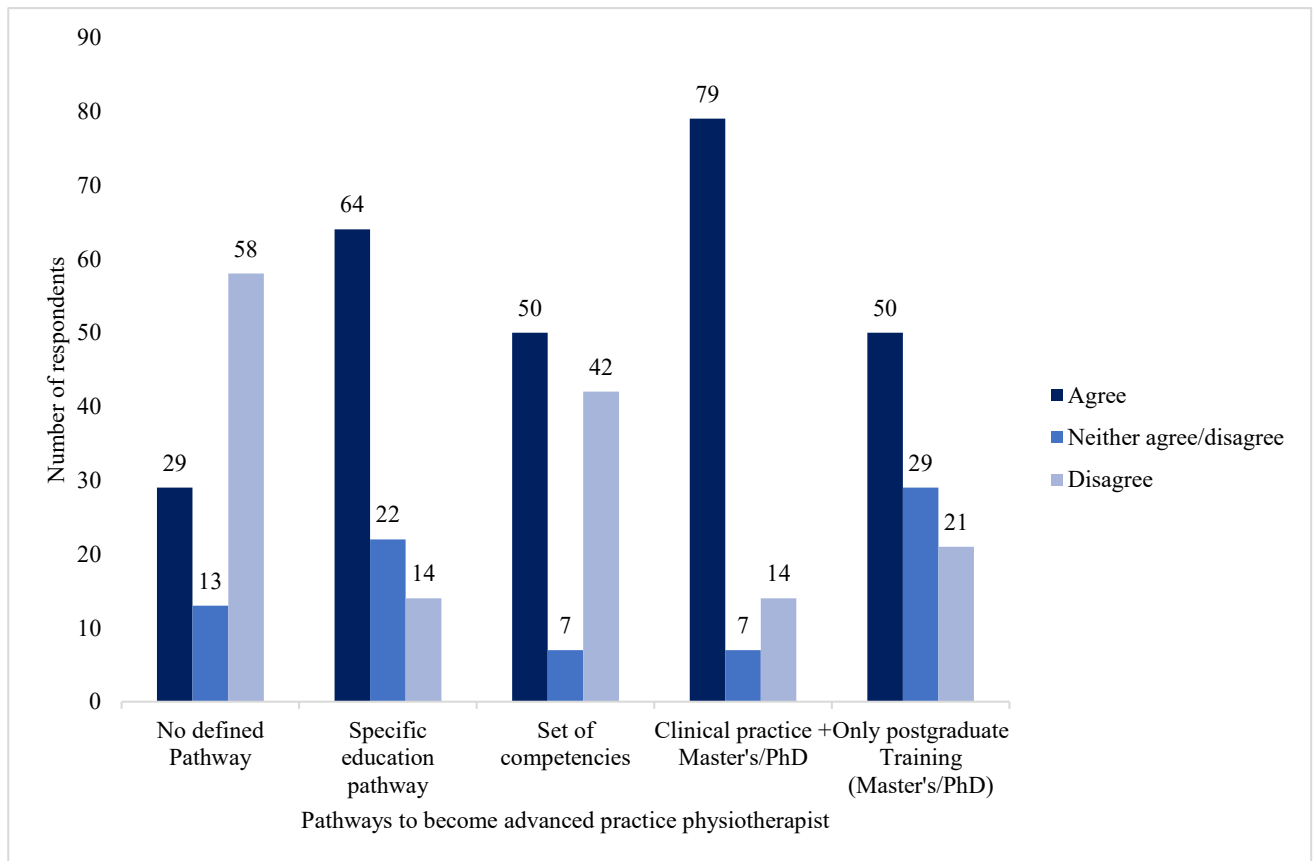


2.3.6 Professional development and education requirements

To explore the potential pathways to advanced physiotherapy practice, MOs were asked about five possible scenarios in their countries, as presented in Figure 6. Sixty-four percent (9/14) ‘agreed’ or ‘strongly agreed’ there was a specific education pathway, while 29% (4/14) ‘agreed’ or ‘strongly agreed’ that there was no defined educational pathway. Half of the respondents ‘agreed’ or ‘strongly agreed’ that every advanced practice physiotherapist must demonstrate a set of defined competencies and that, to be considered for the role, clinicians must

have a postgraduate qualification such as a master’s degree or Ph.D. Seventy-nine (11/14, 79%) of respondents ‘agreed’ or ‘strongly agreed’ with the statement that ‘most advanced practice physiotherapists have a combination of clinical practice and a Master’s/Doctoral degree. These results are illustrated in Figure 2.6.

Figure 2.6 Professional development and educational pathways reported for advanced practice physiotherapy



2.3.7 Facilitators and barriers

For MOs with advanced practice physiotherapy, the major facilitators to the development and sustainability of the role were the research evidence, advocacy by the professional organization, the need to reduce cost in healthcare delivery, and the support received by the

advanced practitioner from their employers. Figure 2.7 illustrates the reported facilitators and the strength of each one. These were similar for MOs without advanced practice physiotherapy, however, patients' views, professional regulation, views of the medical profession, and political support were the additional major facilitators to the development and implementation of advanced practice roles, as illustrated in Figure 2.8. The need to reduce waiting times was identified as a minor facilitator for countries with and without advanced practice.

Reimbursement models for practitioners were seen as the major barrier to establishing the roles for MOs with advanced practice, while the political support and the medical profession were perceived to be a major barrier for MOs without advanced practice.

Figure 2.7 Presentation of the perceived facilitators that affect the implementation of advanced practice as reported by respondents with advanced practice physiotherapy

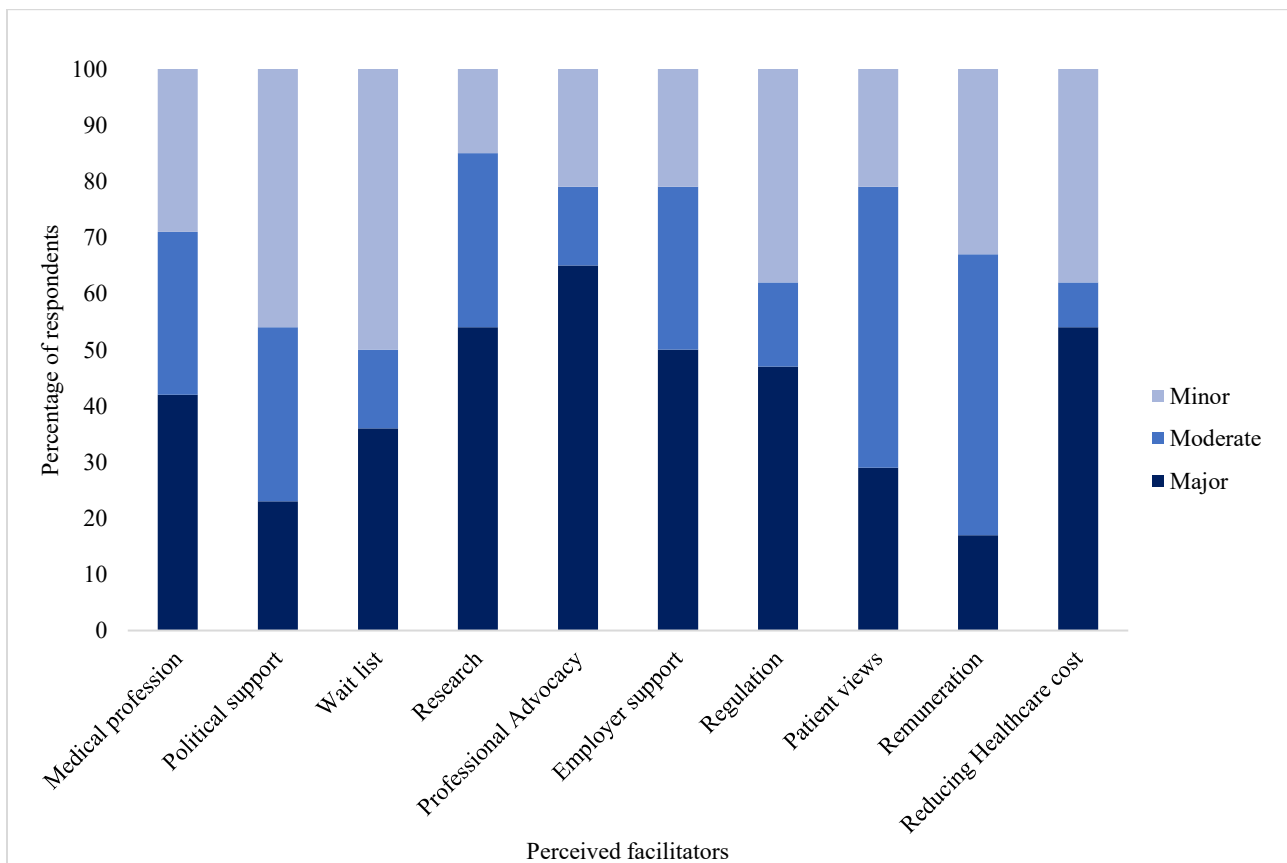
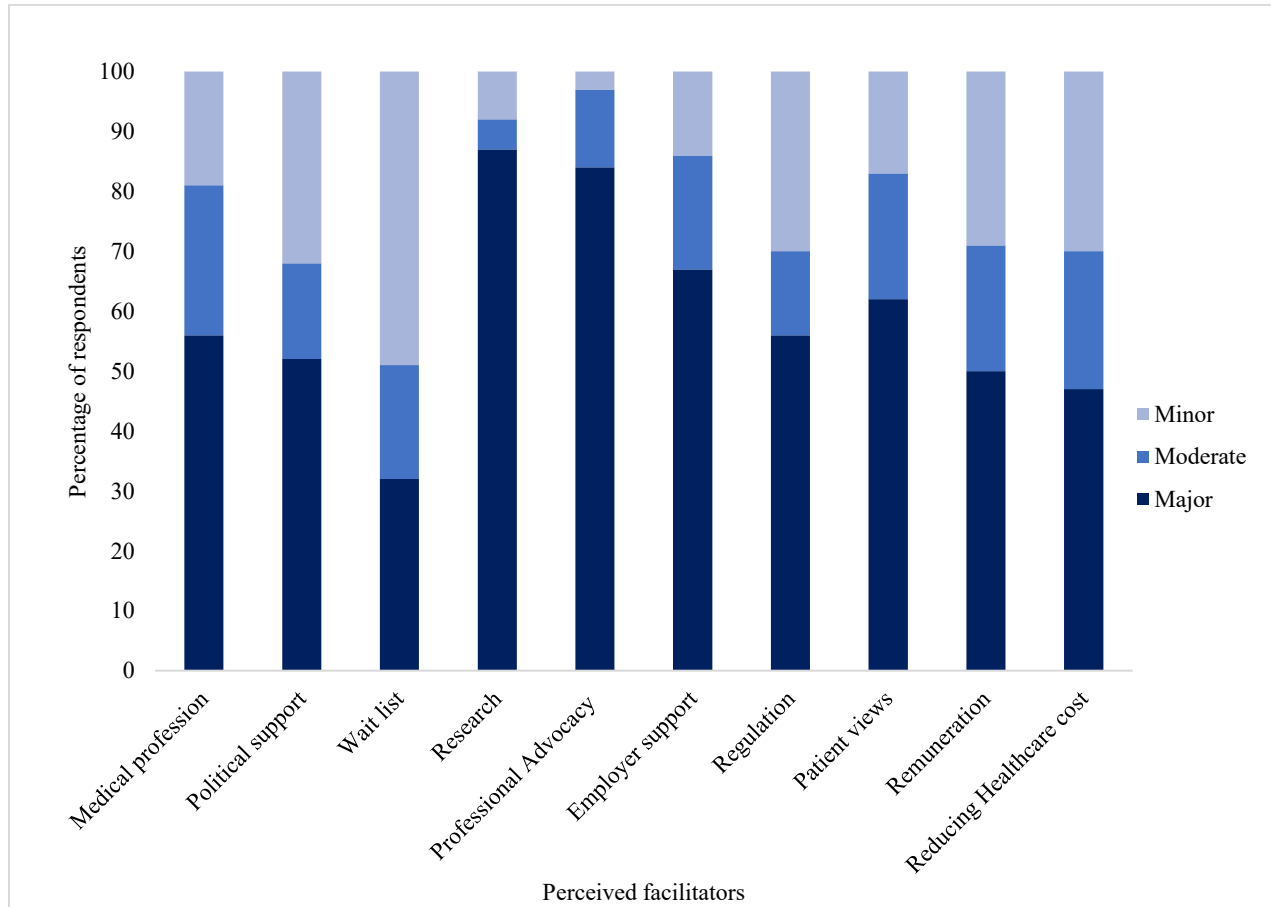


Figure 2.8 Presentation of the perceived facilitators that affect the implementation of advanced practice as reported by respondents without advanced practice physiotherapy



2.4 Discussion

The overall purpose of this study was to describe the current state of advanced practice in physiotherapy across the global physiotherapy community. The MO response rate was high at 73% (82/112), and the numbers of MOs responding from each World Physiotherapy region are consistent with the proportion of MOs in each region. It was noted that, while advanced practice roles are reported to exist in a relatively small number of countries/territories, the development of advanced practice was reported as desirable by many MOs.

To our knowledge, this paper is the first study to identify the current practice of the profession and the growing interest in advanced practice among World Physiotherapy MOs. This interest in developing advanced practice roles may be attributed to the importance advanced practice models of care play within the healthcare system. Research suggests that the advanced practice model improves outcomes for patients with musculoskeletal conditions as well as enhances their experience of care.^{13,14}

One of the findings from this study was that some MOs reported the use of ‘specialists’ as a title for advanced practice physiotherapists. Upon further clarification with the MOs, the authors concluded that these roles were not advanced practice as outlined in our earlier description. This confusion is also related to the fact that, in countries where advanced practice roles exist, physiotherapists who work in these roles are also often considered specialist physiotherapists. This is because specialization is well defined by World Physiotherapy and most MOs. However, WP only recently (2019) adopted a policy statement on Advanced Practice and provided a description of the practice. According to the World Physiotherapy policy statement, advanced practice physiotherapy includes a higher level of practice, functions, responsibilities, activities and capabilities.¹⁸ Most importantly, advanced practice results in the responsibility for delivering care to patients/clients who commonly have complex needs or problems safely and

competently and to manage risk.¹ Specialization is described as having in-depth knowledge, skills and competence attained by a physical therapist qualified in a specific area within the scope of practice recognized as physiotherapy¹⁹. The Chartered Society of Physiotherapy (CSP) in the UK has clarified the difference between advanced practice and specialization: the specialist has in-depth knowledge in a particular specialty while advanced practitioners have a much broader knowledge in physiotherapy and other health fields including oncology pharmacology, radiology, laboratory investigations.¹ Although both advanced practice and specialist physiotherapist roles are exclusive, they complement each other. While a physiotherapist may be both a specialist and an advanced practice physiotherapist, the competencies and thus training required are different. This delineation is also significant for MOs who already have specialization and are in the process of setting up advanced practice roles.

Another important finding from this study is the diverse and expanded fields of advanced practice. Although advanced practice started in orthopedics and musculoskeletal practice, there has been a move into other fields, including cardiorespiratory, neurology, pediatrics, and women's health. Earlier models of care were centralized within hospitals where practitioners provided early triage for patients requiring orthopedic surgery.^{5,20} Over time, the model of care has shifted from hospital-based to community-based care. More recently, there has been a shift into primary care where advanced practice physiotherapists work directly with General Practitioners (GPs) to assess patients presenting with musculoskeletal conditions. This model of care is currently being rolled out in the UK and was developed, in part, to support the shortage of GPs, but more importantly, to ensure that the person who presents with a musculoskeletal condition receives the very best expertise in assessment and diagnosis.^{21,22} Roles have also been

developed in pediatrics for complex patients and in rheumatology.²³⁻²⁷ The emergence of advanced practice in new fields is an essential step in the progression and sustainability of the advanced practice model of care within the physiotherapy profession.

This study also surveyed the potential facilitators and barriers to the development of advanced practice roles. The most important facilitators relate to the need to improve health systems to meet the needs of patients. This is consistent with the history of the development of the roles, which has been to address the need for improved care, improved efficiency, and better access for patients.²⁷ The earlier models for advanced practice resulted from the need to treat patients promptly and for physiotherapists to take on more complex roles in support of the shortage of medical professionals.²⁷ Similarly, the most prominent barriers for advanced practice development are the support from other health professionals and regulations. This is consistent with a previously published study on the challenges to advanced practice, such as medical support and the need for change in regulation.^{6,7}

2.5 Limitations

The main limitation of this study was the circulation of the survey to MOs for whom English is not their first language. Because this survey was in English, the respondent within a MOs for whom English is not their first may have found it difficult to respond or may have interpreted the questions differently. This could account for the rate of non-responders. WP staff were ready to provide support when needed. However, the rate of non-responders was low. Most of the countries with advanced practice physiotherapy as reported in available literature responded to this survey.

Other limitations include not all countries in the world are MOs of WP, therefore, some countries/territories are not represented in this survey. With the continual expansion of World

Physiotherapy MOs, a future updated survey would present views and perspectives from these countries. Finally, another limitation is the use of a quantitative survey for complex questions. Advanced practice physiotherapy is complex, and a more qualitative approach (e.g., interviews or focus groups) could provide in-depth meaning behind some of the questions asked and provide a better understanding and uncover certain topics not highlighted in the survey.

2.6 Conclusion

This is the first study to comprehensively quantify and describe the current state of advanced practice within the global physiotherapy community. Findings from this study provide a clearer understanding of how the MOs of WP define advanced physiotherapy practice, the range of titles used in different countries, and differences in scope and fields of advanced physiotherapy practice. In addition, a number of identified barriers and facilitators to advanced practice development gave insight into the challenges of a global implementation of the role and provided important background for the development of the advanced practice physiotherapy policy document by WP. Finally, an important future direction for developing advanced practice and enabling wider adoption of the role is the development of standard competencies and training throughout World Physiotherapy MOs.

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2.9 Appendix

Appendix 2.1 Ethics

Notification of Approval

Date:	October 25, 2017
Study ID:	Pro00073988
Principal Investigator:	Andrews Tawiah
Study Supervisor:	Linda Woodhouse
Study Title:	Developing a Framework for Advanced Physiotherapy Practice
Approval Expiry Date:	Wednesday, October 24, 2018
Approved Consent Form:	Approval DateApproved Document 10/25/2017 Privacy and Consent statement

Thank you for submitting the above study to the Research Ethics Board 2. Your application has been reviewed and approved on behalf of the committee.

A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the Research Ethics Board does not encompass authorization to access the staff, students, facilities or resources of local institutions for the purposes of the research.

Sincerely,

Stanley Varnhagen, PhD
Chair, Research Ethics Board 2

Note: This correspondence includes an electronic signature (validation and approval via an online system).

Appendix 2.2 Survey questionnaire

Advanced Physiotherapy Practice: A Global Survey
1. WCPT advanced practice survey
<p>Dear colleague,</p> <p>Thank you for taking the time to complete this survey which is being sent to all WCPT member organisations.</p> <p>The purpose is to create a map of where the profession is in terms of advanced practice and to understand the facilitators and barriers to its development. Overall, this information will serve to assist in the development of advanced physiotherapy/physical therapy practice globally.</p> <p>If you have any queries, or if you would like assistance completing the questionnaire, please do not hesitate to contact anyone of the researchers listed below:</p> <p>Andrews Tawiah - atawiah@ualberta.ca Héðinn Jónsson - hjonsson@wcpt.org Emma Stokes - estokes@tcd.ie</p> <p>By clicking the link below, you are providing us with your consent to participate in the survey.</p> <p>Your consent to participate may be withdrawn at any time by stopping the survey. This study is in receipt of ethical approval from the University of Alberta and Trinity College Dublin.</p>

2. Member organisation

* 1. Name of WCPT member organisation

3. Advanced practice definitions

For the purposes of this survey, the following definitions apply. We have drawn them from position statements and policy documents of a number of WCPT member organisations

Advanced practice is a combination of advanced skills, knowledge and attitudes which enable physiotherapists to address complex problems and manage risk; it is the use of advanced critical thinking to deliver care to patients with complex needs safely and competently (CSP, 2016).

Scope of practice is the full spectrum of roles, functions, responsibilities, activities and decision-making capacity that individuals within the profession are educated, competent and authorised to perform (APA, 2016)

* 2. In your country, are there formal or informal advanced physiotherapy practice roles?

Yes

No

4. Advanced practice in physiotherapy in your country

* 3. What titles are used to describe advanced practice roles? (Tick all that apply)

- Advanced physiotherapy practitioner
- Consultant physiotherapist
- Extended scope practitioner
- Other (please specify)

* 4. In what fields of physiotherapy practice is advanced physiotherapy practised? (Tick all that apply)

- Amputee rehabilitation
- Cardiorespiratory physical therapy
- Intellectual disability
- Mental health
- Neurology
- Inpatient Orthopaedics - musculoskeletal - rheumatology
- Outpatient Orthopaedics - musculoskeletal - rheumatology
- Occupational health and ergonomics
- Older people
- Oncology/palliative care
- Pain (includes pain management, pain research)
- Paediatrics
- Sports physical therapy
- Women's health
- Men's health
- Pelvic rehabilitation
- Other (please specify)

5. Advanced practice

* 5. Please tell us about the professional development and education required to become an advanced physiotherapy practitioner by considering the statements below?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
There is no defined education pathway	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a specific education pathway to become an advanced physiotherapy practitioner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Every advanced physiotherapy practitioner has to demonstrate a set of defined competencies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most advanced physiotherapy practitioners have a combination of clinical practice and a Master's/Doctoral degree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In your country, to be considered for an advanced physiotherapy practice role, clinicians must have postgraduate qualifications such as Master's degree or PhD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 6. What do you think have been the facilitators of advanced physiotherapy practice?

Facilitators = circumstances that assist the development to occur.

Please tick all that apply indicating the strength of the facilitator 1-5 where 1 is a minor facilitator and 5 is a major facilitator.

	1. Minor facilitator	2	3	4	5. Major facilitator
Views of medical professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Need to manage waiting lists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research evidence in support of the roles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advocacy by the professional organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support of employers in the health service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulation of the profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Views of patients/clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reimbursement models	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce cost in health care delivery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 7. What do you think are or have been the barriers of advanced physiotherapy practice?

Please tick all that apply, selecting if it is a current or past barrier, and indicate the strength of the barrier 1-5 where 1 is a minor barrier and 5 is a major barrier.

	Tick if a current barrier	Tick if a past barrier	1. Minor barrier	2	3	4	5. Major barrier
Views of medical professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Political support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Need to manage waiting lists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Research evidence in support of the roles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advocacy by the professional organisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Support of employers in the health service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Regulation of the profession	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Views of patients/clients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reimbursement models	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce cost in health care delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* 8. Have you or other institutions/organisations in your country developed and/or agreed upon competencies for advanced physiotherapy practitioners?

- Yes
- No

6.

* 9. Who has described these? Please provide details of the websites where documents can be found.

- Professional organisation
- Regulator
- Health service employer
- They have not been described
- Other (please specify)

7.

* 10. Please provide the information or where it may be found (e.g. web link)

* 11. Have you, as a professional organisation, developed a policy or guideline on advanced physiotherapy practice?

- No
- Yes, if possible please provide us with a link to the document

8.

* 12. Advanced physiotherapy practice is not available in your country but do you consider it a desirable development for the profession?

Not at all desirable	Not desirable	Neutral	Desirable	Very desirable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 13. What do you think are the facilitators of advanced physiotherapy practice?

Facilitators = circumstances that assist the development to occur.

Please tick all that apply indicating the strength of the facilitator 1-5 where 1 is a minor facilitator and 5 is a major facilitator.

	1. Minor facilitator	2	3	4	5. Major facilitator
Views of medical professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Need to manage waiting lists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research evidence in support of the roles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advocacy by the professional organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support of employers in the health service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulation of the profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Views of patients/clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reimbursement models	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce cost in health care delivery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 14. What do you think are the barriers of advanced physiotherapy practice?

Please tick all that apply indicating the strength of the barrier 1-5 where 1 is a minor barrier and 5 is a major barrier.

	1. Minor barrier	2	3	4	5. Major barrier
Views of medical professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Need to manage waiting lists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research evidence in support of the roles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advocacy by the professional organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support of employers in the health service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulation of the profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Views of patients/clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reimbursement models	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce cost in health care delivery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Thank you

Thank you for taking the time to complete this survey.

CHAPTER 3

DEVELOPING A COMPETENCY PROFILE FOR ADVANCED PRACTICE PHYSIOTHERAPY: A SCOPING REVIEW

3.1 Introduction

Musculoskeletal (MSK) conditions are the most prevalent conditions globally, affecting an estimated 1.17 billion people worldwide.¹ MSK conditions are the leading contributor of disability worldwide.¹ Due to population growth and an ageing population, the number of people living with MSK conditions and the disability associated with MSK conditions is expected to increase rapidly.¹ There is a need to develop innovative models of care targeted to address the concerns of the rising population of those living with MSK conditions.² One example of such innovative models of care is the introduction of advanced practice physiotherapists in primary care, rapid access clinics or secondary care interphase clinics to triage, manage and provide onward referrals for patients with MSK conditions.³⁻⁵

There is no universal agreement on the definition of advanced practice physiotherapy. However, there is a consensus that physiotherapists in advanced practice roles have additional training, often from outside the physiotherapy profession, and they provide an independent assessment of complex patients, often with multi-morbidities.⁶ In some jurisdictions, advanced practice physiotherapists can request and interpret diagnostic investigations, including imaging and laboratory investigations, and prescribe medications.⁷

The advanced practice physiotherapy role has been shown to improve patients' outcomes, improve the patient experience of care, improve process outcomes, and lead to reduced healthcare costs.⁸⁻¹² A review by Samsson et al.⁹ on the health and process outcomes of an advanced practice physiotherapist-led orthopedic triage found that the advanced practice physiotherapist-led model of care provided similar improvement in patient outcomes compared

to standard care. Fennelly et al.¹¹ and Robarts et al.¹⁰ reported positive patient experience and a higher patient satisfaction rate after consultation with advanced practice physiotherapists in a triage model. Advanced practice physiotherapy roles have been reported to decrease wait time for patients awaiting specialist care.^{13,14} Recent studies have also reported that advanced practice physiotherapy roles have resulted in 27% - 43% cost savings compared to standard care.^{3,12,15}

Although advanced practice physiotherapy has been demonstrated to positively impact health and healthcare delivery, there are challenges with the implementation and sustainability of this role. One significant challenge is the lack of a standardized and globally accepted set of competencies for the training and evaluation of advanced practice physiotherapists. Currently, there is fragmentation in the development and training of advanced practice physiotherapists, resulting in difficulty understanding the role within the physiotherapy profession and healthcare systems. The lack of standardization has also resulted in inconsistencies with the training of practitioners.

The need for an international competency profile for advanced practice physiotherapy has been highlighted in two recent publications by Tawiah et al.¹⁶ and Fennelly et al.¹⁷. Developing an international set of competencies will ensure transportability of recognized skills, acceptance of the advanced practice role by the broader physiotherapy profession and other stakeholders in healthcare delivery, ensuring the sustainability of the role. The current paper is part of a larger body of work to develop an international competency profile for advanced practice physiotherapy.

The first step in the process of developing the competencies was to identify what competencies already existed and to map out the differences and similarities within the competencies. This current paper is a scoping review to determine the available literature and

reports on the competencies of advanced practice physiotherapists. This scoping review intends to develop a first draft of competencies for advanced practice physiotherapists.

3.2 Methodology

A scoping review was chosen as the method of choice for reviewing the available papers and reports, given the relative paucity of published articles on this topic. The scoping review is more inclusive and allows for both published and grey literature.¹⁸ Unlike systematic reviews, scoping reviews do not evaluate the papers' quality but allow for a much broader scope on the topic.¹⁸ The Arksey and O'Malley framework for conducting the scoping review was the framework used for this review, and the PRISMA-scoping review methodology was the guide used to report and write up the review.^{18,19}

3.2.1 Search strategy

The principal researcher (AT) developed a comprehensive search strategy in consultation with a Librarian from the University of Alberta who has extensive experience conducting similar searches. The search strategy was subsequently reviewed by two of the investigators (LW and ES). Keywords used in the search strategy included: physiotherapy or physical therapy, extended scope practice, extended scope of practice and triage. A full description of the search strategy, including the use of Boolean operators, is described in Appendix 3.1. No other limiters were applied to capture all papers related to advanced practice physiotherapy competencies.

Two searches were conducted for this review. The initial search was completed in September 2017 and repeated in April 2020. Four online databases were searched, including CINAHL plus, MEDLINE Ovid, PubMed, and Scopus. Reference lists from major reviews were also screened to ensure that those papers were included in the scoping review. A systematic search for grey literature was conducted by searching the websites of professional physiotherapy

associations and government agencies. Finally, the research team reached out to known persons who have been involved in the development of advanced practice physiotherapy roles for documentation (reports and executive summaries) on competencies that supported the development of those roles. The PRISMA diagram is presented in Figure 3.1.

3.2.2 Inclusion/exclusion criteria

For a paper/report to be included, it had to meet the following criteria:

1. The paper must cover advanced practice physiotherapy or synonymous titles, such as extended scope physiotherapy, extended scope of practice, advanced scope physiotherapy, advanced physiotherapy practice and physiotherapy-led triage.
2. The paper must describe the competency, scope, description, policy, or legislation related to advanced practice physiotherapy.
3. The paper must cover the evaluation of the competencies related to advanced practice physiotherapy.

Papers/reports were excluded if:

1. They only addressed advanced practice competencies of other professions and did not include physiotherapy/physiotherapists/physical therapists.
2. They covered other aspects of MSK physiotherapy not related to advanced practice (e.g., Manual Therapy).

3.2.3 Data Management

All data from the search were screened using the Covidence software package (Covidence is the primary screening and data extraction tool designed by Cochrane for authors conducting systematic reviews), and data extraction was performed using Microsoft Word 2016.

One author (AT) imported all data from the four databases directly into Covidence. Duplicates were removed using Covidence as the papers were imported. The same author (AT) double-checked all records to ensure that the deletion of duplicates was done correctly. Two investigators (AT and LW) screened all titles and abstracts, following which there was a joint discussion to reach a consensus on all titles and abstracts that conflicted. AT conducted Full-text screening and data extraction. LW and MW reviewed all included papers.

3.2.4 Data Analysis

Data generated from the scoping review were analyzed using a narrative synthesis approach.²⁰ The narrative synthesis approach allows for synthesizing findings from multiple studies through words and text to tell a story.²⁰ The four stages of the narrative synthesis comprised: (1) developing or selecting a theoretical framework for the synthesis; (2) developing preliminary synthesis of the findings of the included studies; (3) exploring the relationships among the data; (4) assessing the robustness of the synthesis.

Stage 1: Developing or selecting a theoretical framework

For this narrative synthesis, we selected the National Physiotherapy Advisory Group (NPAG) essential competency profile as a framework for presenting the competencies.²¹ The NPAG essential competency profile for entry-to-practice physiotherapy is a set of competencies and milestones for assessing the training and competencies of entry-to-practice physiotherapists in Canada. This profile was established based on input from individuals representing the regulatory, association, education, and clinical sector. This framework also contributed to the interpretation of the findings of the review.

Stage 2: Developing preliminary synthesis of the findings of the included studies

The preliminary synthesis was developed using tabulation of the data retrieved as part of the scoping review. A data tabulation form was developed in Microsoft Word 2016 to help tabulate all documents under review. Specific headings were used to represent the exact data extracted and charted. The titles, authors, country, and year of publication were extracted. The type of paper or report was tabulated because most of the documents were from the grey literature, and it was important to ascertain the type of document. Finally, a summary of the advanced practice competencies was extracted from each paper and reported. Summaries of competencies are presented in bullet points for ease of reading. For clarity, the tabulated results from the preliminary analysis stage are presented in table 3.1.

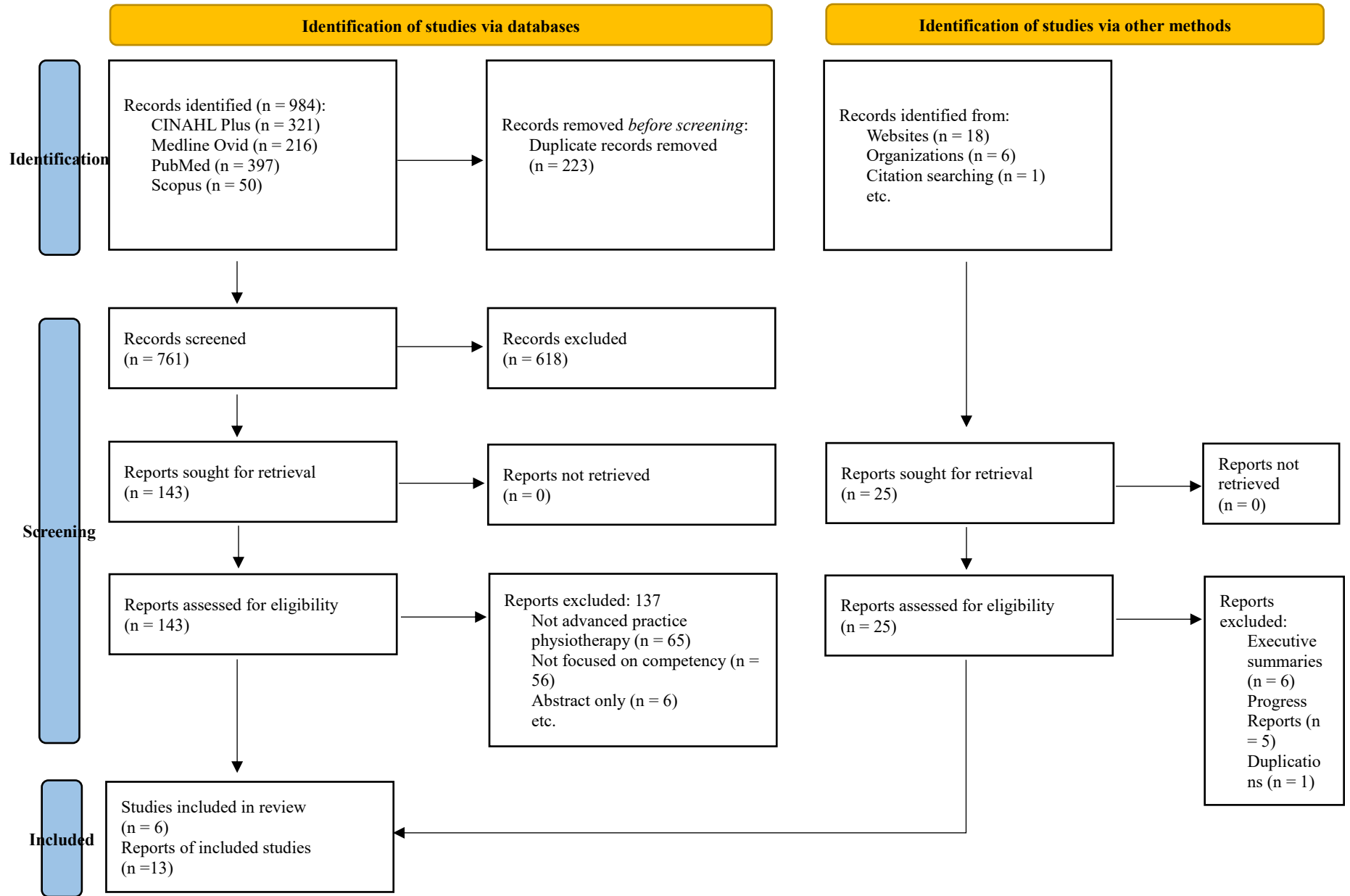
Stage 3: Exploring the relationships among the data

To explore the relationships in the data, the similarities and differences between the competencies for advanced practice physiotherapy were identified and themed according to the domains of the NPAG essential competency profile. A full description of stage 3 is presented in section 3.4.1.

Stage 4: Assessing the robustness of the synthesis

To assess the robustness of the synthesis, subject matter experts in advanced practice physiotherapy were asked to review the findings from this scoping review and the new competencies generated. A full description of the findings from the expert review is presented in section 3.4.1. Six SMEs were contacted from the UK, Ireland, Canada, Australia and New Zealand. The SMEs were consultant physiotherapists, leaders in national and international physiotherapy associations and researchers in advanced practice physiotherapy. They were selected because of their extensive experience as advanced practice physiotherapists, experience in researching or developing advanced practice models of care.

Figure 3.1 PRISMA diagram of included studies and reports²²



3.3 Results

A total of 984 published papers were identified from four databases (CINAHL plus, Medline-Ovid, PubMed, and Scopus), and 25 unpublished reports were identified through other secondary search methods (websites of government agencies and professional associations, reference screening and contacting known individuals). After removing duplicates, title, and abstract screening, 143 papers and all 25 reports were retrieved. During the full-text screening, 137 papers and 12 reports were excluded for reasons including papers not focusing on advanced practice physiotherapy or not focusing on the competencies of advanced practice physiotherapists. In addition, reports were excluded if it was an executive summary or a progress report. A full description of the study selection process is presented in Figure 3.1.

Nineteen papers and reports (6 research papers and 13 reports) were included in the final scoping review.^{6,23-40} Six documents (4 reports^{6,32,34,36}, 1 research paper³⁵ and 1 doctoral thesis³³) were from England. One policy report each was from Northern Ireland, Scotland, and Wales.^{28,29,31} Five documents (3 research papers^{37,39,40} and 2 reports^{26,27}) were from Australia and one report from New Zealand²⁴. Three documents (2 reports^{23,25} and 1 research paper³⁸) were from Canada. A full list of all included papers and reports is presented in Table 3.1.

Of the 13 reports, 11 were policy statements from government organizations, healthcare institutions and professional physiotherapy associations on the competencies of advanced practice physiotherapists.^{6,23-29,31,32,34} One position statement from the European region of World Physiotherapy on advanced practice physiotherapy education and development framework and a doctoral thesis on the core clinical competencies of extended scope physiotherapists were included.^{30,33}

Two out of the 6 published research papers focused on developing, implementing, and evaluating advanced practice physiotherapy roles.^{36,37} Two other research papers concentrated on developing competencies for advanced practice physiotherapists using Delphi studies and stakeholder perspectives.^{35,39} The final two research papers were a short report and debate article on the expected competencies for an advanced practice physiotherapy role.^{36,40} Most of the papers and reports focused on advanced physiotherapy in musculoskeletal practice, with only one research paper on incontinence and pelvic health.³⁷

Two reports were produced by the Chartered Society of Physiotherapy (CSP)^{6,32} and Victoria Health, Australia.^{26,37} The remaining reports were from the Ontario Ministry of Health (Canada), Department of Health (North Ireland), Australian Physiotherapy Association (APA), University of Montreal (Canada), Physiotherapy Board of New Zealand, and the National Health Service (NHS) of England, Wales, and Scotland. (Table 3.1)

Table 3.1 Summary of papers included in the scoping review

No.	Title	Authors	Country (Year)	Type of study	Summary of Competencies
1	Development, implementation, and evaluation of a bespoke, advanced musculoskeletal training program within a clinical assessment and treatment service ³⁶	Kay Stevenson, Greg Bicker, Stephanie Cliffe, John Kemp, Ajit Menon, Emma Hall, Sarah Ryan	United Kingdom (2019)	Short report	<p>Key Competencies:</p> <ul style="list-style-type: none"> • Understanding the processes of treatment pathways, including triage and awareness • Key components of a successful subjective and objective examination diagnoses and evidence-based management • Communication skills (verbal, nonverbal and written) • Managing patient expectations • Interpreting investigations, e.g., blood tests • Awareness of inflammatory and non-inflammatory pathologies • Awareness of red and yellow flag principles • Current medication used to manage MSK pain • Awareness of comorbidities • Awareness of current best evidence • Development of Injection therapy skills
2	Multi-professional framework for advanced clinical practice in England ³⁴	National Health Service (NHS) – England	London, United Kingdom (2017)	Policy document	<p>Domain: Clinical Practice</p> <ul style="list-style-type: none"> • Working with the scope of practice • Using a sound clinical decision-making process • Effecting communication with family and carers <p>Domain: Initiate, evaluate and modify a range of interventions</p> <ul style="list-style-type: none"> • Using professional judgement • Working collaboratively • Clinical role model <p>Domain: Leadership and Management</p>

-
- Developing effective relationships
 - Evaluating practice and leading new practice
 - Peer review
 - Team leadership
 - Works within individual scope of practice and within legal and ethical policies.

Domain: Education

- Self-directed learner
- Critical reflection
- Organizational learning
- Role model, educator, supervisor

Domain: Research

- Engage in Research Activity
- Evaluate and audit own and others practice
- Critically appraise and synthesis outcomes of relevant research
- Knowledge translation and dissemination
- Collaboration between clinical practice and research

3	Advanced practice in physiotherapy ⁶	Chartered Society of Physiotherapy	London, United Kingdom (2016)	Policy document	<p>Physiotherapy Knowledge</p> <ul style="list-style-type: none"> ● Knowledge and understanding of physiotherapy that is relevant to the area of practice and that underpins the individual scope of practice ● Knowledge and understanding of the political, social, economic, and institutional factors shaping the health and well-being economy and how they inform the design/delivery of physiotherapy. ● Self-Awareness
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Physiotherapy Practice skills

- Profession-specific practice skills relate to physiotherapy's scope of practice & primary aim of maximizing individuals' movement potential
- Practical and technical skills are shared with other workers in health, social care, and education, e.g. First Aid, Manual handling

Interacting

- Communicating
- Helping others learn and develop

Promoting integration and teamwork

- Integration and teamwork
- Putting the person at the center of practice
- Respecting and Promoting diversity

Problem-solving and decision making

- Ensuring quality
- Improving and developing services
- Lifelong learning
- Practice decision making
- Researching and evaluating practice
- Using evidence to lead practice

4 Physiotherapy Framework: putting physiotherapy behaviours, values, knowledge, and skills into practice ³²

Chartered Society of Physiotherapy

London, United Kingdom (2013)

Policy document

Key competencies:**Knowledge and understanding of physiotherapy**

- Practicing within a complex and unpredictable context with in-depth clinical reasoning
- Awareness of current problems using research and advanced scholarship

Political Awareness

- Awareness of political, social, economic, and institutional factors affecting health
- Implementing and developing policies

Self-awareness

- Strong self-awareness by using critical reflection and feedback from others

Physiotherapy practice skills

- Technical mastery of complex clinical skills
- Modify technique in action

Communicating

- Use advanced and specialized communication skills
- Use a range of ICT support

Helping others learn and develop

- Train others
- Select appropriate learning, teaching and assessment

Managing self and others

- Autonomy and initiative
- Managerial responsibilities and modify personal behaviour

Promoting integration and Teamwork

-
- Foster collaboration, work effectively with others and critically reflect on the experience

Putting the person at the center of practice

- Respect for an individual by acknowledging unique differences, preferences, and autonomy
- Support and empower individuals

Respecting and promoting diversity

- Respect and value diversity
- Identify and articulate their own values
- Identify and challenge discriminatory practices

Ensuring quality

- Demonstrate effectiveness, efficiency, and quality of service

Improving and developing services

- Develop safe, effective, and efficient recommendations for improving quality
- Contribute to change development

Lifelong learning

- Advanced personal knowledge, understanding and skills
- Record outcomes of personal learning

Practice decision making

- Process and critically analyses information to make informed decisions

					<p>Research and evaluating practice</p> <ul style="list-style-type: none"> ● Design, plan, conduct and manage evaluation and research projects. ● Applying standard and specialized research methods <p>Using evidence to lead practice</p> <ul style="list-style-type: none"> ● Critically evaluate current research, scholarship and use the appraisal to address issues
5	Core clinical competencies for Extended-scope physiotherapists working in Musculoskeletal (MSK) interface clinics Based in primary care: a Delphi consensus study ³³	Janet Suckley	Salford, United Kingdom (2012)	Doctorate Thesis	<ul style="list-style-type: none"> ● History-taking skills (12 competencies) ● Use history taking skills to identify conditions or diagnoses (8) ● Physical examination skills (2 competencies) ● Use of physical examination to identify conditions or diagnoses (7 competencies) ● Teaching of history-taking and physical examination skills (12 competencies) ● Underpinning knowledge (23 competencies)
6	A Delphi study of the role parameters and requirements of extended scope practice in hand therapy ³⁵	Bridget Ellis, Paula Kersten, Andrews Sibley	United Kingdom (2005)	Research article	<p>Essential competencies (top 10):</p> <ul style="list-style-type: none"> ● Minimum 3 years' experience in the relevant clinical area ● Work Autonomously ● Recognize weakness in clinical knowledge ● 'In-house' formal training or clinical programs ● Lead and initiate practice development ● Teach others ● Completion of advanced accredited assessment, diagnostic and treatment course ● Assessment of clinical practice ● Evidence of skills provided in a portfolio

					<ul style="list-style-type: none"> • 'In-house' informal training
7	Advanced Allied Health Professionals Practice Framework ³¹	Department of Health	Northern Ireland (2019)	Policy document	<ul style="list-style-type: none"> • Core competency 1: Direct clinical practice • Core competency 2: Leadership and management • Core competency 3: Research and development • Core competency 4: Education
8	Advanced Practice Physiotherapy in the European Region of the WCPT - Position Statement ³⁰	European Region of World Physiotherapy	Dublin, Ireland (2018)	Position statement	<p>Level 7 of the European Qualifications Framework (EQF)</p> <ul style="list-style-type: none"> • Knowledge: Highly specialized knowledge in the field of work or study. • Skills: Specialized problem-solving skills required in research and/or innovation • Competence: Manage and transform or study contexts that are complex, unpredictable and require new strategic approaches
9	Allied Health Practitioners Advanced Practice Education and Development Framework (Musculoskeletal) ²⁹	NHS – Education for Scotland	Scotland (2012)	Policy document	<p>Clinical Practice</p> <ul style="list-style-type: none"> • Communicate effectively to a high level • Collect information • Interpret information and come to appropriate <p>Clinical decisions</p> <ul style="list-style-type: none"> • Take appropriate action • Promote health and well-being • Operate within the scope of practice <p>Facilitating Learning</p> <ul style="list-style-type: none"> • Learning environment • Facilitation of learning • Quality Assurance • Service Improvement

					<p>Leadership</p> <ul style="list-style-type: none"> ● To self ● To organization <p>Research</p> <ul style="list-style-type: none"> ● Research, service evaluation and audit <p>Integrated Capabilities</p> <ul style="list-style-type: none"> ● Facilitate evidence-based practice ● Acting as an advisor ● Managing Information
10	Framework for advanced nursing, midwifery, and allied health professional practice in Wales ²⁸	NHS Wales	Wales (2010)	Policy document	<p>Advanced Practice Pillars</p> <ul style="list-style-type: none"> ● Management and Leadership ● Education (either with clinical practice or education sector) ● Research ● Advanced clinical practice <p>Underpinning principles</p> <ul style="list-style-type: none"> ● Autonomous practice ● Critical thinking ● High levels of decision-making problem-solving ● Value-based care ● Improving practice
11	APA National Advanced Musculoskeletal Physiotherapy Competency Framework:	Australian Physiotherapy Association	Australia (2019)	Policy document	<p>Professional behaviours</p> <ul style="list-style-type: none"> ● Operates within the scope of practice ● Displays accountability <p>Lifelong Learning</p> <ul style="list-style-type: none"> ● Demonstrates a commitment to lifelong learning

Communication

- Communicate with colleagues in the context of advanced practice physiotherapy
- Communicates with patients and careers in the context of advanced practice physiotherapy

Provision and coordination of care

- Evaluate referrals
- Construct and perform assessments in the context of advanced practice physiotherapy.
- Apply the use of radiological investigations in the context of advanced practice physiotherapy.
- Apply the use of therapeutic medicine in the context of advanced practice physiotherapy
- Apply the use of therapeutic medicine in the context of advanced practice physiotherapy
- Apply advanced clinical decision-making to formulate a differential diagnosis
- Formulate and implement management plans in the context of advanced practice physiotherapy
- Evaluate and appraise a patient complex comorbidity
- Evaluate and appraise in the context pediatric patient
- Monitor and escalate care

12 Development, implementation, and evaluation of an advanced practice in continence and women's health physiotherapy model of care ³⁷

Robyn Brennen, Margaret Sherburn and Anna Rosamilia

Australia (2019)

Research article

Five competencies

- Urinalysis testing and analysis
- PVR volume measurement
- Pelvic organs prolapse quantification (POP-Q) measurement
- Indications for referral for urodynamic
- Bimanual pelvic examination

13	Stakeholder perspectives of the Extended Scope Physiotherapy Practitioner (ESPP) role in Australia – a qualitative study ³⁹	Louise Wiles, Steve Milanese	Australia (2016)	Research article	<p>Core knowledge and skills</p> <ul style="list-style-type: none"> ● Pharmacology ● Prescribing (medications) ● Radiology (medical imaging) ● Clinical leadership ● Evidence-based practice ● Research
14	Advanced Musculoskeletal Physiotherapy (AMP) Clinical Education Framework ²⁶	Paula Harding, Annie Pearce, Jonathan Prescott	Australia, Victoria (2014)	Policy document	<p>Professional Behaviors</p> <ul style="list-style-type: none"> ● Operate within the scope of practice ● Display accountability <p>Lifelong learning</p> <ul style="list-style-type: none"> ● Demonstrate a commitment to lifelong learning <p>Communication</p> <ul style="list-style-type: none"> ● Communication with colleagues <p>Provision and coordination of care</p> <ul style="list-style-type: none"> ● Evaluate referrals ● Perform health assessment/examination ● Apply the use of radiological investigations in AMP services ● Apply the use of pathology/laboratory tests in AMP services (under direction and supervision of a consultant) ● Apply the use of therapeutic medicines in AMP services (under direction and maintenance of a consultant)

					<ul style="list-style-type: none"> ● Apply advanced clinical decision making ● Formulate and implement a management/intervention plan ● Monitor and escalate care ● Obtain patient consent ● Document patient information <p>Specific to practice context</p> <ul style="list-style-type: none"> ● Related to the area of practice (MSK, Emergency Department, Pediatrics, and Incontinence)
15	Physiotherapist in Emergency departments: responsibilities, accountability, and education ⁴⁰	Jacqueline Crane, Clare Delany	Australia (2013)	Debate article	<p>Care Coordination</p> <ul style="list-style-type: none"> ● Assessment ● Diagnosis ● Clinical reasoning skills ● Patient referral <p>Soft tissue Injury specialization</p> <ul style="list-style-type: none"> ● Requesting and interpreting radiology ● Applying plaster ● Managing minor wounds and fractures ● Assessing analgesia needs ● Onwards referrals
16	The proposed Advanced practice physiotherapist roles and key competencies and revised competencies for	Physiotherapy Board of New Zealand	New Zealand (2020)	Policy document	<p>Role and Key competencies</p> <p>1. Physiotherapy practitioner</p> <ul style="list-style-type: none"> ● Demonstrate advanced clinical reasoning in assessing and managing patients. ● Plans and implement a person, and whānau - centred care applying in-depth and evidence-informed knowledge and skills

2. Professional and ethical practitioner

- Contributes to reviews of legal, professional, and ethical standards
- Role model and foster ethical competence

3. Communicator

- Culturally responsive communication skills
- Documentation of advanced clinical reasoning

4. Reflective practitioner and self-directed learner

- Critical reflection on performance
- Apply quality improvement process to improve health systems.

5. Collaborative practitioner

- Role modelling positive relationships
- Effective intra-professional and inter-professional practice

6. Educator

- Foster a culture of learning and educate students, clients, the public and other healthcare professionals.

7. Manager/Leader

- Leadership in professional practice and facilitating change in service delivery
- Contribute to improvement in health promotion and health care teams.

17	Competency Profile DEP.A physiotherapy in NMS ²³	University of Montreal	Montreal, Canada (2019)	Policy document	<p>Broad Domains</p> <ul style="list-style-type: none"> ● Expertise in advanced neuro-musculoskeletal physiotherapy ● Communication ● Collaboration ● Management ● Leadership ● Education ● Professionalism
18	Advanced Practice Provider Competency Workbook: Rapid Access Clinic Hip & Knee Arthritis Part 1: Learning Plan ²⁵	Susan Robarts	Ontario, Canada (2018)	Policy document	<p>Broad domains on competencies</p> <p>Professional Behaviors</p> <ul style="list-style-type: none"> ● Operate within the scope of practice ● Display accountability <p>Lifelong learning</p> <ul style="list-style-type: none"> ● Demonstrate a commitment to lifelong learning <p>Communication</p> <ul style="list-style-type: none"> ● Communication with colleagues <p>Provision and coordination of care</p> <ul style="list-style-type: none"> ● Evaluate referrals ● Perform health assessment/examination ● Apply the use of diagnostic investigations through delegation mechanisms as required ● Apply the use of pathology/laboratory tests through delegation mechanisms as required or under the direction of a surgeon ● Apply the use of therapeutic medicines ● Apply advanced clinical decision making

					<ul style="list-style-type: none"> ● Formulate and implement a management/intervention plan ● Monitor and escalate care ● Obtain patient consent ● Document patient information
					<p>Specific to practice context</p> <ul style="list-style-type: none"> ● Perform an appropriate musculoskeletal assessment and implement a management plan for patients presenting with OA of the knee\
19	Development and early evaluation of an inter-professional post-licensure education program for extended practice roles in arthritis care 38	Katie Lundon, Rachel Shupak, Rayfel Schneider, Jodi Herold McIlroy	Ontario, Canada (2011)	Research article	<p>Arthritis care</p> <ul style="list-style-type: none"> ● Data gathering ● Technical and procedural skills ● Diagnosis ● Treatment and management ● Collaborative skills ● Self-reflection ● Self-assessment <p>Clinical tasks and procedures</p> <ul style="list-style-type: none"> ● History taking and physical exam ● Interpreting clinical, laboratory and radiographic data ● Initiating treatment and management ● Follow-up and monitoring treatment ● Monitoring of medications and complications ● Delivering patient education

3.4 Discussion

This scoping review identified key advanced practice physiotherapy competencies from five countries with established advanced practice roles. As expected, many of the competency profiles for advanced practice physiotherapy were unpublished and in the grey literature. However, the central themes identified from analysis of the research papers and reports centred on advanced clinical skills, research, scholarship, professional development, organizational leadership, and education. These themes are similar to the core pillars of advanced practice physiotherapy developed in the United Kingdom (clinical, scholarship, service development and professional leadership).⁶

Findings from this review suggest that advanced practice physiotherapists need to demonstrate a higher level of clinical competencies than entry-level physiotherapy clinical competencies. However, there was no consensus on these clinical competencies (i.e., advanced or expert level). Most of the patients that advanced practice physiotherapists review have complex conditions, often with comorbidities autonomously. The clinicians use advanced clinical reasoning and shared decision-making to assess and manage patients with complex issues. In some jurisdictions, advanced practice physiotherapists have a broad scope of practice, including ordering and interpreting diagnostic imaging and laboratory investigations and prescribing.

Another common finding from this scoping review is the effective use of good communication by the advanced practice physiotherapist. Advanced practice physiotherapists require excellent communication skills to communicate with patients, clinicians, and other stakeholders.

The research papers and reports reviewed identified scholarship as another essential competency of an advanced practice physiotherapist. The ability for advanced practice

physiotherapists to be involved in research and quality improvement projects to evaluate and ensure the quality of their service delivery was highlighted by several studies. Research skills also ensure that advanced practice physiotherapists offer evidence-based practice and lead initiatives for practice-based evidence.

Leadership skills were identified as an essential competency during this review. Leadership skills identified centred on the need to demonstrate clinical mentorship and development and to be able to work effectively as a member of a team. Effective leadership also ensures collaboration with other clinicians and stakeholders. Papers selected for this review also highlighted that advanced practice physiotherapists need to demonstrate lifelong learning competencies and interprofessional collaborative learning. Due to the fluid nature of the clinical practice, practitioners are expected to develop an attitude for constant learning and improving on their skills.

3.4.1 Process of developing the first draft of competencies

Consistent similarities and differences between the competencies identified for advanced practice physiotherapists across countries with varying health care systems were observed. The main similarity in advanced practice physiotherapist competencies among the countries was a higher level of clinical skills either at the advanced or expert level. Additional similarities included: excellent communication skills, leadership skills and competencies in program development, research, and evaluation, and developing skills and competencies in mentorship and teaching others.

As reported by the research papers and reports, the main differences between the competencies were the scope of practice based on jurisdiction and area of specialization. In the United Kingdom, the advanced practice physiotherapist has a wide scope of practice, including

ordering diagnostic imaging, ordering laboratory investigation, performing therapeutic injections, and prescribing medication. This is different from the scope of practice for advanced practice physiotherapists in Canada, with variations within Canada depending on the province where they practice. For example, in Ontario, advanced practice clinicians may only order medical imaging and laboratory investigations under medical direction, while in other provinces, such as Alberta, ordering imaging is within a physiotherapist's scope of practice.

The area of advanced practice specialization highlighted other differences. For example, advanced practice physiotherapists working in accident and emergency departments and primary care settings require additional competencies in clinical knowledge related to their area of practice compared to advanced physiotherapy practitioners specializing in the triage of patients for joint arthroplasty or rheumatology.

The key similarities and differences between the competencies for advanced practice physiotherapists identified in the 19 documents were themed based on the seven domains from the National Physiotherapy Advisory Group (NPAG) essential competency profile²¹. All similar competencies related to the practitioner's clinical skills were grouped under the “Clinical Expert Practitioner” domain. Similar competencies related to communication skills were grouped under the “Communicator” domain. Additionally, similar competencies that related to collaboration skills, leadership skills and advocacy skills were grouped under the “Collaborator”, “Leader,” and “Health Advocate” domains. Finally, all similar competencies related to the research and program evaluation skills and similar competencies related to professionalism were grouped under the “Scholar” and “Professional” domains.

To address the differences in competencies for advanced practice physiotherapists identified from the 19 documents reviewed, provisions were made within the first draft of

competencies to reflect that practitioners can only demonstrate these competencies if it was within the scope of practice for their jurisdiction.

Additionally, six subject matter experts (SMEs) from the UK, Ireland, Australia, New Zealand and Canada reviewed the first draft of competencies. The SMEs were asked to respond to three questions as part of their review process: What additional competencies would you add to this list? What competencies would you exclude from the list provided? And What suggestions or comments would you provide to the research team to support the study going forward? The SMEs recommended changes to the competencies' wording, format, and content. The SMEs' feedback was integrated with the themed competencies on similarities and differences. (Table 3.2)

Table 3.2 First draft of proposed competencies for advanced practice physiotherapy

DOMAIN	COMPETENCIES
<p>1. Clinical Expert Practitioner</p> <p>Definition: Advanced Practice Physiotherapists employ expert physiotherapy knowledge, skills, and advanced clinical reasoning in providing high-quality and safe patient-centred care in high-risk clinical scenarios.</p>	<ol style="list-style-type: none"> 1. Demonstrate an expert level of physiotherapy knowledge, skills and understanding of physiotherapy practices. 2. Practice advanced roles within or outside their professional scope of practice as recognized within their jurisdiction. 3. Plans and performs an appropriate assessment, implements therapeutic procedures using expert-level clinical reasoning, planning and evaluation. 4. Demonstrate knowledge of institutional factors affecting health, including the political, social, and economic factors. 5. Apply the use of diagnostic investigations based on jurisdictional provisions (X-ray, MRI, Ultrasound scan, laboratory investigations). 6. Apply the appropriate use of therapeutic medications, including the use of therapeutic injections, prescribing and de-prescribing based on jurisdictional provisions. 7. Demonstrates accountability, self-reflection of practice and ability to provide appropriate and timely referrals.
<p>2. Communicator</p> <p>Definition: Advanced Practice Physiotherapists use effective communication to form relationships with patients and their families that facilitate the gathering and sharing essential information for effective health care.</p>	<ol style="list-style-type: none"> 8. Establish a professional therapeutic alliance with patients and their families through engagement and development of treatment plans that reflect their health care needs and goals. 9. Elicit and synthesize accurate and relevant information, incorporating the perspectives of patients and their families. 10. Document and share written and electronic information about the therapeutic encounter to optimize clinical decision-making, patient safety, confidentiality, and privacy.
<p>3. Collaborator</p> <p>Definition: Advanced Practice Physiotherapists work effectively</p>	<ol style="list-style-type: none"> 11. Actively contribute to the continuous improvement of healthcare quality and patient safety as an individual and as a team member providing care.

with other health care professionals to provide safe, high-quality, patient-centred care by identifying their roles within the healthcare team and seeking appropriate support when needed.

12. Work effectively with other colleagues in the health care professions to promote understanding, manage differences and resolve conflicts.

13. Provide appropriate and timely referrals of patients to another health care professional

4. Leader

Definition: Advanced practice physiotherapists engage with others to contribute to a vision of a high-quality health care system and take responsibility for delivering excellent patient care through their activities as clinicians, administrators, scholars, or teachers.

14. Contribute to the improvement of health care delivery in teams, organizations, and systems

15. Engage in the stewardship of health care resources

16. Provides clinical mentorship and training of trainees within their field of practice

17. Demonstrate leadership in professional practice, including respecting and promoting diversity.

5. Health Advocate

Definition: Advanced practice physiotherapists contribute their expertise and influence to work with communities or patient populations to improve health. They work with those they serve to determine and understand needs, speak on behalf of others when required, and support the mobilization of resources to effect change.

18. Respond to an individual patient's health needs by advocating with the patient within and beyond the clinical environment

19. Respond to the needs of the communities or populations they serve by advocating with them for system-level change in a socially accountable manner

6. Scholar

Definition: As Scholars, Advanced Practice Physiotherapists demonstrate a lifelong commitment to excellence in practice through continuous learning and by teaching others, evaluating evidence, and contributing to scholarship.

20. Engage in the continuous enhancement of their professional activities through ongoing learning

21. Teach students, colleagues, the public, and other health care professionals

22. Integrate best available evidence into practice

23. Contribute to the creation and dissemination of knowledge and practices applicable to health

7. Professional

24. Demonstrate a commitment to patients by applying best practices and adhering to high ethical

<p>Definition: Advanced Practice Physiotherapists are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, regulation, and maintenance of personal health.</p>	<p>standards</p> <p>25. Demonstrate a commitment to society by recognizing and responding to societal expectations in health care</p> <p>26. Demonstrate a commitment to the profession by adhering to standards and complying with legal and regulatory requirements.</p> <p>27. Demonstrate a commitment to the practitioner's health and well-being to foster optimal patient care</p>
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3.5 Strengths and Limitations

One of the major strengths of this review is that it captured many of the competencies for advanced practice physiotherapy not published (grey literature). In addition to reviewing websites, the authors contacted known persons and organizations actively involved in developing advanced practice physiotherapy for resources related to the competencies used in the process and copies of reports generated. This provided 13 different competency documents that would not have been retrieved through database searches. Although we searched 4 online databases and reference lists, in addition to the grey literature, there is a possibility that not all competencies for advanced practice physiotherapy were retrieved for this review. Some of the documents on government websites were irretrievable. Additionally, the document retrieved were mainly from developed countries with no documents from developing countries. Obtaining documents from developing countries would have provided a broader perspective on the competencies of advanced practice physiotherapists.

3.6 Conclusion

This review has provided a draft of competencies capturing the key similarities and differences in competencies from different countries and organizations. The new set of 27

competencies is grouped under 7 domains (expert clinical practitioner, communicator, collaborator, health advocate, leader, scholar and professional). This is the first cross-jurisdictional set of competencies developed for advanced practice physiotherapy based on an extensive review of published and unpublished literature.

Roles for advanced practice physiotherapy have grown from the bottom up as organizations respond to the need to address escalating costs and limited access to health care. Based on the success of the model and the quality of care of these new roles, health care systems have started to mandate the expansion of these roles using a top-down systems approach. Unfortunately, the physiotherapy profession has lagged in defining what advanced practice physiotherapy is (and is not), identifying the core competencies these practitioners require, and adopting a standardized approach to training and evaluating (i.e., milestones required) these practitioners.

Identifying and describing competencies of advanced practice physiotherapists is the first step in a much-needed process to develop and implement international standardization of the role of advanced practice physiotherapy. Now that the competencies have been identified, described, and reviewed across key countries that have implemented these roles (Canada, Australia, New Zealand, United Kingdom, and Ireland), the next step will be to establish international acceptance of the competencies, identify the milestones linked to each competency and standardize the process for training of advanced practice physiotherapists. This will help to clarify, for the profession and the public, the important role that advanced practice physiotherapists play within healthcare systems and enable the transfer of their skills and competencies across countries and jurisdictions.

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3.8 Appendix

Appendix 3.1 Search Strategy

Search 1. ("physical therap*" or "physiotherap*").mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]

Search 2. ("extended scope practice" or "extended scope of practice").mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]

Search 3. "advance* practice".mp.

Search 4. "triage".mp. or exp Triage/

Search 5. ("advance* physiotherap* practice" or "advance* practice physiotherap*").mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]

Search 6. Combine searches 2 or 3 or 4

Search 7. Combine searches 1 and 6

Search 8. Combine searches 5 or 7

CHAPTER 4

DEVELOPING A COMPETENCY PROFILE FOR ADVANCED PRACTICE PHYSIOTHERAPY: FINDINGS FROM FOCUS GROUPS

4.1 Introduction

The rising population of patients with musculoskeletal (MSK) conditions and the need to improve care, improve access and reduce the cost of care delivery has led to the development of new models of care.^{1,2} An example of such a model of care is an interprofessional model that uses advanced practice physiotherapists in collaboration with other healthcare providers, in triage roles, emergency department or in primary care.³⁻⁵ Advanced practice physiotherapists manage complex cases with multimorbidity. These practitioners use advanced clinical reasoning to assess and manage patients. In some jurisdictions, advanced practice physiotherapists can request and interpret diagnostic imaging, laboratory investigations and therapeutic injections, including prescribing medication.^{3,6,7}

There is evidence that the advanced practice physiotherapy role supports health care delivery, including addressing wait times, improving patients' care experience, and reducing the cost of healthcare delivery.⁸⁻¹² Advanced practice physiotherapists have been reported to have equal diagnostic accuracy compared to medical colleagues when assessing patients with MSK conditions.^{11,12} Additionally, advanced practice physiotherapists in surgical triage roles have been reported to have higher surgical conversion rates and lower re-referral rates for patients referred for arthroplasty.¹¹ The added value of an advanced practice physiotherapy model of care has led to a surge in the advanced practice physiotherapy role across several countries.

Although the advanced practice physiotherapy role is expanding in many countries, there are concerns within the physiotherapy profession and the healthcare system about a lack of consistency with the development, competencies, and training of practitioners. Currently, there

are no internationally accepted competencies for advanced practice physiotherapy. The lack of an internationally accepted set of competencies has resulted in inconsistencies in the training of practitioners and difficulty in transferring skills and practitioners between countries and or institutions. There is the need for an internationally accepted set of competencies to ensure consistency and standardization of the training of advanced practice physiotherapists. Recent studies on advanced practice physiotherapy have highlighted this need for international standardization of competencies.^{13,14} World Physiotherapy in a policy statement on advanced practice roles suggested the need for consistency in the development of the role.¹⁵

The present study is part of a larger body of work aimed at developing an international competency profile for advanced practice physiotherapy. The first step in developing the competency profile was conducting a scoping review of the available literature (published and grey) on the competencies of advanced practice physiotherapists. Six research papers and 13 reports were included in the final review. The findings from the scoping review were subjected to further review by six subject matter experts (SMEs) and led to the development of a first draft of competencies. Findings from the scoping review are presented in Chapter 3.

This current study is a qualitative study using a series of four focus groups aimed at seeking the opinion of advanced practice physiotherapists, researchers, and administrators of advanced practice physiotherapists on the first draft of competencies. Additionally, the focus groups are intended to generate feedback on the competencies and provide suggestions or revisions of the first draft competencies. The findings from the focus groups are intended to develop a refined version (second draft) of competencies after further review by an international group of subject matter experts (SMEs).

4.2 Methods

A series of four focus groups were conducted online using the Zoom video conferencing platform. Ethical approval for this study was obtained from the Research Ethics Board at the University of Alberta (ID: Pro00099692). (Appendix 4.1) The international group of SMEs who provided an additional revision of the findings from this study were from Canada, Australia, New Zealand, Ireland and the United Kingdom. These experts were consultant physiotherapists, leaders in national and international physiotherapy associations and researchers in advanced practice physiotherapy.

4.2.1 Study Design

The qualitative descriptive methodology was used as the qualitative study approach for this study.¹⁶⁻¹⁸ According to Neergaard et al.¹⁶, the qualitative descriptive methodology is useful in gaining firsthand knowledge of patients', relatives', or professionals' experiences with a particular topic. In addition, this study did not aim to generate a new theory; hence, the qualitative descriptive method is justified.¹⁸ Four online focus groups were hosted on the Zoom video conferencing platform. The discussion guide for the focus groups was developed based on the 1st draft of competencies (Appendix 4.2). The Standards for Reporting Qualitative Research (SRQR) and the Consolidated criteria for reporting qualitative studies (COREQ) 32-item checklist were used to report and write-up findings from the focus groups.^{19,20}

4.2.2 Recruitment and Participants

Participants were recruited from the United Kingdom, Australia, New Zealand, Canada, and Ireland. These countries were selected because they have already established advanced practice physiotherapy roles. Both purposive and snowball sampling techniques were used to recruit participants. Only participants who were current or past advanced practice

physiotherapists or participants who conducted research or were involved in developing advanced practice physiotherapy roles were contacted for the study.

The researchers created a list of known advanced practice physiotherapists based on their contacts. Participants were then contacted individually through emails to confirm their interest and availability to participate in the study. Eighteen (18) participants agreed and confirmed their availability to participate, however, one participant dropped out before the focus groups due to personal reasons, and another did not show up. Sixteen (16) participants completed the focus groups. All the participants who agreed to participate in the focus group received an email package containing the informed consent form (Appendix 4.3), demographic questionnaire (Appendix 4.4), and a sample of the list of competencies (Appendix 4.5) to be discussed one week before the focus group.

4.2.3 Data Collection

All focus groups were video recorded, and automatic transcription was generated through Zoom video conferencing platform. The transcripts were audited for accuracy, and appropriate corrections were made. The principal researcher (AT) facilitated each of the focus groups. No other person was present except AT and the participants during the focus groups.

Focus group one had 4 participants, focus group two had 6 participants, focus group three had 4 participants and focus group four had 2 participants. A full description of the demographic characteristics of the participants is provided in table 4.2. The focus groups were conducted between August 5 – 14, 2020, with each focus group lasting about 1 hour. AT and LW developed the discussion guide based on the first draft of competencies. The discussion guide contained semi-structured questions and prompts. Because the focus groups were held on Zoom video conferencing platform, the list of each competency to discuss was presented using PowerPoint

slides throughout the focus groups. The PowerPoint slides ensured that all participants were on the same page during the discussion of the competencies. A full description of the discussion guide is presented in appendix 4.2.

After each focus group, the initial data analysis (exploration) and coding were conducted simultaneously. Data saturation was reached after analysis of the fourth focus group, with similar themes emerging to those of the previous three focus groups.²¹ No additional focus group was conducted at this point.

4.2.4 Data Analysis

All data from the focus groups (raw video footage, automated transcripts, and edited transcripts) were transferred and managed in NVivo 12, QRS International. Thematic analysis was conducted according to Braun and Clark.²² Participant quotation identifier was developed for each quote supporting a theme. Example [001-F1] represents participant 1 from focus group 1. The process of conducting the thematic analysis is presented in table 4.1. The coding map is presented in Appendix 4.6.

4.2.5 Reflexivity, data trustworthiness and respondent validation

The principal researcher (AT) was trained as an advanced practice physiotherapist in the United Kingdom and practiced closely with an orthopedic surgeon in Ghana. AT has previous experience facilitating focus groups and interviews with patients, clinicians, and other researchers. AT facilitated all focus groups and debriefed with the senior researcher (LW) after each focus group. AT reviewed and corrected auto transcripts in NVivo 12 QRS International, which were then reviewed again by LW and MW. AT generated the codes and developed the themes, and LW and MW reviewed the codes and themes for completeness and accuracy. The initial themes and supporting quotes were shared with all the participants for respondent

validation. Participants provided clarity on quotes and revisions where appropriate before the final themes were developed.

SMEs were also contacted to provide feedback on the competencies. Six SMEs were contacted from the UK, Ireland, Canada, Australia and New Zealand. The SMEs were consultant physiotherapists, leaders in national and international physiotherapy associations and researchers in advanced practice physiotherapy. They were selected because of their extensive experience as advanced practice physiotherapists, experience in researching or developing advanced practice models of care.

Table 4.1 Phases of thematic analysis²²

Phase	Description of Process
1 Familiarization with the data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2 Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3 Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4 Reviewing themes	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2)
5 Defining and naming themes	Ongoing analysis to refine the specifics of each theme and the overall story the analysis tells, generating clear definitions and names for each theme.
6 Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

4.3 Results

4.3.1 Demographics characteristics of participants

Sixteen (16) participants from five countries took part in four focus groups, with four participants each from Australia, Canada, and Ireland, and two from New Zealand and the UK (Table 4.2). Seventy-five 75% (12/16) percent of the participants were either currently working or previously worked as advanced practice physiotherapists. The other 25% (4/16) worked in leadership roles within national physiotherapy associations and university management. In addition, these participants were previously involved in the setting up advanced practice physiotherapy roles within their jurisdiction. Most of the participants, 81% (13/16), had over 15 years of professional experience, demonstrating the level of experience participants brought to the discussion. In addition to the experience, all the participants had postgraduate training at either the diploma, master's, or doctoral level.

Table 4.2 Participant's demographics (n=16)

ID	Focus group	Advanced practice physio	Country	Role	Job title	Years of practice	Sector	Level of education
001	F2	Yes	New Zealand	Clinician scientist	Clinical director	15+	Community practice	Post Graduate Diploma
002	F1	Yes	New Zealand	Administrator/ Educator	Consultant	15+	Public sector/ Private sector	Doctorate
003	F3	Yes	Canada	Clinician/ Administrator	Advanced practice physiotherapist/ Practice Lead	15+	Hospital	Doctorate
004	F2	No	Ireland	Researcher	Post-doctoral researcher	5 – 10	Public sector/ University	Doctorate
005	F3	Yes	United Kingdom	Clinician/ Researcher/ Educator	Consultant Physiotherapist	15+	Community practice	Masters
006	F2	Yes	Australia	Clinician	Advanced scope physiotherapist	15+	Hospital/ Public sector	Masters
007	F1	No	Canada	Researcher/ Administrator	Vice president - Innovation	15+	Public sector/ University	Doctorate
008	F3	Yes	Ireland	Clinician- scientist/ Educator	Clinical specialist physiotherapist	15+	Hospital/ Public sector	Masters
009	F2	Yes	United Kingdom	Clinician scientist/ educator/ administrator	Consultant physiotherapist	15+	Hospital/ Public sector/ community practice	Doctorate

010	F4	Yes	Australia	Clinician, researcher, educator	Teaching and Research academic/ advanced scope physiotherapy	15+	Hospital/ public sector/ private sector	Doctorate
011	F4	No	Australia	Researcher / Educator	Associate professor	15+	Public sector/ University	Doctorate
012	F2	Yes	Australia	Clinician scientist/ Educator	Advanced scope physiotherapist	15+	Hospital/ public sector	Masters
013	F1	Yes	Canada	Clinician, researcher, administrator	Advanced practice physiotherapist/ Central intake and assessment center	15+	Hospital	Masters
014	F3	Yes	Canada	Clinician	Advanced practice physiotherapist	10 – 15	Hospital	Masters
015	F2	No	Ireland	Researcher/ Educator	Associate professor	10 – 15	Public sector/ University	Doctorate
016	F1	Yes	Ireland	Clinician/ administrator/ Educator	Clinical specialist/ MSK triage	15+	Hospital/ public sector	Masters

4.4 Themes

Five themes were generated after the data analysis, as presented in figure 4.1.

Figure 4.1 Themes generated from thematic analysis of focus group data



4.4.1 Clinical expertise

Participants described their clinical expertise as one of the important aspects of their practice. They believed that the advanced practice physiotherapist needs to develop in-depth clinical skills in physiotherapy and other disciplines. The advanced practitioner needs a broader clinical skills set, advanced clinical reasoning and must demonstrate that they can manage complex cases.

“The most important role we have is really as the expert clinician, who’s got the experience, the clinical practice, the clinical reasoning...we are talking about, the person, “whānua” centred care.” That bigger picture and all the complexities of those cases”. [001 – F2]

“Yeah, I would agree with that, and I think it’s about being an expert clinician, somebody who can deal with the complexity of cases, you know, often cases are incredibly complex, and you’re dealing with uncertainty within those cases, potentially” [005 – F3]

“Well, personally, I found that that being an expert in a condition is probably the most important, [OR] was the most important part of setting up our service. Because we needed to gain the trust of the people that we were working with and collaborating with, and I think without that level of expertise. Without that ability to show your autonomy with your clinical decision-making, I feel like the role [OR] the service probably wouldn’t have been successful in being able to set up. So, we had to gain that trust with our medical and nursing colleagues by being expert clinicians, and that has helped us concrete the service and concrete the role”. [006 – F2]

“So, it’s the whole package, but first they have to have the credibility of their clinical skills and in their expert clinical skills. But it’s also those other skills that surround...that gives them the credibility to be accepted and recognized”. [001 – F2]

In addition, participants described that this clinical expertise is developed through years of experience and exposure to the different patient populations and clinical scenarios.

“I suppose from an expert clinician point of view. It’s about that mileage. It’s about having the kind of mileage of those patients. You know, an undergraduate comes out without any of that clinical experience or knowledge that an expert clinician will have because they’ve had hundreds and hundreds of patients that they’ve looked at. So, there’s something around making sure that they’ve got that expertise.” [005 – F3]

“I like those keywords like mileage. I really like that word. Just repetition and just those experiences, time and time and time again, so that mileage piece. And then refining it that you’re just so much more efficient in homing in on what’s the actual problem”. [014 – F3]

Participants described the differences between the clinical skills of advanced practice physiotherapists and an entry-to-practice physiotherapist. Describing the differences in clinical skills is critical to determining what additional competencies are required of an advanced practice physiotherapist.

“And I do think when we’re comparing it to the entry-to-practice, seeing to complex cases and the higher levels of risks and the unpredictability with cases, that’s kind of the big difference.” [004 – F2]

“Entry-level would have very little clinical experience. So, I think it would be very difficult to call them expert clinicians. You know, they have the minimum required or the minimum number of hours required to get registered, but it’s pretty basic. And it’s also been largely supervised up until that point.” [011 – F4]

4.4.2 Experienced Communicator

Participants identified communication as one of the core skills required of an advanced practice physiotherapist. Participants described communication skills as a vital and integral part of their practice. They were of the opinion that advanced practice physiotherapist needs to have effective communication skills.

“I think there’s a lot of different ways to educate and communicate with individuals. And certainly, over the years, I’ve had lots and lots of discussions with patients, and you get a sense of, sort of what is sinking in and what isn’t necessarily sinking in.” [013 – F1]

“I think communication is key because you can have the experience and the knowledge and skills, but if you can’t communicate properly, whether it’s with patients or your surgeons.” [003 – F3]

“Maybe the word is effective communication skills, rather than higher because that’s what you want, isn’t it? You want people to be able to have those really good conversations. Not always in a challenging position, but here to help people make those

decisions you're asking. So, I think for me, it's much more about effective communication". [005 – F3]

Participants explained that excellent communication comes with experience. They described how they have built and improved their communication skills over the years due to continual work with patients and other health care professionals.

"I've improved upon my delivery of certain conversations with patients through time and trial and error, to be honest. So, I've refined my communication. I'm better now at managing challenging situations, both inter professionally, whether that's patient, surgeon, primary care provider, [or] difficult family member. So, I don't like the higher level of [communication], [but] demonstrated refined style and level of communication". [014 – F3]

"Oh, it certainly comes from experience. I haven't taken any communication courses or anything like that. And again, that's so you know what you're talking about. You need sort of five years of actual clinical hands-on working with patients. You definitely need that because all those different communications you have with patients and their families certainly, give you a lot of different scenarios to draw from and a lot of experience". [013 – F1]

"Yeah, I agree. I think with experience; they're going to anticipate questions and concerns from patients and be more competent in your answers and in reassuring". [016 - F1]

"And I think as well with more years of practice you get better at listening for the love of it. So, it's actually just not going in with your set of questions to tick off or screen, but actually, just to be able to sit back and let their patients tell their story and have a better way of deciphering what's behind the message and also be better at retaining the details". [016 – F1]

The need to be culturally sensitive and communicate effectively by respecting different cultures was highlighted by a participant.

"I suppose, from my perspective here in New Zealand, it's about the cultural sensitivity of working with all populations. And I think that's really important under the area of communication. So, in understanding the population, you're working [with] on the cultural sensitivity of that as a communicator". [001 – F2]

Participants also compared the communication skills of advanced practice physiotherapists and entry-to-practice physiotherapists. Participants described that they have

developed a deeper understanding of communication and can advocate for the role through their communication skills.

“I think the main difference, I would perceive between advanced practice physiotherapy communication skills and entry-level communication skills is the fact that you’ve probably got a deeper understanding of what the problem is so that you can convey the information a little bit more effectively, both to the patient and to any other medical jurisdiction.” [010 – F4]

“Certainly, you know, all our entry-level physiotherapists need to be able to communicate. But I think that probably the depths of our communication and the information we provide is probably a lot more holistic for the patient. We can weigh up the pros and cons of different management and practices where the entry-level physiotherapist would struggle with that”. [010 – F4]

“But I think it’s also about assertive communication. You know, to some extent, I think the entry-level physio perhaps lacks because they can’t count on their clinical experience. So perhaps they lack some confidence when they’re communicating, whereas I would have thought in advance practice practitioner”. [011 – F4]

“The one thing I would think that the entry-level physios are not good at would be thinking more broadly about communication in the healthcare system. So, I think they would communicate well with their patients potentially, or they would do that [at] an acceptable level, but they would certainly have, I think, issues of advocating for these kinds of roles with senior staff, with hospital management that would certainly have difficulty communicating with Department of Health. You know, the kind of high-level management, I think, or high-level communication they would struggle with”. [011 – F4]

4.4.3 Strong Leadership Skills

Strong leadership skills were identified as a critical and needed skill to enable advanced practice physiotherapists to lead and advocate for the role's implementation and address the challenges of working as an advanced practitioner and leading the change process.

“If you’re going to establish a role, you must have leaders and health advocates because you must be going back to the hospital management and the patient groups and the clinicians around you and advocating for these roles.” [012 – F2]

“I think you need to have a certain type of personality to fulfil this role. They need to be a leader that’s able to stand on your two feet and stand your grounds as well”. [003 – F3]

“Leading when you know things are changing. So, it’s being responsive to change that occurs that actually, you know our role is to not block those changes and to actually make sure people are aware of those changes and to be able to lead it”. [005 – F3]

“But I’d say to get this role to actually mean something, you actually have to have somebody who leads it and pushes it and brands and if you like.” [002 – F1]

Participants described having to use their leadership skills to lead the development of programs and push traditional boundaries in developing these programs.

“Instead of demonstrating commitment, [the advanced practitioner] is leading the development of best practices and standards. Because you’re actually pushing the barrier, rather than saying you’re just doing this...” [002 – F1]

“You might expect these clinicians, you know, rather than applying this practice, to be leading the development of best practice [and] defining best practice. Working within regulatory frameworks to extend [and] develop regulatory requirements that reflect the changing roles that people are moving into”. [012 – F2]

The participants articulated some of the differences in leadership competencies between advanced practice physiotherapists and an entry-to-practice physiotherapist.

“Leader and health advocate, well, I think leadership probably. I don’t think they’re [entry-to-practice] leading anything health advocate. I think that they’re probably making attempts to advocate. So, I would hope for their patient and on behalf of their patient. But again, I think that’s a skill that improves with experience”. [011 – F4]

“...obviously, they’ll [entry-to-practice] be an advocate for their patients. But in terms of them thinking broadly in the health service that may not come in for some time”. [016 – F1]

4.4.4 Collaboration

Participants identified collaboration with other healthcare professionals as essential to the advanced practice physiotherapy role. Participants described their ability to collaborate with other professionals and how collaboration has propelled the role. In addition, participants mentioned how they have made connections and how working effectively with other colleagues is critical to advanced practice physiotherapy.

“Someone that’s been in the profession or in that role for a while certainly needs to have all the connections to collaborate with, say, an orthopedic surgeon so that you can use them as a mentor.” [013 – F1]

“When it comes to collaboration at an advanced level, I would say it’s more of that service redesign and development and collaborating with the researchers and government and professional bodies.” [009 – F2]

“And I think what’s really critical is to collaborate as an equal participant and that you’re a leader and that your voice and the patient’s voice is what you’re representing. That you have advocacy is a critical role as well. But you collaborate as an equal and not collaborate or contribute to something that you are kind of as a tag on or an add-on”. [012 – F2]

Participants described that they have a higher level of collaboration compared to an entry-to-practice physiotherapist. Participants were of the opinion that they have the experience and confidence to collaborate with different stakeholders within health care delivery.

“It’s maybe not having that experience or that confidence to be able to do so. But as you develop as a practitioner, those are the skills you begin to develop—that kind of wider collaboration, mentoring, role modelling and leadership”. [001 – F2]

“Collaboration, in a broader sense, we think about high-level collaborations with research institutes, academic institutions or with the Department of Health, or funders or insurance companies.” [011 – F4]

4.4.5 Knowledge creation and dissemination

The ability to lead the creation of new knowledge and lead in driving evidence-based approach and research was recognized as an essential skill of an advanced practice physiotherapist. Additionally, participants described “scholarship” as critical to the role of advanced practice physiotherapists.

“It’s with the scholar piece, and so you know, we don’t have or what we don’t do well, at least in Canada is the clinician-scientist role. Physicians are great at it, and nurses actually are pretty good at it, too. And we have not done that. And to me, what I think is an attractive piece of the advanced practice physio role is that they are the clinician-scientist role”. [007 – F1]

“So, part of the job was to implement the program, so I think you learned a lot about mastery then you’re also a liaison between the surgeons and the patients and other health care professionals that are involved”. [003 – F4]

“[Advanced Practitioners] need to be able to show mastery of education. So that’s the ability to impart knowledge, whether patient education, teaching at whatever level and multidisciplinary team level or university level, etc. And having that educational, academic background as well, they need to prove mastery in leadership education and research. They need to be able to show level set at level seven in the UK”. [009 – F2]

“You need the scholars because they’re the ones that demonstrate the value to the service, and values are slippery things in health organization that measures things by occasions of service and what’s happening right now with a patient, rather than thinking of patients on their trajectory and returning to their normal life roles.” [012 – F2]

Advanced practice physiotherapists have research and knowledge translation skills that may differ from entry-to-practice clinicians. Participants discussed that although entry to practice physiotherapists may be consumers of information, advanced practice physiotherapists are engaged in creating knowledge.

“But, I mean, it’s something that describes the development. They [entry-level] can be mentored into contributing to education and research, maybe under the guidance or under a team approach under the guidance of the advanced practice physio. But certainly, it might just be some years before you be expecting that level of input from them with the new grads”. [0016 – F1]

“Whereas, again, you might have a more junior physiotherapist who’s not an advanced practice level but has done other things before, so maybe they were an academic before in something different or even in physiotherapy. But they weren’t that level of clinician that could contribute to the creation of dissemination of knowledge”. [009 – F2]

“I think new grads are the consumers of information, but they’re not necessarily generators of information; I would have thought that an advanced practitioner has a role in facilitating the creation of knowledge.” [011 – F4]

4.5 Discussion

This study sought the opinion of advanced practice physiotherapists on the first draft of an international list of competencies. Participants provided feedback on the competencies and suggested modifications to the already developed competencies. To our knowledge, this is the first study to bring together advanced practice physiotherapists and stakeholders from different countries to discuss developing an international set of competencies. The findings from this study provide an in-depth look into the critical roles and competencies of the advanced practice physiotherapist from the stakeholder's perspective. The following process was used to develop a more refined version (second draft) of the competencies:

4.5.1 Changes to the content and wording of the first draft of competencies

Findings from this study identified advanced practice physiotherapists as expert clinicians in their area of practice. The need to develop competencies in clinical expertise was very evident in the focus groups. The clinical expertise could be developed either through years of clinical experience or by seeing a high volume and variety of patients with varying complexities. Accumulation of years of experience was evident in the participant's characteristics for this study. Participants had an average of over 15 years of experience as physiotherapists. Previously published studies on advanced practice physiotherapists have reported that clinicians need a minimum of 5 years in a particular area of practice before becoming advanced practice physiotherapists.^{6,23} Revised content and wording included "uses clinical experience and techniques," which were not in the 1st draft of the competencies. Several studies have also suggested that advanced practice physiotherapists have equal diagnostic accuracy and diagnostic agreement compared to medical consultants and surgeons when managing patients with MSK disorders.^{5,12,24} Modifications were made to the clinical domain based on the findings from the

focus group with the inclusion of words that reflects the advancement in clinical knowledge, skills, and the need for clinical skills from disciplines outside physiotherapy (Table 4.3).

The findings from this study also suggested that advanced practice physiotherapists are effective communicators and health advocates. Advanced practice physiotherapists require skillful communication competencies to connect with their patients and discuss difficult clinical diagnoses. Additionally, practitioners need to communicate with physicians, surgeons, nurses, and other healthcare providers through direct verbal or written communication to convey their diagnosis and management strategy. This level of communication competencies requires a more advanced and skillful approach than that of an entry-to-practice physiotherapist. Furthermore, this level of communication competencies could be gained throughout the years of practice. However, formal and informal education on communication for advanced practitioners is critical and would ensure standardization of the training of practitioners. The following changes were made to the 2nd draft of competencies by including words such as “effective communication skills” and a “refined level of communication” (Table 4.3).

In addition, the findings suggest that advanced practice physiotherapists use competencies in advocacy to advocate for their patients and the role. Practitioners are periodically engaging with the management of health institutions to promote and justify the need for the role and the impact on patient care. Changes were made to the draft of competencies to reflect “evaluates the needs of patients, communities and the population through advocacy and leading change”, “supports the improvement of health care delivery teams and leads the development of best practices” (Table 4.3).

This study found that knowledge creation and knowledge dissemination skills are important to the advanced practice physiotherapist. One of the current requirements to become an advanced practice physiotherapist in the participants’ countries is to have completed a

research-based master's degree.^{6,23,25} This requirement highlights the importance of facilitating the creation and dissemination of knowledge. Changes made to the draft of the competencies reflect the need to facilitate (leading or participating) in research, quality improvement, knowledge translation and dissemination. (Table 4.3) These new additions reflect the changes informed by the findings from the focus groups.

Strong leadership competencies were identified as essential for advanced practice physiotherapists to support clinical care, role implementation and other colleagues. Practitioners lead patient care and provide direction in managing care as part of a team. Similarly, strong leadership competencies are essential to promote the role and lead change. The establishment of advanced practice requires a change of process from the standard approach to care to a more advanced new model of care.

Since the practitioners are seen as working at the highest level of care and often these roles are new and require some justification for their sustenance, advanced practice physiotherapists need to lead the program development and quality improvement and maintain professional standards. These are unique competencies that are not usually present with an entry-level physiotherapist. Changes were made to the first draft of competencies to reflect the need for leadership competencies and the need to lead change. (Table 4.3)

4.5.2 Revision by subject matter experts

SMEs also reviewed the findings from the focus in advanced practice physiotherapy. The SMEs were asked for their opinion on the refined competencies, what other modifications should be made, and any additional feedback for the research team. All the SMEs agreed on the revisions and refinement made to the 1st draft of the competency profile into a second draft. One of the important suggestions from the SMEs was the need to use the appropriate verbs to reflect

the higher level of learning as it relates to Bloom's Taxonomy.²⁶ An example is the inclusion of verbs such as "applies", "creates", "operates", "evaluates," and "measures". These verbs shifted away from the 1st draft of the competencies, which included the word "demonstrates".

Table 4.3 Modified version of the list of competencies (all modifications in red text)

Original version	Modified version
Domain name: Expert Clinician	Domain name: Expert Clinician
Description: Advanced Practice Physiotherapists: Employs depth and breadth of knowledge, skills, and advanced clinical reasoning informed by best available evidence in providing high-quality and safe patient-centred care to manage most complex cases with a high level of risks in unpredictable clinical scenarios.	Description: Advanced practice physiotherapist applies advanced depth and breadth of knowledge, skills, and clinical reasoning informed by best available evidence in providing high-quality, safe, patient-centred care for individuals who present with highly complex findings often due to multimorbidity.
Competencies:	
1. Demonstrate an expert level of physiotherapy knowledge, skills, and understanding of physiotherapy practices.	1. Applies advanced clinical knowledge, skills , and understanding of best practices. Uses clinical experience and techniques, drawing on formal and informal education and consultation within and outside the physiotherapy profession to make autonomous decisions.
2. Practice advanced roles within or outside the normal or generally accepted scope of practice as recognized within their jurisdiction.	2. Operates within a predefined scope of practice within the legal parameters of their jurisdiction and with appropriate authorizations (which may fall within or outside the traditionally accepted scope of physiotherapy practice).
3. Plans and performs an appropriate assessment, implement therapeutic procedures using expert-level clinical reasoning, planning, and evaluation.	3. Plans and performs comprehensive patient assessment using advanced clinical reasoning, shared patient decision making , planning, evaluation, and evidence-informed clinical knowledge and skills.

4. Demonstrate knowledge of institutional factors affecting health, including the political, social, and economic factors.
5. Order and interpret diagnostic investigations based on jurisdictional provisions (X-ray, MRI, Ultrasound scan, laboratory investigations, and other investigations as approved).
6. Prescribe or de-prescribe therapeutic medications, including injections, appropriate to the patient's condition, clinician's level of expertise, and jurisdiction.

4. **Requests and** interprets diagnostic investigations based on jurisdictional provisions **and with appropriate predetermined authorizations** (e.g., Diagnostic imaging or laboratory investigations).

5. **Creates and Implements comprehensive patient management using advanced clinical reasoning, shared patient decision-making, and evidence-informed clinical knowledge and skills.**

6. **Plans, performs and educates the patient about appropriate therapeutic interventions (e.g., medications, therapeutic injections, or arterial blood gases) based on the patient's condition and clinician's level of expertise within their predefined and authorized additional scope of practice.**

7. **Applies knowledge of institutional and systemic factors (Including political, social, and economic factors) that affect health.**

Domain name: **Communicator**

Description: Advanced Practice Physiotherapists: Use effective communication skills to form relationships with patients, families, and other clinicians through challenging and difficult situations.

Competencies:

7. Demonstrate a higher level of communication to manage challenging and conflict situations both intra- and inter-professionally.

Domain name: **Communicator**

Description: Advanced practice physiotherapist **develops effective and refined communication skills to nurture relationships with patients, families, other clinicians, and other healthcare services.**

8. **Applies effective communication skills (verbal and non-verbal) in managing complex and challenging situations** intra- and inter-professionally **and intersectorally.**

8. Provides mentorship, counselling, and coaching of others to manage challenging and emotionally charged conversations.

9. Demonstrates an advanced level of communication that supports cultural safety, promotes, and respects diversity.

9. Mentors, counsels, coaches' peers, and students to manage professional communication with patients, healthcare professionals, and health care systems.

10. Applies a refined level of communication that embraces cultural sensitivity and safety, promoting and respecting diversity.

Domain name: **Collaborator**

Description: Advanced Practice Physiotherapists use inclusive, collaborative, consultative, and shared decision-making approaches with patients, relevant health professionals, and others to provide an advanced level of care.

Competencies:

10. Actively contribute, as an individual and as a member of a team providing care, to the continuous improvement of health care quality, equity, and patient safety through a shared decision-making approach.

11. Work effectively with other colleagues in the health care professions and serve as a role model to promote understanding, manage differences, and resolve conflicts.

Domain name: **Collaborator**

Description: Advanced practice physiotherapist uses inclusive, collaborative, and consultative approaches with patients, relevant health professionals, and others to provide an advanced level of evidence-informed care.

11. Collaborates to triage or provide patients with advanced clinical care (e.g., Accident and emergency case management, Orthopedic triage/ Rheumatology/ Neurology/ Respiratory triage, or Continence and Pelvic health).

12. Collaborates effectively intra- and inter-professionally and promotes understanding, manages differences, and contributes to building effective interprofessional and evidence-informed teams.

Domain name: **Leader and Health Advocate**

Description: Advanced practice physiotherapists: Engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of advanced patient care through their activities as clinicians, administrators, scholars, or teachers.

12. Responds to the needs of the patients, communities, and populations they serve by advocating for or on their behalf for systems-level changes.

13. Contribute to the improvement of health care delivery in teams, organizations, and systems

14. Engage in the stewardship of health care resources

15. Provides clinical mentorship and training of trainees within their field of practice within and beyond the profession.

16. Demonstrate leadership in professional practice, including respecting and promoting equity and diversity.

Domain name: **Scholar**

Description: Advanced Practice Physiotherapists: demonstrate a lifelong commitment to excellence in practice through continuous learning, evidenced-informed practice and

Domain: **Leader and Health Advocate**

Description: Advanced practice physiotherapist **leads the development of services and provision of high-quality service and advocates for their patients at all levels of care.**

13. **Evaluates the** needs of patients, communities, and the populations they serve by advocating **and leading change to improve their care.**

14. **Supports the improvement** of health care delivery teams **and leads in developing best practices and standards at the organization and systems level.**

15. **Measures and evaluates the** stewardship **and prudent use of** health care resources.

16. **Mentors and educates trainees on leadership** within their field of practice, both within and **outside the** profession.

17. **Leads in** professional practice, including respecting and promoting equity and diversity.

Domain name: **Scholar**

Description: Advanced practice physiotherapist **is a lifelong learner who engages in continuous quality improvement,**

contributing to scholarship. They apply learning principles and strategies to facilitate learning by other patients, professionals, students, relevant others, funders, and governments.

Competencies:

17. Role model, mentor, and teach to enhance the lifelong learning of students, colleagues, other health professionals, and the public

18. Contribute to the creation and dissemination of knowledge and practices applicable to health

knowledge translation and dissemination, and clinical research to enhance patient care and improve healthcare.

18. Role models, mentors, and teaches to enhance the lifelong learning of students, colleagues, other health professionals, and the public.

19. Participates in or leads continuous quality improvement projects, knowledge translation and dissemination, and the implementation and evaluation of an evidence-based approach at all levels of care. Involves in knowledge generation through clinical research.

20. Engages in continuous professional development activities by being a life-long learner and leading the education and training of peers.

Domain name: **Professional**

Description: Definition: Advanced Practice Physiotherapists are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, professional regulatory bodies, and maintenance of personal health.

Competencies:

Domain name: **Professional**

Description: Advanced practice physiotherapist commits to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, professional regulatory bodies, and maintenance of personal health.

19. Demonstrate a commitment to patients, professions, and society by applying best practices and adhering to ethical standards.

20. Demonstrate a commitment to the profession by adhering to standards and complying with legal and regulatory requirements.

21. Demonstrate a commitment to the practitioner's health and well-being to foster optimal patient care.

21. Commits to the patients, physiotherapy profession, and society by developing and implementing best practices, adhering to, and promoting ethical standards (Clinical and Business) and safety.

22. Commits to developing advanced practice physiotherapy through developing frameworks (e.g., medical directives) to support the implementation and operationalization of the role to comply with legal and regulatory requirements.

23. Commits to the practitioner's and colleague's health and well-being (work-life balance) to foster optimal patient care.

24. Contributes to reviews of legal, professional, ethical, and other relevant standards, codes, and guidelines and fosters ethical competence and best practices.

4.6 Strengths and Limitations

A major strength of this study is its opportunity to bring together advanced practice physiotherapists, researchers, and administrators from different countries to discuss competencies for advanced practice physiotherapy. The heterogeneity of the participants ensured an in-depth discussion of the competencies based on diverse opinions on advanced practice physiotherapy.

One of the limitations of this study is that although 16 participants took part in the focus groups, they were not evenly spread across all four focus groups. For example, due to scheduling limitations, focus group four had only 2 participants compared to focus groups three and four, with 6 and 5 participants, respectively. Thus, the limited number of participants in the final focus group may have affected the levels of engagement within that group. However, the findings from focus group four were consistent with the findings from the other three focus groups.

Finally, although participants were advanced practice physiotherapists, researchers and administrators from Canada, Australia, the United Kingdom, Ireland and New Zealand, the findings from this study represent their opinion on the competencies for advanced practice physiotherapy and may not be generalizable to the entire advanced practice physiotherapy population within these countries. Furthermore, because these countries have well-established advanced practice physiotherapy roles, caution should be taken when generalizing the findings to other countries with new and emerging advanced practice roles.

4.7 Conclusion

There is no international competency profile for the advanced practice physiotherapy role, which has resulted in inconsistencies in the design and training of practitioners. The need for standardization and the international agreement on the competencies for advanced practice

physiotherapy has been echoed by several bodies. The competencies developed from this study are part of the early approaches to developing the international competency profile. The findings from this study suggest that advanced practice physiotherapists require competencies in advanced clinical skills, effective and refined communications, collaborations, leadership and advocacy, and competencies in knowledge creation and dissemination. The findings from this study resulted in the development of a refined version (second draft) of a list of competencies for advanced practice physiotherapy, which comprises 6 domains and 24 competencies.

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4.9 Appendix

Appendix 4.1 Ethics

Notification of Approval

Date:	May 20, 2020						
Study ID:	Pro00099692						
Principal Investigator:	Andrews Tawiah						
Study Supervisor:	Linda Woodhouse						
Study Title:	Developing a competency profile for Advanced Practice in Physiotherapy						
Approval Expiry Date:	May 19, 2021						
Approved Consent Form:	<table><thead><tr><th>Approval Date</th><th>Approved Document</th></tr></thead><tbody><tr><td>2020-05-20</td><td>Consent for Survey</td></tr><tr><td>2020-05-20</td><td>Consent for Focus Groups</td></tr></tbody></table>	Approval Date	Approved Document	2020-05-20	Consent for Survey	2020-05-20	Consent for Focus Groups
Approval Date	Approved Document						
2020-05-20	Consent for Survey						
2020-05-20	Consent for Focus Groups						

Thank you for submitting the above study to the Research Ethics Board 2. Your application, including the following, has been reviewed and approved on behalf of the committee:

- Survey Email, Version 4, May 19, 2020;
- Focus Group Email, Version 3, May 19, 2020;
- Research Proposal, Version 1, April 3, 2020.

Any proposed changes to the study must be submitted to the REB for approval prior to implementation. A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the Research Ethics Board does not encompass authorization to access the staff, students, facilities or resources of local institutions for the purposes of the research.

Approval by the Research Ethics Board does not encompass authorization to recruit and/or interact with human participants at this time. Researchers still require operational approval (e.g., Alberta Health Services) and must meet the requirements imposed by the public health emergency ([link to Alberta COVID page](#)).

Sincerely,

Ubaka Ogbogu, LLB, BL, LLM, SJD
Chair, Research Ethics Board 2

Appendix 4.2 Discussion Guide

Discussion Guide

Advanced Practice Physiotherapy Focus Group

Researchers involved:

Andrews Tawiah: leading the focus group

Andrews Tawiah: Take procedural notes, suggestions for changes with next group

Start Recording

Plan:

- 1) Welcome participants, information and consent form, and demographic questionnaire.
- 2) Both consent form and demographics questionnaire will be sent out prior to the day of the focus group.
- 3) Description of the project and summary of what we have found so far:
 - A summary of a first draft of competencies will sent out to the participants prior to the day of focus.
- 4) Objectives of the focus group;
- 5) Description of the plan of the focus group;
- 6) Questions:

Questions

1. How do you define Advanced Practice within jurisdiction?
 - How well do you think patients, other healthcare professionals and health care management within your jurisdiction understand this role?

(Provide a description of the 6 roles)

2. Within your jurisdiction, what is the difference between the roles compared to entry-to-practice.
 - Expert Clinician
 - Communicator
 - Collaborator
 - Leader and Health Advocate
 - Scholar
 - Professional

3. Which of these 6 roles do you perceive to be the most crucial in establishing Advanced practice roles compared to entry-to-practice?

- Can you provide some reasons to support your selection?

4. (Focusing on Competencies)

For each role: which competencies do you consider as key.

- (Give example of competencies)
- Power point slides of competencies on screen
- Can you provide some reasons to support your selection?

5. Focusing on APP and Specialist

How can we distinguish the differences in competencies between APP and Specialists based on your jurisdiction?

6. Is there anything else that you would like to include?

Appendix 4.3 Consent

INFORMATION LETTER and CONSENT FORM

Title of the study: Development of a competency profile for Advanced Practice in Physiotherapy

Principal Investigator: Andrews Tawiah
3-44 Corbett Hall, University of Alberta
Edmonton, Alberta, T6H 2G4
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780-492-2903

Supervisors: Dr. Linda Woodhouse
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780-492-2889

Background

- You are being asked to be in the study because you are an advanced practice physiotherapist.
- You are being contacted through the physiotherapy association of your country
- The results of this study will be used in support of my thesis and the development of a competency profile for advanced practice physiotherapists.
- Before you make a decision, you are encouraged to ask questions if you feel anything needs to be made clearer. You will be given a copy of this form for your records.

Purpose

- The purpose of this work is to define competencies for the training of advanced practice physiotherapists by developing an evidence-informed competency profile for the role.

Study Procedures

- Your participation in this focus group is a step in the development of an APP competency profile. The focus group will be hosted using Zoom. If you agree to participate, you will receive a link to join the discussion and a demographics questionnaire. The focus group will have up to 7 other advanced practitioners from 5 different countries - Canada,

Australia, New Zealand, United Kingdom and Ireland. The discussion is expected to last 60 – 120 minutes.

- The data collected during the focus group will include video and audio recording. Data will be transcribed verbatim for analysis. The transcripts will be sent back to you for verification. All data obtained from this study will be stored in accordance with the University of Alberta's data storage procedures and will be destroyed after 5 years.
- The focus group will be moderated by the principal researcher. Technical support will be provided by a member of the University of Alberta's IT team who will be on standby.

Benefits

- You will not benefit from being in this study.
- We hope that the information we get from doing this study will help us in developing competencies for advanced practice physiotherapists and aide in the training of these practitioners.

Risk

- The risks to participation in the focus group are not expected to be significant. It is possible that you may feel compelled to share personal thoughts and opinions during the discussion. All participants will be reminded to keep the discussion confidential; however, given the nature of a focus group, we cannot ensure confidentiality.

Voluntary Participation

- Your participation in the focus group is completely voluntary and you are under no obligation to continue even after we start. You are free to leave the focus group at any time by exiting the Lifesize Cloud meeting.
- Given the nature of data collection during a focus group, it will not be possible to remove data you have already contributed to the discussion as that could make interpretation of the focus group transcript difficult.

Confidentiality & Anonymity

- The findings from this study will be part of a Ph.D. thesis, research articles, presentations and development of a competency profile. No personally identifying information will be part of the findings of this research.
- Data will be kept confidential. The principal researcher and supervisory committee will only have access to the data.
- While we will make every effort to protect the confidentiality of what is discussed during the focus groups, we cannot guarantee that others from the group will do the same. Please respect the confidentiality of others outside of the focus group.
- Zoom collects only the user data that is required to provide you with Zoom services. This includes technical and operational support and service improvement. For example, Zoom collects information such as a user's IP address and OS and device details to deliver the best possible Zoom experience to you regardless of how and from where you join. All recorded data from Zoom will be stored locally on the PI's password-protected computer ([Zoom Privacy Statement](#)).

- Data will be kept in a secured place for a minimum of 5 years following completion of the research project. All data will be stored on password-protected computer and will be destroyed afterwards the 5 years.
- Participants will receive copies of the transcribed data for verification before analysis

Contact Information

- If you have any further questions regarding this study, please do not hesitate to

Andrews Tawiah (PhD Candidate)

Email: atawiah@ualberta.ca

Tel: [780.492.9674](tel:780.492.9674)

University of Alberta

- The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta. If you have questions about your rights or how research should be conducted, you can call (780) 492-2615. This office is independent of the researchers.

Consent Statement

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I agree to participate in the research study described above and will receive a copy of this consent form. I will receive a copy of this consent form after I sign it.

Participant's Name

Participants digital signature or initials

Date

Appendix 4.4 Demographics

DEMOGRAPHICS QUESTIONNAIRE

1. What is your country of practice?

Australia

New Zealand

Canada

United Kingdom

Ireland

2. Are you currently an advanced practice/scope physiotherapist or have you ever been an advanced practice/scope physiotherapist?

Yes

No

3. Which role do you mostly associate with? (You can select all that applies and provide percentages if possible)

Clinician

Researcher

Administrator

Clinician-Scientist/Researcher

Educators

3. For clinicians, where do you practice? (Select all applicable responses)

Hospital

Community practice

Public sector

Private sector

4. What is your current job title?

5. For how many years have you been a physiotherapist?

0 – 5 years

5 – 10 years

10 – 15 years

Over 15 years

6. What is your highest level of education?

Doctorate

Masters

Bachelors

Other relevant credentials

Appendix 4.5 List of competencies

Draft of Competencies for Advanced Practice Physiotherapists

Role 1: Expert Clinician

Advanced Practice Physiotherapists: Employs depth and breadth of knowledge, skills and advanced clinical reasoning informed by best available evidence in providing high-quality and safe patient-centered care to manage most complex cases with a high level of risks in unpredictable clinical scenarios.

Competencies:

1. Demonstrate an expert level of physiotherapy knowledge, skills and understanding of physiotherapy practices.
2. Practice advanced roles within or outside of the normal or generally accepted scope of practice as recognized within their jurisdiction.
3. Plans and performs an appropriate assessment, implement therapeutic procedures using expert-level clinical reasoning, planning and evaluation.
4. Demonstrate knowledge of institutional factors affecting health including the political, social and economic factors.
5. Order and interpret diagnostic investigations based on jurisdictional provisions (X-ray, MRI, Ultrasound scan, laboratory investigations and other investigations as approved).
6. Prescribe or de-prescribe therapeutic medications, including injections, appropriate to the patient's condition, clinician's level of expertise and the jurisdiction.

Role 2: Communicator

Advanced Practice Physiotherapists: Use effective communication skills to form relationships with patients, families and other clinicians through challenging and difficult situations.

Competencies:

7. Demonstrate a higher level of communication to manage challenging and conflict situations both intra- and inter-professionally.
8. Provides mentorship, counselling and coaching of others to manage challenging and emotionally charged conversations.
9. Demonstrates an advanced level of communication that supports cultural safety, promotes and respects diversity.

Role 3: Collaborator

Advanced Practice Physiotherapists: Use inclusive, collaborative, consultative and shared decision-making approaches with patients, relevant health professionals and others to provide an advanced level of care.

Competencies:

10. Actively contribute, as an individual and as a member of a team providing care, to the continuous improvement of health care quality, equity and patient safety through a shared decision-making approach.
11. Work effectively with other colleagues in the health care professions and serve as a role model to promote understanding, manage differences and resolve conflicts.

Role 4: Leader and Health Advocate

Advanced practice physiotherapists: Engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of advanced patient care through their activities as clinicians, administrators, scholars, or teachers.

Competencies:

12. Contribute to the improvement of health care delivery in teams, organizations, and systems
13. Engage in the stewardship of health care resources
14. Provides clinical mentorship and training of trainees within their field of practice within and beyond the profession.
15. Demonstrate leadership in professional practice including respecting and promoting equity and diversity.
16. Responds to the needs of the patients, communities and populations they serve by advocating for or and on their behalf for systems-level changes.

Role 5: Scholar

Advanced Practice Physiotherapists: demonstrate a lifelong commitment to excellence in practice through continuous learning, evidenced-informed practice and contributing to scholarship. They apply learning principles and strategies to facilitate learning and by other patients, professionals, students, relevant others, funders, and governments.

Competencies:

17. Role model, mentor, and teach to enhance the lifelong learning of students, colleagues, other health professionals and the public
18. Contribute to the creation and dissemination of knowledge and practices applicable to health

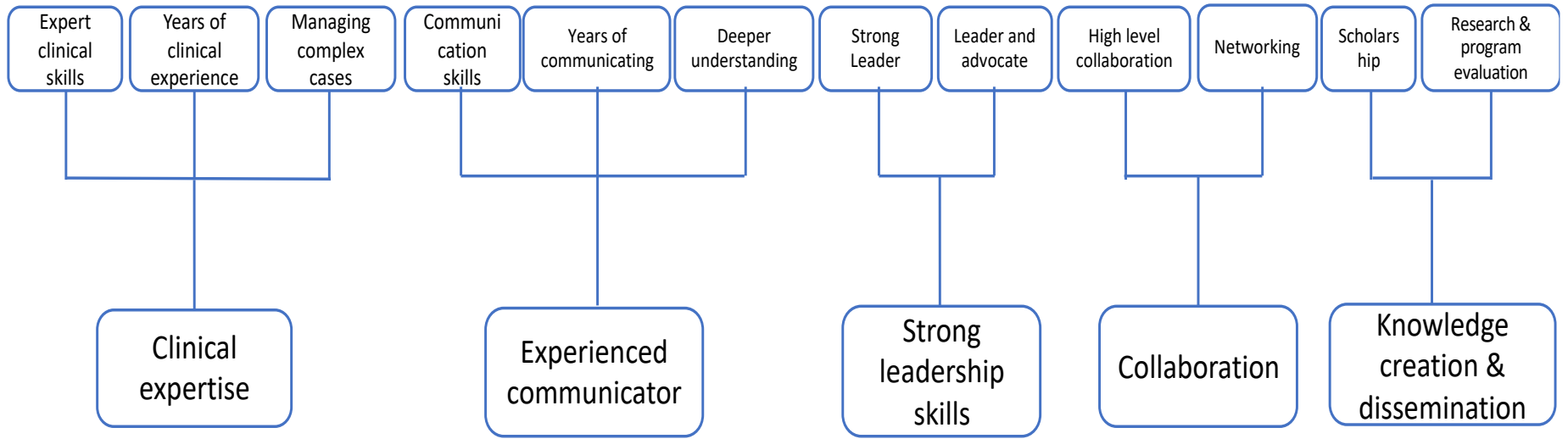
Role 6: Professional

Definition: Advanced Practice Physiotherapists are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behavior, accountability to the profession and society, professional regulatory bodies, and maintenance of personal health.

Competencies:

19. Demonstrate a commitment to patients, professions and society by applying best practices and adhering to ethical standards.
20. Demonstrate a commitment to the profession by adhering to standards and comply with legal and regulatory requirements.
21. Demonstrate a commitment to the practitioner's health and well-being to foster optimal patient care.

Appendix 4.6 Coding map



CHAPTER 5

SURVEY TO VALIDATE THE COMPETENCIES FOR ADVANCED PRACTICE PHYSIOTHERAPY

5.1 Introduction

The prevalence of musculoskeletal conditions (MSK) is rapidly increasing worldwide,¹ and are the highest cause of years lived with disability in the adult population, partly due to the ageing population.¹ The need to provide appropriate care, improve access, and contain costs in managing patients with MSK conditions has led to the development of new models of care². One such example is an interprofessional model that incorporates advanced practice physiotherapists in the care pathway for patients with MSK conditions.^{3,4}

Advanced practice physiotherapists use advanced clinical skills and clinical reasoning to manage complex patients, often with co-morbidities⁵. These practitioners can request and interpret diagnostic imaging, laboratory investigations and refer patients for surgical review.⁵⁻⁷ In some jurisdictions, advanced practice physiotherapists can also prescribe medication.⁵

Recent studies have identified that advanced practice physiotherapy roles in a variety of settings have resulted in improved patient care delivery, greater patient satisfaction, reduced wait times and reduced the cost of healthcare delivery.^{6,8-10} There is, however, growing concern within the physiotherapy profession and healthcare institutions about the lack of clarity of the description, competencies, and training of advanced practice physiotherapists within and between countries. These concerns have been centred on the need for consistency and standardization of the competencies and training of practitioners. The need for an international set of competencies for advanced practice physiotherapy has been highlighted in recent studies.^{11,12} While the development of an international set of competencies will positively impact

the advanced practice role and enhance its sustainability, it will also provide transparency and protection to the public. A standardized set of competencies will enable consistency in the design and training of advanced practice physiotherapists globally. In addition, a standardized set of competencies can encourage transferability of skills, transportability of professionals and ensure a greater understanding of the advanced practice role by other healthcare professionals and within the greater healthcare system.

The present study is part of a larger body of work aimed at developing an international competency profile for advanced practice physiotherapy. The process of developing a competency profile for advanced practice physiotherapy began with a scoping review to identify and review the existing literature (published and grey) on the range of current competencies for advanced practice physiotherapists. The scoping review identified 6 research papers and 13 reports from government institutions and professional physiotherapy associations' websites. A first draft of competencies was developed based on an analysis of the documents from the scoping review and further review by six subject matter experts (SMEs). Findings from the scoping review are presented in Chapter 3.

The next step in developing international acceptance of the proposed competencies was to host a series of four focus groups that comprised 16 participants representing five countries: the United Kingdom (UK), Ireland, Australia, New Zealand, and Canada. The focus groups included advanced practice physiotherapists, researchers, and managers of advanced practice physiotherapists to discuss and provide feedback on the list of competencies developed from the scoping review. Additionally, the focus groups provided an opportunity for participants to suggest new competencies or modify existing competencies. Finally, findings from the focus groups were summarized and then reviewed by a group of subject matter experts in order to

synthesize the results into a more developed and refined second draft of the list of competencies. Findings from the focus groups are presented in Chapter 4.

This current study is a global survey of a much wider advanced practice physiotherapy group with the aim of validating (face validity) the second draft of competencies developed based on feedback from the focus groups. The process used to validate the competencies was based on published work by Bonham et al.¹³. The survey was also intended to generate further feedback on the second draft of competencies by allowing participants to provide written comments on each competency. Validation of the competencies was done to determine the importance of each competency and the value advanced practice physiotherapists place on each competency.

5.2 Methods

A cross-sectional online survey was conducted using the Survey Monkey platform. Ethical approval for this study was obtained from the Research Ethics Board 2 of the University of Alberta (ID: Pro00099692) (Appendix 5.1).

5.2.1 Participants

Participants were advanced practice physiotherapists working in clinical practice, research and/or management and administrative roles. The survey targeted participants from the United Kingdom, Ireland, Australia, New Zealand, and Canada. These countries were targeted because they have already established advanced practice roles for over a decade. Additional participants were from Switzerland and Argentina.

A sample size of 100 was calculated for this study. There is currently no identifiable number of advanced practice physiotherapists in the targeted countries, so a series of assumptions and approximations were made in calculating the sample size based on background

knowledge from previous commentaries and discussion papers on advanced practice physiotherapy.^{14,15} Firstly, it was assumed that approximately 1% of all physiotherapists in each of the five targeted countries were advanced practice physiotherapists, resulting in a combined total of approximately 1,000 advanced practitioners in these countries based on the total number of physiotherapists in each country¹⁶. A target of 10% of all advanced practice physiotherapists was set for this survey, resulting in a sample size of 100 participants. Sampling 10% of a population is an acceptable sample size.¹⁷

Participants were required to complete an inclusion criteria question before they could take part in the study. Participants had to be either advanced practice physiotherapists or be involved in research or development of advanced practice roles. This criterion ensured that the survey also captured responses from researchers and administrators in advanced practice whose views are fundamental in developing competencies.

5.2.2 Questionnaire

The questionnaire for the survey was developed based on the second draft of competencies from the focus groups (Chapter 4). The questionnaire comprised 31 questions under 4 different headings (Competency, Demographics, Education and Remuneration). The full version of the questionnaire is presented in Appendix 5.2.

The questionnaire began with a welcome page describing the purpose of the survey and seeking consent. Next, a definition of “advanced practice physiotherapy” and “competency” was provided, followed by an eligibility question. The next section of the questionnaire was a list of the 24 competencies under six domains, with one domain per page. The domains were Expert clinician; Communicator; Collaborator; Leader and Health Advocate; Scholar, and Professional. A description of the domain followed by the list of competencies within that domain were

provided on each page. Participants were asked to rate the importance of the competencies on a five-point agreement Likert Scale (“Strongly disagree”, “disagree”, “neither agree nor disagree”, “agree”, and “strongly agree”). The next set of questions covered the demographics, education, and remuneration of participants.

The questionnaire was piloted with six advanced practice physiotherapists to assess the response time to complete the survey, identify any difficulty in understanding the question or the structure of the questions and the overall completeness of the survey. Data from the pilot study led to further revisions to the questionnaire.

5.2.3 Data collection

The survey was hosted online for four weeks (June 4th – July 8th, 2021) to allow maximum participation. Three different approaches were used to recruit participants, including convenient and snowball sampling, through advanced practice physiotherapy professional groups and on social media (Twitter). Known advanced practice physiotherapists were initially contacted directly by the principal researcher. Participants were also asked to send the survey to any colleagues who were also advanced practice physiotherapists. The survey was also sent to the email lists of advanced practice physiotherapy groups. The principal researcher and one other known advanced practice physiotherapist posted the survey on their Twitter handle. Finally, a reminder email was sent to the participants one week before the deadline.

5.2.4 Data Analysis (Validation process)

All data from the survey were analyzed using STATA B/E 17 and Microsoft Excel 2016. The competencies were validated (face validity) using the ranking method developed by Bonham et al.¹³. This method was also previously used in validating the essential competency profile for entry-to-practice physiotherapists developed by the National Physiotherapy Advisory Group

(NPAG) in Canada¹⁴. Using this method, the importance of each competency was rated by participants on a 5-point agreement Likert scale (“Strongly disagree”, “disagree”, “neither agree nor disagree”, “agree”, and “strongly agree”). A competency was ranked as “high” if 66.7% or more of the participants either “strongly agree” or “agree” on the competency. A competency was ranked as “medium” if greater than 33.3%, but less than 66.7% of participants either “strongly agree” or “agree” on the competency. Finally, a competency was ranked as “low” if 33.3% or less of participants either “strongly agree” or “agree” on the competency.

An a priori decision was established that, if a competency was ranked as “high”, it would be considered validated and would therefore be included in the final list of competencies. If a competency was ranked as “low”, it would not be considered as validated and would therefore be excluded from the final list of competencies. If a competency was ranked as “medium”, it would undergo further screening with SMEs who would vote on whether to include or exclude that competency from the final list. This comprehensive process of ranking competencies ensured appropriate validation of the most relevant competencies for advanced practice physiotherapists.

Additionally, participants’ demographic, practice and education data were analyzed using descriptive statistics of percentages and proportions. All written feedback provided by participants was analyzed using thematic analysis according to Braun and Clarke¹⁸ and word frequency search queries using NVivo 12, QRS International.

5.3 Results

5.3.1 General characteristics of participants

A total of 99 participants completed the survey. This included responding positively to the eligibility question (i.e., Are you currently/previously an advanced practice physiotherapist, or are you involved in the development and research of advanced practice physiotherapy?) and answering at least one additional question from the survey. All 99 participants provided a complete data set for the competencies, and 90 participants provided a complete data set for the demographics with 9 missing data.

Of the 90 participants with complete demographics data, 25% (23/90) were from Australia or Canada, 18% (16/90) from New Zealand or the United Kingdom, 9% (8/90) from Ireland and 4% (4/90) from other countries (i.e., Switzerland and Argentina). Sixty-three percent of participants (57/90) were females, while 33% (30/90) were males. One percent of the participants, 1% (1/90), reported as non-binary. A description of participants' demographics is presented in table 5.1.

Thirty-three percent (30/90) of the participants were between the ages of 40 – 49 years, 29% (26/90) were between 50 – 59 years, and 24% (22/90) were between 30 – 39 years (Table 5.1). Most of the participants had considerable experience as licensed physiotherapists, with 60% (54/90) being licensed for over 20 years and 59% (53/90) having more than 20 years of clinical experience (Table 5.1). Thirty percent 30% (27/90) of participants had over 12 years of experience as advanced practice physiotherapists compared to only 13% (12/90) with less than two years of experience as advanced practice physiotherapists (Table 5.1).

Fifty-four percent, 54% (49/90) of participants, were employed full-time as an advanced practice physiotherapist compared to 34% (31/90) who were employed on a part-time basis.

Most of the participants who reported working full-time were from Canada (37%, 18/49) and New Zealand (20%, 10/49) (Table 5.1)

Eighty-two 82% (74/90) participants reported their titles. A word frequency query on the titles using NVivo 12, QRS International produced 67 different words used to describe the titles. The most frequent words were physiotherapist, advanced, practice and clinical, with a total combined weighted average of 43%. A word cloud map of the titles used by participants is presented in appendix 5.3.

5.3.2 Specialties within advanced practice

More than half, 53% (71/134) of the participants worked in orthopedics or MSK specialty of advanced practice physiotherapy (Figure 5.1). This number was in sharp contrast to other specialties, including accident and emergency 8% (11/134), sports 8% (10/134), pain 7% (9/134), and rheumatology 6% (8/134) (Figure 5.1). Participants had the option of selecting all applicable specialties.

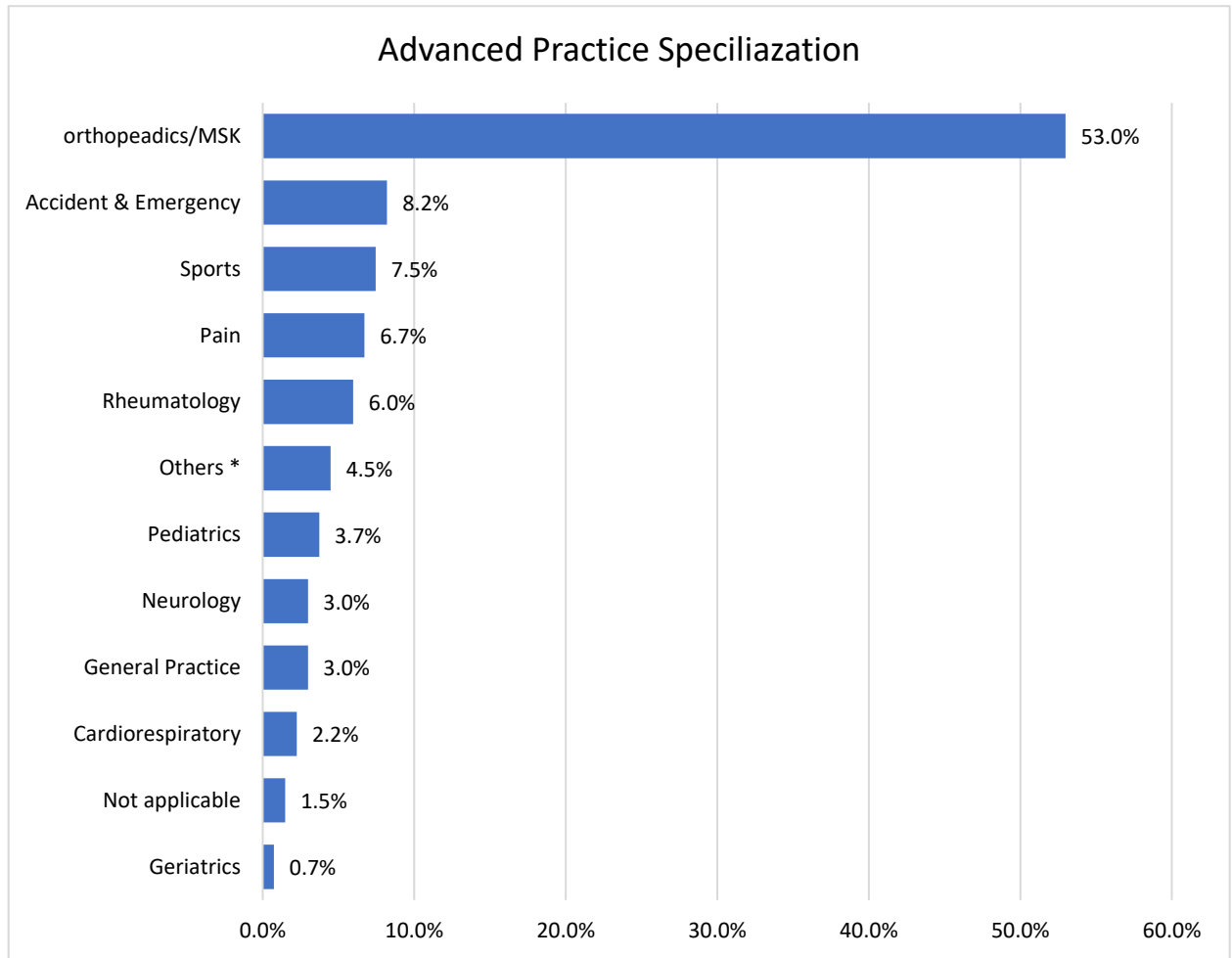
Table 5.1 Demographic characteristics of participants

	Overall (N=90) *	Country, N (%)					
		Australia, 23 (25)	New Zealand 16 (18)	Canada 23 (25)	United Kingdom 16 (18)	Ireland 8 (9)	Others** 4 (4)
Gender							
Male	30 (33)	9 (30)	5 (16.7)	5 (16.7)	6 (20.0)	2 (6.6)	3 (10.0)
Female	57 (63)	12 (21)	10 (17)	18 (32)	10 (17)	6 (11)	1 (2)
Non-binary	1 (1)	0 (0)	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)
Prefer not to answer	2 (2)	2 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Age Groups							
Under 30	2 (2)	0 (0)	0 (0)	0 (0)	0 (0)	2 (100)	0 (0)
30 – 39	22 (24)	9 (41)	0 (0)	6 (27)	4 (18)	1 (5)	2 (9)
40 – 49	30 (33)	5 (16.7)	3 (10)	11 (37)	7 (23)	3 (10)	1 (3)
50 – 59	26 (29)	4 (15)	8 (31)	6 (23)	5 (19)	2 (8)	1 (4)
60+ yrs.	9 (10)	4 (44)	5 (56)	0 (0)	0 (0)	0 (0)	0 (0)
N/A	1 (1)	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Number of years as a licensed physiotherapist							
0 – 4 yrs.	1 (1)	0 (0)	0 (0)	0 (0)	1 (100)	0 (0)	0 (0)
5 – 9 yrs.	5 (6)	1 (20)	0 (0)	1 (20)	1 (2)	2 (40)	0 (0)
10 – 14 yrs.	13 (14)	7 (54)	0 (0)	5 (38)	0 (0)	0 (0)	1 (7)
15 – 19 yrs.	16 (18)	3 (19)	1 (6)	5 (31)	3 (19)	2 (12)	2 (12)
20+ yrs.	54 (60)	12 (22)	15 (28)	11 (20)	11 (20)	4 (7)	1 (2)
N/A	1 (1)	0 (0)	0 (0)	0 (0)	1 (100)	0 (0)	0 (0)
Number of years as an advanced practice physiotherapist							
0 – 2 yrs.	12 (13)	2 (17)	1 (8)	7 (58)	0 (0)	1 (8)	1 (8)
3 – 5 yrs.	23 (26)	7 (30)	2 (9)	9 (39)	4 (17)	0 (0)	1 (4)
6 – 8 yrs.	10 (11)	5 (50)	1 (10)	1 (10)	0 (0)	2 (20)	1 (10)
9 – 11 yrs.	12 (13)	1 (8)	1 (8)	3 (25)	5 (42)	1 (8)	1 (8)
12+ yrs.	27 (30)	6 (22)	10 (37)	3 (11)	6 (22)	2 (7)	0 (0)
N/A	6 (7)	2 (33)	1 (17)	0 (0)	1 (17)	2 (33)	0 (0)
Advanced practice employment status							
Full-time	49 (54)	8 (16)	10 (20)	18 (37)	9 (18)	3 (6)	1 (2)
Part-time	31 (34)	13 (42)	3 (10)	4 (13)	6 (19)	3 (10)	2 (6)
N/A	10 (11)	2 (20)	3 (30)	1 (10)	1 (10)	2 (20)	1 (10)

*Missing characteristics data (n=9)

** Other countries: Switzerland & Argentina

Figure 5.1 Specialties within advanced practice



*Rural health, neurosurgery screening and hand therapy. (Selected all that applied n=134)

5.3.3 Educational status of participants

Almost two-thirds, 64% (58/90) of the participants hold a bachelor's degree as their entry-to-practice physiotherapy degree compared to 17% (15/90) with a graduate-entry master's physiotherapy degree (Table 5.2). In Canada, the largest proportion (60%, 9/15) had a graduate-entry master's degree. Half 50% (45/90) of participants hold a clinical or course-based master's degree as their highest level of education. (Table 5.2)

Twenty-six percent 26% (41/157) of participants were trained in-house, while 24% (38/157) and 23% (36/157) were trained through a master's degree or post-graduate courses, respectively. Most of the participants received their advanced practice training in either a university or post-secondary institution 35%, (46/131), or a health care institute/hospital 32% (42/131). (Table 5.2)

Forty-seven percent 47% (42/90) of participants reported that their advanced practice program was not accredited, while 29% (26/90) reported that their program was accredited. Among the participants who reported that their program was accredited, 39% (10/26) reported that their accreditation was through a university or post-secondary institution, compared to 8% (2/26) who reported the accreditation was through a licensing or regulatory body (Table 5.2).

Table 5.2 Comparison of education status of participants by country (n=90)

	Overall (N=90) * N (%)	Country, N (%)					
		Australia 23 (25.6)	New Zealand 16 (17.8)	Canada 23 (25.6)	United Kingdom 16 (17.8)	Ireland 8 (8.8)	Others** 4 (4.4)
Entry to practice physiotherapy degree							
Diploma	13 (14)	0 (0)	9 (69)	0 (0)	3 (23)	0 (0)	1 (8)
Bachelor'	58 (64)	19 (33)	5 (9)	13 (22)	11 (19)	7 (12)	3 (5)
Grad-entry master's	15 (17)	4 (26)	1 (7)	9 (60)	0 (0)	1 (7)	0 (0)
DPT	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Others+	4 (4)	0 (0)	1 (25.)	1 (25)	2 (50)	0 (0)	0 (0)
Highest level of education							
PhD	10 (11)	1 (10)	3 (30)	1 (10)	1 (10)	3 (30)	1 (10)
Clinical doctorate	4 (4)	2 (50)	0 (0)	1 (25)	1 (25)	0 (0)	0 (0)
Research master's	6 (7)	0 (0)	2 (33)	1 (17)	3 (50)	0 (0)	0 (0)
Clinical/course-based master's	45 (50)	15 (33)	6 (13)	11 (24)	8 (18)	3 (7)	2 (4)
Bachelor's	11 (12)	2 (18)	0 (0)	7 (64)	0 (0)	1 (9)	1 (9)
Diploma	3 (3)	1 (33)	0 (0)	0 (0)	1 (33)	1 (33)	0 (0)
Others◇	11 (12)	2 (18)	5 (46)	2 (18)	2 (18)	0 (0)	0 (0)
Was the Advanced practice training program accredited							
Yes	26 (29)	6 (23)	8 (31)	5 (19)	5 (19)	1 (4)	1 (4)
No	42 (47)	11 (26)	6 (14)	14 (33)	6 (14)	4 (10)	1 (2)
N/A	22 (24)	6 (31.6)	2 (10)	4 (21)	5 (26)	3 (16)	2 (10)
Advanced practice training program (selected all that applied) N = 157							
	Overall (N=157) N (%)	Australia 40 (25.5)	New Zealand 29 (18.5)	Canada 41 (26.0)	United Kingdom 29 (18.5)	Ireland 11 (7.0)	Others** 7(4.5)
Research master's	11 (7)	0 (0)	5 (46)	3 (27)	3 (27)	0 (0)	0 (0)
Clinical master's	38 (24)	16 (42)	6 (16)	6 (16)	7 (18)	2 (5)	1 (3)
Post-grad courses	36 (23)	7 (19)	8 (22)	9 (25)	6 (17)	4 (11)	2 (6)
Residency/fellowship	3 (2)	1 (33)	0 (0)	2 (67)	0 (0)	0 (0)	0 (0)
In house training/ apprenticeship	41 (26)	9 (22)	2 (5)	16 (39)	9 (22)	4 (10)	1 (2)
Other forms training♣	22 (14)	5 (23)	8 (36)	4 (18)	4 (18)	0 (0)	1 (5)
N/A	6 (4)	2 (33)	0 (0)	1 (17)	0 (0)	1 (17)	2 (33)
Advanced practice training institute (selected all that applied) N = 131							
	Overall (N=131) N (%)	Australia 33 (25.2)	New Zealand 25 (19.1)	Canada 34 (26.0)	United Kingdom 23 (17.5)	Ireland 10 (7.6)	Others** 6 (4.6)
Uni or Post-secondary	46 (35)	15 (33)	8 (17)	9 (20)	10 (22)	3 (6)	1 (2)
National PT association	12 (9)	2 (17)	5 (41)	0 (0)	2 (17)	2 (17)	1 (8)
Health care Institute	42 (32)	11 (26)	4 (10)	16 (38)	7 (17)	3 (7)	1 (2)
International Organization	3 (2)	0 (0)	1 (33)	1 (33)	1 (33)	0 (0)	0 (0)
Others♣	20 (15)	2 (10)	7 (35)	7 (35)	2 (10)	1 (5)	1 (5)
N/A	8 (6)	3 (38)	0 (0)	1 (12)	1 (12)	1 (12)	2 (25)

*Missing characteristics data (n=9) ** Other countries: Switzerland & Argentina
+Combined BScPT & DPT ◊ Doctorate (Health Sciences), Post graduate Diploma, Diplôme étude professionnelle approfondie en physiothérapie
♠Ph.D., Queensland Health Extension Program, clinical experience, Self-directed, clinical doctorate, IFOMT, FCAMPT, MACP, ACPAC
♣New Zealand Board of Physiotherapy, Self-directed learning, Online Hybrid Education, RAC-LBP Curriculum

5.3.4 Ranking of competencies

All competency data were ranked by adding the cumulative percentage of the “agree” and “strongly agree” on the Likert scale. Figure 2 is the graphical representation of the ranking of all the competencies. The findings suggest that all the competencies were ranked “high” and validated with a cumulative percentage of 66.7% of participants ranking each competency as “agree” or “strongly agree”.

The highest-ranked competencies were in the “Expert Clinician” and “Communicator” domains. The participants ranked the competency to plan and perform a comprehensive patient assessment using advanced clinical reasoning, shared patient decision-making, planning, evaluation, and evidence-informed clinical knowledge and skills as highly important to their practice (99%). Similarly, the competency to apply a refined level of communication that embraces cultural sensitivity and safety, promoting and respecting diversity, was ranked as highly important by the participants (98.9%). The competency to apply knowledge of institutional and systemic factors (including political, social, and economic factors) that affect health was ranked high at 89.9%. Although the competency was ranked high and validated, it was the lowest-ranked competency under the “Expert Clinician” domain.

The “Collaborator” domain had two highly ranked competencies at 96.8% and 95.8%, respectively. Participants either “agreed” or “strongly agreed” that collaboration is vital to advanced practice and necessary to develop competencies that enable them to collaborate intra- and inter-professionally successfully. An abbreviated version of the competencies under the

collaboration domain is presented in Figure 2, and the full version of the competencies is presented as part of the questionnaire in Appendix 5.2.

The “Leader and Health Advocate” domain received a mixed ranking of competencies. The highest-ranked competency by participants under this domain (93.6%) was to support the improvement of health care delivery teams and lead in developing best practices and standards at the organization and systems level. The lowest-ranked competency (79.8%) by participants under this domain was the competency to measure and evaluate the stewardship and prudent use of health care resources. Similarly, the “Scholar” domain had a mixed ranking of competencies. The highest-ranked competency by participants (96.7%) was the competency to engage in continuous professional development activities by being a lifelong learner and leading the education and training of peers. The lowest-ranked competency (88.0%) was the competency to participate in or lead continuous quality improvement projects, knowledge translation and dissemination, and the implementation and evaluation of an evidence-based approach at all levels of care.

The “Professional” domain has competencies with some of the lowest rankings by participants, although all were ranked above 66.7%. For example, two of the competencies were ranked 84.6% (“Contributes to reviews of legal, professional, ethical, and other relevant standards, codes, and guidelines, and fosters ethical competence and best practices” and “Commits to the practitioner’s and colleague’s health and well-being to foster optimal patient care”). The highest-ranked competency under the “Professional” domain (97.8%) was the competency to commit to the patients, physiotherapy profession, and society by developing and implementing best practices, adhering to and promoting ethical standards (Clinical and Business), and safety.

5.3.5 Written feedback on competencies

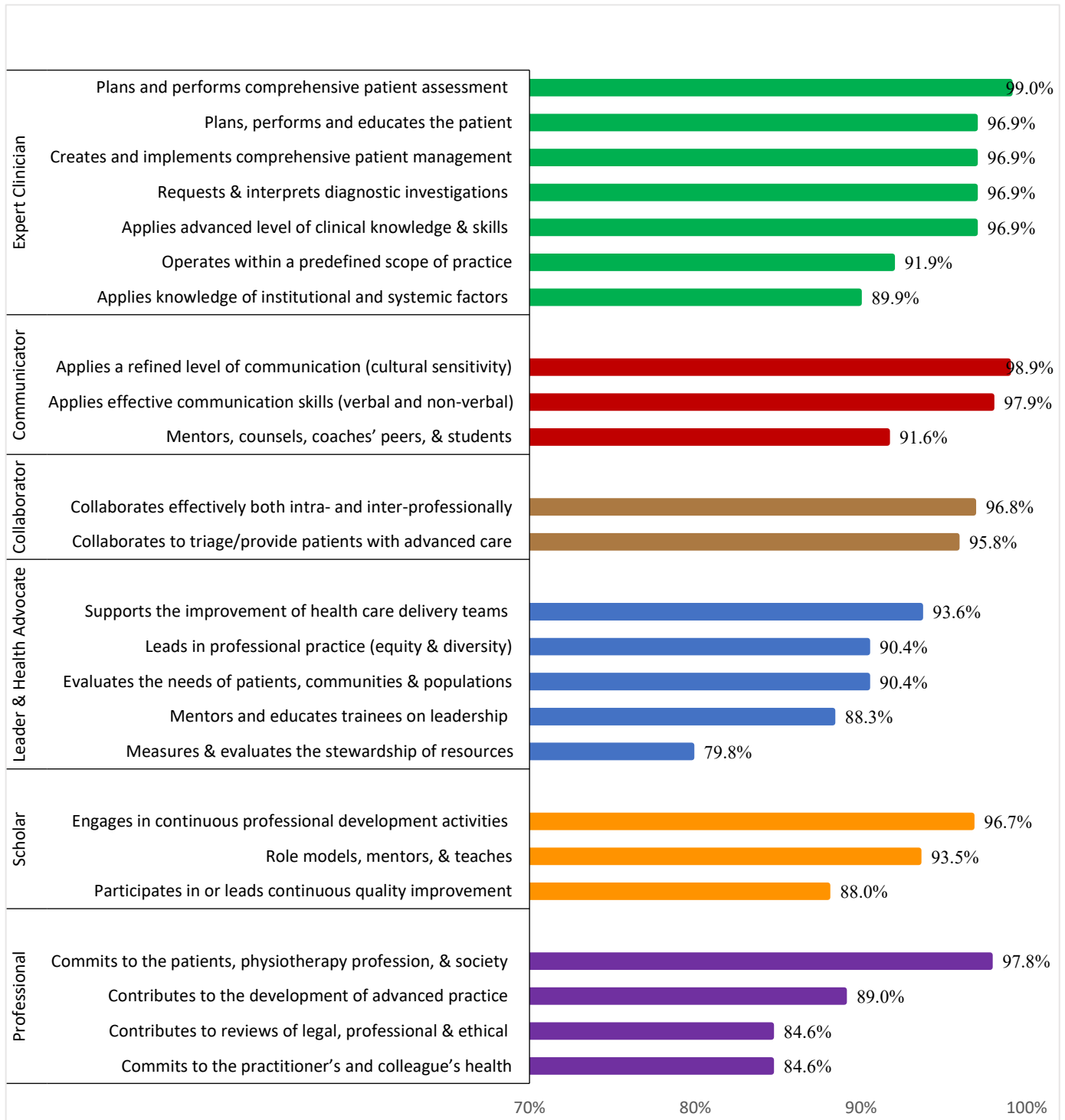
Participants provided over 60 written responses (i.e., feedback and comments) on the competencies. A detailed thematic analysis of the written responses generated one central theme; “the need for institutional support to help attain competencies”. Although all the competencies were adequately validated, some participants cautioned on the need to manage the expectations of being an advanced practice physiotherapist. Participants described the need for time and resource allocation to ensure that practitioners can successfully demonstrate these competencies. The following quotes reflect examples of what some of the participants wrote.

“Yes - I strongly agree with all these competencies; however, they are all impossible to meet (QI, training others) unless there are structural supports in place to enable the [extended scope practitioners] ASPs to meet this competency”.

“There can be very high standards and expectations of clinicians which can become unrealistic and stressful with the external constraints of funders, and yet we are required to adhere to the standards, and these are applied if a complaint is lodged, or an audit is undertaken. This is an issue that needs to be discussed openly; standards around competencies and resourcing need to align for an advanced practitioner to do their job successfully”.

“Need to be mindful not to overburden the advanced practitioner, all of the above are important, but there need to be boundaries”.

Figure 5.2 Cumulative percentage of participant’s ranking of each competency as “agree” or “strongly agree” (n= 90)



The competencies are abbreviated—complete list of competencies in appendix 5.2

Colour codes for domains: **Expert clinician**; **Communicator**; **Collaborator**; **Leader and Health Advocate**; **Scholar**; **Professional**.

5.4 Discussion

The survey aimed to validate the draft of competencies for advanced practice physiotherapists that was developed from a series of focus groups. The survey confirmed the importance that each of the proposed competencies in the profile had to a global advanced practice physiotherapy community. The survey also generated additional feedback on the competencies. To our knowledge, this is the first global survey on the competencies of advanced practice physiotherapists.

The survey findings suggest that the majority of the participants were highly experienced physiotherapists in advanced practice roles. Most of the participants had over 20 years of experience as physiotherapists, with over nine years in advanced practice physiotherapy roles and suggesting this group had in-depth knowledge on the competencies required for the role. Additionally, more than two-thirds of the participants had either a master's or a doctoral degree as their highest level of education, which demonstrates that the participants were highly educated and were competent to respond to the survey.

The findings from this study suggest that competencies directly or indirectly associated with patient care were ranked highly as being essential among advanced practice physiotherapists relative to competencies not related to patient care. An example is that all the competencies under the "Expert Clinician" and "Communicator" domains were ranked higher than the competencies under the "Professional" and "Scholar" domains. Although scholarship and professionalism are important for the advanced practice physiotherapy role, improving patient care through improved outcomes and access to quality care are the central focus of the role and should be the focal point for the competencies of the practitioners. This is also reflected in the highest-ranked competency (99%) "Plans and performs comprehensive patient assessment using advanced level clinical reasoning, shared patient decision making, planning, evaluation and

evidence-informed clinical knowledge and skills,” which demonstrates the importance of clinical reasoning and using evidence-informed clinical knowledge and skills.

Previous studies have compared the clinical skills of advanced practice physiotherapists to that of other medical practitioners in assessing and managing MSK conditions.^{9,19–21} Advanced practice physiotherapists have been found to have a high or equal diagnostic accuracy, lower re-referral rates and a high surgical conversion rate compared to their medical counterparts.^{9,19,21,22}

The ability to request and interpret diagnostic imaging, laboratory investigation and the use of appropriate therapeutic interventions delineate the most advanced practice physiotherapist. An advanced practice physiotherapist uses advanced clinical reasoning to make evidence-informed decisions based on subjective and objective findings. Competencies under the “expert clinician” domain were highly ranked because they directly impact patient care.

The findings from this survey also suggest that advanced practice physiotherapists consider communication as an important competency necessary for the role. The competency “applies a refined level of communication that embraces cultural sensitivity and safety, promoting and respecting diversity” was ranked the highest (98.9%). Previous studies have reported high patient satisfaction with advanced practice physiotherapists, which could be attributed to the effectiveness of their communication with patients.^{7,23,24} The findings from this study suggest that a combination of clinical and communication competencies is central to patient care and is the key domain of competencies for advanced practice physiotherapists.

Competencies under the “Collaborator” domain are vital to advanced practice physiotherapy. One of the most common models of advanced practice physiotherapy is the “orthopedic triage” model, where practitioners work within a centralized intake and assessment process for patients referred for specialist care (Rheumatology or surgery). The triage model requires advanced practice physiotherapists to work collaboratively with a specialist, nurses,

consultants, surgeons and other healthcare practitioners in the patient's care pathway.

Competencies under the collaborator domain were ranked as "high" and suggest the importance of working collaboratively as an advanced practice physiotherapist.

Leadership and advocacy are important in establishing the advanced practice role and leading change within the practice area.²⁵ One of the four pillars of advanced practice in the UK suggests management skills as a key part of the pillars.²⁶ Although management and leadership are important, the competency to "measure and evaluate the stewardship and prudent use of health care resources" and the competency to "mentor and educate trainees" were ranked relatively low (79.8% and 88.3%, respectively) compared to the other competencies. Although these competencies may not be directly related to patient care, they are vital in developing and evaluating the role and sustainability of the role.

Scholarship competencies are essential for advanced practice physiotherapists. A recent opinion paper highlighted the need for the physiotherapy profession in Canada to support the clinician-scientist role by implementing advanced practice physiotherapy.²⁷ There is consensus that advanced practice physiotherapists require a research master's degree, however, the feasibility of implementing the scholarship competencies is seldom addressed in most advanced practice physiotherapy models of care. Findings from this survey suggest that being a life-long learner and training others is highly ranked (96.7%), compared to participating or leading research, quality improvement and knowledge translation (88%). Although advanced practice physiotherapists could lead research and quality improvement studies, it may not be the central part of the competencies of the practitioner, and there should be structures in place to support the demonstration of such competencies. Participants alluded to the fact that there is a need for additional time and resource allocations within the advanced practice physiotherapist role to support these competencies.

Out of the four competencies under the “Professional” domain, three were ranked below 90%. The competency to “commit to the patient, physiotherapy profession, and society by developing and implementing best practices, adhering to and promoting ethical standards (Clinical and Business)” was ranked highest within this domain, 97.8%. The other three competencies under this domain were ranked relatively lower.

Findings from this study suggest that the advanced practice physiotherapy role is primarily centred on clinical, communication and collaboration competencies. However, the other competencies under leadership and advocacy, scholar and professional domains are also essential for the implementation and sustainability of the role. For practitioners to demonstrate these additional competencies, supportive structures and measures by employers and funders of advanced practice physiotherapy roles will be required. There is a need to acknowledge the immense effort and time it takes to lead or contribute to research, quality improvement or mentorship. There is also a need to safeguard time and resources to support practitioners to demonstrate these competencies.

5.5 Strengths and limitations

One of the significant strengths of this study is the timely addition of a validated list of competencies for the advanced practice physiotherapy role. This work supports the notion that there is a need for standardization and consistency in the training of practitioners. Findings from this study provide the first step towards a global standard for the competencies of an advanced practice physiotherapist. Additionally, the response rate of 99 participants from 5 targeted countries supports the need for a global discussion on the competencies for advanced practice physiotherapy.

One of the study's limitations is that although 99 participants out of 100 sample size responded to the survey, a sample size of 100 cannot be generalizable to all advanced practice physiotherapists in the participating countries. An added limitation is the unknown number of advanced practice physiotherapists within these countries as there is no database identifying all advanced practice physiotherapists. Additionally, the participants are from only five countries (UK, Ireland, Canada, Australia and New Zealand), with limited representation from other countries with new and emerging advanced practice roles. Therefore, caution should be taken when generalizing the findings to other countries.

Another limitation of this study is the difficulty of generalizing the findings due to variations in the regulation and scope of practice for the physiotherapy profession in different countries. An activity permitted in one country (e.g., prescribing) may not be permitted in another country. To address this limitation, provisions were made within the competencies developed from this study to allow for modification to meet different local contexts.

Additionally, since the survey was hosted online, there is a possibility of not knowing the exact composition of the participants, as is common with online surveys. To address this limitation, participants were asked to confirm their eligibility before proceeding further with the survey. The eligibility question screened out ineligible participants. Additionally, most of the participants were contacted either directly by the principal researcher, through snowballing or through an email list of advanced practice physiotherapy groups. These different methods of contacting participants ensured that only known advanced practice physiotherapists were contacted, which limited the potential of non-eligible participants completing the survey.

5.6 Conclusion

The findings from the study provide a validated list of global competencies for advanced practice physiotherapy. Although focused on MSK practice, these competencies can be modified to other areas of advanced practice physiotherapy in different countries. The findings suggest that competencies directly or indirectly related to patient care are ranked relatively higher by participants than competencies not related to patient care. The findings from this review also suggest that administrators of advanced practice physiotherapists will need to safeguard time and resources for practitioners to undertake activities related to other competencies under the leadership, scholarship, or professional domains.

This study provides the first step in developing a standardized and consistent international competency profile for advanced practice physiotherapy. Since advanced practice physiotherapy has been developed through institutions, there is currently no consistencies and the international agreement on the design and training of practitioners. These inconsistencies have resulted in confusion within the physiotherapy profession on what advanced practice is and is not and affects the suitability of the role. The competencies developed from this study will serve as a template for national physiotherapy associations interested in developing advanced practice roles to adopt and modify to meet their local context.

5.7 References

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5.8 Appendix

Appendix 5.1 Ethics

Notification of Approval

Date:	May 20, 2020						
Study ID:	Pro00099692						
Principal Investigator:	Andrews Tawiah						
Study Supervisor:	Linda Woodhouse						
Study Title:	Developing a competency profile for Advanced Practice in Physiotherapy						
Approval Expiry Date:	May 19, 2021						
Approved Consent Form:	<table><thead><tr><th>Approval Date</th><th>Approved Document</th></tr></thead><tbody><tr><td>2020-05-20</td><td>Consent for Survey</td></tr><tr><td>2020-05-20</td><td>Consent for Focus Groups</td></tr></tbody></table>	Approval Date	Approved Document	2020-05-20	Consent for Survey	2020-05-20	Consent for Focus Groups
Approval Date	Approved Document						
2020-05-20	Consent for Survey						
2020-05-20	Consent for Focus Groups						

Thank you for submitting the above study to the Research Ethics Board 2. Your application, including the following, has been reviewed and approved on behalf of the committee:

- Survey Email, Version 4, May 19, 2020;
- Focus Group Email, Version 3, May 19, 2020;
- Research Proposal, Version 1, April 3, 2020.

Any proposed changes to the study must be submitted to the REB for approval prior to implementation. A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the Research Ethics Board does not encompass authorization to access the staff, students, facilities or resources of local institutions for the purposes of the research.

Approval by the Research Ethics Board does not encompass authorization to recruit and/or interact with human participants at this time. Researchers still require operational approval (e.g., Alberta Health Services) and must meet the requirements imposed by the public health emergency ([link to Alberta COVID page](#)).

Sincerely,

Ubaka Ogbogu, LLB, BL, LLM, SJD
Chair, Research Ethics Board 2

Appendix 5.2 Survey questionnaire

Welcome Page

Why am I being invited to participate:

You are invited to participate in this global online survey to help develop a competency profile for advanced practice physiotherapists because you are/were working as an advanced practice physiotherapist, or you are/were involved in the development and research of advanced practice physiotherapy.

The purpose of the survey:

The survey is part of a larger body of work aimed at developing an internationally accepted competency profile for advanced practice physiotherapy roles. There is currently no internationally accepted competencies for advanced practice physiotherapy. With the rapid expansion of the role across different countries, there is a need to identify advanced practice physiotherapy competencies for consistent implementation and acceptability of the role.

How much time will this take:

The survey should take approximately 20-30 mins to complete. You are under no obligation to participate. If you choose to participate and prefer not to answer a particular question, you can select "neither agree nor disagree" for competencies and you can skip demographic questions.

Once you have completed the survey, please click on the "done" button. You can always save your responses and return to the survey. Responses are saved when you click the Next or Done button on each page. You can return by re-opening the link to the survey.

Due date:

We would appreciate it if you could complete the survey by July 8th, 2021. We will send you 2 email reminders.

Contacts:

If you have any questions or require more information, you may contact the researcher (or supervisors) at the contacts listed below:

Andrews Tawiah (Ph.D. Candidate) - atawiah@ualberta.ca

Dr. Marguerite Wieler - mwieler@ualberta.ca

Dr. Linda Woodhouse - linda.woodhouse@ualberta.ca

Consent:

This study has been reviewed and given approval by the Human Research Ethics Board at the University of Alberta. If you have any questions regarding your rights as a research participant or how the research is being conducted you may contact the University of Alberta's Research Ethics Office at 780-492-2615. You can also find the full consent form at this [link](#). If you want us to contact you later for further research in advanced practice, please provide your email address at the end of the survey. Your survey responses will not be linked to your email.

Definitions and overview of the survey

For this survey, the following definitions apply:

Advanced practice physiotherapy: Is a combination of advanced skills, knowledge, and attitudes that enables physiotherapists to address complex problems and manage risk; it is the use of advanced critical thinking to deliver care to patients with complex needs safely and competently following a training process at the post-licensure level (CSP, 2016).

Competency: Is an observable ability of a health professional related to a specific activity that integrates knowledge, skills, values, and attitudes (J.R Frank et al., 2010).

We acknowledge that advanced practice physiotherapist needs "Capabilities" to develop and be flexible to meet future needs. This project focuses on developing competencies that are required as the minimum standard for becoming an advanced practice physiotherapist.

Survey Methodology

This survey was developed based on feedback from 4 focus groups conducted with participants from 5 different countries (Australia, New Zealand, Canada, United Kingdom, and Ireland) and consultation with subject matter experts.

The survey begins with a list of 24 proposed competencies grouped under 6 domains, with 1 domain per page. Each page begins with a description of the domain followed by a list of the competencies within that domain. You are asked to rate each competency based on its importance to your practice. The next set of questions focuses on demographics, education, and remuneration that are essential to data analysis.

Use the Prev/Next buttons at the end of each page to navigate through the pages.

Please click next to proceed.

Eligibility

* 1. Are you currently/previously an advanced practice physiotherapist, or are you involved in the development and research of advanced practice physiotherapy?

- Yes
- No (end of survey)

Domain 1 - Expert Clinician

Description: Advanced practice physiotherapist applies advanced depth and breadth of knowledge, skills, and clinical reasoning informed by best available evidence in providing high-quality, safe, patient-centred care for individuals who present with highly complex findings often due to multimorbidity.

* 2. Please rate each competency (1-7) using the following statement:

As an advanced practice physiotherapist/researcher, I believe that developing the following advanced clinician competencies is important for the practice.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Applies an expert level of clinical knowledge, skills, and understanding of best practices. Uses clinical experience and techniques, drawing on formal and informal education, and consultation within and outside the physiotherapy profession to make autonomous decisions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Operates within a predefined scope of practice within the legal parameters of their jurisdiction and with appropriate authorizations (which may fall within or outside the traditionally accepted scope of physiotherapy practice).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Plans and performs comprehensive patient assessment using advanced-level clinical reasoning, shared patient decision making, planning, evaluation, and evidence-informed clinical knowledge and skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Requests and interprets diagnostic investigations based on jurisdictional provisions and with appropriate predetermined authorizations (e.g., Diagnostic imaging or laboratory investigations).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Creates and implements comprehensive patient management using advanced-level clinical reasoning, shared patient decision-making, and evidence-informed clinical knowledge and skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Plans, performs and educates the patient about appropriate therapeutic interventions (e.g., medications, therapeutic injections, or arterial blood gases) based on the patient's condition and clinician's level of expertise within their predefined and authorized additional scope of practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Applies knowledge of institutional and systemic factors (including political, social, and economic factors) that affect health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments: (e.g. Are there any competencies that you believe have not been covered under this domain? If you answered disagree or strongly disagree, can you provide us with additional comments)

Domain 2 - Communicator

Description: Advanced practice physiotherapist develops effective and refined communication skills to nurture relationships with patients, families, other clinicians, and other healthcare services (example: Department/ministries of health, public health agencies, and professional regulatory bodies).

* 3. Please rate each competency (8-10) using the following statement:

As an advanced practice physiotherapist/researcher, I believe that developing the following competencies as a communicator is important for the practice.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
8. Applies effective communication skills (verbal and non-verbal) in managing complex and challenging situations both intra- and inter-professionally, and intersectoral.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Mentors, counsels, coaches' peers, and students to manage professional communication with patients, healthcare professionals, and health care systems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Applies a refined level of communication that embraces cultural sensitivity and safety, promoting and respecting diversity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments: (e.g. Are there any competencies that you believe have not been covered under this domain? If you answered disagree or strongly disagree, can you provide us with additional comments)

Domain 3 - Collaborator

Description: Advanced practice physiotherapist uses inclusive, collaborative, and consultative approaches with patients, relevant health professionals, and others to provide an advanced level of evidence-informed care.

* 4. Please rate each competency (11-12) using the following statement:

As an advanced practice physiotherapist/researcher, I believe that developing the following competencies as a collaborator is important for the practice.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
11. Collaborates to triage or provide patients with advanced clinical care (e.g., Accident and emergency case management, Orthopedic triage/Rheumatology/Neurology/Respiratory triage, or Continence and Pelvic health).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Collaborates effectively both intra- and inter-professionally and promotes understanding, manages differences, and contributes to building effective interprofessional and evidence-informed teams.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments: (e.g. Are there any competencies that you believe have not been covered under this domain? If you answered disagree or strongly disagree, can you provide us with additional comments)

Domain 4 - Leader and Health Advocate

Description: Advanced practice physiotherapist leads the development of services and provision of high-quality service, and advocates for their patients at all levels of care.

* 5. Please rate each competency (13-17) using the following statement:

As an advanced practice physiotherapist/researcher, I believe that developing the following competencies as a leader and health advocate is important for the practice.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
13. Evaluates the needs of patients, communities, and the populations they serve by advocating and leading change to improve their care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Supports the improvement of health care delivery teams and leads in the development of best practices and standards at the organization and systems level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Measures and evaluates the stewardship and prudent use of health care resources.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Mentors and educates trainees on leadership within their field of practice, both within and outside the profession.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Leads in professional practice including respecting and promoting equity and diversity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments: (e.g. Are there any competencies that you believe have not been covered under this domain? If you answered disagree or strongly disagree, can you provide us with additional comments)

Domain 5 - Scholar

Description: Advanced practice physiotherapist is a lifelong learner who engages in continuous quality improvement, knowledge translation and dissemination, and clinical research to enhance patient care and improve the healthcare system.

* 6. Please rate each competency (18-20) using the following statement:

As an advanced practice physiotherapist/researcher, I believe that developing the following scholarly competencies is important for the practice.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
18. Role models, mentors, and teaches to enhance the lifelong learning of students, colleagues, other health professionals, and the public.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Participates in or leads continuous quality improvement projects, knowledge translation and dissemination, and the implementation and evaluation of an evidence-based approach at all levels of care. Involved in knowledge generation through clinical research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Engages in continuous professional development activities by being a life-long learner and leading the education and training of peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments: (e.g. Are there any competencies that you believe have not been covered under this domain? If you answered disagree or strongly disagree, can you provide us with additional comments)

Domain 6 - Professional

Description: Advanced practice physiotherapist commits to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, professional regulatory bodies, and maintenance of personal health.

* 7. Please rate each competency (21-24) using the following statement:

As an advanced practice physiotherapist/researcher, I believe that developing the following professional competencies is important for the practice.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
21. Commits to the patients, physiotherapy profession, and society by developing and implementing best practices, adhering to and promoting ethical standards (Clinical and Business), and safety.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Contributes to the development of advanced practice physiotherapy through developing frameworks (e.g. medical directives) to support the implementation and operationalization of the role to comply with legal and regulatory requirements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Commits to the practitioner's and colleague's health and well-being (work-life balance) to foster optimal patient care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Contributes to reviews of legal, professional, ethical, and other relevant standards, codes, and guidelines, and fosters ethical competence and best practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments: (e.g. Are there any competencies that you believe have not been covered under this domain? If you answered disagree or strongly disagree, can you provide us with additional comments)

Demographics

8. What is your country of practice?

- Australia
- New Zealand
- Canada
- United Kingdom
- Ireland
- Other (please specify)

9. Gender: How do you identify?

- Male
- Non-binary
- Female
- Prefer to self-describe, below
- Not applicable

Self-describe:

10. What is your age category?

- Under 30
- 30-39
- 40-49
- 50-59
- 60+
- Not applicable

11. How many years have you been a licensed/registered physiotherapist?

- 0 - 4 years
- 5 - 9 years
- 10 - 14 years
- 15 - 19 years
- 20+ years
- Not applicable

12. How many years have you worked in clinical practice as a physiotherapist?

- 0 - 4 years
- 5 - 9 years
- 10 - 14 years
- 15 - 19 years
- 20+ years
- Not applicable

13. For clinicians, how many years have you worked as an advanced practice physiotherapist?

- 0 - 2 years
- 3 - 5 years
- 6 - 8 years
- 9 - 11 years
- 12+ years
- Not applicable

14. For researchers/administrators, how many years have you been involved in the development and research of advanced practice physiotherapy?

- 0 - 2 years
- 3 - 5 years
- 6 - 8 years
- 9 - 11 years
- 12+ years
- Not applicable

15. What is your current advanced practice physiotherapy employment status?

- Full-time employment
- Part-time employment
- Unemployed
- Retired
- Not applicable

16. If you are employed part-time, please indicate your Full-Time Equivalent (FTE)

17. What is the proportion of time you spend in each role (paid or unpaid) Percentages should add up to 100%, including what you list under "other"

	100%
Clinician	<input type="text"/>
Researcher	<input type="text"/>
Administrator	<input type="text"/>
Educator	<input type="text"/>

Other (please specify the role and percentage of time in that role)

18. What is your current job title?

19. Where do you work? (Please select all that apply and include an estimate of the percentage for each practice setting. Percentages should add up to 100%, including what you list under "other")

100%

Public Sector	<input type="text"/>
Private Sector	<input type="text"/>
Hospital (Inpatient)	<input type="text"/>
Hospital (Outpatient)	<input type="text"/>
Community practice (e.g. Homecare or public health)	<input type="text"/>
University	<input type="text"/>

Other (please specify)

20. What is your primary area of advanced practice physiotherapy? (Please select all that apply).

- General practice
- Burns and wound management
- Pediatric
- Amputations
- Orthopedics/Musculoskeletal
- Rheumatology
- Geriatrics
- Continence and Pelvic Rehabilitation
- Oncology
- Critical care
- Cardiorespiratory
- Neurology
- Palliative care
- Occupational Health and Ergonomics
- Intellectual disability
- Accident and Emergency (Emergency Department)
- Pain
- Sports Physical Therapy
- Other (please specify)

- Not applicable

Education

21. What is your entry-to-practice physiotherapy degree?

- Diploma
- Bachelor's Degree
- Graduate Entry Master's Degree
- Doctor of Physical Therapy
- Other (please specify)

- Not applicable

22. What is your highest level of education?

- PhD
- Clinical Doctorate
- Research Masters
- Clinical/Course-based Masters
- Bachelors
- Diploma
- Other (please specify)

- Not applicable

The next set of questions (Questions 23 - 25) relates to your practice as a clinician. Please select "Not Applicable" if it doesn't apply to you.

23. What training enabled you to work as an advanced practice physiotherapist? (Please select all that apply)

- Research masters degree
- Clinical master degree
- Post graduate courses
- Residency or Fellowship
- In-house training or Apprenticeship
- Other (please specify)

Not applicable

24. Which institution/organization conducted the training that enabled you to work as an advanced practice physiotherapist? (Please select all that apply)

- University or Post Secondary Institution
- National Physiotherapy Professional Association
- Health Care Institutions (e.g. Hospitals)
- International Physiotherapy Organisation (e.g. IFOMPT)
- Other (please specify)

Not applicable

25. Was the program that trained you to be an advanced practice physiotherapist accredited?

- Yes
- No
- Not applicable

Education

26. Which Institution/organization provided accreditation for the program?

- National Physiotherapy Professional Association
- International Physiotherapy Organisation (e.g. IFOMPT)
- University or Post Secondary Institution
- Licensing or Regulatory Body
- Other (please specify)

- Not applicable

Remuneration

27. Is there an additional remuneration (Payment or non-monetary compensation) for advanced practice physiotherapist in your location?

- Yes
 No
 Not applicable

28. If non-monetary compensation is provided, please elaborate. If not, please write Not Applicable (N/A).

29. Which organization provides the source of funding for the advanced practice physiotherapy role? (Please select all that applies)

- Hospital Global Budget
 Special Project Grant
 Government/Ministry of Health
 Industry Support (e.g. Arthritis Society)
 Other (please specify)

- Not applicable

30. Please rate the following statement:

The remuneration for advanced practice physiotherapists aligns with the duties and responsibilities of the work.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Not applicable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Would you like to elaborate?

Future Research

31. We would like to contact you in the future to see if you would be interested in participating in another study on advanced practice physiotherapy. Please indicate below if you are willing to be contacted about any future research studies.

- Yes - I agree to be contacted about future research studies
- No - I do not want to be contacted about future research studies

Future Research

32. Can you provide us with your email address? (Your survey responses will not be linked to your email address)

Email Address

CHAPTER 6

GENERAL DISCUSSION AND CONCLUSIONS

6.1 Introduction

The aim of this thesis was to develop a competency profile as a framework to support the development of international competencies for advanced practice physiotherapy. This thesis explored advanced practice within the global physiotherapy community and described the processes used to develop and validate the competencies associated with the advanced practice roles. This chapter will present a brief synopsis of the findings from the included studies, a discussion of the contribution of each study to the development and validation of the competencies, and a presentation of the final competency profile. The chapter will conclude with a general discussion of the profile, the strengths and limitations of the thesis, and suggestions for future directions.

6.2 Advanced practice in physiotherapy: A global survey (Chapter 2)

The survey aimed to describe the current state of advanced practice physiotherapy across the global physiotherapy community¹. The findings from this survey provided important background information on the countries with advanced practice physiotherapy roles, the titles used by those practitioners, regulation of the role, and finally, the competencies or educational framework that support the role. Additionally, this study reported on essential facilitators and barriers to implementing advanced practice physiotherapy.

The survey presented in chapter 2 is the first international survey of advanced practice physiotherapy.¹ Although previous studies have looked at other aspects of advanced practice physiotherapy, such as patient outcomes, patient experience, diagnostic agreement with surgeons,

surgical conversion rate and economic benefits, no study has explored the current state of advanced practice physiotherapy across different countries.²⁻⁷

A novel finding from this study was that 14 world physiotherapy member organizations have formal advanced practice physiotherapy roles. Additionally, there was no consensus on the title or the competencies for advanced practice physiotherapy. This study highlighted the need for standardized competencies and training as an important future direction for advanced practice physiotherapy. The need for standardized competencies was identified by Fennelly et al.⁸ in their study on developing advanced MSK physiotherapy practice education curricula and the (World Physiotherapy) WP position statement on advanced practice physiotherapy.⁹

Overall, the findings from this global survey provided important data on the current state of advanced practice physiotherapy across WP member organizations. Additionally, the survey provided background knowledge and information for the subsequent studies conducted in this thesis. This study has been published in the journal “Physiotherapy.”

6.3 Developing international competencies for advanced practice physiotherapy: A scoping review (Chapter 3)

This study aimed to identify the available literature (published and grey) on the competencies of advanced practice physiotherapy by different countries, government agencies, and organizations. Findings from the scoping review resulted in developing the 1st draft of international competencies. Thirteen reports (grey literature) and six research papers (published) were identified and included in this review. The findings suggested that advanced clinical competencies, leadership, communication and scholarship competencies were central in all the documents reviewed. These findings are similar to the four pillars of advanced practice (clinical practice, leadership and management, education, and research) in the United Kingdom (UK).¹⁰

One of the main differences in the advanced practice competencies across the different countries is in the scope of practice for each country. For example, in the UK, advanced practice physiotherapists need to demonstrate competencies in medical imaging and independent prescribing, as opposed to countries like Australia, New Zealand and Ireland, where competencies in medical imaging are through medical delegation, with no prescribing rights. Provincial regulation of physiotherapy practice in Canada dictates what physiotherapists can do.

Significantly, findings from this review contributed to the development of the 1st draft of competencies, which captured the key similarities among all competencies included in the review. The 1st draft of competencies is the first set of competencies for advanced practice physiotherapy that combined published and grey literature from five countries, forming the initial step in developing an internationally agreed set of competencies.

6.4 Developing international competencies for advanced practice physiotherapy: Findings from focus groups (Chapter 4)

The focus groups aimed to seek the opinion of advanced practice physiotherapists, researchers, and administrators on the 1st draft of competencies. The focus groups brought together key stakeholders in advanced practice physiotherapy from five countries to discuss advanced practice competencies and suggest new competencies and modifications to the first draft.

Five main themes were developed from the focus groups, which included: clinical expertise, experienced communicator, strong leadership skills, collaboration and knowledge creation and dissemination. The themes were used to develop a revised version of the competencies (2nd draft). The findings from the focus groups suggested that advanced practice physiotherapists are expert clinicians with effective and refined communication skills developed

from years of experience in dealing with complex patients and collaboration with other health care professionals. The findings also suggest that advanced practice physiotherapists are skilled advocates, collaborators, and knowledge generators. Advanced practice physiotherapists are leaders in their field and advocate for the profession and patients. The findings from the focus groups informed the revision of the 1st draft of the competencies and the development of the 2nd draft. The 2nd draft provided the foundation for the subsequent study.

6.5 Developing international competencies for advanced practice physiotherapy: A global validation survey of competencies (Chapter 5)

The survey aimed to validate (face validity) the 2nd draft of competencies through a relative rating method and solicited additional feedback on the relative importance of each competency from a larger population of advanced practice physiotherapists.

Interestingly, all of the competencies presented were validated with a rating of “high” based on a scoring of 66.7% or higher. The “high” rating suggested that all of the proposed competencies should be included in the final version of this new competency profile. The findings from the survey also suggested that participants ranked the competencies directly or indirectly related to patient care (i.e., expert clinician, communicator, and collaborator domains) higher relative to the competencies not related to patient care (i.e., leader and health advocate, scholar, professional domains).

In addition, the findings from the survey also suggested that advanced practice physiotherapists felt that to demonstrate the competencies under the leader and health advocate, scholar, and professional domains, they required additional resources and protected time allocated for these competencies. It was noted that the research, program development, teaching, and mentorship competencies would require additional time and resource allocation outside of

regular clinical practice. Participants also cautioned about setting high and unrealistic expectations for advanced practice physiotherapists, which may be unachievable.

Overall, the findings from this survey suggested that all competencies were duly validated. However, there is the need to set up structures and support systems to ensure that advanced practice physiotherapists demonstrate these competencies. The final list of competencies was developed based on all the validated competencies and the additional feedback received from the survey.

6.6 Integrated discussion

6.6.1 Final competency profile

All the validated competencies and the revisions made were based on the feedback from the validation study and were included in the final list of competencies (Table 6.1). The final list of advanced practice competencies included self-reflection and self-evaluation under the communicator domain. This modification was based on the feedback received from participants in the validation survey. Participants suggested that for advanced practice physiotherapists to communicate effectively, they must self-reflect and self-evaluate before engaging in communications. These revisions reflect the advancement and refinement in the communication practices of advanced practice physiotherapists. The final competency profile (see Table 6.1) consists of a list of 24 validated competencies categorized into 6 domains with a description of each domain.

Table 6.1 Final competency profile for advanced practice physiotherapy (new modifications are in red text)

Domain Description	Competencies
<p>Expert Clinician: Advanced practice physiotherapists apply advanced depth and breadth of knowledge, skills, and clinical reasoning informed by best available evidence to provide high-quality, safe, patient-centred care for individuals who present with highly complex findings often due to multimorbidity.</p>	<ol style="list-style-type: none"> 1. Applies advanced clinical knowledge, skills, and understanding of best practices. Uses clinical experience and techniques, drawing on formal and informal education and consultation within and outside the physiotherapy profession to make autonomous decisions. 2. Operates within a predefined scope of practice within the legal parameters of their jurisdiction and with appropriate authorizations (which may fall within or outside the traditionally accepted scope of physiotherapy practice). 3. Plans and performs comprehensive patient assessment using advanced clinical reasoning, shared patient decision-making, planning, evaluation, and evidence-informed clinical knowledge and skills. 4. Requests and interprets diagnostic investigations based on jurisdictional provisions and appropriately predetermined authorizations (e.g., Diagnostic imaging or laboratory investigations). 5. Creates and implements comprehensive patient management using advanced clinical reasoning, shared patient decision-making, and evidence-informed clinical knowledge and skills. 6. Plans, performs and educates the patient about appropriate therapeutic interventions (e.g., medications, therapeutic injections, or arterial blood gases) based on the patient’s condition and clinician’s level of expertise within their predefined and authorized additional scope of practice. 7. Applies knowledge of institutional and systemic factors (Including political, social, and economic factors) that affect health.
<p>Communicator: Advanced practice physiotherapist develops effective and refined communication skills to nurture relationships with patients, families, other clinicians, and other healthcare services.</p>	<ol style="list-style-type: none"> 8. Applies effective communication skills (verbal and non-verbal) through self-reflection and self-evaluation in managing complex and challenging situations intra- and inter-professionally, and intersectorally. 9. Mentors, counsels, coaches’ peers, and students to manage professional communication with patients, healthcare professionals, and health care systems. 10. Applies a refined level of communication that embraces cultural sensitivity and safety, promoting and respecting diversity.
<p>Collaborator: Advanced practice physiotherapist uses inclusive, collaborative, and consultative approaches with</p>	<ol style="list-style-type: none"> 11. Collaborates to triage and provide patients with advanced clinical care and appropriate referral (e.g., Accident and emergency department case management, Orthopedic triage/Rheumatology/Neurology/Respiratory triage, or Continence and Pelvic health).

patients, relevant health professionals, and others to provide an advanced level of evidence-informed care.

Leader and Health advocate:

Advanced practice physiotherapists lead or **contribute** to the development of services and provision of high-quality service and advocate for their patients at all levels of care.

12. Collaborates effectively both intra- and inter-professionally, promotes understanding, manages differences, and contributes to building effective interprofessional and evidence-informed teams.

13. **Supports** the needs of patients, communities, and the populations they serve by advocating and leading change to improve their health and healthcare.

14. Supports the improvement of health care delivery teams and **contributes** to developing best practices and standards at the organization and systems level.

15. Measures and evaluates the stewardship and prudent use of health care resources.

16. Mentors and educates trainees on leadership within their field of practice, both within and outside the profession.

17. Leads in professional practice, including respecting and promoting equity and diversity.

Scholar:

Advanced practice physiotherapists are lifelong learners who engage in continuous quality improvement, knowledge translation and dissemination, and clinical research to enhance patient care and improve healthcare.

18. Role models, mentors, and teaches to enhance the lifelong learning of students, colleagues, other health professionals, and the public.

19. **Leads or contributes** to continuous quality improvement projects, knowledge translation and dissemination, and the implementation and evaluation of an evidence-based approach at all levels of care. **Leads or contributes** to knowledge generation through clinical research.

20. Engages in continuous professional development activities by being a life-long learner and leading the education and training of peers.

Professional:

Advanced practice physiotherapists commit to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, professional regulatory bodies, and personal health maintenance.

21. Commits to the patients, physiotherapy profession, and society by developing and implementing best practices, adhering to, and promoting ethical standards (Clinical and Business) and safety.

22. Commits to developing advanced practice physiotherapy through developing frameworks (e.g., medical directives) to support the implementation and operationalization of the role to comply with legal and regulatory requirements.

23. Commits to the practitioner's and colleague's health and well-being (work-life balance) to foster optimal patient care.

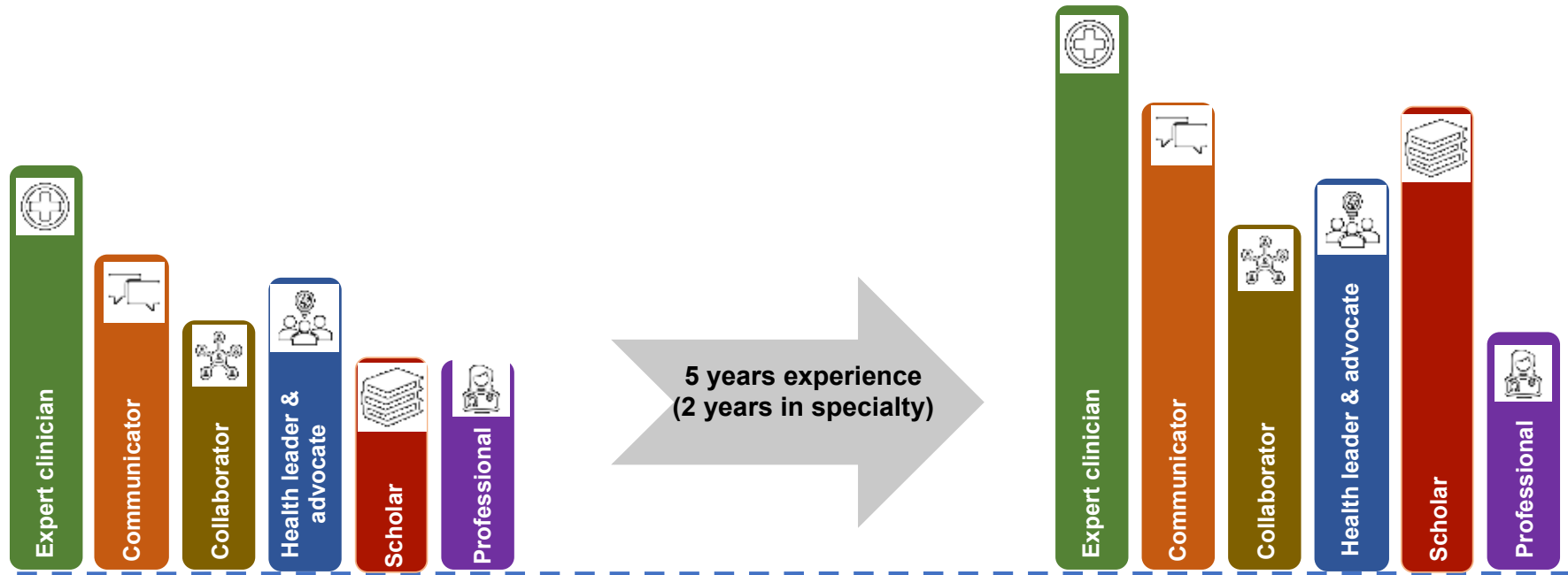
24. Contributes to reviews of legal, professional, ethical, and other relevant standards, codes, and guidelines and fosters ethical competence and best practices.

6.6.2 Comparing competencies of advanced practice physiotherapists to those of entry-to-practice physiotherapists

Comparing the competencies of advanced practice physiotherapists to those of entry-to-practice (entry-level) physiotherapists is important in understanding the progression of competencies from entry-level to advanced practice and identifying any differences or similarities. The National Physiotherapy Advisory Group (NPAG) essential competency profile for an entry-level physiotherapist in Canada¹¹ was used as a baseline comparator because it is a domain or role-based competency profile and was developed using a similar process described by Bonham et al.¹². The NPAG competency profile for entry-level physiotherapists consists of 7 domains, 34 essential competencies and a list of milestones for each competency. The current comparison focuses on only the domains and competencies. Figure 6.1 depicts the relative progression of competencies from entry-level physiotherapists to advanced practice physiotherapists. Advanced practice physiotherapists have, on average, 5 years of experience, with 2 years in a particular specialty.¹³⁻¹⁵

There is a clear progression from entry-level to advanced practice for all the competencies. First, entry-level physiotherapists must demonstrate adequate clinical competencies to assess patients; establish prognosis and diagnosis, plan and deliver care. Advanced practice physiotherapists must further demonstrate advanced clinical reasoning and decision-making. With training from disciplines outside of physiotherapy, such as orthopedic surgery, rheumatology and radiology, advanced practice physiotherapists develop and use clinical reasoning skills to request and interpret diagnostic imaging and laboratory investigation and make informed decisions based on these tests.

Figure 6.1 Graphical depiction of the progression in levels of competencies required from entry-level to advanced practice physiotherapist



Secondly, in some jurisdictions, advanced practice physiotherapists need competencies in prescribing medications and performing therapeutic injections to support patient care. This demonstrates a clear progression in competencies from entry-level physiotherapists.

There is a clear progression in communication competencies from entry-level to advanced practice. Entry-level physiotherapists are expected to have adequate communication skills to communicate their clinical findings to their patients and communicate with other clinicians. Advanced practice physiotherapists are expected to progress from simple sufficient communication competencies to effective and refined communication competencies. Effective and refined communication is developed based on exposure to multiple complex patients, continuous discussions and interactions with medical specialists and other healthcare professionals and negotiations with institutions and healthcare agencies. Refined communication skills are also gained through self-reflection and self-evaluation. Additional communication competencies for advanced practice physiotherapists include cultural sensitivity, respecting diversity, mentoring, and training others on effective and refined communication.

The progression in collaboration competencies for advanced practice physiotherapists is a higher level of collaboration compared to entry-level physiotherapists. Advanced practice physiotherapists collaborate with physicians, surgeons, rheumatologists, and other health professions as equal team members. Advanced practice physiotherapists in some jurisdictions can refer patients for a surgical consult, refer patients to other specialists or discharge patients post-surgery. This level of collaboration and teamwork is not an expected competency for entry-level physiotherapists.

There are some similarities in the competencies of advanced practice physiotherapists and those of entry-level physiotherapists under the management, leadership (leader and health advocate), scholarship and professional domains. The entry-level physiotherapist is expected to

pursue leadership, advocacy, aid in resource utilization, contribute to research and supervise others. However, additional competencies for advanced practice physiotherapists include actively measuring and evaluating the use of evidence and resources within the role. These evaluations can be achieved through leading or contributing to clinical research, continuous quality improvement initiatives, knowledge translation and dissemination.

Additionally, the additional competencies under the professional domain for advanced practice physiotherapists include developing frameworks, legal, ethical, and professional standards to support advanced practice physiotherapy. Entry-level physiotherapists are expected to adhere to standards, legal and ethical frameworks guiding the profession but are not expected to demonstrate competencies in developing these frameworks.

Although there is a clear progression in the competencies from entry-to-practice to advanced practice, advanced practice physiotherapists are primarily physiotherapists, and it is assumed that they have already demonstrated entry-level competencies (and beyond) before advancing. Therefore, being a physiotherapist's core competencies and skills are still essential and relevant to the advanced practice physiotherapist. However, the competencies identified in this thesis work highlight the additional knowledge, skills, and attributes as physiotherapists transition from entry-level to advanced practice roles. The competencies identified and described in this thesis are to ensure that advanced practice physiotherapists can practice in a more consistent, safe, and effective manner. These competencies can also ensure the transportability of skills and professionals between institutions and jurisdictions and ensure standardization in the development and training of practitioners. Finally, these competencies enhance, by building upon, the competencies developed during entry-to-practice and should not be seen as overshadowing them.

6.6.3 Comparing the competencies of an advanced practice physiotherapist and those of an advanced practice nurse

The advanced practice nursing role is one of the early models of advanced practice in healthcare.^{16,17} The role was established at the primary care level to support patient care in locations lacking medical practitioners.¹⁸ According to the International Council of Nurses (ICN), an advanced practice nurse is a “registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice. A master’s degree is recommended for entry-level.”¹⁹ The advanced practice nurse has an expanded scope of clinical practice with authority to order diagnostic tests autonomously, make a diagnosis, and prescribe treatment and medications.¹⁹

Earlier models of advanced practice physiotherapy were based on the advanced practice nursing role. Comparing the competency profile for advanced practice physiotherapy to that of the advanced practice nursing role will aid in understanding the key similarities and differences between the two roles. Comparing the competencies also helps identify the additional competencies required of an advanced practice physiotherapist.

There are significant similarities in the competencies of an advanced practice physiotherapist and an advanced practice nurse. In the UK and Ireland, the advanced practice nursing role is based on the four pillars of advanced practice: clinical practice, facilitating learning, leadership and evidence, research, and development. These pillars are similar to the six competency domains identified in this thesis work for advanced practice physiotherapists (i.e., clinical expertise, communication, collaborator, leader and health advocate, scholar and professional). These similarities in competency domains may be attributed to the fact that the

same four pillars for developing the advanced practice physiotherapy role were used in the UK and Ireland. Additionally, the competencies identified in this thesis are similar to the characteristics of the advanced practice nursing role, which includes extended clinical skills, professional development, organizational leadership, research, and education.¹⁷

The main difference between advanced practice physiotherapists and advanced practice nurses is the scope of their clinical competencies. For example, advanced practice physiotherapists have advanced clinical competencies and skills in musculoskeletal practice and are considered experts in this field, while advanced practice nurses have a much broader clinical skill set with a broader scope.²⁰ Therefore, the advanced practice nurse working in primary care setting will demonstrate clinical skills equivalent to that of a general practitioner. However, an advanced practice physiotherapist in a similar role will need to demonstrate clinical skills in MSK conditions closer to the equivalency of a sports medicine physician or an orthopedic surgeon. The similarities and differences in the competencies of an advanced practice physiotherapist and the advanced practice nurse suggest that the roles are similar but with different clinical scopes of practice. An example is that while an advanced practice physiotherapist is more suited for triage roles for patients referred for arthroplasty, the advanced practice nurse is more suitable for general practice roles related to diseases such as diabetes.

6.7 Strengths and Limitations

An important strength of this thesis is that it has produced a timely addition of a validated competency profile that can support the international standardization of competencies for advanced practice physiotherapy. Due to the rapid growth of advanced practice physiotherapy globally, there have been calls from within the physiotherapy profession for standardization of the role and development of international competencies to ensure consistency in the training of

practitioners. The findings from this thesis address this growing concern and is the first step towards global standardization of advanced practice physiotherapy.

Another strength of this thesis is the comprehensive and rigorous process (conceptual framework) used in developing and validating the competencies. The process used in this thesis integrates three different methods used in developing competencies for entry-to-practice physiotherapists, advanced MSK practice and First Contact Practitioners. Our comprehensive process ensured that we included many practitioners, important stakeholders, and experts in advanced practice physiotherapy from five different countries. Furthermore, our comprehensive and rigorous process (conceptual framework) can be adopted by other professions and groups interested in a systematic method of developing role competencies.

This thesis work has some limitations. First, by focusing on countries with already established advanced practice physiotherapy roles (UK, Ireland, Australia, New Zealand, and Canada), there is limited representation from countries with emerging advanced practice physiotherapy roles such as Sweden, Norway, and Argentina. Therefore, caution should be taken when generalizing the findings to countries with new roles or different approaches to developing the roles. However, the five countries selected have developed advanced practice physiotherapy for over a decade, and they have the experience of developing competencies, which was vital in developing a competency profile as a framework to support standardization of advanced practice physiotherapy.

Another limitation of this thesis is the small sample size used in the focus group and the validation survey. Although an attempt was made to reach a larger advanced practice physiotherapy population, the sample size of 16 for the focus groups and 100 for the validation survey is only a small representation of all advanced practice physiotherapists in these countries. Thus, the sample size reflects limited representation and could affect the generalizability of the

findings. However, considering that data saturation was attained during the focus groups and that all the competencies were ranked as “high,” we anticipate that increasing the sample size would not have altered the final validation of the competencies.

Another limitation of the competencies developed from this thesis is the differences in scope of practice and regulation of the physiotherapy profession in different countries. These differences mean that not all proposed competencies can be supported in countries where the scope of practice does not permit. Due to the expansion of the scope of practice for an entry-to-practice physiotherapist in some jurisdictions, some activities that were previously considered outside the scope of practice are now recognized to be within the scope of practice. This may impact the implementation of this competency profile within those jurisdictions. To address this limitation, provisions have been made within the competencies to allow for modification and interpretation of the competencies to support local or jurisdictional contexts.

6.8 Recommendations and future direction

6.8.1 Further research

The first recommendation from this thesis is the need for an additional consultation process with key stakeholders in the health care industry such as other health professionals (doctors, nurses, etc.), regulators, hospital administrators, ministries of health, professional physiotherapy associations and universities. The feedback generated from these stakeholders will be important in shaping the competencies and will help provide a better understanding of what is expected of an advanced practice physiotherapist. This consultation process should be done at the local, state/provincial, and national levels to modify the competencies based on each jurisdiction's regulations and scope of practice.

Another recommendation is the need for the development of milestones for each competency. Milestones (i.e., Competency standards) are measurement units for each competency and represent a specific measurement of when competency is attained. Developing milestones for each competency will allow for the appropriate measurement and assessment of each competency and subsequent development of education curricula based on the competencies and milestones.

Another important future research direction is adapting and validating the competencies for the different specialties in advanced practice physiotherapy (e.g., rheumatology, pediatrics, incontinence, pelvic health, and cardiorespiratory). The competencies developed from this thesis are broad and adaptable to all specialties within advanced practice physiotherapy. Because advanced practice physiotherapy is rapidly expanding to new specialties, there is the need to develop competencies for these new and emerging advanced practice roles. Additionally, there is the need for cross-cultural adaptation of the competencies developed from this thesis to align with the cultural preferences of different countries. There is also the need for translation into different languages to support the implementation of the competencies in jurisdictions where English is not the first language.

6.8.2 Policy direction

Our first recommendation is that these competencies serve as the framework for developing a standardized and consistent advanced practice physiotherapy role globally. The competencies developed from this thesis have potential implications for policies related to advanced practice physiotherapy. These competencies could serve as important external source material for international physiotherapy organizations such as World Physiotherapy (WP) and

International Federation for Orthopedic Manipulative Physical Therapy (IFOMPT) to support the standardized and consistent implementation of advanced practice physiotherapy globally.

The competencies identified from this work may also impact advanced practice physiotherapy at the national, provincial/state, and local levels. Another recommendation is that these competencies can be used as a template to support the consistent development of advanced practice physiotherapy roles at various levels with opportunities for further modifications based on national or local context. In addition, universities and hospitals looking to develop new advanced practice physiotherapy roles or update their existing programs can use these competencies as a template for their future work.

6.9 Conclusion

This thesis provides an important, valuable, and timely competency profile as a framework to support the international standardization of competencies for advanced practice physiotherapy. Roles for advanced practice physiotherapy have been developed from the bottom up as organizations have needed to address escalating costs and limited access to health care. Based on the success of the model and the quality of care of these new roles, health care systems have started to mandate the expansion of these roles using a top-down systems approach. Unfortunately, the physiotherapy profession has lagged in defining what advanced practice physiotherapy is (and is not), identifying the core competencies needed, and adopting a standardized approach to training and evaluation (i.e., milestones required).

The findings from this work provide 24 internationally validated competencies for advanced practice physiotherapy grouped under six domains (Clinical expertise; Communicator; Collaborator, Leader and Health Advocate; Scholar and Professional). The findings also suggest that competencies directly associated with clinical practice and patient care are rated relatively

higher compared to competencies not directly related to clinical practice or patient care. Identified as a potential barrier for advanced practice physiotherapists to demonstrate these competencies is the need to safeguard time and resources to allow the practitioners to demonstrate the other competencies under the leadership and advocacy, scholarly and professional domains.

It is hoped that the competencies developed from this work can inform and positively impact the global expansion of advanced practice physiotherapy roles with the added benefits of improving patient care, enhancing the patient experience of care, reducing health cost, and improving providers satisfaction. Moreover, these findings maybe even more important in how they inform the development of advanced practice physiotherapy in countries that intend to establish new advanced practice roles. At a minimum, this work should serve as the first step towards a standardized and consistent development, training, and evaluation of the competencies of advanced practice physiotherapists.

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APPENDICES

Appendix 2.1 Ethics

Notification of Approval

Date:	October 25, 2017
Study ID:	Pro00073988
Principal Investigator:	Andrews Tawiah
Study Supervisor:	Linda Woodhouse
Study Title:	Developing a Framework for Advanced Physiotherapy Practice
Approval Expiry Date:	Wednesday, October 24, 2018
Approved Consent Form:	Approval Date 10/25/2017
	Approved Document Privacy and Consent statement

Thank you for submitting the above study to the Research Ethics Board 2. Your application has been reviewed and approved on behalf of the committee.

A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the Research Ethics Board does not encompass authorization to access the staff, students, facilities or resources of local institutions for the purposes of the research.

Sincerely,

Stanley Varnhagen, PhD
Chair, Research Ethics Board 2

Note: This correspondence includes an electronic signature (validation and approval via an online system).

Appendix 2.2 Survey questionnaire

Advanced Physiotherapy Practice: A Global Survey
1. WCPT advanced practice survey
<p>Dear colleague,</p> <p>Thank you for taking the time to complete this survey which is being sent to all WCPT member organisations.</p> <p>The purpose is to create a map of where the profession is in terms of advanced practice and to understand the facilitators and barriers to its development. Overall, this information will serve to assist in the development of advanced physiotherapy/physical therapy practice globally.</p> <p>If you have any queries, or if you would like assistance completing the questionnaire, please do not hesitate to contact anyone of the researchers listed below:</p> <p>Andrews Tawiah - atawiah@ualberta.ca Héðinn Jónsson - hjonsson@wcpt.org Emma Stokes - estokes@tcd.ie</p> <p>By clicking the link below, you are providing us with your consent to participate in the survey.</p> <p>Your consent to participate may be withdrawn at any time by stopping the survey. This study is in receipt of ethical approval from the University of Alberta and Trinity College Dublin.</p>

2. Member organisation

* 1. Name of WCPT member organisation

3. Advanced practice definitions

For the purposes of this survey, the following definitions apply. We have drawn them from position statements and policy documents of a number of WCPT member organisations

Advanced practice is a combination of advanced skills, knowledge and attitudes which enable physiotherapists to address complex problems and manage risk; it is the use of advanced critical thinking to deliver care to patients with complex needs safely and competently (CSP, 2016).

Scope of practice is the full spectrum of roles, functions, responsibilities, activities and decision-making capacity that individuals within the profession are educated, competent and authorised to perform (APA, 2016)

* 2. In your country, are there formal or informal advanced physiotherapy practice roles?

Yes

No

4. Advanced practice in physiotherapy in your country

* 3. What titles are used to describe advanced practice roles? (Tick all that apply)

- Advanced physiotherapy practitioner
- Consultant physiotherapist
- Extended scope practitioner
- Other (please specify)

* 4. In what fields of physiotherapy practice is advanced physiotherapy practised? (Tick all that apply)

- Amputee rehabilitation
- Cardiorespiratory physical therapy
- Intellectual disability
- Mental health
- Neurology
- Inpatient Orthopaedics - musculoskeletal - rheumatology
- Outpatient Orthopaedics - musculoskeletal - rheumatology
- Occupational health and ergonomics
- Older people
- Oncology/palliative care
- Pain (includes pain management, pain research)
- Paediatrics
- Sports physical therapy
- Women's health
- Men's health
- Pelvic rehabilitation
- Other (please specify)

5. Advanced practice

* 5. Please tell us about the professional development and education required to become an advanced physiotherapy practitioner by considering the statements below?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
There is no defined education pathway	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a specific education pathway to become an advanced physiotherapy practitioner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Every advanced physiotherapy practitioner has to demonstrate a set of defined competencies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most advanced physiotherapy practitioners have a combination of clinical practice and a Master's/Doctoral degree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In your country, to be considered for an advanced physiotherapy practice role, clinicians must have postgraduate qualifications such as Master's degree or PhD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 6. What do you think have been the facilitators of advanced physiotherapy practice?

Facilitators = circumstances that assist the development to occur.

Please tick all that apply indicating the strength of the facilitator 1-5 where 1 is a minor facilitator and 5 is a major facilitator.

	1. Minor facilitator	2	3	4	5. Major facilitator
Views of medical professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Need to manage waiting lists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research evidence in support of the roles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advocacy by the professional organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support of employers in the health service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulation of the profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Views of patients/clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reimbursement models	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce cost in health care delivery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 7. What do you think are or have been the barriers of advanced physiotherapy practice?

Please tick all that apply, selecting if it is a current or past barrier, and indicate the strength of the barrier 1-5 where 1 is a minor barrier and 5 is a major barrier.

	Tick if a current barrier	Tick if a past barrier	1. Minor barrier	2	3	4	5. Major barrier
Views of medical professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Political support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Need to manage waiting lists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Research evidence in support of the roles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advocacy by the professional organisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Support of employers in the health service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Regulation of the profession	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Views of patients/clients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reimbursement models	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce cost in health care delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* 8. Have you or other institutions/organisations in your country developed and/or agreed upon competencies for advanced physiotherapy practitioners?

- Yes
- No

6.

* 9. Who has described these? Please provide details of the websites where documents can be found.

- Professional organisation
- Regulator
- Health service employer
- They have not been described
- Other (please specify)

7.

* 10. Please provide the information or where it may be found (e.g. web link)

* 11. Have you, as a professional organisation, developed a policy or guideline on advanced physiotherapy practice?

- No
- Yes, if possible please provide us with a link to the document

8.

* 12. Advanced physiotherapy practice is not available in your country but do you consider it a desirable development for the profession?

Not at all desirable	Not desirable	Neutral	Desirable	Very desirable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 13. What do you think are the facilitators of advanced physiotherapy practice?

Facilitators = circumstances that assist the development to occur.

Please tick all that apply indicating the strength of the facilitator 1-5 where 1 is a minor facilitator and 5 is a major facilitator.

	1. Minor facilitator	2	3	4	5. Major facilitator
Views of medical professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Need to manage waiting lists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research evidence in support of the roles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advocacy by the professional organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support of employers in the health service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulation of the profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Views of patients/clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reimbursement models	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce cost in health care delivery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 14. What do you think are the barriers of advanced physiotherapy practice?

Please tick all that apply indicating the strength of the barrier 1-5 where 1 is a minor barrier and 5 is a major barrier.

	1. Minor barrier	2	3	4	5. Major barrier
Views of medical professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Need to manage waiting lists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research evidence in support of the roles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advocacy by the professional organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support of employers in the health service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulation of the profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Views of patients/clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reimbursement models	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce cost in health care delivery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Thank you

Thank you for taking the time to complete this survey.

Appendix 3.1 Search Strategy

1. ("physical therap*" or "physiotherap*").mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]

2. ("extended scope practice" or "extended scope of practice").mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]

3. "advance* practice".mp.

4. "triage".mp. or exp Triage/

5. ("advance* physiotherap* practice" or "advance* practice physiotherap*").mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]

6. 2 or 3 or 4

7. 1 and 6

8. 5 or 7

Appendix 4.1 Ethics

Notification of Approval

Date:	May 20, 2020						
Study ID:	Pro00099692						
Principal Investigator:	Andrews Tawiah						
Study Supervisor:	Linda Woodhouse						
Study Title:	Developing a competency profile for Advanced Practice in Physiotherapy						
Approval Expiry Date:	May 19, 2021						
Approved Consent Form:	<table><thead><tr><th>Approval Date</th><th>Approved Document</th></tr></thead><tbody><tr><td>2020-05-20</td><td>Consent for Survey</td></tr><tr><td>2020-05-20</td><td>Consent for Focus Groups</td></tr></tbody></table>	Approval Date	Approved Document	2020-05-20	Consent for Survey	2020-05-20	Consent for Focus Groups
Approval Date	Approved Document						
2020-05-20	Consent for Survey						
2020-05-20	Consent for Focus Groups						

Thank you for submitting the above study to the Research Ethics Board 2. Your application, including the following, has been reviewed and approved on behalf of the committee:

- Survey Email, Version 4, May 19, 2020;
- Focus Group Email, Version 3, May 19, 2020;
- Research Proposal, Version 1, April 3, 2020.

Any proposed changes to the study must be submitted to the REB for approval prior to implementation. A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the Research Ethics Board does not encompass authorization to access the staff, students, facilities or resources of local institutions for the purposes of the research.

Approval by the Research Ethics Board does not encompass authorization to recruit and/or interact with human participants at this time. Researchers still require operational approval (e.g., Alberta Health Services) and must meet the requirements imposed by the public health emergency ([link to Alberta COVID page](#)).

Sincerely,

Ubaka Ogbogu, LLB, BL, LLM, SJD
Chair, Research Ethics Board 2

Appendix 4.2 Discussion Guide

Discussion Guide

Advanced Practice Physiotherapy Focus Group

Researchers involved:

Andrews Tawiah: leading the focus group

Andrews Tawiah: Take procedural notes, suggestions for changes with next group

Start Recording

Plan:

- 7) Welcome participants, information and consent form, and demographic questionnaire.
- 8) Both consent form and demographics questionnaire will be sent out prior to the day of the focus group.
- 9) Description of the project and summary of what we have found so far:
 - A summary of a first draft of competencies will sent out to the participants prior to the day of focus.
- 10) Objectives of the focus group;
- 11) Description of the plan of the focus group;
- 12) Questions:

Questions

7. How do you define Advanced Practice within jurisdiction?
 - How well do you think patients, other healthcare professionals and health care management within your jurisdiction understand this role?

(Provide a description of the 6 roles)

8. Within your jurisdiction, what is the difference between the roles compared to entry-to-practice.
 - Expert Clinician
 - Communicator
 - Collaborator

- Leader and Health Advocate
- Scholar
- Professional

9. Which of these 6 roles do you perceive to be the most crucial in establishing Advanced practice roles compared to entry-to-practice?

- Can you provide some reasons to support your selection?

10. (Focusing on Competencies)

For each role: which competencies do you consider as key.

- (Give example of competencies)
- Power point slides of competencies on screen
- Can you provide some reasons to support your selection?

11. Focusing on APP and Specialist

How can we distinguish the differences in competencies between APP and Specialists based on your jurisdiction?

12. Is there anything else that you would like to include?

Appendix 4.3 Consent

INFORMATION LETTER and CONSENT FORM

Title of the study: Development of a competency profile for Advanced Practice in Physiotherapy

Principal Investigator: Andrews Tawiah
3-44 Corbett Hall, University of Alberta
Edmonton, Alberta, T6H 2G4
atawiah@ualberta.ca

780-492-2903

Supervisors: Dr. Linda Woodhouse
Faculty of Rehabilitation Medicine
University of Alberta
Linda.woodhouse@ualberta.ca
0892662109

Dr. Marguerite Wieler
Faculty of Rehabilitation Medicine
University of Alberta
m.wieler@ualberta.ca
780-492-2889

Background

- You are being asked to be in the study because you are an advanced practice physiotherapist.
- You are being contacted through the physiotherapy association of your country
- The results of this study will be used in support of my thesis and the development of a competency profile for advanced practice physiotherapists.
- Before you make a decision, you are encouraged to ask questions if you feel anything needs to be made clearer. You will be given a copy of this form for your records.

Purpose

- The purpose of this work is to define competencies for the training of advanced practice physiotherapists by developing an evidence-informed competency profile for the role.

Study Procedures

- Your participation in this focus group is a step in the development of an APP competency profile. The focus group will be hosted using Zoom. If you agree to participate, you will receive a link to join the discussion and a demographics questionnaire. The focus group will have up to 7 other advanced practitioners from 5 different countries - Canada, Australia, New Zealand, United Kingdom and Ireland. The discussion is expected to last 60 – 120 minutes.

- The data collected during the focus group will include video and audio recording. Data will be transcribed verbatim for analysis. The transcripts will be sent back to you for verification. All data obtained from this study will be stored in accordance with the University of Alberta's data storage procedures and will be destroyed after 5 years.
- The focus group will be moderated by the principal researcher. Technical support will be provided by a member of the University of Alberta's IT team who will be on standby.

Benefits

- You will not benefit from being in this study.
- We hope that the information we get from doing this study will help us in developing competencies for advanced practice physiotherapists and aide in the training of these practitioners.

Risk

- The risks to participation in the focus group are not expected to be significant. It is possible that you may feel compelled to share personal thoughts and opinions during the discussion. All participants will be reminded to keep the discussion confidential; however, given the nature of a focus group, we cannot ensure confidentiality.

Voluntary Participation

- Your participation in the focus group is completely voluntary and you are under no obligation to continue even after we start. You are free to leave the focus group at any time by exiting the Lifesize Cloud meeting.
- Given the nature of data collection during a focus group, it will not be possible to remove data you have already contributed to the discussion as that could make interpretation of the focus group transcript difficult.

Confidentiality & Anonymity

- The findings from this study will be part of a Ph.D. thesis, research articles, presentations and development of a competency profile. No personally identifying information will be part of the findings of this research.
- Data will be kept confidential. The principal researcher and supervisory committee will only have access to the data.
- While we will make every effort to protect the confidentiality of what is discussed during the focus groups, we cannot guarantee that others from the group will do the same. Please respect the confidentiality of others outside of the focus group.
- Zoom collects only the user data that is required to provide you with Zoom services. This includes technical and operational support and service improvement. For example, Zoom collects information such as a user's IP address and OS and device details to deliver the best possible Zoom experience to you regardless of how and from where you join. All recorded data from Zoom will be stored locally on the PI's password-protected computer ([Zoom Privacy Statement](#)).
- Data will be kept in a secured place for a minimum of 5 years following completion of the research project. All data will be stored on password-protected computer and will be destroyed afterwards the 5 years.
- Participants will receive copies of the transcribed data for verification before analysis

Contact Information

- If you have any further questions regarding this study, please do not hesitate to

Andrews Tawiah (PhD Candidate)

Email: atawiah@ualberta.ca

Tel: [780.492.9674](tel:780.492.9674)

University of Alberta

- The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta. If you have questions about your rights or how research should be conducted, you can call (780) 492-2615. This office is independent of the researchers.

Consent Statement

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I agree to participate in the research study described above and will receive a copy of this consent form. I will receive a copy of this consent form after I sign it.

Participant's Name

Participants digital signature or initials

Date

Appendix 4.4 Demographics

DEMOGRAPHICS QUESTIONNAIRE

7. What is your country of practice?

Australia

New Zealand

Canada

United Kingdom

Ireland

8. Are you currently an advanced practice/scope physiotherapist or have you ever been an advanced practice/scope physiotherapist?

Yes

No

9. Which role do you mostly associate with? (You can select all that applies and provide percentages if possible)

Clinician

Researcher

Administrator

Clinician-Scientist/Researcher

Educators

3. For clinicians, where do you practice? (Select all applicable responses)

Hospital

Community practice

Public sector

Private sector

10. What is your current job title?

11. For how many years have you been a physiotherapist?

0 – 5 years

5 – 10 years

10 – 15 years

Over 15 years

12. What is your highest level of education?

Doctorate

Masters

Bachelors

Other relevant credentials

Appendix 4.5 List of competencies

Draft of Competencies for Advanced Practice Physiotherapists

Role 1: Expert Clinician

Advanced Practice Physiotherapists: Employs depth and breadth of knowledge, skills and advanced clinical reasoning informed by best available evidence in providing high-quality and safe patient-centered care to manage most complex cases with a high level of risks in unpredictable clinical scenarios.

Competencies:

22. Demonstrate an expert level of physiotherapy knowledge, skills and understanding of physiotherapy practices.
23. Practice advanced roles within or outside of the normal or generally accepted scope of practice as recognized within their jurisdiction.
24. Plans and performs an appropriate assessment, implement therapeutic procedures using expert-level clinical reasoning, planning and evaluation.
25. Demonstrate knowledge of institutional factors affecting health including the political, social and economic factors.
26. Order and interpret diagnostic investigations based on jurisdictional provisions (X-ray, MRI, Ultrasound scan, laboratory investigations and other investigations as approved).
27. Prescribe or de-prescribe therapeutic medications, including injections, appropriate to the patient's condition, clinician's level of expertise and the jurisdiction.

Role 2: Communicator

Advanced Practice Physiotherapists: Use effective communication skills to form relationships with patients, families and other clinicians through challenging and difficult situations.

Competencies:

28. Demonstrate a higher level of communication to manage challenging and conflict situations both intra- and inter-professionally.
29. Provides mentorship, counselling and coaching of others to manage challenging and emotionally charged conversations.

- 30.** Demonstrates an advanced level of communication that supports cultural safety, promotes and respects diversity.

Role 3: Collaborator

Advanced Practice Physiotherapists: Use inclusive, collaborative, consultative and shared decision-making approaches with patients, relevant health professionals and others to provide an advanced level of care.

Competencies:

- 31.** Actively contribute, as an individual and as a member of a team providing care, to the continuous improvement of health care quality, equity and patient safety through a shared decision-making approach.
- 32.** Work effectively with other colleagues in the health care professions and serve as a role model to promote understanding, manage differences and resolve conflicts.

Role 4: Leader and Health Advocate

Advanced practice physiotherapists: Engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of advanced patient care through their activities as clinicians, administrators, scholars, or teachers.

Competencies:

- 33.** Contribute to the improvement of health care delivery in teams, organizations, and systems
- 34.** Engage in the stewardship of health care resources
- 35.** Provides clinical mentorship and training of trainees within their field of practice within and beyond the profession.
- 36.** Demonstrate leadership in professional practice including respecting and promoting equity and diversity.
- 37.** Responds to the needs of the patients, communities and populations they serve by advocating for or and on their behalf for systems-level changes.

Role 5: Scholar

Advanced Practice Physiotherapists: demonstrate a lifelong commitment to excellence in practice through continuous learning, evidenced-informed practice and contributing to scholarship. They apply learning principles and strategies to facilitate learning and by other patients, professionals, students, relevant others, funders, and governments.

Competencies:

- 38. Role model, mentor, and teach to enhance the lifelong learning of students, colleagues, other health professionals and the public

- 39. Contribute to the creation and dissemination of knowledge and practices applicable to health

Role 6: Professional

Definition: Advanced Practice Physiotherapists are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behavior, accountability to the profession and society, professional regulatory bodies, and maintenance of personal health.

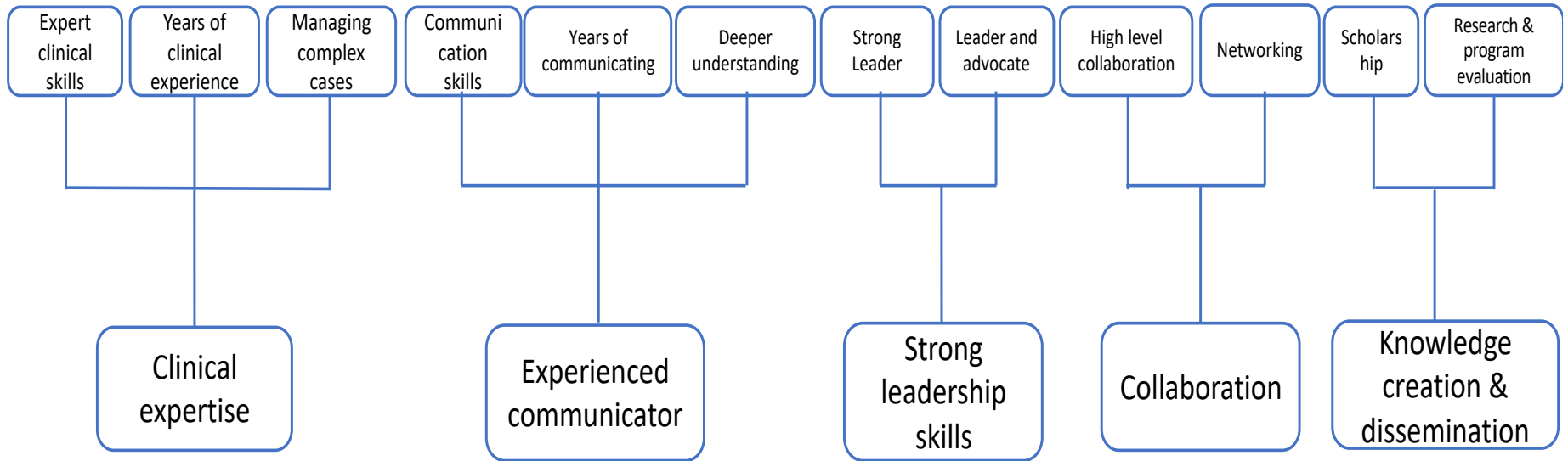
Competencies:

- 40. Demonstrate a commitment to patients, professions and society by applying best practices and adhering to ethical standards.

- 41. Demonstrate a commitment to the profession by adhering to standards and comply with legal and regulatory requirements.

- 42. Demonstrate a commitment to the practitioner's health and well-being to foster optimal patient care.

Appendix 4.6 Coding map



Appendix 5.1 Ethics

Notification of Approval

Date:	May 20, 2020
Study ID:	Pro00099692
Principal Investigator:	Andrews Tawiah
Study Supervisor:	Linda Woodhouse
Study Title:	Developing a competency profile for Advanced Practice in Physiotherapy
Approval Expiry Date:	May 19, 2021
Approved Consent Form:	Approval Date Approved Document
	2020-05-20 Consent for Survey 2020-05-20 Consent for Focus Groups

Thank you for submitting the above study to the Research Ethics Board 2. Your application, including the following, has been reviewed and approved on behalf of the committee:

- Survey Email, Version 4, May 19, 2020;
- Focus Group Email, Version 3, May 19, 2020;
- Research Proposal, Version 1, April 3, 2020.

Any proposed changes to the study must be submitted to the REB for approval prior to implementation. A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the Research Ethics Board does not encompass authorization to access the staff, students, facilities or resources of local institutions for the purposes of the research.

Approval by the Research Ethics Board does not encompass authorization to recruit and/or interact with human participants at this time. Researchers still require operational approval (e.g., Alberta Health Services) and must meet the requirements imposed by the public health emergency ([link to Alberta COVID page](#)).

Sincerely,

Ubaka Ogbogu, LLB, BL, LLM, SJD
Chair, Research Ethics Board 2

Appendix 5.2 Survey questionnaire

Welcome Page

Why am I being invited to participate:

You are invited to participate in this global online survey to help develop a competency profile for advanced practice physiotherapists because you are/were working as an advanced practice physiotherapist, or you are/were involved in the development and research of advanced practice physiotherapy.

The purpose of the survey:

The survey is part of a larger body of work aimed at developing an internationally accepted competency profile for advanced practice physiotherapy roles. There is currently no internationally accepted competencies for advanced practice physiotherapy. With the rapid expansion of the role across different countries, there is a need to identify advanced practice physiotherapy competencies for consistent implementation and acceptability of the role.

How much time will this take:

The survey should take approximately 20-30 mins to complete. You are under no obligation to participate. If you choose to participate and prefer not to answer a particular question, you can select "neither agree nor disagree" for competencies and you can skip demographic questions.

Once you have completed the survey, please click on the "done" button. You can always save your responses and return to the survey. Responses are saved when you click the Next or Done button on each page. You can return by re-opening the link to the survey.

Due date:

We would appreciate it if you could complete the survey by July 8th, 2021. We will send you 2 email reminders.

Contacts:

If you have any questions or require more information, you may contact the researcher (or supervisors) at the contacts listed below:

Andrews Tawiah (Ph.D. Candidate) - atawiah@ualberta.ca

Dr. Marguerite Wieler - mwieler@ualberta.ca

Dr. Linda Woodhouse - linda.woodhouse@ualberta.ca

Consent:

This study has been reviewed and given approval by the Human Research Ethics Board at the University of Alberta. If you have any questions regarding your rights as a research participant or how the research is being conducted you may contact the University of Alberta's Research Ethics Office at 780-492-2615. You can also find the full consent form at this [link](#). If you want us to contact you later for further research in advanced practice, please provide your email address at the end of the survey. Your survey responses will not be linked to your email.

Definitions and overview of the survey

For this survey, the following definitions apply:

Advanced practice physiotherapy: Is a combination of advanced skills, knowledge, and attitudes that enables physiotherapists to address complex problems and manage risk; it is the use of advanced critical thinking to deliver care to patients with complex needs safely and competently following a training process at the post-licensure level (CSP, 2016).

Competency: Is an observable ability of a health professional related to a specific activity that integrates knowledge, skills, values, and attitudes (J.R Frank et al., 2010).

We acknowledge that advanced practice physiotherapist needs "Capabilities" to develop and be flexible to meet future needs. This project focuses on developing competencies that are required as the minimum standard for becoming an advanced practice physiotherapist.

Survey Methodology

This survey was developed based on feedback from 4 focus groups conducted with participants from 5 different countries (Australia, New Zealand, Canada, United Kingdom, and Ireland) and consultation with subject matter experts.

The survey begins with a list of 24 proposed competencies grouped under 6 domains, with 1 domain per page. Each page begins with a description of the domain followed by a list of the competencies within that domain. You are asked to rate each competency based on its importance to your practice. The next set of questions focuses on demographics, education, and remuneration that are essential to data analysis.

Use the Prev/Next buttons at the end of each page to navigate through the pages.

Please click next to proceed.

Eligibility

* 1. Are you currently/previously an advanced practice physiotherapist, or are you involved in the development and research of advanced practice physiotherapy?

- Yes
- No (end of survey)

Domain 1 - Expert Clinician

Description: Advanced practice physiotherapist applies advanced depth and breadth of knowledge, skills, and clinical reasoning informed by best available evidence in providing high-quality, safe, patient-centred care for individuals who present with highly complex findings often due to multimorbidity.

* 2. Please rate each competency (1-7) using the following statement:

As an advanced practice physiotherapist/researcher, I believe that developing the following advanced clinician competencies is important for the practice.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Applies an expert level of clinical knowledge, skills, and understanding of best practices. Uses clinical experience and techniques, drawing on formal and informal education, and consultation within and outside the physiotherapy profession to make autonomous decisions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Operates within a predefined scope of practice within the legal parameters of their jurisdiction and with appropriate authorizations (which may fall within or outside the traditionally accepted scope of physiotherapy practice).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Plans and performs comprehensive patient assessment using advanced-level clinical reasoning, shared patient decision making, planning, evaluation, and evidence-informed clinical knowledge and skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Requests and interprets diagnostic investigations based on jurisdictional provisions and with appropriate predetermined authorizations (e.g., Diagnostic imaging or laboratory investigations).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Creates and implements comprehensive patient management using advanced-level clinical reasoning, shared patient decision-making, and evidence-informed clinical knowledge and skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Plans, performs and educates the patient about appropriate therapeutic interventions (e.g., medications, therapeutic injections, or arterial blood gases) based on the patient's condition and clinician's level of expertise within their predefined and authorized additional scope of practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Applies knowledge of institutional and systemic factors (including political, social, and economic factors) that affect health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments: (e.g. Are there any competencies that you believe have not been covered under this domain? If you answered disagree or strongly disagree, can you provide us with additional comments)

Domain 2 - Communicator

Description: Advanced practice physiotherapist develops effective and refined communication skills to nurture relationships with patients, families, other clinicians, and other healthcare services (example: Department/ministries of health, public health agencies, and professional regulatory bodies).

* 3. Please rate each competency (8-10) using the following statement:

As an advanced practice physiotherapist/researcher, I believe that developing the following competencies as a communicator is important for the practice.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
8. Applies effective communication skills (verbal and non-verbal) in managing complex and challenging situations both intra- and inter-professionally, and intersectoral.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Mentors, counsels, coaches' peers, and students to manage professional communication with patients, healthcare professionals, and health care systems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Applies a refined level of communication that embraces cultural sensitivity and safety, promoting and respecting diversity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments: (e.g. Are there any competencies that you believe have not been covered under this domain? If you answered disagree or strongly disagree, can you provide us with additional comments)

Domain 3 - Collaborator

Description: Advanced practice physiotherapist uses inclusive, collaborative, and consultative approaches with patients, relevant health professionals, and others to provide an advanced level of evidence-informed care.

* 4. Please rate each competency (11-12) using the following statement:

As an advanced practice physiotherapist/researcher, I believe that developing the following competencies as a collaborator is important for the practice.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
11. Collaborates to triage or provide patients with advanced clinical care (e.g., Accident and emergency case management, Orthopedic triage/Rheumatology/Neurology/Respiratory triage, or Continence and Pelvic health).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Collaborates effectively both intra- and inter-professionally and promotes understanding, manages differences, and contributes to building effective interprofessional and evidence-informed teams.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments: (e.g. Are there any competencies that you believe have not been covered under this domain? If you answered disagree or strongly disagree, can you provide us with additional comments)

Domain 4 - Leader and Health Advocate

Description: Advanced practice physiotherapist leads the development of services and provision of high-quality service, and advocates for their patients at all levels of care.

* 5. Please rate each competency (13-17) using the following statement:

As an advanced practice physiotherapist/researcher, I believe that developing the following competencies as a leader and health advocate is important for the practice.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
13. Evaluates the needs of patients, communities, and the populations they serve by advocating and leading change to improve their care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Supports the improvement of health care delivery teams and leads in the development of best practices and standards at the organization and systems level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Measures and evaluates the stewardship and prudent use of health care resources.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Mentors and educates trainees on leadership within their field of practice, both within and outside the profession.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Leads in professional practice including respecting and promoting equity and diversity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments: (e.g. Are there any competencies that you believe have not been covered under this domain? If you answered disagree or strongly disagree, can you provide us with additional comments)

Domain 5 - Scholar

Description: Advanced practice physiotherapist is a lifelong learner who engages in continuous quality improvement, knowledge translation and dissemination, and clinical research to enhance patient care and improve the healthcare system.

* 6. Please rate each competency (18-20) using the following statement:

As an advanced practice physiotherapist/researcher, I believe that developing the following scholarly competencies is important for the practice.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
18. Role models, mentors, and teaches to enhance the lifelong learning of students, colleagues, other health professionals, and the public.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Participates in or leads continuous quality improvement projects, knowledge translation and dissemination, and the implementation and evaluation of an evidence-based approach at all levels of care. Involved in knowledge generation through clinical research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Engages in continuous professional development activities by being a life-long learner and leading the education and training of peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments: (e.g. Are there any competencies that you believe have not been covered under this domain? If you answered disagree or strongly disagree, can you provide us with additional comments)

Domain 6 - Professional

Description: Advanced practice physiotherapist commits to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, professional regulatory bodies, and maintenance of personal health.

* 7. Please rate each competency (21-24) using the following statement:

As an advanced practice physiotherapist/researcher, I believe that developing the following professional competencies is important for the practice.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
21. Commits to the patients, physiotherapy profession, and society by developing and implementing best practices, adhering to and promoting ethical standards (Clinical and Business), and safety.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Contributes to the development of advanced practice physiotherapy through developing frameworks (e.g. medical directives) to support the implementation and operationalization of the role to comply with legal and regulatory requirements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Commits to the practitioner's and colleague's health and well-being (work-life balance) to foster optimal patient care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Contributes to reviews of legal, professional, ethical, and other relevant standards, codes, and guidelines, and fosters ethical competence and best practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments: (e.g. Are there any competencies that you believe have not been covered under this domain? If you answered disagree or strongly disagree, can you provide us with additional comments)

Demographics

8. What is your country of practice?

- Australia
- New Zealand
- Canada
- United Kingdom
- Ireland
- Other (please specify)

9. Gender: How do you identify?

- Male
- Non-binary
- Female
- Prefer to self-describe, below
- Not applicable

Self-describe:

10. What is your age category?

- Under 30
- 30-39
- 40-49
- 50-59
- 60+
- Not applicable

11. How many years have you been a licensed/registered physiotherapist?

- 0 - 4 years
- 5 - 9 years
- 10 - 14 years
- 15 - 19 years
- 20+ years
- Not applicable

12. How many years have you worked in clinical practice as a physiotherapist?

- 0 - 4 years
- 5 - 9 years
- 10 - 14 years
- 15 - 19 years
- 20+ years
- Not applicable

13. For clinicians, how many years have you worked as an advanced practice physiotherapist?

- 0 - 2 years
- 3 - 5 years
- 6 - 8 years
- 9 - 11 years
- 12+ years
- Not applicable

14. For researchers/administrators, how many years have you been involved in the development and research of advanced practice physiotherapy?

- 0 - 2 years
- 3 - 5 years
- 6 - 8 years
- 9 - 11 years
- 12+ years
- Not applicable

15. What is your current advanced practice physiotherapy employment status?

- Full-time employment
- Part-time employment
- Unemployed
- Retired
- Not applicable

16. If you are employed part-time, please indicate your Full-Time Equivalent (FTE)

17. What is the proportion of time you spend in each role (paid or unpaid) Percentages should add up to 100%, including what you list under "other"

	100%
Clinician	<input type="text"/>
Researcher	<input type="text"/>
Administrator	<input type="text"/>
Educator	<input type="text"/>

Other (please specify the role and percentage of time in that role)

18. What is your current job title?

19. Where do you work? (Please select all that apply and include an estimate of the percentage for each practice setting. Percentages should add up to 100%, including what you list under "other")

100%

Public Sector	<input type="text"/>
Private Sector	<input type="text"/>
Hospital (Inpatient)	<input type="text"/>
Hospital (Outpatient)	<input type="text"/>
Community practice (e.g. Homecare or public health)	<input type="text"/>
University	<input type="text"/>

Other (please specify)

20. What is your primary area of advanced practice physiotherapy? (Please select all that apply).

- General practice
- Burns and wound management
- Pediatric
- Amputations
- Orthopedics/Musculoskeletal
- Rheumatology
- Geriatrics
- Continence and Pelvic Rehabilitation
- Oncology
- Critical care
- Cardiorespiratory
- Neurology
- Palliative care
- Occupational Health and Ergonomics
- Intellectual disability
- Accident and Emergency (Emergency Department)
- Pain
- Sports Physical Therapy
- Other (please specify)

- Not applicable

Education

21. What is your entry-to-practice physiotherapy degree?

- Diploma
- Bachelor's Degree
- Graduate Entry Master's Degree
- Doctor of Physical Therapy
- Other (please specify)

- Not applicable

22. What is your highest level of education?

- PhD
- Clinical Doctorate
- Research Masters
- Clinical/Course-based Masters
- Bachelors
- Diploma
- Other (please specify)

- Not applicable

The next set of questions (Questions 23 - 25) relates to your practice as a clinician. Please select "Not Applicable" if it doesn't apply to you.

23. What training enabled you to work as an advanced practice physiotherapist? (Please select all that apply)

- Research masters degree
- Clinical master degree
- Post graduate courses
- Residency or Fellowship
- In-house training or Apprenticeship
- Other (please specify)

Not applicable

24. Which institution/organization conducted the training that enabled you to work as an advanced practice physiotherapist? (Please select all that apply)

- University or Post Secondary Institution
- National Physiotherapy Professional Association
- Health Care Institutions (e.g. Hospitals)
- International Physiotherapy Organisation (e.g. IFOMPT)
- Other (please specify)

Not applicable

25. Was the program that trained you to be an advanced practice physiotherapist accredited?

- Yes
- No
- Not applicable

Education

26. Which Institution/organization provided accreditation for the program?

- National Physiotherapy Professional Association
- International Physiotherapy Organisation (e.g. IFOMPT)
- University or Post Secondary Institution
- Licensing or Regulatory Body
- Other (please specify)

- Not applicable

Remuneration

27. Is there an additional remuneration (Payment or non-monetary compensation) for advanced practice physiotherapist in your location?

- Yes
 No
 Not applicable

28. If non-monetary compensation is provided, please elaborate. If not, please write Not Applicable (N/A).

29. Which organization provides the source of funding for the advanced practice physiotherapy role? (Please select all that applies)

- Hospital Global Budget
 Special Project Grant
 Government/Ministry of Health
 Industry Support (e.g. Arthritis Society)
 Other (please specify)

- Not applicable

30. Please rate the following statement:

The remuneration for advanced practice physiotherapists aligns with the duties and responsibilities of the work.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Not applicable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Would you like to elaborate?

Future Research

31. We would like to contact you in the future to see if you would be interested in participating in another study on advanced practice physiotherapy. Please indicate below if you are willing to be contacted about any future research studies.

- Yes - I agree to be contacted about future research studies
- No - I do not want to be contacted about future research studies

Future Research

32. Can you provide us with your email address? (Your survey responses will not be linked to your email address)

Email Address

Appendix 5.3 Word cloud

