Towards optimizing professional practice: Understanding registered respiratory therapists' role as scholarly practitioners

Marco Zaccagnini, MSc, RRT

School of Physical and Occupational Therapy

Faculty of Medicine and Health Sciences

McGill University

Montréal, Canada

August 2024

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

(Rehabilitation Sciences)

© Marco Zaccagnini, 2024

Copyright in this work is held by the author. Please ensure that any reproduction or re-use is done in accordance with the relevant national copyright legislation.

Table of Contents

LIST OF TABLES IV

LIST OF FIGURES V

LIST OF APPENDICES VI

ABBREVIATIONS VII

ABSTRACT VIII

RÉSUMÉ X

ACKNOWLEDGEMENTS XIII

RECOGNITION OF FUNDING XV

PREFACE XVI

STATEMENT OF ORIGINALITY XVI

CONTRIBUTION OF AUTHORS XVI

THESIS ORGANIZATION AND OVERVIEW XVIII

CHAPTER 1: LITERATURE REVIEW 20

1.1 The Canadian healthcare system and its professionals 21
1.2 Sociological understanding of a professional 21
1.3 Competencies of healthcare professionals 25
1.4 Scholarly practice role and the benefits across healthcare professionals 27
1.5 Conceptualization of scholarly practice 31
1.6 Scholarly practice in rehabilitation professionals 32
1.7 The respiratory therapy profession 34
1.8 Scholarly practice in respiratory therapy 37
1.9 Identified research gaps to enhance the study and applicability of scholarly practice in healthcare professionals and respiratory therapists 39
References 44

CHAPTER 2: RATIONALE AND THESIS OBJECTIVES 65

Rationale 65
Specific Objectives 65

CHAPTER 3: MANUSCRIPT 1 67

Abstract 68
Background 69
Methods 70
Results 74
Discussion 79
Conclusion 84
References 89
Appendices 101

CHAPTER 4: BRIDGE BETWEEN MANUSCRIPT 1 AND 2 123

4.1 Research questions of manuscript 1 and 2 123
4.2 Integration of manuscript 1 and 2 123

CHAPTER 5: MANUSCRIPT 2 ..... **125**

Abstract 126
1.0 Introduction 127
2.0 Methods 128
3.0 Results 131
4.0 Discussion 138
5.0 Conclusion 141
References 146
Appendices 153

CHAPTER 6: BRIDGE BETWEEN MANUSCRIPT 2 AND 3 ..... **168**

6.1 Research questions of manuscript 2 and 3 168
6.2 Integration of manuscript 2 and 3 168

CHAPTER 7: MANUSCRIPT 3 ..... **170**

Abstract 171
Background 172
Methods 172
Results 176
Discussion 179
Conclusion 184
References 195
Appendices 204

CHAPTER 8: BRIDGE BETWEEN MANUSCRIPT 3 AND 4 ..... **218**

8.1 Research questions of manuscript 3 and 4 218
8.2 Integration of manuscript 1, 2, 3 and 4 218

CHAPTER 9: MANUSCRIPT 4 ..... **220**

Abstract 221
Background 222
Methods 224
Results 228
Discussion 231
Conclusion 235
References 243
Appendices 251

CHAPTER 10: INTEGRATED DISCUSSION **276**

10.1 Summary of findings 276
10.2 Theoretical contributions 279
10.3 Methodological contributions 284
10.4 Practice contributions 287
10.5 Strengths and Limitations 289
10.6 Future research 293
10.7 Reflexivity 295
10.8 Concluding Statement 299
References 300
Appendices 314

List of Tables

Chapter	Table	Title	Page
3	1	General Characteristics-Summary of included articles	86
3	2	Operationalization of scholarly practice	87
5	1	Characteristics of participants	143
7	1	Demographics	186
7	2	Scholarly activities	188
7	3	Practice profile	189
7	4	Results from scholarly practice survey	191
7	5	Themes from summative content analysis	194
9	1	Sociodemographic characteristics of full survey respondents	238
9	2	Factor loading	241

List of Figures

Chapter	Figure	Title	Page
3	1	PRISMA Flow Diagram	85
5	1	Concept map of scholarly practice	145
7	1	Study flow diagram	185
9	1	Study flow diagram from original cross-sectional study	236
9	2	Scree plot	237

List of Appendices

Chapter	Appendix	Title	Page
3	1	Data extraction tool	101
3	2	Citation list for included articles	102
3	3	Years of publication	107
3	4	Scholarly practice terms	108
3	5	Definitions of scholarly practice	109
5	1	Interview guide	153
5	2	Themes, subthemes, categories and illustrative quotes	156
5	3	Coding structure example	163
5	4	COREQ (COnsolidated criteria for REporting Qualitative research) checklist	165
7	1	Final survey	204
7	2	Data cleaning protocol	211
7	3	Percentage of time spent in each type of work area	212
7	4	Checklist for Reporting Of Survey Studies (CROSS) checklist	214
9	1	Definitions of constructs	251
9	2	Pilot survey	252
9	3	Data cleaning protocol	258
9	4	Final survey and pilot testing results	259
9	5	Final scholarly practice measurement tool	273
10	1	Ethics approval certificate for dissertation	314
10	2	Email recruitment script	316
10	3	Consent form for manuscript 2	319
10	4	Email template for manuscript 3	322
10	5	Flyer for members of regulatory bodies and professional associations	325
10	6	Consent form for manuscript 3	327

Abbreviations

Abbreviation	Meaning
CanMEDS	Canadian Medical Education Directives for Specialists
CBME	Competency-Based Medical Education
CINAHL	Cumulated Index to Nursing and Allied Health Literature
COPD	Chronic Obstructive Pulmonary Disease
COREQ	The Consolidated Criteria for Reporting Qualitative Studies
CPD	Continuing Professional Development
CROSS	Checklist for Reporting of Survey Studies
CSRT	Canadian Society of Respiratory Therapists
EFA	Exploratory Factor Analysis
HPE	Health Professions Education
ID	Interpretive Description
MAP	Minimum Average Partial
MEDLINE	Medical Literature Analysis and Retrieval System Online
NCDs	Non-Communicable Diseases
NPAPPs	Non-Physician Advanced Practice Providers
OTs	Occupational Therapists
PRESS	Peer Review of Electronic Search Strategies
PRISMA-ScR	Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews
PTs	Physiotherapists
REDCap	Research Electronic Data Capture
RTs	Respiratory Therapists
SD	Standard Deviation
SL-P	Speech-Language Pathologists
SPSS	Statistical Package for Social Sciences
KMO	Kaiser-Meyer-Olkin
WHO	World Health Organization

Abstract

Scholarly practice is a competency common to most healthcare professions. It aims to equip professionals with the essential knowledge, skills, behaviours, and attitudes to ground their practice in theory and research, critically evaluate practice, and integrate evidence-based literature into their work. Despite the purported benefits for patients, professionals and organizations, such as professional empowerment, a positive work environment, and improved patient outcomes, scholarly practice is often misunderstood due to the conceptual ambiguity and inconsistent use of terminology and definitions. This misunderstanding leads to variations in the ways in which scholarly practice is enacted in routine practice and a misalignment between the teaching and assessment of this competency. Consequently, many healthcare professionals may not fully appreciate their roles as scholarly practitioners, perceiving it as less important in their education and in how they deliver patient care. Combined, these challenges underscore the necessity of clarifying what scholarly practice is, understanding its component parts, how it is operationalized in different professions and identifying ways it might be measured. These challenges are particularly noticeable in younger rehabilitation professions like respiratory therapy. Though respiratory therapists (RTs) are expected to enact aspects of scholarly practice for effective patient care, scholarly practice is formally excluded from their competency frameworks.

The aim of this dissertation is to explore how practicing RTs conceptualize, describe and enact their roles as scholarly practitioners through four distinct but interconnected phases, each targeting a specific objective.

In Phase 1, a scoping review was used to ascertain what is known about scholarly practice amongst healthcare professionals. Scholarly practice was conceptualized as the interdependent relationship between scholarship and practice, to advance a profession and is core to being a healthcare practitioner. Attributes of scholarly practitioners were organized into five themes: 1) possessing a commitment to excellence in practice, 2) having a collaborative nature, 3) the presence of virtuous characteristics, 4) having effective communication skills, and 5) possessing an adaptive change ethos. While some papers offered explicit definitions of scholarly practice, there was no consensus on what scholarly practice is, suggesting that it may be a complex and multifaceted concept. Finally, the review revealed an absence of psychometrically validated measurement tools of scholarly practice.

In Phase 2, interpretive description methodology was used to explore what scholarly practice means and how it manifests in daily practice from RTs' perspectives. Five themes were identified: (i) the identity of a scholarly practitioner in RTs; (ii) the factors influencing scholarly practice; (iii) one's impression of their professional self-image; (iv) scholarly practice as a vehicle for changing practice and (v) the complex interconnections between knowledges and practices. Scholarly practice appears to be a multifaceted phenomenon encompassing a wide range of activities and skills, including conducting research, reflective practice, applying research to practice, and contributing to the advancement of the profession and healthcare.

In Phase 3, a cross-sectional study was conducted to describe the demographic characteristics, scholarly and practice profile of RTs across Canada. The results revealed limited participation in research activities and scholarly practice, such as low rates of engaging in literature or scientific presentations. Supportive work environments, access to resources and professional development opportunities can help advance the scholarly practice of RTs.

In Phase 4, the findings from Phase 3 were used to develop, pilot, and generate preliminary validity evidence for a tool designed to measure scholarly practice among RTs, following DeVellis' 9-step scale development process and exploratory factor analysis. The four factors include: 1) professional development and credibility; 2) elements supporting scholarly practice; 3) perceived impact of scholarly activities on practice; and 4) scholarly practitioner identity and ability. By serving as a catalyst for self-reflection, the tool has the potential to foster the advancement of scholarly practice within the profession and among other healthcare professions.

The research reported in this dissertation advances the theoretical understanding of scholarly practice as a multidimensional phenomenon essential for providing legitimacy and credibility to a profession and can serve to stimulate discussions of scholarly practice within the respiratory therapy profession. The newly developed tool for measuring scholarly practice can support RTs to engage in self-reflection.

Résumé

La pratique érudite est une compétence commune à de nombreuses professions de santé. Elle vise à permettre aux professionnels d'acquérir les connaissances, les compétences, les attitudes et les comportements essentiels pour fonder leur pratique sur la théorie et la recherche, évaluer de manière critique la pratique clinique et intégrer dans leur travail la littérature fondée sur des données probantes. Malgré les avantages présumés pour les patients, les professionnels et les organisations, comme l'autonomisation professionnelle, un environnement de travail positif et de meilleurs résultats pour les patients, la pratique érudite est souvent mal comprise en raison de l'ambiguïté conceptuelle et de l'utilisation non standardisée de la terminologie et des définitions. Ce malentendu entraîne des différences notables dans la manière dont la pratique érudite est mise en œuvre dans la pratique courante et un écart entre l'enseignement et l'évaluation de cette compétence. Par conséquent, de nombreux professionnels de la santé peuvent ne pas apprécier pleinement leur rôle en tant que praticiens érudits, le percevant comme moins important durant leur formation et dans la manière dont ils prodiguent des soins aux patients. Ensemble, ces défis démontrent qu'il importe de clarifier ce qu'est la pratique érudite, de comprendre ses éléments constitutifs, la manière dont elle est mise en œuvre dans les différentes professions et d'identifier les moyens de la mesurer. Ces défis sont particulièrement visibles parmi les professions de la réadaptation plus jeune comme l'inhalothérapie. Bien que les inhalothérapeutes soient censés mettre en œuvre des aspects de la pratique érudite pour prodiguer des soins efficaces aux patients, la pratique érudite n'apparait pas formellement dans leur cadre de compétences.

Cette thèse explore la manière dont les inhalothérapeutes en pratique conceptualisent, décrivent et mettent en œuvre leur rôle de praticiens érudits à travers quatre phases distinctes mais interreliées, chacune visant un objectif spécifique.

Dans la phase 1, une étude de portée a été réalisé afin de déterminer ce que l'on connait sur la pratique érudite chez les professionnels de la santé. La pratique érudite a été conceptualisée comme une relation interdépendante entre l'érudition et la pratique, faisant progresser une profession et étant au cœur du métier de professionnel de la santé. Les caractéristiques des praticiens érudits ont été regroupées sous cinq thèmes: 1) l'engagement en faveur de l'excellence dans la pratique, 2) la nature collaborative, 3) la présence des caractéristiques vertueuses, 4) avoir des compétences de communicateurs efficaces et 5) posséder

un éthos de changement adaptable. Alors que certaines sources proposent des définitions formelles de la pratique érudite, il n'y a pas de consensus sur ce qu'est la pratique érudite, suggérant qu'il s'agit d'un concept complexe et multidimensionnel. Enfin, la revue n'a pas relevée d'outils de mesure de la pratique érudite valides sur le plan psychométrique.

Dans la phase 2, une méthodologie descriptive interprétative a été employée afin d'explorer la compréhension de la pratique érudite et la manière dont elle se manifeste dans la pratique quotidienne du point de vue des inhalothérapeutes. Cinq thèmes ont été identifiés, soit: (i) l'identité d'un praticien érudit dans le domaine des inhalothérapeutes; (ii) les facteurs influençant la pratique érudite; (iii) leur propre impression de leur image professionnelle; (iv) la pratique érudite en tant que moyen de changer la pratique et (v) les interconnexions complexes entre les connaissances et les pratiques. La pratique érudite semble être un phénomène multimodal qui englobe un large ensemble d'activités et de compétences, notamment la conduite de recherches, la pratique réflexive, l'application de la recherche en pratique et la contribution à l'avancement de la profession et des soins de santé.

Dans la phase 3, une étude transversale a été réalisée afin de décrire les caractéristiques démographiques, le profil d'érudit et le profil de pratique des inhalothérapeutes au Canada. Les résultats ont démontré une participation limitée aux activités de recherche et à la pratique érudite, dont un faible engagement dans la production et la communication scientifique. Un environnement de travail favorable, l'accès aux ressources et aux opportunités de développement professionnel pourraient contribuer à faire progresser la pratique érudite des inhalothérapeutes.

Dans la phase 4, les résultats de la phase 3 ont été utilisé pour développer, piloter et générer des preuves sur la validité préliminaire d'un outil conçu pour mesurer la pratique érudite chez les inhalothérapeutes, en suivant le processus de DeVellis de développement d'échelle en 9 étapes et l'analyse factorielle exploratoire. Les quatre facteurs sont: 1) le développement professionnel et la crédibilité; 2) les éléments qui soutiennent la pratique érudite; 3) l'impact perçu des activités érudites sur la pratique; et 4) l'identité et la capacité du praticien érudit. En servant de catalyseur à l'autoréflexion, cet outil a le potentiel de favoriser l'avancement de la pratique érudite au sein de la profession en inhalothérapie et d'autres professions de santé.

Cette thèse fait progresser la compréhension théorique de la pratique érudite en tant que phénomène multidimensionnel essentiel pour assurer la légitimité et la crédibilité d'une profession et peut servir à stimuler la discussion sur la pratique érudite au sein de la profession

d'inhalothérapie. L'outil nouvellement développé pour mesurer la pratique érudite peut aider les inhalothérapeutes à s'engager dans l'autoréflexion.

Acknowledgements

This doctoral journey has been a profound experience of learning, self-discovery, and personal growth. Throughout these years, I've encountered numerous successes and failures, each contributing to my journey in valuable ways. I wouldn't change a single moment for anything in the world. To my supervisors, committee members, professors, friends, and family, I express my heartfelt gratitude for the wealth of knowledge and wisdom you've shared with me over the past five years. Through your guidance and support, I've been able to navigate this path of academia and introspection. I've realized that the choices we make and the people we surround ourselves with profoundly shape our character. Through the insights and teachings of others, I've gained a deeper understanding of myself, my values, and the person I aspire to become.

I want to express my heartfelt gratitude to Dr. Aliki Thomas for accepting me as a student and giving me the opportunity to pursue research on a topic that I was most interested in and in a different population. Your guidance and mentorship, navigating through every idea and even the occasional misstep in my emails, have been invaluable. Your dedication to your students is truly commendable, and I am fortunate to have benefited from your wisdom and support. Your tenacity, rigour, and creativity in research inspire me, and I am privileged to have learned from a distinguished researcher like yourself.

Dr. André Bussières, I am grateful for the opportunity to have met and worked with you. Thank you for understanding my professional frustrations and sharing your experiences; it was validating to find common ground. Your gentle and compassionate mentoring, along with your insightful questions, have been instrumental in my academic journey. Your unwavering availability and willingness to discuss any aspect of the process, even at 4:00 in the morning, is a gift that I will always cherish.

Dr. Andrew West, your unwavering support from my days as a just-graduated respiratory therapist to this moment as a PhD candidate has been invaluable. Your advocacy for continuous learning and advancement within the respiratory therapy profession has inspired me to strive for greater heights. I am grateful for your steadfast presence and encouragement throughout this journey.

Dr. Peter Nugus, I extend my appreciation for your unique perspective, which has broadened my horizons beyond the confines of my healthcare background. Your challenges to

explore topics beyond my comfort zone have been enlightening. I consider myself fortunate to have been mentored by every one of you.

I am indebted to Dr. Tim Dubé for his invaluable role as an academic-sounding board, providing guidance and practical advice whenever I felt lost and needed an outside perspective. I'll always remember you telling me to just keep kickin' the can forward.

To the members of the *KEEP* lab at McGill University, I express my gratitude for providing a nurturing environment for my research endeavours. Special thanks to Dr. Jackie Roberge-Dao, Dr. Susanne Mak, Dr. Catherine Giroux, Dr. Sungha Kim, Dr. Zafar Iqbal, Dr. Louis-Pierre Auger, Lisa Arcobelli, Catherine George, Conchita Saldanha, Swati Das, Jennifer Fitzpatrick – I hold very fond memories of learning from everyone. A special shoutout to Dr. Rebecca Ataman, who began this PhD journey with me. Without her, this whole process would have been much more difficult. Thank you for being the best PhD partner.

I am thankful to the respiratory therapy community for their unwavering support and validation of the importance of my work. This work is for us. Special thanks to Carolyn McCoy, Dr. Elizabeth Rohrs, Dr. Mika Nonoyama, Shirley Quach, Brandon D'Souza, and Sébastien Tessier for their encouragement.

To my *Dungeons and Dragons* group, Dr. Olivier Laviguer, Dr. David Drullinsky, Dr. Rohit Mohindra, Michael McArthur, and Alejandro Albagli, thank you for providing a creative outlet during challenging times.

To my parents, Frank and Anna – I am thankful for your unconditional love and support and for always being available to lend a helping hand, whether it be through fixing something in the house that broke or helping with babysitting. To my mother-in-law, Danielle who also helped watch the kids when I had meetings.

Lastly, to my family. Annie Lecavalier, my wife, your patience in listening to my rants, frustrations, accomplishments and my enthusiasm over theoretical frameworks has been invaluable. Thank you for your unwavering belief in me, your moral support, and boundless love. Your presence has been a constant source of strength as I navigate this reflective (and sometimes painful) journey. To my children, Leo and Mia, both born during my PhD, you remain my greatest accomplishments in life. Every milestone, including the completion of this PhD and whatever lies beyond, is dedicated to you.

Thank you, each and every one of you, for being a part of this journey.

Recognition of Funding

My doctoral studies and the phases of research in this dissertation were supported by financial awards from the Jewish Rehabilitation Hospital Foundation, the Richard and Edith Strauss Foundation, the School of Physical and Occupational Therapy at McGill University, the Faculty of Medicine and Health Sciences at McGill University, the Canadian Society of Respiratory Therapists, the American Respiratory Care Foundation and the Fonds de Recherche du Québec-Santé.

Preface

Statement of Originality

The research described in this dissertation is original scholarship. My research makes theoretical, methodological and practice contributions to the topic of scholarly practice in RTs. I have 1) illustrated how scholarly practice is a multidimensional phenomenon that plays a crucial role in providing legitimacy and credibility to a healthcare profession; 2) explored the multifaceted dimensions of scholarly practice within RTs through measurement work, revealing new, never considered dimensions; 3) illustrated how using a multi-method approach to understanding scholarly practice resulted in a comprehensive understanding of the topic; 4) advanced the discourse of scholarly practice in respiratory therapy and; 5) generated a new tool that can be used to measure RTs' self-perceived scholarly practice.

Although this research could not have been conducted without the guidance of my supervisor, Dr. Aliki Thomas, co-supervisor, Dr. André Bussières, and my supervisory committee members, Dr. Peter Nugus and Dr. Andrew West, this statement attests that this doctoral dissertation is my own original work. Any assistance that I received in carrying out this research has been acknowledged. This dissertation has not been published or otherwise disseminated except for the chapters representing manuscripts that are either published or under review in peer-reviewed scientific journals. An external editor was not engaged as part of the process of writing this dissertation.

Contribution of authors

The manuscripts in this dissertation are the work of doctoral candidate Marco Zaccagnini with guidance from all committee members concerning their conceptualization and design. In all four manuscripts, the ethics application (when relevant), participant recruitment, data collection, data analysis, interpretation of results and manuscript writing were conducted by the doctoral candidate with guidance from supervisor Aliki Thomas, OT (c), PhD and co-supervisor André Bussières, DC, PhD. The doctoral candidate was responsible for the originality of the ideas, the scientific quality of the research and for the quality of the reporting across all manuscripts in this dissertation, under the advisement of the thesis committee. Each of the four manuscripts includes

statements of all committee members' roles as co-authors or recognizes their contributions in the acknowledgements.

As primary supervisor, Dr. Aliki Thomas oversaw the entirety of this dissertation, provided expertise in evidence-based practice, scholarly practice, knowledge translation, knowledge synthesis, and cross-sectional, qualitative and mixed methods. Dr. Thomas provided extensive editing and feedback on all chapters of this dissertation and is co-author on all four manuscripts.

As co-supervisor, Dr. André Bussières oversaw the entirety of this dissertation, provided expertise in evidence-based practice, professionalization, knowledge translation, implementation science, knowledge synthesis, cross-sectional, mixed and quantitative methodology. Dr. Bussières provided extensive editing and feedback on all chapters of this dissertation and is co-author on all four manuscripts.

As committee members, Dr. Andrew West and Dr. Peter Nugus provided content and editorial feedback on all chapters of this thesis. Dr. West is co-author on all four manuscripts and Dr. Nugus is co-author on *manuscript 2, 3* and *4.*

Susanne Mak (PhD) was a co-author on *manuscript 1* because she was the second reviewer for the scoping review data extraction. She also provided extensive editorial feedback on this manuscript. Jill Boruff (MLIS) was also a co-author in *manuscript 1* as the health sciences librarian who assisted with the search strategy. She also provided editorial feedback on this manuscript.

Sungha Kim (PhD) was a co-author in *manuscript 2* because she participated in co-coding the data. She has expertise in qualitative methodology and scholarly practice. She also provided editorial feedback on this manuscript.

There are several individuals who are acknowledged for their contributions to each manuscript but who are not co-authors. Brandon D'Souza (BHSc, RRT) was a research assistant and helped with the scoping review search and study selection for *manuscript 1.* Samir Sangani (PhD) helped with IT support to mount the cross-sectional study. Christina St-Onge (PhD) provided critical input in the pilot development of the scholarly practice tool. Sheilah Hogg-Johnson (PhD) provided an expert review of the exploratory factor analysis results.

Thesis organization and overview

This dissertation consists of four manuscripts, two of which have already been published in peer-reviewed scientific journals and two are under review. In alignment with the *Graduate and Postdoctoral Studies* regulations at McGill University, introductory chapters, bridging chapters between the four manuscripts and a concluding, integrated discussion chapter are included in this dissertation. Due to the formatting requitements of a manuscript-based dissertation, some information may be repeated between chapters. The following consists of a brief outline of this dissertation.

Chapter 1 consists of the introduction to the doctoral work; it contains the results of a literature review that introduces key sociological perspectives to explore what it means to be a professional. This chapter also discusses the essential competencies that are expected of healthcare professionals and underscores scholarly practice as a key competency within healthcare, concentrating particularly on rehabilitation professionals and, more specifically, the respiratory therapy profession. I conclude this chapter by identifying the practice, theoretical, and methodological gaps that I aimed to address through my doctoral research on scholarly practice within the respiratory therapy profession.

Chapter 2 presents the rationale for my doctoral research and the objectives of each study with the citation of the corresponding manuscript.

Chapter 3 consists of *manuscript 1,* entitled "*Scholarly practice in healthcare professions: findings from a scoping review,"* which reports on a scoping review on the competency scholarly practice, scholar or scholarly practitioner, and/or related concepts in healthcare professionals.

Chapter 4 is a bridge section which links the first and second manuscript to one another.

Chapter 5 consists of *manuscript 2,* entitled "*What scholarly practice means to respiratory therapists: an interpretive description study,"* which reports on the findings of a qualitative interpretive description study exploring what scholarly practice means, and how it manifests in practice from the perspectives of RTs.

Chapter 6 is a bridge section which links the second and third manuscript to one another.

Chapter 7 consists of *manuscript 3,* entitled *"The scholarly and practice profile of respiratory therapists in Canada: A cross-sectional survey,"* which describes the results of a cross-sectional survey study I administered to a convenience sample of Canadian RTs.

Chapter 8 is a bridge section which links the third and fourth manuscript to one another and provides a summary of the integration of the four manuscripts.

Chapter 9 consists of *manuscript 4,* entitled "*Measuring scholarly practice in respiratory therapists: the development and initial validation of a scholarly practice tool,"* which describes the development, piloting and generation of preliminary validity evidence of a tool designed to measure scholarly practice among RTs.

Chapter 10 presents the integrated discussion chapter which includes a summary of the main findings of this doctoral research, as well as the theoretical, methodological, and practice contributions of my research. The chapter concludes with strengths and limitations, promising areas for future research, a reflexivity section and a closing statement.

While some manuscripts are published, I included their final, but not copyedited version in this dissertation. I have done so in accordance with the *Graduate and Postdoctoral Studies* regulations at McGill University which states that all work contained in the dissertation must be uniform in font size, line spacing, and margin size to ensure consistency and homogeneity. Tables and figures are presented at the end of each manuscript. References and appendices for all chapters are found after each chapter. Reference styles are based the *American Medical Association (AMA) Manual of Style*. All projects requiring ethics approval were approved by *The Faculty of Medicine and Health Sciences Institutional Review Board* at McGill University and all participants provided informed consent.

CHAPTER 1: Literature Review

In this dissertation, I explore the competency of scholarly practice. I emphasize the need for a more comprehensive understanding of scholarly practice, its components, its operationalization across various healthcare professionals, and the justification for the development of a tool to measure this competency. Across many healthcare professions, the competency of scholarly practice (also known the scholar role, scholarly practitioner, or practice-based scholarship) equips professionals with the essential knowledge, skills, behaviours, and attitudes necessary to ground their practice in theory and research, critically evaluate their current practice, and actively explore, and integrate evidence-based literature into their work.[1-5] Although scholarly practice has been shown to provide benefits for healthcare professionals, organizations, and patients,[6-10] this competency is often not well understood, largely due to a lack of conceptual clarity and varying use of terminology and definitions.[11-17] This misunderstanding leads to inconsistencies in the way scholarly practice is applied in routine practice and a misalignment between the teaching and assessment of scholarly practice. Consequently, many healthcare professionals may not fully appreciate the significance of their roles as scholarly practitioners, sometimes viewing it as less important in their education and the delivery of patient care.[17-25] These challenges underscore the necessity of clarifying what scholarly practice is, understanding its component parts, how it is operationalized across and between different healthcare professionals and identifying ways it might be measured.

In this chapter and the subsequent sections, I discuss the current healthcare landscape and the professionals who work within it. I then draw on sociological perspectives to explore what it means to be a professional and highlight the essential competencies expected of healthcare professionals. Furthermore, I underscore the significance of scholarly practice as a key competency within healthcare, concentrating particularly on rehabilitation professionals and, more specifically, the respiratory therapy profession. The choice to focus on the respiratory therapy profession stems from the unique situation where, despite the societal expectation for respiratory therapists (RTs) to stay current with the latest evidence, scholarly practice is not formally included in competency frameworks. I conclude this chapter by identifying the practice, theoretical, and methodological gaps that I aimed to address through my doctoral research on scholarly practice within the respiratory therapy profession.

1.1 The Canadian healthcare system and its professionals

Canadian healthcare is characterized by a publicly funded, universally accessible system designed to provide all people in Canada with comprehensive coverage for a wide range of medical services. It largely relies on its healthcare professionals as the backbone to deliver quality medical care to patients.[26-29] Despite widely acknowledged as one of the best healthcare systems globally,[30] it currently faces several serious challenges in providing timely, person-centred, and evidence-based services to the millions of people living in Canada. These challenges are primarily linked to the aging population, where nearly one in six citizens (5.8 million) is 65 years or older.[31] The demographic shift is intensified by a global rise in the occurrence and frequency of chronic health conditions. These include musculoskeletal disorders, neurological disorders, such as stroke and Alzheimer's disease, cardiovascular disease, cancer, respiratory diseases, such as asthma or chronic obstructive pulmonary disease (COPD), diabetes, arthritis, and mental health disorders including autism and anxiety disorders.[32-35] Notably, 44% of adults in Canada, representing more than one in five individuals aged 20 and above, are affected by at least one high-burden chronic condition.[31,36] Today, many people living in Canada are seeking assistance from healthcare professionals to address a wide range of health conditions and this trend is increasing.[37] In parallel, we are witnessing the most serious health human resource crisis in Canadian history.[38] This crisis is fueled by healthcare professionals' concerns for personal safety, challenging working conditions, emotional exhaustion, and burnout, causing an unprecedented demand for services combined with major resource constraints.[28,38]

Despite these challenges, healthcare professionals are expected to enter practice with the necessary knowledge, skills, attitudes, and behaviours to provide high-quality, person-centred, evidence-informed care to effectively fulfill their roles and meet their professional obligations.[39] Entry-to-practice is granted once a student fulfils the prerequisites of an approved entry-level program. Subsequently, the acquired knowledge, skills, attitudes and behaviours must be further refined through ongoing continuing professional development, scholarly activities and collaborative interprofessional practice throughout their careers.[39,40]

1.2 Sociological understanding of a professional

The definition of a "professional" is laden with complexity due to diverse and conflicting theories, variations in legal frameworks, regulations, and sociopolitical and cultural structures across different countries.[41-44] For years, notable sociologists such as Weber,[45] Durkheim,[46]

Freidson[47] and Abbott[48] have attempted to bring greater clarity to the term. Generally, sociologists have avoided providing a unified definition of the term "professional," largely due to a conviction that the concept is constantly evolving and influenced by societal values and priorities that have fluctuated across different historical periods (e.g., the industrial revolution, the American revolution).[48-53] Given the complexity surrounding the term "professional," it is more useful to examine recurring expectations of professionals derived from various theories of professions, rather than attempting to establish a single definition.[47,48,54-61] These expectations include: 1) possessing an abstract body of knowledge; 2) possessing a high level of expertise; 3) being guided by a code of ethics; and 4) benefitting from legislation that grants self-regulatory control. In the following sections, I discuss these four expectations with the aim of fostering a comprehensive understanding of the essence of a "professional." By understanding the foundational principles of being a healthcare professional, one can better appreciate the significance of enacting competencies like scholarly practice to meet the healthcare needs of patients and society.

1.2.1 Abstract knowledge

Abstract knowledge refers to the necessary theoretical and conceptual knowledge for healthcare professionals to offer a given service and perform their role optimally and safely.[48] At its core, abstract knowledge consists of the principles, concepts and theories which are foundational to the profession. Such knowledge is generally acquired through formal, highly specialized education and training.[48,57,62-67]

According to Freidson,[47] Abbott,[48] and Weber[45] abstract knowledge is in a constant state of refinement. Researchers and certain members of a given profession (e.g., clinician-researchers) hypothesize, theorize, scrutinize, discuss, define, document, and test this knowledge to ensure that it continuously evolves to address society's ever-changing needs and contributes towards showcasing the value of the profession.[68] Conversely, activities and services performed by individuals without this foundational abstract knowledge fail to convey the same authoritative influence with the public who receive their services.[48] For example, psychiatrists use abstract knowledge of dynamic defence mechanism theory to best address and ultimately help resolve a patient's problem rather than merely identifying the defence mechanism.[48,69] In this sense, the professional draws from and mobilizes the knowledge to effectively meet the goals of treatment.[48,69] Another example of abstract knowledge outside of healthcare is in the field of law.

Lawyers possess a deep understanding of legal principles, precedents, and procedures. However, they must also be able to apply this knowledge in a manner that reflects a broad understanding of the social and political contexts in which legal issues arise.[70] The acquisition and application of abstract knowledge is a crucial component of developing expertise in a particular field, another recurrent concept in theories of professions.[71]

1.2.2 Expertise

The collective promise to apply a body of knowledge in an expert manner is the second expectation of a professional.[48,72-75] This promise of expertise sets professions like medicine, law, and engineering apart from other types of work, such as retail service or administrative roles, which are generally perceived as not requiring a complex technical skillset or abstract knowledge. Healthcare is provided to patients on the presumption of expertise.

Expertise has been studied extensively in the field of cognitive psychology and has permeated into health professions education.[72,74,76] Expertise involves mastering a body of knowledge and then using this knowledge to educate others and skillfully practice one's work.[72,74,75] Becoming a professional requires acquiring and mastering an extensive body of abstract knowledge that is specific to a field of expertise. When this knowledge has been mastered, professionals must effectively apply it to solve (often challenging) problems in practice situations.[77-79] A prime example of the mastery and application of this knowledge is physicians' ability to diagnose an illness. Physicians learn to access an extensive and organized body of knowledge which they use to efficiently diagnose the root cause of patients' problems and then develop an appropriate treatment plan.[69,74] Expertise has been shown to garner trust from patients and society.[48,62,76,80,81] As a result, it is an ongoing area of interest among researchers.[76]

1.2.3 Code of ethics

Adherence to a code of ethics, which serves as a guiding framework for ethical decision-making and professional behaviour, is the third expectation.[82] Codes of ethics are designed to help healthcare professionals provide care with honesty and integrity, discourage inappropriate practices, and safeguard the well-being of the clients or patients.[48,54,82-84] Most codes of ethics include the key principles of autonomy (patients' right to determine their own healthcare), justice (distributing the benefits and burdens of care across society), beneficence (doing good for the patient), and non-malfeasance (refraining from actions that harm the patient). Other values to

consider within a code of ethics are transparency and respect for patients' and their families' values.[85,86] Codes of ethics serve a dual purpose: first, they function as prescriptive guidelines used to avoid malpractice; second, they are aspirational documents in that they promote professionals to reflect and deliberate in the face of medical uncertainties.[87] The act of reflection and deliberation are essential for healthcare professionals to navigate and address the moral and scientific uncertainties inherent to working in healthcare.[87] Essentially, professionals can defend their decisions by adhering to the core principles in these codes of ethics.[86] As an illustrative example, in a narrative review examining nurses' experiences of ethical dilemmas, Haahr et al. highlighted common challenges faced by nurses.[88] These challenges often involve finding a balance between minimizing harm and providing optimal care. Nurses may encounter situations where patients' families express preferences for care that contradict the nurses' professional responsibilities, such as when caring for seriously ill patients and being compelled to administer futile care despite the clear indication that the patient is nearing the end of life.[88]

1.2.4 Autonomy and self-regulation

Finally, professionals are granted relative autonomy and the right to self-regulate, provided they have successfully persuaded the public and the government that they hold enough expertise and abstract knowledge. Self-regulation has been characterized as a social contract between the profession and society, where formal legislation grants the profession the privilege and responsibility to set their own standards and rules for their members within certain limits.[89-92] The privilege of self-regulation is given when society acknowledges the profession, their expertise and its body of knowledge and trusts them to serve society's best interests.[92,93] In return, patients expect a higher standard of care.[89]

When the trust between professionals and society is violated, it raises doubts about the effectiveness of self-regulation in ensuring high-quality healthcare.[94-96] This distrust can lead to changes in how professionals are regulated, which can impact their autonomy.[94,97,98] One example of this distrust arose during an examination conducted by an external expert concerning the governance and functioning of the College of Dental Surgeons of British Columbia. The regulatory body responsible for overseeing dentists, dental assistants and dental therapists was subjected to scrutiny because of improper handling of personnel records, unclear practices for managing complaints, and a failure to prioritize patient safety.[99] As a result, the provincial government established a new interprofessional regulatory body comprised of multiple

professionals (e.g., physicians, nurses, and pharmacists) and members of the public to oversee all healthcare professionals instead of expecting that professionals regulate themselves.[100] These changes are intended to restore trust and ensure that healthcare professionals are held to the highest standards of practice resulting in the best possible patient care.[100,101]

While these four expectations (i.e., abstract knowledge, expertise, code of ethics and autonomy and self-regulation) are key to discussions about what a professional *is*, they are not considered exhaustive. For example, researchers in the field of law and health professions education have argued that being a professional also means being accountable to society.[102-104] Accountability includes one's responsibility to provide high-quality care to patients, to adhere to professional standards and ethical guidelines, and to work collaboratively with other healthcare professionals to improve healthcare outcomes.[104-106] This accountability is closely linked to the need for healthcare professionals to possess a foundational understanding of theoretical concepts, principles, and practical skills essential for effective practice. To be accountable to society, healthcare professionals require a range of competencies, including, but not limited to, communication, collaboration, scholarship, and advocacy. These competencies, which are required of most healthcare professionals, are described, organized, and subsequently disseminated to healthcare professionals and the public through competency frameworks.

1.3 Competencies of healthcare professionals

Healthcare professionals are expected to possess and mobilize specific competencies to effectively meet the healthcare needs of the public they serve. Competencies are agreed-upon sets of knowledge, skills, attitudes, and behaviours that are expected of individuals as they transition from student to professional.[3,107,108] To create and develop competency frameworks, different experts (e.g., subject matter, professional bodies, academics) and key partners (e.g., patients, other healthcare professionals) collaborate to determine which knowledge, skills, attitudes, and behaviours are necessary for providing relevant and excellent patient care.[3,109] Profession-specific competencies, such as those for medicine, physiotherapy, or nursing, are detailed in publicly available documents known as competency profiles or frameworks. For example, the Canadian Medical Education Directives for Specialists (CanMEDS) framework by the Royal College of Physicians and Surgeons of Canada for Canadian physicians[3] and the Accreditation Council for Graduate Medical Education Core Competencies for American physicians.[110] The Canadian Physiotherapy Association Competency Profile for

physiotherapists,[4] the Canadian Association of Occupational Therapists' Profile of Practice for occupational therapists (OTs)[1,2] and the national competency framework for RTs.[111] Registered nurses have multiple competency frameworks depending on their role and associated scope of practice (e.g., nurse practitioner).[5,112]

These competency frameworks serve multiple purposes: 1) they provide a structured framework that outlines the knowledge, skills, and behaviours expected from professionals; 2) they serve as a reference point for education, training, and professional development, guiding curriculum development and assessment benchmarks in professional education programs; 3) they help ensure consistency in professional standards and promote quality care by setting clear expectations for professionals.[109,113,114] It is generally assumed that students who meet these competencies will successfully complete a final licensing examination allowing them to safely enter the workforce and provide care at a level that meets the expectations of patients and society at large.

1.3.1 Scholarly practice as a competency

The latest educational approach in health professions education is Competency-Based Medical Education (CBME), which places competencies at the forefront of entry-level education for both students and professionals.[115-117] Educators using this approach evaluate and monitor learners' progress according to these competencies, departing from the traditional time-based or curriculum-driven approach. Many stakeholders, such as researchers, educators, program directors, have recognized that traditional time-based training methods may not adequately prepare graduates for the challenges of modern healthcare. These demands include the need for interprofessional collaboration, a growing emphasis on patient-centered and value-based care, and societal expectations for higher-quality care.[115,118,119] Some of the competencies across many healthcare professionals' frameworks include, but are not limited to, being a medical expert, scholar/scholarly practitioner, communicator, health advocate, and collaborator.

While healthcare professionals are expected to possess all competencies outlined in frameworks, scholarly practice (also known as the scholar role, scholarly practitioner or practice-based scholarship), stands out as a particularly significant expectation for many.[120-123] Notably, the World Health Organization (WHO) has emphasized the significance of evidence-informed decision-making (a core component of scholarly practice) in shaping health policy, practice, and outcomes.[122] The WHO emphasize a pressing need for a more robust utilization of evidence in

all decision-making. This, they argue, would lead to improvements in the effectiveness, efficiency, and equity of health policies and interventions. Additionally, employing evidence-informed decision-making can optimize the allocation of limited resources, enhance transparency and accountability in decision processes, and minimize research wastage. Many of the skills involved in evidence-informed decision-making are embedded in the scholarly practice competency. Therefore, healthcare professionals, being integral components of the healthcare ecosystem, should be proficient in the scholarly practice competency to align with the mandate set by the WHO.[122]

Broadly defined, scholarly practice aims to equip healthcare professionals with the essential knowledge, skills, attitudes, and behaviours to effectively ground their practice in theory and research, to critically examine their existing practices, diligently explore, identify, and integrate evidence-based literature into their work, and ultimately optimize the delivery of care. Moreover, scholarly practice empowers professionals to actively contribute to the advancement of knowledge in their field through engaging in research and other scholarly activities.[1,2,4,122,124] Given its far-reaching impact and contribution to professional development, scholarly practice is a cornerstone competency for healthcare professionals.[1,2,4,122,124]

1.4 Scholarly practice role and the benefits across healthcare professionals

Over the last 20 years, the scholarly practitioner role has generated a great deal of attention from national professional associations, health professions education programs, regulators and clinicians because of its potential to improve professional practice, organizational culture and patient care.[6-10] I further delve into these aspects in the following sections.

1.4.1- Benefits of scholarly practice for the individual provider

Since the early 2000s, some studies have examined the association between healthcare professionals' engagement in scholarship or scholarly practice and several outcomes. At the individual level, these outcomes include heightened recognition from peers, increased job security, attainment of academic, clinical, or industry leadership positions, and an enhanced ability to advocate effectively for patients.[125-129] For example, Chalmers et al. conducted a systematic review to determine the value of “research engagement” among allied healthcare professionals' in practice.[130] The authors opted to define “research engagement” broadly, encompassing activities that go beyond the conventional and limited definition of “research” and incorporate a broad range of activities that include awareness, understanding, and contributions

that have the potential to benefit knowledge exchange, learning and trust between different professional groups, organizations, and communities. This definition aligns with many existing definitions and descriptions of scholarly practice.[15,16] Among the 22 included studies, 11 studies included data about research engagement at the clinical (i.e., at the bedside) level. The authors of the review concluded that the research engagement of allied healthcare professionals has the potential to bring about a "change in human capital" (i.e., the improvement of a professional's collective skills, knowledge, and abilities within a workforce). Specific examples of benefits at the clinical level include a more rapid adoption of new evidence-based treatments, improved survival rates, and an increased likelihood of adhering to and following clinical guidelines. Essentially, the authors suggest that the research engagement of allied healthcare professionals could be a catalyst for positive transformations in the overall capabilities and knowledge base of professionals, ultimately contributing to improved healthcare outcomes.[130] Similarly, Black et al. conducted a mixed-method design to evaluate a research training intervention with nurses working at the bedside. The authors assessed participants on their research knowledge, ability to perform specific research and knowledge translation activities, and willingness to engage in research at three time-points using a validated instrument.[127] The authors found a statistically significant change in research knowledge and ability among the nurses who had the intervention. The effect sizes observed were moderate to large, with a magnitude of d=0.74 for research ability and d=0.77 for research knowledge. Subsequently, the authors conducted qualitative focus groups with the participants and administrators to understand their perceptions regarding the impact of the program. Study participants reported being less intimidated by the research process and had a greater appreciation for the complexities and limitations of research. They also reported being more confident in their understanding of empirical research results, which led to greater ease in applying the research evidence within their clinical setting. Because of their enhanced understanding of empirical research, clinicians reported a superior ability to advocate for change in their healthcare organization.[127] The results from Black and colleagues suggest that professionals who adopted aspects of scholarly practice (e.g., research training during clinical practice) approached patient care with a newfound sense of confidence, excitement and enthusiasm.[127] In another study, Roets et al. conducted a cross-sectional survey to determine if degree-prepared nurses contribute more to scholarly activities compared to diploma-prepared nurses. They found that degree-level nurses secured higher hospital positions and more

frequently integrated scholarly activities in their daily clinical workload.[129] Similarly, doctoral-prepared nurses often fill leadership roles such as chief nurse officer, director of quality improvement, director of evidence-based practice, and chief information officer due to their unique qualifications: clinical knowledge combined with an in-depth knowledge of research methods and data analysis.[128,131,132] They are well-positioned to answer practice problems, ensure that the best evidence reaches the bedside in the most effective and efficient ways and help develop solutions that improve quality of care while reducing cost.[128,131,132] Another observational cross-sectional study by Joyner et al. compared undergraduate- and doctorate-level educated pharmacists and found that doctorate-level educated pharmacists have more clinical responsibilities in larger academic medical centres and report better career mobility.[133] Similarly, OTs with doctorates (compared to their graduate [i.e., Master]-level counterparts) are more likely to hold leadership positions in their careers, such as board members of a community, state, or national professional organization; chairperson or active participant of a leadership team in their workplace.[134]

Scholarly practitioners appear to be at the nexus of clinical practice and academia.[135-140] They use theory and research to inform their practice, and use the knowledge and experiences gained in practice as a source for new learning and research inspiration.[140] They may also conduct research and disseminate their findings to both academic and clinical audiences. Furthermore, they can communicate the importance of scientific evidence in ways that other clinical professionals understand and value. They are also more aware of the challenges involved in implementing evidence-informed treatments into routine settings.[135-139] For example, scholarly practitioners embedded in healthcare organizations can access local contextual information not readily available to "outsiders" and better understand local constraints, problems and priorities.[138,141] Moreover, healthcare professionals who actively participate in research activities while practicing in a clinical setting often show a stronger connection between their research questions and practical aspects of clinical care.[137] They are motivated to disseminate research findings that directly impact patient care and they maintain a strong commitment to ongoing research endeavours.[137,142] A systematic review investigating the role and impact of research positions for allied health professionals further supports these benefits, demonstrating improvements in research culture, positive attitudes towards research, and enhanced capacity building at both the service and organizational levels.[143] There is synergy between practice and

research, and when practitioners engage in both, there is continuous critical thinking, reflective practice, and lifelong learning.[139,143-151] Moreover, practitioners who engage in research while working clinically contribute to developing a body of knowledge and improving their clinical skills.

1.4.2- Benefits of scholarly practice for the organization

Healthcare organizations (e.g., hospitals, clinics) that prioritize the development of a research culture by promoting a research-informed workforce, supporting clinicians' involvement in research, and investing in clinicians' research projects experience positive impacts on their overall performance.[9,10,152] For example, in a pilot randomized controlled trial, Levin et al. found that the nursing groups who received the educational intervention of an advanced research and clinical practice model from the institution (which included strategies such as mentorship, journal clubs, and reflective practice) compared to the nursing group (i.e., the control group) who received basic didactic training held stronger evidence-based practice beliefs, higher index of work satisfaction and had lower rates of attrition from 11% to 6%.[153] In a quality improvement study by Brandt et al., the authors describes the implementation of a non-salaried incentive system that rewarded physicians for their clinical and scholarly efforts over and above predetermined targets. The goal of the system was to support physicians to enhance patient care, increase scholarly productivity (e.g., publications, awarded funding) and decrease hospital expenses. Four years following the implementation of this incentive scheme, several positive outcomes were observed: staff satisfaction with the work culture increased from 89% to 97%; there was a notable 28% increase in the total number of published papers; a 36% increase in extramural research funding obtained per physician; and the organization's productivity and efficiency also improved, resulting in a 33% increase in the number of patients treated.[154] Similarly, Jonker et al. conducted a retrospective analysis of inpatient satisfaction surveys and found that patients treated at research-active hospitals perceive higher levels of staff teamwork, better quality information provision (e.g., prescription management) and more competent and respectful treatment compared to being treated at hospitals without a research culture.[155] Finally, Gould et al. described the implementation and support of a core team of researchers and staff with dedicated resources who collaborate with health system leaders and clinicians to identify and address gaps in clinical practice, such as the unnecessary prescribing of antibiotics for

certain clinical presentations. They reported that an internal analysis of these initiatives indicated a cost savings of over $10 million for their organization.[156]

1.4.3- Benefits of scholarly practice for patients

In recent years, researchers have explored the links between scholarly practice, processes of care and patient outcomes. For example, in a stepped wedge, pragmatic quality improvement study, Dahrouge et al. found that family physicians who voluntarily participate in research tend to deliver better care to their patients (e.g., better chronic disease management, more frequent cancer screening, higher access to emergency care) compared to family physicians who do not participate in research.[157] Brown et al. found that patients stay approximately two days less in hospitals when professionals actively participate in research combined with their clinical practice.[158] Furthermore, healthcare professionals working clinically with advanced degrees have lower rates of adverse events and patient mortality. In a systematic review of observational studies, 75% of included articles provided evidence that nurses with advanced degrees were associated with lower risks of failure to rescue and decreased mortality.[159] In a large, observational study of 422,730 patients from 300 European hospitals, Aiken et al. found that nurses with a higher degree had a 30% lower rate of adverse events and mortality rates for their patients.[160] Similar findings are noted across specific patient populations, such as cardiac arrest and post-surgical patients.[161,162]

1.5 Conceptualization of scholarly practice

Despite the benefits of scholarly practice for many healthcare professionals and the ongoing efforts to promote this competency, challenges concerning its conceptualization (i.e., what it actually is and how it is defined), its development in professionals, and how it may manifest in daily practice persist.[11,14,23] The challenges in understanding and implementing scholarly practice in healthcare appear to be primarily rooted in a lack of conceptual clarity. A likely reason for the confusion surrounding scholarly practice is the interchangeable use of various terms and the existence of multiple definitions and descriptions found in both empirical research[15,16] as well as in many competency frameworks.[1-5] Authors who have explored topics such as clinical reasoning,[163] professional identity,[164] and critical thinking[165] highlight similar challenges. These concepts are often poorly defined, which can significantly impact aspects such as teaching and assessment in health professions education programs.[11-14,17] For example, Binnendyk et al. analyzed the curricula of 18 physician residency training programs, revealing

that the scholar role was one of the least frequently assessed competencies. The authors noted that when program leaders fail to prioritize and assess this competency, it sends a message to learners that it is of lesser importance.[14] The absence of clear definitions hampers the evaluation of learners, making it difficult to effectively measure and reinforce the importance of scholarly practice in their professional development. For example, the results of a scoping review conducted as part of this dissertation revealed a notable absence of suitable measurement tools for scholarly practice, emphasizing the necessity to clarify the underlying concept and begin to create measures with robust psychometric properties.[15]

A small but growing body of literature suggests that healthcare professionals are challenged to apply the competency in practice precisely because of conceptual and definitional ambiguities. For instance, a study conducted by Koo et al. investigated the perspectives of family medicine residents and recent graduates concerning the scholar role. Through in-depth interviews, participants expressed that scholarship encompasses more than just conducting research projects to create new knowledge. They recommended that education on the scholar role should emphasize a comprehensive understanding of scholarship, encompassing aspects such as reflection and quality improvement.[25] Similarly, professionals formally designated as scholarly practitioners (i.e., mandated to conduct research alongside their clinical practice) possess diverse titles, qualifications, and experiences.[137,138,142]

Collectively, the literature suggests that healthcare professionals often have mixed feelings about their role as scholars, with some viewing it as less important in their overall education and the delivery of patient care.[17-25] These challenges emphasize the importance of clarifying what scholarly practice is, understanding its component parts, how it is operationalized across and between different healthcare professionals and identifying ways it might be measured. In this dissertation, my focus extends broadly to rehabilitation professionals, and more specifically, to the profession of respiratory therapy.

1.6 Scholarly practice in rehabilitation professionals

It is estimated that one in every three people (approximately 2.4 billion individuals worldwide) will need rehabilitation care during recovery from illness or injury in their lifetime.[32,166] The need for rehabilitation care will only increase owing to the ageing population and a higher incidence morbidity from non-communicable diseases (NCDs) such as, cardiovascular diseases, diabetes, cancer and chronic respiratory diseases.[32,166] Rehabilitation

care needs to be prioritized as it can effectively assist in preventing and recovering from NCDs. Examples of asthma and COPD rehabilitation indicate effectiveness in relieving dyspnea and fatigue, improving emotional function and quality of life, and enhancing the sense of control that individuals have over their condition.[166-169]

Though most of the evidence on the benefits of adopting scholarly practice is found in the nursing and medical literature, rehabilitation professionals have recently begun to explore what scholarly practice is, and how to best support its development in rehabilitation professionals.[170] This interest in scholarly practice in rehabilitation appears to be linked to a commitment towards providing up-to-date care for patients with increasingly complex medical conditions (e.g., neurological disorders, musculoskeletal injuries, and chronic pain). Furthermore, there is growing interest in empirically investigating processes such as evidence-based practice,[171] knowledge translation,[172] reflective practice[173] and the various "scholarly" roles rehabilitation professionals might adopt, such as knowledge brokers or learning health systems researchers.[174,175]

In a qualitative study aimed at identifying the attributes of OTs who had been nominated by their peers as expert evidence-based practitioners working in stroke rehabilitation, Hallé et al. found that "being scholarly" was key to what it meant to be outstanding OTs.[176] The authors highlighted that scholarly practitioners might be catalysts for enhancing occupational therapy practice and improving stroke rehabilitation services. The peer-nominated experts were described as individuals who taught courses, presented at conferences, informed colleagues of the latest research evidence and were champions for implementing best practices.[176] When researchers asked why these OTs had been nominated as experts in evidence-based practice, their peers indicated that they were interested in improving both their own practice as well as colleagues' practice. A study by Fillion et al. aimed at exploring the perceptions, experiences, and attitudes of physicians and rehabilitation professionals (i.e., OTs, physiotherapists [PTs], speech-language pathologists [SL-P]) regarding their roles as scholarly clinicians. The findings suggest that collaborating with learners has positive effects on professionals' role as scholarly clinicians. This study also suggested that learners who question aspects of clinical decisions and practices encourage clinicians to reflect and explain their clinical reasoning.[177]

In a study aimed at better understanding how all seven occupational therapy professional competencies are enacted in clinical practice, Rochette et al. found discrepancies between OTs'

perceptions of what scholarly practice is and how it is defined in competency frameworks.[178] Over 17% (n=303) of participating OTs perceived their competence in scholarly practice to be less than adequate. What is more, although both the clinicians and organizations valued scholarly practice, there was insufficient time for clinicians to enact certain aspects of scholarly practice, such as searching for evidence or reflecting on their practice. As a result, clinicians were forced to find ways to engage in activities associated with scholarly practice on their personal time, despite scholarly practice being considered a core professional competency.[178]

In the current healthcare context where clinicians are expected to provide up-to-date and personalized care, there must be greater recognition of the importance of using evidence in practice and participating in continuing professional development activities as components of scholarly practice.[122,178] The disconnect between the ethos of scholarly practice and its implementation in clinical practice might impede professional growth, prompting questions about how this might affect healthcare professionals, and ultimately, patient care. In younger rehabilitation professions such as respiratory therapy, where the practice revolves around delivering essential care to individuals with chronic and acute cardiopulmonary disorders, the disconnect between the core tenets of scholarly practice and its practical application might have more serious consequences.

1.7 The respiratory therapy profession

The epidemiology and prognosis of both respiratory disease and critical care management demand specialized healthcare professionals. NCDs (for which respiratory disease is a major contributor) claim the lives of 40 million people each year, accounting for about 70% of all deaths globally. Furthermore, the 2011-2025 projected cost of the continued underinvestment against NCDs is USD 47 trillion.[179,180] Globally, respiratory diseases are the third leading cause of death and disability, accounting for one-fifth of all deaths, leading to an economic burden of over $100 billion per year.[181] In Canada, 3.8 million people over the age of one live with asthma and 2.0 million live with COPD.[35]

The global burden of critical care services is also significantly high; critical care patients' mortality ranges from 35-60%, and those who do survive often live with long-term sequelae such as pulmonary dysfunction, cognitive dysfunction, muscle weakness, or post-traumatic stress disorder.[182] The demand for critical care services is rising due to an aging population combined with a higher incidence of diseases and comorbidities.[182] Additionally, the COVID-19 pandemic

has put an unprecedented focus on respiratory disease, the critical care and long-term management of respiratory disease, highlighting the respiratory therapy profession as one most suitable to work with these populations.[183,184]

Among the 68,000 rehabilitation professionals in the Canadian healthcare system, there are approximately 12,000 RTs who play a vital role in delivering essential care to individuals with chronic and acute disorders, serving a population of 38 million.[185] Respiratory therapy is a young rehabilitation profession that has expertise in critical care and cardiopulmonary medicine. RTs are specialized healthcare professionals that practice across the continuum of care: providing care for all client age groups within and outside of hospital settings, such as intensive care units, operating rooms, neonatal nurseries, and primary care clinics. RTs perform a broad spectrum of clinical tasks, from administering medical gases to managing mechanical ventilators and performing cardiopulmonary resuscitation.[186]

The professionalization of the Canadian respiratory therapy profession took root during the post-World War II era when the Canadian healthcare system was undergoing rapid technological, environmental, and societal changes. Spurred by the poliomyelitis (i.e., polio) epidemic of 1950-1954, new technology was appearing rapidly. These innovations included positive pressure mechanical ventilators as an alternative to negative pressure ("iron lung") ventilators, new technology to alleviate patient's hypoxemia and new pharmacological agents in anesthetics and bronchodilator therapy.[187] These advancements required physicians to seek assistants to help them manage and apply the new technologies to patients, thereby creating the “oxygen orderly” occupation. These orderlies were individuals with various backgrounds (e.g., war veterans, engineers, surgeon’s assistants) who held various positions throughout the hospital (e.g., in the engineering departments) and possessed some mechanical knowledge of gas distribution systems.[187] The orderly’s educational emphasis in the respiratory field was on the technical knowledge needed to provide a safe oxygen delivery service rather than acquiring medical literacy skills related to cardiopulmonary diseases and their treatments. The task of orderlies included cleaning, managing and storing and delivering high-pressure oxygen cylinders and related oxygen equipment to the patient’s bedside, ensuring oxygen humidity bottles were filled with water and helping service anesthesia machines and mechanical ventilators.[187] The historical perception of RTs as mere technicians likely hindered the early growth of the

profession, creating challenges in expanding the scope of practice and scholarly activities, which are now essential in contemporary healthcare.

The respiratory therapy profession's clinical practices and the educational programs leading to licensure for practice have significantly evolved since the profession's inception in the 1950-1960s. RTs now enter practice expected to provide clinical- and patient-centred care, rather than mere sources of technical support. They are entrusted with the responsibility of delivering effective, efficient, and evidence-based care in the modern healthcare setting. Furthermore, RTs are expected to actively engage in patient education and care coordination, integrate into interprofessional teams, foster change within hospital systems through their work on interdisciplinary committees and critically appraise, participate in and integrate research into practice.[187-191] Additionally, given their technical background, RTs are highly skilled at utilizing advanced and rapidly evolving technologies.[187-190] All of these expectations and responsibilities positively contribute to the professionalization of the respiratory therapy profession.

1.7.1 Respiratory therapy education

Today, RTs are required to obtain a diploma in respiratory therapy from an approved educational institution to gain entry to practice. The educational program must contain a core curriculum that is designed to ensure that graduates are prepared to function successfully in the clinical environment.[188,192,193] However, the complexity, volume, and depth of knowledge and skills needed to deliver high-quality, safe and effective respiratory care have grown exponentially since the professions' origins. The respiratory therapy profession is experiencing rapid growth with the emergence of new roles (e.g., sleep disorder specialists), new contexts of practice (e.g., primary care) and technological advancements such as virtual consultations with home-based technology-dependent patients.[194] The COVID-19 pandemic has further accelerated this growth and placed an unprecedented pressure on RTs to assume unique responsibilities, such as a community-based vaccination roles, to address gaps in healthcare delivery.[195]

To ensure that future RTs are equipped with the necessary skills for safe, effective, efficient, and evidence-based practice in the evolving healthcare landscape, educational programs are continuously challenged to incorporate new content. Such new topics include (but are not limited to): 1) strategies for integrating RTs' practice within interprofessional teams, 2) empowering RTs to drive change within hospital and health systems, and 3) enhancing RTs' ability to critically evaluate, engage in, and lead research (i.e., enact scholarly practice) to

advance the delivery of respiratory care.[192] Considering the essential role of RTs in the Canadian healthcare system and the critical nature of their work, it is imperative to gain a deeper understanding of scholarly practice within this profession.[192,193]

1.8 Scholarly practice in respiratory therapy

RTs play an important role in the care of patients with both critical and chronic cardiopulmonary conditions and are expected to provide up-to-date, evidence-based care to meet their professional obligations and remain accountable to patients and society.[187-191] However, there is often a mismatch between the diploma-level training that RTs require for entry to practice and the higher level of knowledge and engagement required for scholarly practice. While diploma programs effectively prepare RTs with the technical skills needed for clinical care, they may not fully equip them with the abstract knowledge and scholarly competencies necessary for advancing the profession. Given the rapid growth and expectations of the respiratory therapy profession, RTs should adopt and embrace the scholarly practice competency. Scholarly practice in respiratory therapy may help to promote the development of expertise and abstract knowledge, markers of what it means to be a professional.[48,190]

Current respiratory therapy educational programs do not expose or prepare learners in these foundational scholarly competencies.[189,196,197] For example, a cross-sectional survey by Barnes et al. identified that only 34% of associate-degree (equivalent to a diploma) respiratory therapy programs in the United States teach evidence-based practice, and only one-third teach students the meaning of general statistical tests, knowledge that is linked to the scholarly practice competency.[189] Similarly, only half of respiratory therapy programs surveyed included content on how to lead care planning, collaboration, regulatory requirements, financial reimbursement and collaborative decision-making.[189] Therefore, it appears that, in the current respiratory therapy educational context, there is a lack of comprehensive instruction on scholarly practice and its various components. Incorporating targeted teaching and assessment strategies designed to foster the development of the necessary knowledge, skills, attitudes, and behaviours associated with scholarly practice into existing respiratory therapy educational programs can help RTs deliver optimal care to people with critical and chronic cardiopulmonary conditions. This approach not only ensures that RTs are well-equipped to meet the challenges of their profession but also helps fulfill their professional obligations. One possibility is to enhance the entry-to-practice requirements of respiratory therapy.

Enhancing the entry-to-practice education of RTs could contribute towards fostering scholarly practice and its component parts. Scholarly RTs may be better prepared to critique published research and explain the links between evidence-based practice, clinical practice and patient benefits. Empirical and conceptual evidence from healthcare professions, such as nursing and occupational therapy, provides support for elevating the level of education (i.e., to an undergraduate degree) for entry-to-practice.[198-200] Higher entry-level qualifications can equip students with a broader range of competencies in diverse areas, including health policy and healthcare financing, research skills, enacting steps in the evidence-based practice process, leadership, quality improvement, and systems thinking; each one an important competency for a patient-centered approach to care and future workforce.[198-200] Most recently, Kaur et al. conducted a retrospective cross-sectional study, providing empirical evidence within the respiratory therapy population. Their findings suggest a correlation between higher education levels of RTs and enhanced patient discharge quality.[201] As discussed earlier, this finding aligns with research in the last two decades in nursing.[159-162,202] While much of these data are derived from the United States, there is little reason to doubt that the situation in Canada is different.[190] Reinforcing RTs' scholarly practice competencies can lead to greater support for the development and enactment of evidence-based practice protocols, the ability to critique and conduct empirical research, develop managerial skills, and contribute to quality improvement, among other abilities. Scholarly RTs can address the increasing number of healthcare issues and ethical components of care involved in more complex care.[203]

A strong foundation in scholarly practice can also significantly enhance RTs' preparedness for specialized roles, such as hospital administration positions, case management, leadership and advanced practice roles.[191,204-206] For example, physicians today are increasingly relying on non-physician advanced practice providers (NPAPPs) such as physician assistants or nurse practitioners to offset the demanding and complex care they must deliver. Scholarly RTs can potentially build on their specialized cardiopulmonary knowledge and skills to develop NPAPP roles within the practices of allergy and immunology, anesthesiology, critical care, pediatrics, pulmonology, and sleep medicine.[206] Scholarly RTs are well-suited to become complementary NPAPPs, filling large gaps in medical care and patient education in the inpatient and outpatient venues as well as in both in urban and rural areas.[207,208] Scholarly RTs can work independently and effectively manage many respiratory services areas, such as shortening the

duration of invasive and non-invasive ventilation,[209,210] ensuring proper use of inpatient respiratory care services,[211,212] and educating patients in self-management for all forms of chronic cardio-pulmonary disorders.[208,213-216]

To contribute to the professionalization of respiratory therapy and meet the healthcare needs of people living in Canada, the profession must embrace scholarly practice more comprehensively, possibly through enhanced education and advanced clinical practice. In the following sections, I discuss the reasons why studying scholarly practice in the respiratory therapy profession can yield distinct and valuable insights.

1.9 Identified research gaps to enhance the study and applicability of scholarly practice in healthcare professionals and respiratory therapists

Scholarly practice is a foundational competency in many healthcare professions, and is thought to represent a core aspect of what it means to be a professional.[1,2,4,5,47,84,124,190] Ultimately, applying the knowledge, skills, attitudes, and behaviours encompassed in this competency benefits professionals, organizations, and patients.[6-10] However, the existence of numerous definitions and terms used to describe scholarly practice within competency frameworks and empirical literature,[15,16] the inconsistencies in its teaching, application, and integration into education and practice,[14,17,148] and the absence of psychometrically robust measurement tools for scholarly practice,[15] contribute to misalignments in the understanding, education and assessment of scholarly practice.

The inconsistencies listed above influence the training and evaluation of future healthcare professionals, resulting in healthcare professionals who may struggle to integrate evidence-based research, exhibit indifference to their roles as scholarly practitioners and may not strive to provide the most up-to-date and relevant patient care.[17-25] In the United States and Canada, where the respiratory therapy profession is most developed, professional licensure bodies have deliberately excluded scholarly practice from their entry-to-practice competencies. Specifically, scholarly practice is not considered a component of their competency frameworks.[111,217] The impact of this decision is that respiratory therapy students are not required to develop the scholarly practice competency or many of its associated components. Furthermore, graduates are not encouraged to develop this competency as part of their continuing professional development.

Given that competency frameworks inform the design and delivery of entry-to-practice curricula and ongoing respiratory education,[109] excluding scholarly practice from the

professional competency framework reduces it to an optional component of curricula and may result in its omission from educational programs. The absence of the scholarly practice competency among RTs could potentially have negative impacts on the profession and, consequently, patient care. First, if RTs are perceived as the only healthcare professionals in an interprofessional team without the knowledge, skills, attitudes, and behaviours of scholarly practice, it may become challenging for them to maintain their professional legitimacy and recognition among their interprofessional colleagues.[190,218] Second, if RTs are not encouraged to engage in scholarly practice, whether within their organization or through continuing professional development, or if it is not integrated into their educational programs, there is a risk of perpetuating the perception that this competency is less important in both education and the delivery of patient care, as reported in the literature.[17-25] Third, RTs may find understanding, appraising and integrating new research findings into their practice challenging, which may result in a possible overreliance on outdated treatment methods, ultimately leading to suboptimal care and a decrease in trust and credibility in their work.[219-222]

Despite scholarly practice being considered fundamental to what it means to be a profession, contributing to the professionalization of respiratory therapy,[47,84,190] and its presence in several healthcare professions competency frameworks,[1,2,4,5,124] there are important practice, theoretical, methodological gaps that require attention and empirical study.

1.9.1 – Practice Gaps

The study of scholarly practice in respiratory therapy presents an opportunity to address various practice-related gaps. One aspect that has received limited attention in the existing literature is the impact of the professional practice environment (i.e., the context of practice), on the development and enactment of scholarly practice and other competencies.[223,224] Considering that RTs often practice in high-stress hospital settings, such as intensive care units and emergency departments, where critical patient care and elevated mortality rates are common,[225] there is a clear need for research to further investigate the practice profile of RTs and how contextual factors might influence the development, enactment and profile of RTs' scholarly practice.

There is also a limited understanding of disciplinary differences regarding scholarly practice. Most literature on the topic stems from nursing and medicine, but scholarly practice likely varies across different healthcare professions. For example, physicians are often exposed

to scholarly experiences at the outset of undergraduate education, unlike other professionals who focus more on clinically oriented skills and may only be exposed to scholarly practice upon entering practice.[226,227] This distinction may lead to variations in early research exposure, skill development and enactment of scholarly practice, highlighting the necessity for additional research to investigate the factors shaping scholarly practice within specific professions. Similarly, it would be important to better understand what scholarly practice entails and examine the barriers and facilitators that RTs encounter when engaging in scholarly practice. By understanding these dynamics, one can identify ways to enhance and support scholarly practice within the respiratory therapy profession and potentially contribute to the overall professional growth and development of RTs.

1.9.2 – Theoretical Gaps

Scholarly practice is considered a core professional competency, yet it remains poorly defined, undertheorized and underexplored in academic literature. The existing research often lacks a clear or consistent definition and tends to rely on implicit assumptions about what scholarly practice entails.[15,16] Moreover, the definitions and descriptions of scholarly practice often diverge from those in established competency frameworks. For example, some competency frameworks may prioritize reflection, quality improvement and critical appraisal of research[1] while others emphasize teaching, or conducting research.[3,124] These discrepancies suggest that perhaps the scholarly practice competency needs to be reconsidered and possibly broadened to reflect its breadth.

Studying scholarly practice in the context of the respiratory therapy profession provides a unique opportunity to explore theoretical gaps. Given the historical dominance of the medical profession over the respiratory therapy profession, researchers might choose to use established theories like those subsumed under the critical theory umbrella (e.g., critical race theory, feminist theory) as a lens to analyze and challenge societal structures, power relations, and assumptions within the profession.[228,229] Similarly, using sociological theories, such as Abbott's system of professions, may highlight challenges faced by the respiratory therapy profession in gaining legitimacy and professionalization.[230,231] Moreover, RTs have struggled to develop a strong professional identity and often find themselves engaged in power struggles with other professions, notably nursing and medicine.[230,231] These power struggles often emerge when healthcare professionals compete for control over specific aspects of patient care, driven by

differences in training, experience, and professional identity.[230,232,233] RTs may face disadvantages in these conflicts, particularly without a solid foundation in scholarly practice.

1.9.3 – Methodological Gaps

The largely undertheorized and empirically studied nature of this competency may partly explain the scarcity of reliable, psychometrically supported measurement tools for evaluating and documenting scholarly practice. Developing a comprehensive measurement tool is crucial as it establishes a more standardized and reliable framework, promotes transparency when making inferences, and promotes fairer assessment of scholarly practice in healthcare professionals' education and in practice.

Existing research about scholarly practice has generally been conducted with a limited or non-diverse group of participants, limiting the transferability of findings. Much of the existing literature often focuses on institutional experiences[10,156] or specific professional roles (i.e., only clinicians or only educators) rather than addressing a diverse range of roles.[6,22,25,140,148,234-237] There is a need to better understand scholarly practice in healthcare across diverse roles such as, managers, clinicians, educators, and researchers. Examining scholarly practice from multiple perspectives can help inform the design and implementation of strategies to support it and improve teaching and assessment methods.

Given the complexity and misunderstandings of scholarly practice noted in the literature,[15,16] researchers may encounter methodological gaps when using only one approach. For example, qualitative methods like interviews and focus groups provide detailed insights but are limited in generalizability due to small sample sizes. Furthermore, the scarcity of quantitative methods limits the ability to measure processes on a larger scale. Employing multiple or mixed methods can enhance understanding and address these gaps, allowing for a more comprehensive exploration of scholarly practice. This approach facilitates the triangulation of findings, potentially leading to a deeper and more clinically relevant understanding.[238-240]

Given the practice, theoretical, and methodological gaps described above, there is an opportunity to enhance our current understanding of the scholarly practice competency and how it is enacted. Addressing these gaps requires using more robust empirical research that broadens our understanding of scholarly practice, both in general and in the context of the respiratory therapy profession. This, in turn, is essential to bolster the respiratory therapy profession's credibility and legitimacy and provide empirical evidence to better support other healthcare

professionals in integrating scholarly practice into their work. Ultimately, this will cultivate a more evidence-based and robust approach to practice, contributing to enhanced patient outcomes.

References

1. Canadian Association of Occupational Therapists. Profile of Practice of Occupational Therapist in Canada. 2012.
2. Canadian Association of Occupational Therapists, Association of Canadian Occupational Therapy Regulatory Organizations, Association of Canadian Occupational Therapy University Programs. *Competencies for Occupational Therapists In Canada.* 2021.
3. Frank JR, Snell L, Sherbino J. *CanMEDS 2015 Physician Competency Framework.* Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.
4. National Physiotherapy Advisory Group. Competency profile for Physiotherapists in Canada (2017). 2017.
5. Canadian Nurses Association. Framework for the Practice of Registered Nurses in Canada. In. 2nd ed. Ottawa, ON.: Canadian Nurses Association; 2015.
6. Kitson A. The relevance of scholarship for nursing research and practice. *Journal of Advanced Nursing.* 2006;55(5):541-543. doi:10.1111/j.1365-2648.2006.04004_1.x.
7. Rosenberg LE. Exceptional economic returns on investments in medical research. *Med J Aust.* 2002;177(7):368-371. doi:10.5694/j.1326-5377.2002.tb04840.x.
8. Masic I, Miokovic M, Muhamedagic B. Evidence based medicine - new approaches and challenges. *Acta Inform Med.* 2008;16(4):219-225. doi:10.5455/aim.2008.16.219-225.
9. Hanney S, Boaz A, Jones T, Soper B. Engagement in research: an innovative three-stage review of the benefits for health-care performance. In: *Health Services and Delivery Research.* Southhampton (UK): NIHR Journals Library; 2013.
10. Harding K, Lynch L, Porter J, Taylor NF. Organisational benefits of a strong research culture in a health service: a systematic review. *Aust Health Rev.* 2017;41(1):45-53. doi:10.1071/AH15180.
11. Kazevman G, Marshall JL, Shachar B, Slater M, Leung F-H, Guiang CB. Uncovering Hidden Scholar Feedback with Field Notes. *MedEdPublish.* 2021;10(1). doi:10.15694/mep.2021.000168.1.
12. Chou S, Cole G, McLaughlin K, Lockyer J. CanMEDS evaluation in Canadian postgraduate training programmes: tools used and programme director satisfaction. *Med Educ.* 2008;42(9):879-886. doi:10.1111/j.1365-2923.2008.03111.x.

13. Barbour-Tuck E, Mutter T, O'Brien J, Girling L, Choo E, Gamble J. Benchmarking a Canadian Anesthesiology Resident Research Program against national norms using a logic model framework: a quality improvement study. *Can Med Educ J.* 2023.
14. Binnendyk J, Pack R, Field E, Watling C. Not wanted on the voyage: highlighting intrinsic CanMEDS gaps in Competence by Design curricula. *Can Med Educ J.* 2021;12(4):39-47. doi:10.36834/cmej.70950.
15. Zaccagnini M, Bussieres A, Mak S, Boruff J, West A, Thomas A. Scholarly practice in healthcare professions: findings from a scoping review. *Adv Health Sci Educ Theory Pract.* 2022. doi:10.1007/s10459-022-10180-0.
16. Hautz SC, Hautz WE, Feufel MA, Spies CD. What makes a doctor a scholar: a systematic review and content analysis of outcome frameworks. *BMC Med Educ.* 2016;16:119. doi:10.1186/s12909-016-0627-z.
17. Ologunde R, Di Salvo I, Khajuria A. The CanMEDS scholar: the neglected competency in tomorrow's doctors. *Adv Med Educ Pract.* 2014;5:383-384.
18. Svab I. Changing research culture. *Ann Fam Med.* 2004;2 (2):S30-34. doi:10.1370/afm.150.
19. Friedman RH, Wahi-Gururaj S, Alpert J, et al. The Views of U.S. Medical School Deans Toward Academic Primary Care. *Academic Medicine.* 2004;79(11):1095-1102.
20. Siemens DR, Punnen S, Wong J, Kanji N. A survey on the attitudes towards research in medical school. *BMC medical education.* 2010;10:4. doi:10.1186/1472-6920-10-4.
21. Burgoyne LN, O'Flynn S, Boylan GB. Undergraduate medical research: the student perspective. *Medical education online.* 2010;15. doi:10.3402/meo.v15i0.5212.
22. Solaja O, Skinner TAA, McGregor TB, Siemens DR. CanMEDS scholars: A national survey on urology residents' attitudes towards research during training. *Can Urol Assoc J.* 2018;12(4):E191-E196. doi:10.5489/cuaj.4927.
23. Stutsky BJ, Singer M, Renaud R. Determining the weighting and relative importance of CanMEDS roles and competencies. *BMC research notes.* 2012;5:354. doi:10.1186/1756-0500-5-354.
24. Ringsted C, Hansen T, Davis D, Scherpbier A. Are some of the challenging aspects of the CanMEDS roles valid outside Canada? *Med Educ.* 2006;40(8):807-815. doi:10.1111/j.1365-2929.2006.02525.x.

25. Koo J, Bains J, Collins MB, Dharamsi S. Residency research requirements and the CanMEDS-FM scholar role: Perspectives of residents and recent graduates. *Can Fam Physician.* 2012;58(6):e330-e336.
26. Bourgeault I, Simkin S, Chamberland-Rowe C. Crisis underscores that health workers are backbone of health system. https://quoimedia.com/crisis-underscores-that-health-workers-are-backbone-of-health-system/. Published 2020. Accessed December 29, 2020.
27. Salmond SW, Macdonald M. Invest in nursing: the backbone of health care systems. *JBI Evidence Synthesis.* 2021;19(4):741-744. doi:10.11124/JBIES-21-00089.
28. House of Commons Canada. *Addressing Canada's Health Workforce Crisis.* 2023.
29. Allin S, Marchildon G, Peckham A. Canada. In: Tikkanen R, Osborn R, Mossialos E, Djordjevic A, Wharton G, eds. *International Health Care System Profiles.* The Commonwealth Fund2020: https://www.commonwealthfund.org/international-health-policy-center/countries/canada. Accessed Febrauary 22, 2023.
30. McAlister FA, Cram P, Bell CM. Comparing Canadian health care to that in other countries: looking beyond the headlines. *CMAJ.* 2018;190(8):E207-E208. doi:10.1503/cmaj.171527.
31. Public Health Agency of Canada. *How healthy are Canadians? A trend analysis of the health of Canadians from a healthy living and chronic disease perspective.* Ottawa, ON. 2016.
32. Cieza A, Causey K, Kamenov K, Hanson SW, Chatterji S, Vos T. Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet.* 2020;396(10267):2006-2017. doi:10.1016/s0140-6736(20)32340-0.
33. Hamm N, Pelletier L, Ellison J, et al. Trends in chronic disease incidence rates from the Canadian Chronic Disease Surveillance System. *Health Promot Chronic Dis Prev Can.* 2019;39(6-7):216-224. doi:10.24095/hpcdp.39.6/7.02.
34. Airhihenbuwa C, Tseng T, Sutton V, Price L. Global Perspectives on Improving Chronic Disease Prevention and Management in Diverse Settings. *Prev Chronic Dis.* 2021;18. doi:10.5888/pcd18.210055.

35. Public Health Agency of Canada. *Report from the Canadian Chronic Disease Surveillance System: Asthma and Chronic Obstructive Pulmonary Disease (COPD) In Canada.* 2018.
36. Public Health Agency of Canada. Prevalence of Chronic Diseases Among Canadian Adults. https://www.canada.ca/en/public-health/services/chronic-diseases/prevalence-canadian-adults-infographic-2019.html. Published 2019. Accessed December 14, 2023.
37. Martin D, Miller AP, Quesnel-Vallee A, Caron NR, Vissandjee B, Marchildon GP. Canada's universal health-care system: achieving its potential. *Lancet.* 2018;391(10131):1718-1735. doi:10.1016/S0140-6736(18)30181-8.
38. Government of Canada. *Summary Report of the Health Human Resources Symposium.* 2022.
39. Canadian Medical Association. CMA Code of Ethics and Professionalism. In:2018.
40. Bauchner H, Fontanarosa P, Thompson A. Professionalism, Governance, and Self-regulation of Medicine. *JAMA.* 2015;313(18):1831-1836. doi:10.1001/jama.2015.4569.
41. Klegon D. The Sociology of Professions: An Emerging Perspective. *Work and Occupations.* 1978;5(3):259-283. doi:10.1177/073088847800500301.
42. Nancarrow S, Borthwick A. The allied health collective. In: Nancarrow S, Borthwick A, eds. *The Allied Health Professions: A Sociological Perspective.* Bristol: Bristol University Press; 2021:27-56.
43. Macdonald K. *The Sociology of Professions.* London: SAGE Publisher; 1995.
44. Collins R. Market closure and the conflict theory of the professions. In: Burrage W, Torstendahl R, eds. *Professions in Theory and History.* London: SAGE Publishing; 1990.
45. Ritzer G. Professionalization, Bureaucratization and Rationalization: The Views of Max Weber. *Social Forces.* 1975;53(4):627-634.
46. Kurtz T. The End of the Profession as a Sociological Category? Systems-theoretical Remarks on the Relationship between Profession and Society. *Am Sociol.* 2022;53(2):265-282.
47. Freidson E. *Professionalism Reborn: Theory, Prophecy, and Policy.* . Chicago, IL.: University of Chicago Press; 1994.
48. Abbott A. *The System of Professions: An Essay on the Division of Expert Labor.* Chicago: University of Chicage Press; 1988.

49. Münte P, Scheid C. Coping with Crises: A Neo-Classical View on Professions. *Professions & Professionalism.* 2017;7(1):1-14. doi:10.7577/pp.1618.
50. Freidson E. *Professional powers: A study of institutionalization of formal knowledge.* Chicago: The University of Chicago Press.; 1986.
51. Larson MS. *The Rise of Professionalism: A Sociological Analysis.* Berkeley: University of California Press; 1977.
52. Parson T. *Essays in sociological theory.* 2nd edition ed: Glencoe, Ill., Free Press; 1954.
53. Evans L. Professionalism, Professionality and the Development of Education Professionals. *British Journal of Educational Studies.* 2008;56(1):20-38. doi:10.1111/j.1467-8527.2007.00392.
54. Wilensky HL. The Professionalization of Everyone? *American Journal of Sociology.* 1964;70(2):137-158.
55. Hugman R. Professionalization in social work: the challenge of diversity. *International Social Work.* 1996;39(2):131-147. doi:10.1177/002087289603900203.
56. Rhodes RL. Professionalism: A Review of its impact on the health services. *Orthotics and Prosthetics.* 1985;38(4):69-74.
57. Cruess SR, Johnston S, Cruess RL. "Profession": a working definition for medical educators. *Teach Learn Med.* 2004;16(1):74-76. doi:10.1207/s15328015tlm1601_15.
58. Parsons T. *The Social System.* London: Routledge; 1991.
59. Saks M. The limitations of the Anglo–American sociology of the professions: a critique of the current neo-Weberian orthodoxy. *Knowledge, Work and Society.* 2003;1(1):13-31.
60. Saks M. Defining a Profession: The Role of Knowledge and Expertise. *Professions & Professionalism.* 2012;2(1):1-10. doi:10.7577/pp.v2i1.151.
61. Saks M. Analyzing the professions: the case for the neo- Weberian approach. *Comparative Sociology.* 2010;9(6):887-915.
62. Freidson E. *Professionalism, the Third Logic.* Chicago, Il: The University of Chicago Press; 2001.
63. Morris PWG, Crawford L, Hodgson D, Shepherd MM, Thomas J. Exploring the role of formal bodies of knowledge in defining a profession – The case of project management. *International Journal of Project Management.* 2006;24(8):710-721. doi:10.1016/j.ijproman.2006.09.012.

64. Kirk LM. Professionalism in medicine: definitions and considerations for teaching. *Proc (Bayl Univ Med Cent).* 2007;20(1):13-16. doi:10.1080/08998280.2007.11928225.
65. Moloney MM. *Professionalization of Nursing: Current Issues and Trends.* 2nd ed. Philadelphia: J.B. Lippincott Company; 1992.
66. Kapitulik BP, Rowell KR, Smith MA, Amaya NV. Examining the Professional Status of Full-time Sociology Faculty in Community Colleges. *Teaching Sociology.* 2016;44(4):256-269. doi:10.1177/0092055x16662694.
67. Campbell-Barr V. Professional Knowledges for Early Childhood Education and Care. *Journal of Childhood Studies.* 2019;44(1):134-146.
68. LaMere K. Reframing the Conversation about Doctoral Education: Professionalization and the Critical Role of Abstract Knowledge. *Iridescent.* 2012;2(1):40-49. doi:10.1080/19235003.2012.11428502.
69. Dickinson BL, Gibson K, VanDerKolk K, et al. "It is this very knowledge that makes us doctors": an applied thematic analysis of how medical students perceive the relevance of biomedical science knowledge to clinical medicine. *BMC Med Educ.* 2020;20(1):356. doi:10.1186/s12909-020-02251-w.
70. Sandefur RL. Elements of Professional Expertise: Understanding Relational and Substantive Expertise through Lawyers' Impact. *American Sociological Review.* 2015;80(5):909-933. doi:10.1177/0003122415601157.
71. Gorman EH, Sandefur RL. "Golden Age," Quiescence, and Revival. *Work and Occupations.* 2011;38(3):275-302. doi:10.1177/0730888411417565. Published 275.
72. Eraut M. Expert and expertise: meanings and perspectives. *Learning in Health and Social Care.* 2005;4(4):173-179. doi:10.1111/j.1473-6861.2005.00102.x.
73. Welie JVM. Is Dentistry a Profession? Part 2. The Hallmarks of Professionalism. *J Can Dent Assoc.* 2004;70(9):599-602.
74. Mylopoulos M, Regehr G. Putting the expert together again. *Med Educ.* 2011;45(9):920-926. doi:10.1111/j.1365-2923.2011.04032.x.
75. Klein E. Toward a Definition of Expertise in Medicine. *Virtual Mentor.* 2006;8(2):69-70. doi:10.1001/virtualmentor.2006.8.2.fred1-0602.

76. Jenkins TM, Underman K, Vinson AH, Olsen LD, Hirshfield LE. The Resurgence of Medical Education in Sociology: A Return to Our Roots and an Agenda for the Future. *J Health Soc Behav.* 2021;62(3):255-270. doi:10.1177/0022146521996275.
77. Kontos PC, Naglie G. Tacit knowledge of caring and embodied selfhood. *Sociol Health Illn.* 2009;31(5):688-704. doi:10.1111/j.1467-9566.2009.01158.x.
78. Oborn E, Barrett M, Gibson S, Gillard S. Knowledge and expertise in care practices: the role of the peer worker in mental health teams. *Sociol Health Illn.* 2019;41(7):1305-1322. doi:10.1111/1467-9566.12944.
79. Tonelli M, Shapiro D. Experiential knowledge in clinical medicine: use and justification. *Theor Med Bioeth.* 2020;41(2-3):67-82.
80. Gritzer G. Occupational specialization in medicine: Knowledge and market explanations. In: Roth JA, ed. *Research in the sociology of Health Care.* Vol 2. Greenwhich, CT.: JAI; 1982.
81. Baer WC. Expertise and Professional Standards. *Work and Occupations.* 1986;13(4).
82. Harris J. Altruism: Should it be Included as an Attribute of Medical Professionalism? *Health Professions Education.* 2018;4(1):3-8. doi:10.1016/j.hpe.2017.02.005.
83. Swick HM. Toward a normative definition of medical professionalism. *Academic Medicine.* 2000;75(6):612-616. doi:10.1097/00001888-200006000-00010.
84. Abbott A. Professional Ethics. *American Journal of Sociology.* 1983;88(5):855-885.
85. Epstein B, Turner M. The Nursing Code of Ethics: Its Value, Its History. *The Online Journal of Issues in Nursing.* 2015;20(2). doi:10.3912/OJIN.Vol20No02Man04.
86. Riddick Jr. F. The Code of Medical Ethics of the American Medical Association. *Ochsner J.* 2003;6(2):6-10.
87. Komparic A, Garon-Sayegh P, Bensimon CM. The promises and limitations of codes of medical ethics as instruments of policy change. *Bioethics.* 2023;37(4):406-415. doi:10.1111/bioe.13143.
88. Haahr A, Norlyk A, Martinsen B, Dreyer P. Nurses experiences of ethical dilemmas: A review. *Nursing Ethics.* 2020;27(1):258-272. doi:10.1177/0969733019832941.
89. Davies C. Regulating the health care workforce: next steps for research. *J Health Serv Res Policy.* 2004;9:55-61. doi:10.1258/135581904322724149.

90. Cruess SR, Cruess RL. Professionalism and Medicine's Social Contract with Society. *Virtual Mentor.* 2004;6(4). doi:10.1001/virtualmentor.2004.6.4.msoc1-0404.
91. Cruess SR, Cruess RL. The Medical Profession and Self-Regulation: A Current Challenge. *Virtual Mentor.* 2005;7(4):320-324. doi:10.1001/virtualmentor.2005.7.4.oped1-0504.
92. Frostenson M. Three forms of professional autonomy: de-professionalisation of teachers in a new light. *Nordic Journal of Studies in Educational Policy.* 2015(2). doi:10.3402/nstep.v1.28464.
93. Martimianakis MA, Maniate JM, Hodges BD. Sociological interpretations of professionalism. *Med Educ.* 2009;43(9):829-837. doi:10.1111/j.1365-2923.2009.03408.x.
94. Yam C, Wong E, Griffiths S, Yeoh E. Do the public think medical regulation keep them safe? *Int J Qual Health Care.* 2018;30(2):90-96. doi:10.1093/intqhc/mzx164.
95. Browne J, Bullock A, Poletti C, Cserzo D. Recent research into healthcare professions regulation: a rapid evidence assessment. *BMC Health Serv Res.* 2021;21(1):934. doi:10.1186/s12913-021-06946-8.
96. Bautista MC, Lopez-Valcarcel BG. Review of medical professional organizations in developed countries: problems of decentralized membership registers. *AIMS Public Health.* 2019;6(4):437-446. doi:10.3934/publichealth.2019.4.437.
97. Choudhari K. The White Paper and regulatory reforms: Beginning the end of professional self-regulation for doctors. *Ulster Med J.* 2008;77(1):4-5.
98. Baron R. Professional Self-regulation in a Changing World: Old Problems Need New Approaches. *JAMA.* 2015;313(18):1807-1808.
99. Motluk A. Self-regulation in health care professions comes under scrutiny. *CMAJ.* 2019;191(33):E926-E927. doi:10.1503/cmaj.109-5790.
100. British Columbia Health Regulators. Regulatory Modernization. https://bchealthregulators.ca/health-regulation-in-bc/regulatory-modernization/. Published 2022. Accessed February 28, 2023.
101. Lindsey B. All discipline for health professionals to be public under new legislation, B.C. health minister says. In: CBC, ed. CBC; 2022.
102. Cornock M. Legal principles of responsibility and accountability in professional healthcare. *Orthopaedic & Trauma Times.* 2014;23:16-18.

103. Chesterton L, Tetley J, Cox N, Jack K. A hermeneutical study of professional accountability in nursing. *J Clin Nurs.* 2021;30(1-2):188-199. doi:10.1111/jocn.15539.
104. Dube TV. An imperative for transforming health professions education. *Med Educ.* 2023. doi:10.1111/medu.15274.
105. Genovese U, Del Sordo S, Pravettoni G, Akulin IM, Zoja R, Casali M. A new paradigm on health care accountability to improve the quality of the system: four parameters to achieve individual and collective accountability. *J Glob Health.* 2017;7(1). doi:10.7189/jogh.07.010301.
106. Emanuel EJ, Emanuel LL. What is accountability in health care? *Annals of Internal Medicine.* 1996;124(2):229-239. doi:10.7326/0003-4819-124-2-199601150-00007.
107. Langins M, Borgermans L. Strengthening a competent health workforce for the provision of coordinated/ integrated health services. In: World Health Organization, 2015.
108. Epstein RM, Hundert EM. Defining and Assessing Professional Competence. *JAMA.* 2002;287(2):226-235. doi:10.1001/jama.287.2.226.
109. Batt AM, Tavares W, Williams B. The development of competency frameworks in healthcare professions: a scoping review. *Adv Health Sci Educ Theory Pract.* 2020;25(4):913-987. doi:10.1007/s10459-019-09946-w.
110. Swing SR. The ACGME outcome project: retrospective and prospective. *Med Teach.* 2007;29(7):648-654. doi:10.1080/01421590701392903.
111. The National Alliance of Respiratory Therapy Regulatory Bodies. National Competency Framework for the Profession of Respiratory Therapy. Ottawa, ON. 2016.
112. Canadian Nurses Association. Canadian Nurse Practitioner: Core Competency Framework. Ottawa, ON. 2010.
113. Campion MA, Fink AA, Ruggeberg BJ, et al. Doing competencies well: best practices in competency modeling. *Personnel Psychology.* 2011;64:225-262. doi:10.1111/j.1744-6570.2010.01207.x.
114. ten Cate O. Entrustability of professional activities and competency-based training. *Med Educ.* 2005;39(12):1176-1177. doi:10.1111/j.1365-2929.2005.02341.x.
115. Frank JR, Snell LS, Cate OT, et al. Competency-based medical education: theory to practice. *Med Teach.* 2010;32(8):638-645. doi:10.3109/0142159X.2010.501190.

116. Hodges A, Konicki A, Talley M, Bordelon C, Holland A, Galin F. Competency-based education in transitioning nurse practitioner students from education into practice. *J Am Assoc Nurse Pract.* 2019;31(11):675-682. doi:10.1097/JXX.0000000000000327.
117. Timmerberg J, Chesbro S, Jensen G, Dole R, Jette D. Competency-Based Education and Practice in Physical Therapy: It's Time to Act! *Physical Therapy.* 2022;102(5). doi:10.1093/ptj/pzac018.
118. Gruppen LD, Mangrulkar RS, Kolars JC. The promise of competency-based education in the health professions for improving global health. *Hum Resour Health.* 2012;10(43). doi:10.1186/1478-4491-10-43.
119. Dagnone JD, Bandiera G, Harris K. Re-examining the value proposition for Competency-Based Medical Education. *Can Med Educ J.* 2021;12(3):155-158. doi:10.36834/cmej.68245.
120. Wilbur K. Should scholar be the new interprofessional competency? *Can Med Educ J.* 2019;10(4):e105-e107.
121. Bourgeois JA, Hategan A, Azzam A. Competency-based medical education and scholarship: Creating an active academic culture during residency. *Perspect Med Educ.* 2015;4(5):254-258. doi:10.1007/s40037-015-0218-4.
122. World Health Organization. *Evidence, policy, impact. WHO guide for evidence-informed decision-making.* Geneva: World Health Organization; 2021.
123. NHS England. *Multi-professional Practice-based Research Capabilities Framework.* 2024.
124. Richardson D, Oswald A, Chan M-K, Lang ES, Harvey BJ. Scholar. In: Frank JR, Snell LS, Sherbino J, eds. *CanMEDS 2015 Physician Competency Framework.* Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.
125. Schroeter K. Certified registered nurses: results of the study of the certified workforce. *AORN Journal.* 2002;75(4):864-865.
126. Tingen MS, Burnett AH, Murchinson RB, Zhu H. The importance of nursing research *The Journal of Nursing Education.* 2009;48(3):167-170. doi:10.3928/01484834-20090301-10.

127. Black AT, Balneaves LG, Garossino C, Puyat JH, Qian H. Promoting evidence-based practice through a research training program for point-of-care clinicians. *J Nurs Adm.* 2015;45(1):14-20. doi:10.1097/NNA.0000000000000151.
128. Trautman DE, Idzik S, Hammersla M, Rosseter R. Advancing Scholarship through Translational Research: The Role of PhD and DNP Prepared Nurses. *OJIN: The Online Journal of Issues in Nursing.* 2018;23(2). doi:10.3912/OJIN.Vol23No02Man02.
129. Roets L, Botma Y, Grobler C. Scholarship in nursing: Degree-prepared nurses versus diploma-prepared nurses. *Health SA Gesondheid.* 2016;21:422-430. doi:10.1016/j.hsag.2016.08.002.
130. Chalmers S, Hill J, Connell L, Ackerley S, Kulkarni A, Roddam H. The value of allied health professional research engagement on healthcare performance: a systematic review. *BMC Health Serv Res.* 2023;23(1):766. doi:10.1186/s12913-023-09555-9.
131. Lewallen LP, Kohlenber E. Preparing the nurse scientist for academia and industry. *Nurs Educ Perspect.* 2011;32(1):22-25.
132. Englebright J, Caspers B. The Role of the Chief Nurse Executive in the Big Data Revolution. *Nurse Leader.* 2016;14(4):280-284. doi:10.1016/j.mnl.2016.01.001.
133. Joyner PU, Thomason TE, Blalock SJ. Practice Settings, Job Responsibilities, and Job Satisfaction of Nontraditional PharmD and BS Pharmacy Graduates. *American Journal of Pharmaceutical Education.* 2009;73(2). doi:10.5688/aj730233.
134. Smallfield S, Flanigan L, Sherman A. Comparing Outcomes of Entry-Level Degrees from One Occupational Therapy Program. *Journal of Occupational Therapy Education.* 2019;3(1). doi:10.26681/jote.2019.030107.
135. Kluijtmans M, de Haan E, Akkerman S, van Tartwijk J. Professional identity in clinician-scientists: brokers between care and science. *Med Educ.* 2017;51(6):645-655. doi:10.1111/medu.13241.
136. Smith LS, Wilkins N. Mind the Gap: Approaches to Addressing the Research-to-Practice, Practice-to-Research Chasm. *J Public Health Manag Pract.* 2018;24 Suppl 1 Suppl, Injury and Violence Prevention:S6-S11. doi:10.1097/PHH.0000000000000667.
137. Newington L, Alexander CM, Wells M. What is a clinical academic? Qualitative interviews with healthcare managers, research-active nurses and other research-active

healthcare professionals outside medicine. *J Clin Nurs.* 2022;31(3-4):378-389. doi:10.1111/jocn.15624.

138. Mickan S, Coates D. Embedded researchers in Australia: Survey of profile and experience across medical, nursing and midwifery and allied health disciplines. *J Clin Nurs.* 2022;31(3-4):417-426. doi:10.1111/jocn.15593.
139. Yanos PT, Ziedonis DM. The Patient-Oriented Clinician-Researcher: Advantages and Challenges of Being a Double Agent. *Psychiatr Serv.* 2006;57(2):249-253. doi:10.1176/appi.ps.57.2.249.
140. Wasserman I, Kram K. Enacting the Scholar–Practitioner Role: An Exploration of Narratives. *Journal of Applied Behavioral Science.* 2009;45(1):12-38. doi:10.1177/0021886308327238.
141. Marshall M, Pagel C, French C, et al. Moving improvement research closer to practice: the Researcher-in-Residence model. *BMJ Qual Saf.* 2014;23(10):801-805. doi:10.1136/bmjqs-2013-002779.
142. Cooper J, Mitchell K, Richardson A, Bramley L. Developing the Role of the Clinical Academic Nurse, Midwife and Allied Health Professional in Healthcare Organisations. *International Journal of Practice-based Learning in Health and Social Care.* 2019;7(2):16-24. doi:10.18552/ijpblhsc.v7i2.637.
143. Wenke R, Mickan S. The role and impact of research positions within health care settings in allied health: a systematic review. *BMC Health Serv Res.* 2016;16(a):355. doi:10.1186/s12913-016-1606-0.
144. Nadelson SG, Nadelson LS. Connecting critical thinking, caring, and curiosity in nurse education: Exploring the beliefs and practices of nurse educators. *Journal of Nursing Education and Practice.* 2019;9(8). doi:10.5430/jnep.v9n8p1.
145. Donohue-Porter P. Creating a culture of shared Governance begins with developing the nurse as scholar. *Creat Nurs.* 2012;18(4):160-167. doi:10.1891/1078-4535.18.4.160.
146. Ramcharan P, Ashmore R, Nicklin L, Drew J. Nursing scholarship within the British university system. *Br J Nurs.* 2001;21(10):196-202. doi:10.12968/bjon.2001.10.3.5383.
147. Riley J, Beal JA, Levi P, McCausland MP. Revisioning Nursing Scholarship. *Journal of Nursing Scholarship.* 2002;34(4):383-389.

148. Riley JM, Beal JA. Scholarly nursing practice from the perspectives of early-career nurses. *Nurs Outlook.* 2013;61(2):e16-24. doi:10.1016/j.outlook.2012.08.010.
149. Storch J, Gamroth L. Scholarship revisited: A collaborative nursing education program's journey. *Journal of Nursing Education.* 2002;52(23):524-530.
150. Thomas A, Law M. Research utilization and evidence-based practice in occupational therapy: a scoping study. *Am J Occup Ther.* 2013;67(4):e55-65. doi:10.5014/ajot.2013.006395.
151. Katzka DA. How to Balance Clinical Work and Research in the Current Era of Academic Medicine. *Gastroenterology.* 2017;153(5):1177-1180. doi:10.1053/j.gastro.2017.09.024.
152. Boaz A, Hanney S, Jones T, Soper B. Does the engagement of clinicians and organisations in research improve healthcare performance: a three-stage review. *BMJ Open.* 2015;5(12):e009415. doi:10.1136/bmjopen-2015-009415.
153. Levin RF, Fineout-Overholt E, Melnyk BM, Barnes M, Vetter MJ. Fostering evidence-based practice to improve nurse and cost outcomes in a community health setting: a pilot test of the advancing research and clinical practice through close collaboration model. *Nurs Adm Q.* 2011;35(1):21-33. doi:10.1097/NAQ.0b013e31820320ff.
154. Brandt TL, Romme CR, LaRusso NF, Lindor KD. A Novel Incentive System for Faculty in an Academic Medical Center. *Annals of Internal Medicine.* 2002;137(9):738-743. doi:10.7326/0003-4819-137-9-200211050-00009.
155. Jonker L, Fisher S, Dagnan D. Patients admitted to more research-active hospitals have more confidence in staff and are better informed about their condition and medication: Results from a retrospective cross-sectional study. *J Eval Clin Pract.* 2020;26:203-208. doi:10.1111/jep.13118.
156. Gould MK, Sharp AL, Nguyen HQ, et al. Embedded Research in the Learning Healthcare System: Ongoing Challenges and Recommendations for Researchers, Clinicians, and Health System Leaders. *J Gen Intern Med.* 2020;35(12):3675-3680. doi:10.1007/s11606-020-05865-4.
157. Dahrouge S, Armstrong CD, Hogg W, Singh J, Liddy C. High-performing physicians are more likely to participate in a research study: findings from a quality improvement study. *BMC Med Res Methodol.* 2019;19(1):171. doi:10.1186/s12874-019-0809-6.

158. Brown A, Griffiss M. Effect of integrated research programs on health care systems and costs. *Military Medicine.* 1996;161(11):691-695.
159. Audet LA, Bourgault P, Rochefort CM. Associations between nurse education and experience and the risk of mortality and adverse events in acute care hospitals: A systematic review of observational studies. *Int J Nurs Stud.* 2018;80:128-146. doi:10.1016/j.ijnurstu.2018.01.007.
160. Aiken LH, Sloane DM, Bruyneel L, et al. Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. *The Lancet.* 2014;383(9931):1824-1830. doi:10.1016/s0140-6736(13)62631-8.
161. Harrison JM, Aiken LH, Sloane DM, et al. In Hospitals With More Nurses Who Have Baccalaureate Degrees, Better Outcomes For Patients After Cardiac Arrest. *Health Aff (Millwood).* 2019;38(7):1087-1094. doi:10.1377/hlthaff.2018.05064.
162. White EM, Smith JG, Trotta RL, McHugh MD. Lower Postsurgical Mortality for Individuals with Dementia with Better-Educated Hospital Workforce. *J Am Geriatr Soc.* 2018;66(6):1137-1143. doi:10.1111/jgs.15355.
163. Young M, Thomas A, Gordon D, et al. The terminology of clinical reasoning in health professions education: Implications and considerations. *Med Teach.* 2019;41(11):1277-1284. doi:10.1080/0142159X.2019.1635686.
164. Mak S, Hunt M, Boruff J, Zaccagnini M, Thomas A. Exploring professional identity in rehabilitation professions: A scoping review. *Adv Health Sci Educ Theory Pract.* 2022. doi:10.1007/s10459-022-10103-z.
165. Kahlke R, Eva K. Constructing critical thinking in health professional education. *Perspect Med Educ.* 2018;7(3):156-165. doi:10.1007/s40037-018-0415-z.
166. Mills T, Marks E, Reynolds T, Cieza A. Rehabilitation: Essential along the Continuum of Care. In: Jamison DT, Gelband H, Horton S, eds. *Disease Control Priorities: Improving Health and Reducing Poverty.* 3rd ed. Washington, DC.: The International Bank for Reconstruction and Development / The World Bank; 2017.
167. Freburger JK, Chou A, Euloth T, Matcho B. Variation in Acute Care Rehabilitation and 30-Day Hospital Readmission or Mortality in Adult Patients With Pneumonia. *JAMA Netw Open.* 2020;3(9):e2012979. doi:10.1001/jamanetworkopen.2020.12979.

168. Osadnik CR, Gleeson C, McDonald VM, Holland AE. Pulmonary rehabilitation versus usual care for adults with asthma. *Cochrane Database of Systematic Reviews.* 2022(8). doi:10.1002/14651858.CD013485.pub2.
169. McCarthy B, Casey D, Devane D, Murphy K, Murphy E, Lacasse Y. Pulmonary rehabilitation for chronic obstructive pulmonary disease. *Cochrane Database of Systematic Reviews.* 2015(2).
170. Thomas A, Han L, Osler BP, Turnbull EA, Douglas E. Students' attitudes and perceptions of teaching and assessment of evidence-based practice in an occupational therapy professional Master's curriculum: a mixed methods study. *BMC Med Educ.* 2017;17(1):64. doi:10.1186/s12909-017-0895-2.
171. Thomas A, Al Zoubi F, Mayo NE, et al. Individual and organizational factors associated with evidence-based practice among physical and occupational therapy recent graduates: A cross-sectional national study. *J Eval Clin Pract.* 2020. doi:10.1111/jep.13518.
172. Jones CA, Roop SC, Pohar SL, Albrecht L, Scott SD. Translating Knowledge in Rehabilitation: Systematic Review. *Physical Therapy.* 2015;95(4):663-677. doi:10.2522/ptj.20130512.
173. Ziebart C, MacDermid JC. Reflective Practice in Physical Therapy: A Scoping Review. *Physical Therapy.* 2019;99(8):1056-1068. doi:10.1093/ptj/pzz049.
174. Johnson J, Stilphen M, Young D, et al. Advancing Rehabilitation Practice Using Embedded Learning Health System Researchers. *Physical Therapy.* 2021;101(6). doi:10.1093/ptj/pzab029.
175. Gaid D, Ahmed S, Thomas A, Bussières A. Profiling knowledge brokers in the rehabilitation sector across Canada: A descriptive study. *J Eval Clin Pract.* 2022;28(2):303-314. doi:10.1111/jep.13621.
176. Hallé MC, Mylopoulos M, Rochette A, et al. Attributes of evidence-based occupational therapists in stroke rehabilitation. *Can J Occup Ther.* 2018;85(5):351-364. doi:10.1177/0008417418802600.
177. Fillion B, Rochette A, Girard A. Challenges of being a scholarly clinician as perceived by stroke rehabilitation professionals. *Disabil Rehabil.* 2014;36(6):521-528. doi:10.3109/09638288.2013.797516.

178. Rochette A, Brousseau M, Vachon B, Engels C, Amari F, Thomas A. What occupational therapists' say about their competencies' enactment, maintenance and development in practice? A two-phase mixed methods study. *BMC Med Educ.* 2020;20(1):191. doi:10.1186/s12909-020-02087-4.
179. Bloom DE, Cafiero ET, Jané-Llopis E, et al. *The Global Economic Burden of Noncommunicable Diseases.* Geneva; 2011.
180. World Health Organization. Global Health Observatory Data. NCD mortality and morbidity. https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/ncd-mortality. Published 2018. Accessed February 3, 2021.
181. European Respiratory Society. Respiratory diseases in the world. https://www.ersnet.org/pdf/publications/firs-world-report.pdf. Published 2013. Accessed.
182. Adhikari NKJ, Fowler RA, Bhagwanjee S, Rubenfeld GD. Critical care and the global burden of critical illness in adults. *The Lancet.* 2010;376(9749):1339-1346. doi:10.1016/s0140-6736(10)60446-1.
183. Hester TB, Cartwright JD, DiGiovine DG, et al. Training and Deployment of Medical Students as Respiratory Therapist Extenders during COVID-19. *ATS Scholar.* 2020;1(2):145-151. doi:10.34197/ats-scholar.2020-0049PS.
184. American Association of Respiratory Care. Respiratory Therapists: Warriors in the Fight Against COVID-19. https://www.aarc.org/wp-content/uploads/2020/03/032020-COVID-19-RT-role-press-release.pdf. Published 2020. Accessed February 24, 2020.
185. Canadian Institute for Health Information. Canada's Health Care Providers, 2016 to 2020 — Data Tables. In. Ottawa, ON.: CIHI; 2022.
186. The Canadian Society of Respiratory Therapists. The RT profession. https://www.csrt.com/rt-profession/. Published 2018. Accessed February 24, 2020.
187. Andrews M. *The Early Years - A Reflective History of the Canadian Society of Respiratory Therapists.* Ottawa, ON: Canadian Society of Respiratory Therapists; 2006.
188. Kacmarek RM, Durbin CG, Barnes TA, Kageler WV, Walton JR, O'Neil EH. Creating a Vision for Respiratory Care in 2015 and Beyond. *Respiratory Care.* 2009;54(3):375-389.
189. Barnes TA, Kacmarek RM, Kageler WV, Morris MJ, Durbin CG, Jr. Transitioning the respiratory therapy workforce for 2015 and beyond. *Respir Care.* 2011;56(5):681-690. doi:10.4187/respcare.01169.

190. Zaccagnini M, Bussières A, Nugus P, West A, Thomas A. Exploring the professionalization of respiratory therapy in Canada. *Canadian Journal of Respiratory Therapy.* 2021;57:129-137. doi:10.29390/cjrt-2021-046.
191. Barnes TA, Gale DD, Kacmarek RM, Kageler WV. Competencies Needed by Graduate Respiratory Therapists in 2015 and Beyond. *Respir Care.* 2010;55(5):601-616.
192. American Association for Respiratory Care. *Entry to Respiratory Therapy Practice 2030.* 2019.
193. Canadian Society of Respiratory Therapist. *CSRT Position Statement on Baccalaureate Degree as Entry-to-Practice.* 2019.
194. Tran T, Nonoyama M, Cithiravel N, et al. Virtual mask fitting in pediatric patients during COVID-19: A case series. *Can J Respir Ther.* 2021;57:93-98. doi:10.29390/cjrt-2021-023.
195. Hummel AM. President Biden Adds RTs to Administer Vaccines. https://www.aarc.org/an21-president-biden-adds-rts-to-administer-vaccines/. Published 2021. Accessed August 11, 2021.
196. Goodfellow LT. The Continuum of Research in Entry-Level Education and Post-Graduate Clinical Respiratory Care. *Respir Care.* 2023. doi:10.4187/respcare.11504.
197. Willis LD, Rintz J, Zaccagnini M, Miller AG, Li J. Barriers to Respiratory Care Research in the United States. *Respir Care.* 2023;68(8):1112-1118. doi:10.4187/respcare.10899.
198. Institute of Medicine. Transforming Education. In: Press NA, ed. *The future of Nursing: Leading Change, Advancing Health.* Washington, DC.2011.
199. Kovner CT, Brewer CS, Yingrengreung S, Fairchild S. New nurses' views of quality improvement education. *Jt Comm J Qual Patient Saf.* 2010;36(1):29-35. doi:10.1016/s1553-7250(10)36006-5.
200. Brown T, Crabtree JL, Wells J, Mu K. The entry-level occupational therapy clinical doctorate: The next education wave of change in Canada? *Can J Occup Ther.* 2016;83(5):306-316. doi:10.1177/0008417416656206.
201. Kaur R, Geistkemper A, Mitra R, Becker EA. RT education and COVID-19 pneumonia discharge quality. *Can J Resp Ther.* 2023;59:190-203. doi:10.29390/001c.87641.

202. Aiken L, Clarke S, Cheung R, Sloane D, Silber J. Educational Levels of Hospital Nurses and Surgical Patient Mortality. *JAMA.* 2003;290(12):1617-1623. doi:10.1001/jama.290.12.1617.
203. College of Respiratory Therapist of Ontario. *A Report on Respiratory Therapy Stakeholder Perspectives Regarding a Baccalaureate Degree Level Entry-to-practice for Respiratory Therapy in Ontario.* 2005.
204. Becker EA, Nguyen XT. The current impact of entry-level associate and baccalaureate degree education on the diversity of respiratory therapists. *Respir Care.* 2014;59(12):1817-1824. doi:10.4187/respcare.03106.
205. Alismail A, Lopez D. Clinical Competencies in Advanced Practice Respiratory Therapy Education: Is It Time to Entrust the Learner? *Adv Med Educ Pract.* 2020;11:83-89. doi:10.2147/AMEP.S239376.
206. Strickland SL, Varekojis SM, Goodfellow LT, et al. Physician Support for Non-Physician Advanced Practice Providers for Persons With Cardiopulmonary Disease. *Respir Care.* 2020;65(11):1702-1711. doi:10.4187/respcare.07387.
207. Fuhrman TM, Aranson R. Point: Should Medicare allow respiratory therapists to independently practice and bill for educational activities related to COPD? Yes. *Chest.* 2014;145(2):210-213. doi:10.1378/chest.13-2517.
208. Stoller JK. Donald F. Egan Scientific Lecture. Are respiratory therapists effective? Assessing the evidence. *Respir Care.* 2000;46(1):56-66.
209. Duan J, Tang X, Huang S, Jia J, Guo S. Protocol-directed versus physician-directed weaning from noninvasive ventilation: the impact in chronic obstructive pulmonary disease patients. *J Trauma Acute Care Surg.* 2012;72(5):1271-1275. doi:10.1097/TA.0b013e318249a0d5.
210. Ely EW, Bennett PA, Bowton DL, Murphy SM, Florance AM, Haponik EF. Large scale implementation of a respiratory therapist-driven protocol for ventilator weaning. *Am J Respir Crit Care Med.* 1999;159(2):439-446.
211. Kollef MH, Shapiro SD, Clinkscale D, et al. The effect of respiratory therapist-initiated treatment protocols on patient outcomes and resource utilization. *Chest.* 2000;117(2):467-475.

212. Orens DK, Kester L, Konrad DJ, Stoller JK. Changing patterns of inpatient respiratory care services over a decade at the Cleveland Clinic: challenges posed and proposed responses. *Respir Care.* 2005;50(8):1033-1039.
213. Rice KL, Dewan N, Bloomfield HE, et al. Disease management program for chronic obstructive pulmonary disease: a randomized controlled trial. *Am J Respir Crit Care Med.* 2010;182(7):890-896. doi:10.1164/rccm.200910-1579OC.
214. Volsko TA. Cystic Fibrosis and the Respiratory Therapist: A 50-Year Perspective. *Respir Care.* 2009;54(5):587-594.
215. Shelledy DC, Legrand TS, Gardner DD, Peters JI. A randomized, controlled study to evaluate the role of an in-home asthma disease management program provided by respiratory therapists in improving outcomes and reducing the cost of care. *J Asthma.* 2009;46(2):194-201. doi:10.1080/02770900802610068.
216. Shelledy DC, McCormick SR, LeGrand TS, Cardenas J, Peters JI. The effect of a pediatric asthma management program provided by respiratory therapists on patient outcomes and cost. *Heart Lung.* 2005;34(6):423-428. doi:10.1016/j.hrtlng.2005.05.004.
217. American Association for Respiratory Care. *Competencies for Entry into Respiratory Therapy Practice.* Irving, TX; 2016.
218. Prud'homme J. "Professional Techs": machines, technical skills and professional aspirations in hearing prosthetics and respiratory care in Quebec, 1950–1990 *Sci Can.* 2011;33(1):71-94. doi:10.7202/1000845ar.
219. Carpenter S, Haber-Curran P. The role of research and scholarship in the professionalisation of student affairs. *Journal of Student Affairs in Africa.* 2013;1(1):1-9. doi:10.14426/jsaa.v1i1-2.20.
220. Ten Cate O. Health professions education scholarship: The emergence, current status, and future of a discipline in its own right. *FASEB Bioadv.* 2021;3(7):510-522. doi:10.1096/fba.2021-00011.
221. Birkhauer J, Gaab J, Kossowsky J, et al. Trust in the health care professional and health outcome: A meta-analysis. *PLoS One.* 2017;12(2):e0170988. doi:10.1371/journal.pone.0170988.

222. Paulsel M, McCroskey J, Richmond V. Perceptions of Health Care Professionals' Credibility as a Predictor of Patients' Satisfaction with their Medical Care and Physician. *Communication Research Reports.* 2006;23(2):69-76. doi:10.1080/08824090600668832.
223. Squires JE, Aloisio LD, Grimshaw JM, et al. Attributes of context relevant to healthcare professionals' use of research evidence in clinical practice: a multi-study analysis. *Implement Sci.* 2019;14(1):52. doi:10.1186/s13012-019-0900-8.
224. Thomas A, Rochette A, George C, et al. The Definitions and Conceptualizations of the Practice Context in the Health Professions: A Scoping Review. *J Contin Educ Health Prof.* 2023;43(4S):S18-29. doi:10.1097/CEH.0000000000000490.
225. Donchin Y, Seagull F. The hostile environment of the intensive care unit. *Curr Opin Crit Care.* 2002;8(4):316-320. doi:10.1097/00075198-200208000-00008.
226. King O, West E, Lee S, et al. Research education and training for nurses and allied health professionals: a systematic scoping review. *BMC Med Educ.* 2022;22(1):385. doi:10.1186/s12909-022-03406-7.
227. Cornett M, Palermo C, Wallace M, Diug B, Ward B. A realist review of scholarly experiences in medical education. *Med Educ.* 2021;55(2):159-1666. doi:10.1111/medu.14362.
228. Paradis E, Nimmon L, Wondimagegn D, Whitehead CR. Critical Theory: Broadening Our Thinking to Explore the Structural Factors at Play in Health Professions Education. *Acad Med.* 2020;95(6):842-845.
229. Sandars JE. Critical theory and the scholarship of medical education. *Int J Med Educ.* 2016;7:246-247.
230. Hall P. Interprofessional teamwork: Professional cultures as barriers. *Journal of Interprofessional Care.* 2005;19(1):188-196. doi:10.1080/13561820500081745.
231. Coburn D. Medical dominance then and now: critical reflections. *Health Sociology Review.* 2006;15(5):432-443.
232. Belrhiti Z, Van Belle S, Criel B. How medical dominance and interprofessional conflicts undermine patient-centred care in hospitals: historical analysis and multiple embedded case study in Morocco. *BMJ Global Health.* 2021;6:e006140. doi:10.1136/ bmjgh-2021-006140.

233. Cornett M, Palermo C, Ash S. Professional identity research in the health professions-a scoping review. *Adv Health Sci Educ Theory Pract.* 2022. doi:10.1007/s10459-022-10171-1.
234. Cusick A. The Experience of Clinician-Researchers in Occupational Therapy. *American Journal of Occupational Therapy.* 2001;55:9-18.
235. Kielhofner G. A scholarship of practice: creating discourse between theory, research and practice. *Occup Ther Health Care.* 2005;19(1-2):7-16. doi:10.1080/J003v19n01_02.
236. Turale S, Shih FJ, Klunklin A, Chontawan R, Ito M, Nakao F. Asia-Pacific nursing scholarship development: qualitative exploration of nurse scholars in Taiwan (Republic of China). *J Clin Nurs.* 2010;19(17-18):2601-2610. doi:10.1111/j.1365-2702.2009.03100.x.
237. Wilkes L, Mannix J, Jackson D. Practicing nurses perspectives of clinical scholarship: a qualitative study. *BMC Nursing.* 2013;12(21).
238. Hoang NS, Lau JN. A Call for Mixed Methods in Competency-Based Medical Education: How We Can Prevent the Overfitting of Curriculum and Assessment. *Acad Med.* 2018;93(7):996-1001. doi:10.1097/ACM.0000000000002205.
239. Creswell JW, Plano Clark VL. *Designing and conducting mixed methods research.* 3rd ed. Thousand Oaks, California: SAGE Publications Inc.; 2018.
240. Hunter A, Brewer J. Designing Multimethod Research. In: Hesse-Biber S, Johnson R, eds. *The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry.*2015:185-205.

CHAPTER 2: Rationale and Thesis Objectives

Rationale

Scholarly practice, a foundational competency in many healthcare professions, represents a core aspect of what it means to be a professional. Scholarly practice encompasses the necessary knowledge, skills, attitudes, and behaviours for professionals to ground their practice in theory and research, to critically evaluate their current approaches, and to actively explore, and integrate evidence-based literature into their work. Ultimately, this competency can enable healthcare professionals to provide up-to-date care that benefits their own clinical practice, their organization, and the patients they serve.

Unfortunately, there are misunderstandings regarding scholarly practice, largely due to a lack of conceptual and definitional clarity, as well as inconsistent and interchangeable use of terminology. The consequences of these inconsistencies are threefold; 1) they impede the effective application and enactment of scholarly practice in healthcare settings, making it difficult for healthcare professionals to integrate evidence-based research into clinical settings, which can potentially affect patient care; 2) inconsistency in scholarly practice leads to misalignments between teaching methods and assessment criteria in health professions education, complicating the education and evaluation of future healthcare professionals; 3) the absence of a universal understanding of scholarly practice makes it challenging to pinpoint areas for improvement within healthcare, potentially impeding quality improvement efforts. Consequently, these challenges result in difficulty in discerning how scholarly practice is operationalized and how it manifests in practice. This challenge is further amplified in younger rehabilitation professions like respiratory therapy, where scholarly practice is formally excluded from competency frameworks, yet RTs are still expected to enact aspects of scholarly practice to serve their patients effectively. To that end, the overall objective of this dissertation is to understand how practicing RTs conceptualize, describe and enact their roles as scholarly practitioners. This doctoral research consists of four distinct but interconnected phases, with each phase targeting a specific objective.

Specific Objectives

Objective 1: The objective of the first phase was to determine what is known about scholarly practice amongst licensed healthcare professionals. More specifically, I wanted to determine: (1)

how is scholarly practice conceptualized and defined in licensed healthcare professionals, (2) What are the component parts of scholarly practice in licensed healthcare professionals and (3) how has scholarly practice been operationalized in clinical practice among licensed healthcare professionals?

Manuscript 1: Zaccagnini, M. Bussières, A. Mak, S. Boruff, J. West, A. Thomas, A. Scholarly practice in healthcare professions: findings from a scoping review. *Adv Health Sci Educ Theory Pract*. 2023 Aug; 28(3):973-996. doi: 10.1007/s10459-022-10180-0.

Objective 2: The objective of the second phase was to explore licensed Canadian RTs' knowledge and perceptions of scholarly practice. Specifically, I wanted to explore what scholarly practice means and how it manifests in daily practice from the perspectives of RTs.

Manuscript 2: Zaccagnini, M. Bussières, A. Kim, S. Nugus, P. West, A. Thomas, A. What scholarly practice means to respiratory therapists: An interpretive description study. *J Eval Clin Pract*. 2023 Aug 25. doi: 10.1111/jep.13917.

Objective 3: The objective of this third phase was to describe the practice profile and scholarly practice of licensed Canadian RTs.

Manuscript 3: Zaccagnini, M. Bussières, A. Nugus, P. West, A. Thomas, A. The scholarly and practice profile of respiratory therapists in Canada: A cross-sectional survey. *Canadian Journal of Respiratory Therapy.* 2024;60:122-139. doi:10.29390/001c.122345

Objective 4: The objective of this fourth phase was to develop, pilot and generate preliminary validity evidence of a tool designed to measure scholarly practice among RTs.

Manuscript 4: Zaccagnini, M. Bussières, A. Nugus, P. West, A. Thomas, A. Measuring scholarly practice in respiratory therapists: the development and initial validation of a scholarly practice tool. Under review as of May 10, 2024, in the *Journal of Continuing Education in the Health Professions*

CHAPTER 3: Manuscript 1

Citation: Zaccagnini M, Bussières A, Mak S, Boruff J, West A, Thomas A. Scholarly practice in healthcare professions: findings from a scoping review. *Adv Health Sci Educ Theory Pract*. 2023 Aug;28(3):973-996. doi: 10.1007/s10459-022-10180-0

Marco Zaccagnini,[1,2] André Bussières,[1,2,3] Susanne Mak,[1,2,4] Jill Boruff,[5] Andrew West,[6] Aliki Thomas[1,2,4]

[1]School of Physical and Occupational Therapy, McGill University, Montréal, Québec. Canada
[2]Centre for Interdisciplinary Research in Rehabilitation of Greater Montréal, Montréal, Québec, Canada
[3]Département chiropratique, Université du Québec à Trois-Rivières, Trois-Rivières, Québec
[4]Institute of Health Sciences Education, McGill University Montréal, Québec. Canada
[5]Schulich Library of Physical Sciences, Life Sciences, and Engineering, McGill University, Montréal, Québec, Canada
[6]The Canadian Society of Respiratory Therapists, Saint John, New Brunswick, Canada.

Corresponding author: Aliki Thomas**,** McGill University, School of Physical and Occupational Therapy**,** Charles Meredith House**,** Montréal, Québec, Canada, H3A 1A3**;** Telephone: 514-398-4496; Fax: 514-398-6360**;** Email: aliki.thomas@mcgill.ca

Abstract

Scholarly practitioners are broadly defined as healthcare professionals that address critical practice problems using theory, scientific evidence, and practice-based knowledge. Though scholarly practice is included in most competency frameworks, it is unclear what scholarly practice *is,* how it *develops* and how it is *operationalized* in clinical practice. The aim of this review was to determine what is known about scholarly practice in healthcare professionals. We conducted a scoping review and searched MEDLINE, EMBASE, CINAHL from inception to May 2020. We included papers that explored, described, or defined scholarly practice, scholar or scholarly practitioner, and/or related concepts in healthcare professionals. We included a total of 90 papers. Thirty percent of papers contained an explicit definition of scholarly practice. Conceptualizations of scholarly practice were organized into three themes: the interdependent relationship between scholarship and practice; advancing the profession's field; and core to being a healthcare practitioner. Attributes of scholarly practitioners clustered around five themes: commitment to excellence in practice; collaborative nature; presence of virtuous characteristics; effective communication skills; and adaptive change ethos. No single unified definition of scholarly practice exists within the literature. The variability in terms used to describe scholarly practice suggests that it is an overarching concept rather than a definable entity. There are similarities between scholarly practitioners and knowledge brokers regarding attributes and how scholarly practice is operationalized. Individuals engaged in the teaching, research and/or assessment of scholarly practice should make explicit their definitions and expectations for healthcare professionals.

Keywords: Scholarly practice; Scoping review; Scholar; Scholarship; Knowledge broker; Competency-based education; Education, Medical; Clinical competence

Background

Practicing healthcare professionals are expected to ground their practice in theory and research, question their current practices, as well as search, identify and integrate evidence-based literature in their practice to optimize the delivery of care. The competency that encompasses the knowledge, skills, attitudes and values associated with these aspects of practice is known as scholarly practice. Broadly, scholarly practitioners address critical practice problems using theory, scientific evidence and practice-based knowledge, and are committed to the cycle of creating, disseminating, applying and translating knowledge to improve the health of the patients entrusted in their care.[1-3]

Evidence from a small body of research suggests that scholarly practice is associated with positive outcomes for the individual practitioner and for their patients.[4,5] For instance, studies in nursing have found that scholarly practitioners garner recognition from peers, have greater job security, appreciate the complexities and limitations of research, can better advocate for change on behalf of patients and earn more opportunities for leadership positions.[6-8] Healthcare organizations (e.g., hospitals, clinics) that promote scholarly practice by adopting a research culture (e.g., promote a research-informed workforce, support and invest in clinicians conducting and participating in research activities) report lower mortality rates, greater organizational efficiency, higher patient and staff satisfaction with the organization, and reduced staff turnover.[4,9-11] Scholarly practice has also been associated with better patient health outcomes and increased satisfaction with their care.[12-14] For example, a study of family physicians who participate in research within their clinical practice found that they provide better patient care (e.g., superior chronic disease management, more frequent cancer screening) than family physicians who did not participate in research.[13]

Despite the purported benefits of scholarly practice, there are persistent challenges in understanding what scholarly practice "*is*." This lack of clarity is highlighted in studies suggesting that healthcare professionals find it challenging to enact and develop their role as a scholarly practitioner in routine practice.[15] Healthcare professionals also report having ambivalent attitudes towards the role; they question its inclusion in professional competency frameworks and the direct benefits to patient care.[16,17] These perceptions may be related to the lack of clarity regarding what scholarly practice actually *is,* how it *develops* and how it's *operationalized* in clinical practice.[15-24] Furthermore, it appears that the scholar role is rarely

assessed in formal classroom teaching or in clinical practica.[17,24,25] A content analysis of 18 Canadian physician residency-training curricula showed that the scholar role was one of the least frequently mapped to assessment methods.[23] The authors argued that when program leaders fail to prioritize and assess this role, the message they convey to learners is that it is less important than other roles.[23]

It seems that stakeholders from the education sector (e.g., teachers, curriculum developers, program leaders) seldom assess this competency, yet clinicians are expected to apply theory and research in routine care.[1-3] Indeed, representatives from education assume that graduating healthcare professionals enter practice competent to enact their roles as scholarly practitioners; this is in stark contradiction to a growing body of evidence that has documented a disconnect between the results from empirical research and what is actually applied in practice.[26-28] Moreover, studies by Bammeke et al.,[29] Chou et al.,[25] Ologunde et al.,[17] Rochette et al.,[15] and Smesny et al.[30] converge to suggest that healthcare professionals do not feel confident in their roles as scholarly practitioners and uncertain as to what scholarly practice actually entails or how it contributes to better patient care.

This literature points to an ongoing tension between the conceptualization and impetus of scholarly practice and its application in healthcare. When a role or competency is explicitly included in a competency framework, it sends a strong message about its importance for entry-level practice.[31] If healthcare professionals are to successfully embrace and enact scholarly practice, they will need greater clarity about what the role entails and how it manifests in practice. Greater clarity can also benefit educators in health professions education (HPE) as they design and deliver curricula that address the component parts of this important role. This may be achieved by identifying a trajectory of competency development with clear milestones.[15,32,33] The aim of this paper was to map the breadth and depth of the literature on what is known about scholarly practice in healthcare professionals including the main conceptualizations and components of scholarly practice.

Methods

We used the 6-step methodological framework developed by Arksey and O'Malley [34] further refined by Levac et al.[35] and the Joanna Briggs Institute.[36] The methods are outlined briefly below (the full protocol has previously been published).[37]

Step 1: Identifying the research question

The overarching question guiding this review is "*What is known about scholarly practice in licensed healthcare professionals?"* The specific sub-questions include:

1. How is scholarly practice conceptualized and defined in licensed healthcare professionals?
2. What are the component parts of scholarly practice in licensed healthcare professionals?
3. How has scholarly practice been operationalized in clinical practice among licensed healthcare professionals?

Step 2: Identifying relevant studies

A health sciences librarian (JB) and the first author (MZ) developed the search strategy with keywords derived from existing Canadian competency frameworks in medicine, nursing and rehabilitation (i.e., occupational therapy [OT], physiotherapy [PT], respiratory therapy [RT] and speech-language pathology [SL-P]) that include scholarly practice as one of the core competencies. We circulated these keywords amongst the research team so that they could add other similar words and/or synonyms. The search was peer-reviewed by a second librarian using the Peer Review of Electronic Search Strategies (PRESS) guidelines.[38] The first author performed the searches in MEDLINE (Ovid), EMBASE (Ovid), CINAHL (EBSCO) in May 2020 without a date limit. The full search details are available in a data repository.[39]

To be included, papers had to explore, describe, or define scholarly practice, scholar, or scholarly practitioner, and/or related concepts in licensed healthcare professionals. Of interest were papers describing how these concepts are operationalized, defined, or developed using a theoretical framework. We defined healthcare professionals as individuals formally recognized by a regulatory body as a clinician who has passed all the qualifications to practice in that profession, in that state, province, or country. The list includes physicians, nurses, pharmacists, dietitians, social workers, clinical psychologists, and rehabilitation professionals (OT, PT, RT, SL-P). We only considered papers written in English or French because 1) these were the only two languages spoken and written by our team members and 2) we had limited resources for translation.[40,41]

We excluded papers if they: 1) only focused on students or pre-licensure healthcare professionals; 2) discussed scholarship related to a grant or payment; 3) were editorials; 4) were obituaries (i.e., articles that described the death of a prominent researcher); 5) were media

interviews with individual researchers; 6) described the process/steps of conducting research; 7) discussed a location or program without mention of licensed professionals; 8) described a surgical or medical technique used in clinical practice; 9) were posters or conference abstracts; and 10) only reported citation metrics.

Step 3: Study selection

We uploaded the search results to EndNote X9.1, removed duplicates, and uploaded the papers into Covidence. The first author (MZ) and a research assistant conducted a calibration exercise on a random 5% (n=362) sample of the full archive (n= 7246). The calibration exercise consisted of each person independently reviewing a common set of papers for inclusion. MZ and the research assistant met to discuss the included papers until they reached 90% agreement.[42] MZ and the research assistant screened a total of 10% (n=725) papers before achieving a 90% agreement. At this point in the process, we divided the remaining papers (n= 3266 each) and applied the inclusion/exclusion criteria. When either member was uncertain about including the paper or not, they opted to retain it for full-text screening. We conducted dual screening at the full-text screening stage, which involved each team member independently reviewing the full text of the papers to determine its eligibility. Both team members had to agree to include the paper. In case of a disagreement, the team members discussed the full text, the reasons for their decision and came to a consensus. Any discrepancy was resolved by a third team member.

Step 4: Charting the data

The first author (MZ) developed an extraction form based on the research questions and corresponding units of analysis (e.g., theoretical models used, provided definitions of scholarly practice). MZ then mounted the form on Microsoft Excel and circulated it to the research team (as content experts) for feedback. We did not conduct a critical appraisal of the included articles because it was not an aim of the review and would not generate any additional meaningful insights.[34]

Two team members (MZ and SM) independently pilot tested the form on the same five papers, met to discuss any discrepancies, and modified the extraction form to enhance clarity, relevance, and completeness. After discussing those five papers, this process was repeated for an additional 15 (20 total) papers to ensure that the data extraction form was clear, comprehensive

and that they achieved a 90% agreement. MZ proceeded to extract the data for every paper and SM co-extracted a random sample of 50% of the papers to ensure the quality and reproducibility of the data extraction process. Supplementary Appendix 1 includes the data extraction tool.

Step 5: Collating and reporting the results

We conducted a numerical (bibliometric) and descriptive qualitative content analysis. For the numerical analysis, we used frequencies to report year of publication, country, and population, scholarly practice synonyms, definitions, which (if any) theoretical frameworks and/or models used.

We then conducted a descriptive qualitative content analysis according to the recommendations of published guidelines[34-36] and used NVivo to manage the data. The process of qualitative content analysis begins with repeatedly reading all the data to immerse oneself in the data.[43] This is followed by reading the excerpts word-by-word to capture key thoughts and concepts and then using those concepts to generate the codes. The codes are then organized into categories based on how the different codes are related and linked. Finally, the emergent categories are organized to group codes into meaningful clusters.[43]

For this review, the first author (MZ) read the results of each paper and the data excerpts related to the research questions to develop a set of codes and operational definition for each code. MZ sent these codes and operational definitions to SM for initial feedback, and then refined earlier codes or replaced them with different ones to better represent the identified concepts according to the feedback. Next, MZ grouped codes with similar meanings into categories. If a code did not fit into any category, MZ developed a new category. Once the preliminary data analysis was completed, MZ presented the codes and categories to the other research team members (AT, SM, AB) for review and feedback. Following their feedback, the categories were grouped into themes using a process similar to the one used for developing the categories.

Step 6: Consulting stakeholders

After integrating the research team's feedback on the themes, MZ further refined the codes and themes and consulted four clinician-researchers (two nurses and two physicians) who represent the largest healthcare professions identified in the data set. These individuals are

content experts in HPE, have published papers related to HPE scholarship and hold graduate degrees in education and/or HPE. We asked the experts to review the codes and themes and provide feedback on whether the themes reflected the concept of scholarly practice from their perspective as content experts. We incorporated their feedback into the final version of the themes as reported in this manuscript.

Results

The search yielded 12,238 papers. After eliminating 4992 duplicates, we screened the title/abstract of 7246 papers, yielding 559 papers for full-text review. In total, 90 papers matched our eligibility criteria, including 6 articles identified by hand-searching the reference lists. We consulted 11 competency frameworks that referenced scholar/scholarly practitioner but were not included in the overall count of included papers. Figure 1 includes the preferred reporting items for systematic reviews and meta-analyses extension for scoping reviews (PRISMA-ScR) flow diagram[44,45] and Supplementary Appendix 2 includes all the articles extracted for the final analysis.

Numerical analysis

Table 1 lists the general characteristics of the included 90 papers. Over 75% of papers were published in North America (n= 68). More than half focused on the nursing profession (n= 51, 57%), followed by physicians (n= 13, 15%) and OTs (n= 13, 15%). Supplementary Appendix 3 includes the years of publications.

We identified 28 unique terms used to describe the individual who engages in scholarly practice in their day-to-day practice. The most common terms include “scholarship” (n=14), “scholar” (n=12) or “nursing scholarship” (n=10). A smaller subset of papers uses “scholarship of practice” (n=7), “practice scholars” (n=7), “scholarly practice” (n=4), and “clinical scholarship” (n=4). Supplementary Appendix 4 for the full list.

Almost two-thirds of the included papers were conceptual (n=57; 63%). The remaining 36% (n= 32) reported on the results of empirical investigations. One paper was a dissertation (1%). Thirty percent (n=27) of the papers included an explicit definition of scholarly practice or a related synonym (Supplementary Appendix 5). Seventy percent (n=63) of the papers contained implicit definitions related to scholarly practice, that is, they were general description of actions

or components but no statement that the authors were working with a specific definition of scholarly practice or a related synonym.

Two thirds of the papers (n=60; 67%) did not report any theoretical framework or model used to underpin their study or discussion of scholarly practice. Boyer's model of scholarship was explicitly cited in 22 articles (24%).[46] Other models and framework included the scientist-practitioner model,[47] scholarship of practice as a personal framework,[48] Schön's reflective practice model,[49] Neuman systems model,[50] dialogical self-theory[51] and clinical scholar model.[52]

Descriptive Qualitative Content Analysis

We identified three themes regarding how licensed healthcare professionals conceptualize scholarly practice: 1) interdependent relationship between scholarship and practice; 2) advancing the profession; and 3) scholarly practice is core to being a healthcare practitioner.

Theme 1: Interdependent relationship between scholarship and practice

This theme represents how scholarly practice manifests. In 37% (n=33) of papers, scholarly practice is reported as a reciprocal and "*synergistic"* relationship between research and practice: practice informs research, while research influences practice.[47,51,53-62] Indeed, many authors described the bidirectional relationship between research and practice as a constant, reciprocal, circular and complementary dialect.[47,48,50,60,63-68] For instance, Kielhorfner[66] suggested that scholarly practice was a dialect in which theoretical and empirical knowledge are applied to the practical problems of therapeutic work and in which the latter raise questions to be addressed through scholarship (e.g., empirical research). Similarly, Taylor et al.[48] suggests that scholarly practice is the empirical verification of concepts through research and applying those concepts in real-world clinical practice. Other authors[11,69,70] cite the reciprocal relationship between practice and research as knowledge translation, which is the dynamic and iterative process to disseminate, exchange and share knowledge. In a phenomenological study of recently trained clinician-scientist nurses and physiotherapists seeking to understand their professional identity in their clinician-scientist role, the participants characterized their new meta-identity as a '*broker*,' someone whose primary purpose is to advance practice by connecting science and care.[51] Similarly, respondents in Ridley et al.'s study suggested that the definition of a scientist-

practitioner in psychologists are clinicians who deliberately integrated science and practice in routine clinical care. [60]

Theme 2: Advancing the profession

This theme captures the *"raison d'être*" of scholarly practice. The purpose of conducting research as part of one's role as a scholarly practitioner is to generate new knowledge; this knowledge is then used to guide professional practice, decision-making, and clinical reasoning.[68,71,72] For example, Stockhausen and Turale[33] explored nurse scholars' personal and professional perspectives on the nature and development of nursing scholarship. Most participants agreed that scholarship revolved around the generation, creation, and modification of what is known about nursing, not merely conducting and publishing research but changing the practice of their disciplines. Logsdon et al.[73] conducted a cross-sectional study to describe the role, activities, and outcomes of nurse scientists. The performance evaluation of nursing scientists revolved around their contribution to practice and their ability to facilitate the research of other professionals. Specifically, the most important criteria for performance evaluation included attaining nursing research goals, leadership skills, involvement in research of staff, and the number of presentations facilitated by collaborative research with staff.[73]

Theme 3: Scholarly practice is core to being a healthcare practitioner

This theme highlights that scholarly practice is embedded within the individual and reflected through their personal and professional attributes. Scholarly practice was described as part of clinicians' identity, and inherent in everything they do. For example, Prideaux et al.[74] explain that physicians as scholar must adopt a life-long commitment to personal learning.

Twenty-eight authors (31%) used words such as creative (e.g. in their way of thinking or approaching a problem),[33,54,55,59,75-78] reflective,[48,59,79,80] critical thinkers[51,64,69,81,82] and possessing high intrinsic motivation[47,56,62,68,80] when describing clinicians believed to embody the essence of scholarly practice. These individuals challenge the status quo; they ask "*why*" questions, and they constantly reflect on the evidence that is available to support decision-making. They also query current practice and clinical situations they encounter, ultimately in the pursuit of enhancing practice. Finally, several authors describe how scholarly practitioners often "*refuse to accept mediocrity*."[51,82-85] In a historical review article by Vespia and Sauer[47] about scientist-

practitioners in psychology, the authors claim that a scientist-practitioner is not defined by a job title, but by their willingness to embrace a research orientation in their practice.

We grouped the attributes of scholarly practitioners into five major themes: (1) commitment to excellence in practice; (2) collaborative nature; (3) presence of virtuous characteristics; (4) utilizes effective communication skills; and (5) an adaptive change ethos.

Theme 1: Commitment to excellence in practice

This theme describes scholarly practitioners as being steadfast in their commitment to improving their practice and the care they provide. These individuals find ways to go above and beyond in everything they do (e.g., research, clinical practice, volunteering, etc.); they integrate and advocate for scholarship within their practice regardless of the barriers they may face.[52,86-88] They are often self-motivated and self-directed.[84] They develop habits of ongoing reflection-in-practice,[89] regularly read articles to stay abreast with the latest empirical literature to support their practice specialty/discipline.[71,74,85,89] Scholarly practitioners are open to continually learning and investing their time and energy into their practice and scholarship.[90] The persistence of these healthcare professionals to integrate scholarship into their practice is described by certain authors as courageous,[33] habitual,[71,74,85,89,91] brave,[33] intrinsically motivated,[69,92,93] influential,[92] perseverant,[94] perpetually curious[95] and tenacious.[57,88,92]

Theme 2: Collaborative nature

A scholarly practitioner is someone who actively collaborates with colleagues or works within interdisciplinary teams. Cusick,[86] Forsyth et al.[53] and Strout[52] suggest that a scholarly practitioner is one who understands the importance of teamwork and of understanding the context in which they practice; as such, they possess an *"insider's perspective"* of the context. They also develop partnerships with individuals and organizations outside of their immediate professional circle in an effort to create new educational, practice and research opportunities.[53,86,96]

Theme 3: Presence of virtuous characteristics

The scholarly practitioner exhibits behaviors that reflect high moral standards. Because of a focus on doing what is right and avoiding what is wrong, their colleagues trust and value their

opinion, and view them as credible sources of knowledge.[56,92,97-99] For instance, Currey et al.'s[97] review on the scholarship of clinical nurse research consultants found that being credible and trustworthy led to professionals being *"educationally influential"* on their peers. A qualitative descriptive study by Christmas et al.[100] aimed at understanding and characterizing clinical excellence in scholarly physicians found that the judicious application of evidence for patient care decisions represents the ideal scholarly approach to clinical practice.

Theme 4: Effective communication skills

The scholarly practitioner processes and interprets both verbal and non-verbal information from others in a sophisticated manner.[33] As effective communicators, they select key pieces of a complex idea (written or verbal) and explain it to others to build a shared understanding.[92] They disseminate knowledge to the broader professional and public community, through teaching, writing (e.g., peer-reviewed publications, blogs), speaking (e.g., conference presentations) and involvement in policy development.[83,101,102] When Mannix et al.[93] attempted to define a nurse clinical scholar, they found that such individuals are quick to share the (empirical or experiential) knowledge they have gained. Stockhausen and Turale[33] found that scholarly practitioners critically question taken-for-granted or complex, abstract ideas, translate them, and explain intricate concepts concisely, allowing knowledge to become accessible to academics, practitioners, and consumers alike.

Theme 5: Adaptive change ethos

Scholarly practitioners embrace an ethos characterized by an adaptive change model. Adaptive change shifts individuals' mindsets, habits, and behaviors to respond to challenges that require new learning or discovery. The scholarly practitioner is not "*stuck in their ways*" but often looks at ways to innovate, grow or think differently.[91] Some authors describe this method of thinking as an openness to new thinking or maintaining an open attitude and mutual respect,[62,103] while others relate this method of thinking to reflective practice. Specifically, scholarly practitioners explore both failures and successes, they simultaneously analyze why things go wrong and why they go right.[69,89,101,104,105] This reflection "*renews their professional spirit*" (i.e., the motivation to be a better professional), generates clarity of purpose, and allows them to modify their behavior in similar future scenarios.[52,89,104,105] Scholarly practitioners are

flexible in their approach to practice and scholarship. For example, Donohue-Porter[105] discusses the importance of remaining flexible through changes and possessing a tolerance for ambiguity necessary to integrate scholarship in nursing.

Finally, we identified 201 excerpts that describe how healthcare professionals might operationalize or engage in scholarly practice. The most common include dissemination activities (41%), which include publishing peer-reviewed publications, publishing grey literature (e.g., social media posts, blogs) and conference activity (e.g., seminars, presentations, and workshops). They also operationalize scholarly practice through professional advancement (28%) (e.g., advocating for their profession, working on committees in their workplace), research (13%) (e.g., participating in research projects), continuing professional development (11%) (e.g., reviewing articles and engaging in reflection)—and advising (7%) (e.g., acting as a mentor) (Table 2).

Discussion

The aim of this review was to identify the definitions, conceptualizations, components, and operationalization of scholarly practice in HPE. We identified 28 unique terms used to describe a clinician who is believed to be a scholarly practitioner. The results of this review indicate that there is no single unified definition of scholarly practice. Indeed, most authors opted not to provide an explicit definition, rather, they provided a wide range of terms (often used interchangeably), definitions, and attributes to define scholar, scholarly practice, or scholarship. Our findings also show that, though scholarly practitioners possess a myriad of attributes that render them unique, few papers discussed how these attributes develop in training or over time in practice.

The variety of terms and definitions identified in this review aligns with recent conversation in the HPE about the appropriateness of generating a common terminology for important processes or concepts.[106-109] For example, Young et al.[107] report on the implications and considerations of the terms used to describe clinical reasoning. They acknowledge that because of disparate terminology, individuals—whether clinical educators, program directors, or learners—may use the same terms with different intended meanings resulting in misalignment between the teaching and assessment of clinical reasoning. Other authors maintain that disparate terminology augments the challenge of implementing new educational frameworks (e.g.,

competency-based medical education) because stakeholders do not possess a shared understanding of the ways in which curricula should be structured and learning outcomes should be assessed.[106] While 30% of the papers in our review provided an explicit definition of scholarly practice or a related synonym, the remaining 70% provided a range of terms or their own definitions attempting to define scholarly practice. As pointed out by other authors[106-110] this may further puzzle educators, learners or researchers interested in the teaching, assessment, or study of scholarly practice.

The conclusion that "*there is not a clear definition*" is not an endpoint but rather an opportunity for discussion about concepts in HPE.[111] Instead of suggesting a single, unified definition of scholarly practice, the results of this review can help to conceptualize scholarly practice as an overarching concept with many component parts. For example, in the scoping review of clinical reasoning, Young and colleagues[110] identified a broad array of conceptualizations of clinical reasoning.[107,112] They suggest that clinical reasoning may be an overarching concept because it appears to manifest, be operationalized, or crystalized differently depending on the context (i.e., influenced by the professional and location). Our findings of scholarly practice mirror those of Young et al.[107] and other scholars who advocate for diversity in the ways in which concepts in HPE are defined and conceptualized, and the use of frameworks to organize various definitions to maintain the richness contained in each.[107,110,113-116] Such strategies may allow both educators and researchers to adopt a position about what constitutes "scholarly practice" in their context and how to support scholarly practice for a specific purpose (e.g., for influencing professionalism). The diverse definitions of scholarly practice found in this review suggests that it may manifest differently within different healthcare professionals, which may influence how it might be taught and assessed across different HPE programs. Individuals involved in the teaching, research, or assessment of scholarly practice as a core competency should make their chosen definition or conceptualization explicit and be deliberate in communicating their expectations (e.g., for assessment or teaching) of learners.[117,118]

In recent years, authors have suggested that adopting a shared mental model framework (i.e., make deliberate the shared understanding among team members)[119] may allow for a more defensible way to assess competencies that are otherwise subjective. Edgar et al.[120] reviewed shared mental models for decision-making in graduate medical education amongst clinical competency committees. They argue that a shared mental model allows for better identifying the

strengths, areas of concern and determining the ideal path of professional development for learners by bringing together a group of individuals' unique perspectives. They also suggested that committees should share their mental model and their related expectations for determining competency among faculty and learners to ensure high-quality, consistent, and fair decision-making.[120]

Our findings showed that the most cited model used to illustrate scholarly practice was Boyer's model of scholarship (24%). Briefly, Boyer's[46] model of scholarship was originally created to respond to limitations of traditional scholarship conducted in higher education (i.e., universities).[46] The qualitative content analysis of the definitions of scholarly practice in this review further extend a subcategory of Boyer's[46] model of scholarship (the scholarship of application). Boyer[46] describes the scholarship of application as an activity of engagement, specifically "*applying knowledge in community or service activities so the outcomes will benefit the larger community*." This statement parallels our findings on how scholarly practice is conceptualized. Specifically, the "*raison d'être*" of scholarly practice is to produce meaningful knowledge that advances the larger profession or community of professionals. Additionally, Boyer describes the scholarship of application as one that both applies and contributes to human knowledge, suggesting that knowledge derived in academia be applied to consequential problems while the social problems *themselves* define an agenda for scholarly investigation.[46] Boyer's scholarship of application holds promise as a model to help describe scholarly practice, as proposed by some authors in this review.[64,121]

Most healthcare professionals in the included papers conceptualized scholarly practice as the interdependent relationship between scholarship and practice. Forty percent of the papers described both practice and research as interwoven, that is, one cannot exist without the other.[53-57] However, the use of theory to help explain or understand the concept of scholarly practice was scarce, as was the use of supporting theoretical frameworks to underpin the study and/or the discussion of scholarly practice. Researchers interested in studying scholarly practice should consider explicitly integrating theories to support the various stages of the research process (e.g., research questions, methodological choices) to better understand concepts of scholarly practice.[122] Drawing on a theoretical framework might help illustrate "*new*" (i.e., previously not considered) gaps in the literature and/or help strengthen conclusions made from the study, such

as clinicians' perception of their role as scholarly practitioners, their motivations to embody attributes of a scholarly practitioner, or how scholarly practice might develop intrinsically.[122]

While there is no clear definition of scholarly practice, there seems to be an agreement in the literature we reviewed on how scholarly practitioners are perceived and how they act. Scholarly practitioners seem to possess many qualities (e.g., courageous, brave, virtuous).[33,71,74,85,89,91] Additionally, they seem to self-select for the role, are intrinsically motivated, engaged with their profession and viewed as influential by their peers.[58,69,86,92,93] Their curiosity leads them to constantly engage in reflective practice and continuous learning.[57,59,95,104,105,123] Scholarly practitioners appear to use these qualities in conjunction with an adaptive change ethos and effective communication skills. While these attributes frequently appeared in the included papers, they can be viewed as idealistic; such aspirational or even superhuman attributes may not be aligned with some realities of clinical practice (e.g., high patient load, challenging patients, etc.). Suggesting that every clinician *constantly* exhibits these traits might unintentionally create an expectation of perfectionism which has been linked to burnout in healthcare professionals.[124]

Interestingly, the attributes of scholarly practitioners mirror those of knowledge brokers. Knowledge brokers are individuals that facilitate the interaction between researchers and practitioners within a knowledge translation process.[125,126] Knowledge brokers are increasingly being used as a medium to support evidence-based practice among practicing clinicians through various knowledge translation strategies.[125-127] They too possess excellent interpersonal, communication and motivational skills which seem to be combined with a flexible or adaptive change personal and work ethos. Another parallel between scholarly practitioners and knowledge brokers is the variety of ways they operationalize their scholarship. In this review, almost half (41%) of the instances used to illustrate scholarly practice focused on the dissemination of knowledge to peers using various traditional (e.g., peer-reviewed publications, conference presentations) and non-traditional (e.g., social media, blogs) means of communication. Moreover, 28% of the examples emphasized activities involving their profession (e.g., participating on workplace committees) compared with traditional measures of academic success (e.g., acquiring competitive grants). Similarly, knowledge brokers work at the interface of research and practice to facilitate knowledge exchange and build rapport with key stakeholders often by using means such as knowledge dissemination.[126,128]

Future work

The findings from this review suggest that scholarly practice might be an overarching concept rather than a discrete, definable entity. Researchers interested in this phenomenon may wish to consider the benefits and drawbacks of constructing a single, unified definition and consider in which context a unified definition might be useful or appropriate. Future work might include the application of a content analysis methodology to the terms and definitions of scholarly practice identified in this review to delineate concepts further.

We identified many parallels between scholarly practitioners and knowledge brokers. It may be worthwhile for clinical and educational stakeholders to discuss these similarities and see what may be leveraged to inform the work being done in each sector. This knowledge might offer ways to better conceptualize the scholarly practice competency and how healthcare professionals might apply aspects of scholarly practice. We recognize that as a fairly new domain of research the roles of a knowledge broker in knowledge translation is conceptualized differently in various sectors and settings (e.g., public policy).[129] Still, it may be a worthwhile area of future study in the context of scholarly practice and the larger discipline of HPE. Since knowledge brokers and scholarly practitioners share similar attributes, future work could explore the similarities and differences between them in greater detail.

The diversity of terms and definitions indicate that scholarly practice and scholarship vary across healthcare professions. Future research should seek to understand the perceptions of different clinician groups regarding what they believe scholarly practice to be. Armed with that knowledge, stakeholders (e.g., curriculum developers, educators) can begin to purposively modify curricula to optimally foster and assess this competency and ensure that learners emerge from their training programs as scholarly practitioners. An important caveat must be made regarding the results of this review. The findings should be considered relevant to the health professions only. Indeed, the meaning and use of the word "scholarship" or "scholarly" will most likely vary across professions and outside healthcare (e.g., architecture, arts and engineering). For example, scholarship for architecture professionals might include outputs such as website illustrations or hosting curated exhibits of original creative work.[130] In the arts, creating musical compositions or giving input into film productions may be associated with scholarship.[131] These examples reinforce that scholarly practice and scholarship must be considered as an overarching concept depending on the context and/or the profession.

Strengths and limitations

The strengths of this review include having a health librarian in the review team and externally peer-reviewed the search strategy using best practice standards.[38] Also, the decision to include many different healthcare professions allowed us to examine the competency across HPE. Including various healthcare professionals reflects actual clinical practice, where most professionals work closely within interprofessional teams. Additionally, we conducted this review according to all six steps of scoping review methodology, including the optional consultation phase with key stakeholders (often excluded from published reviews).[40,41] This critical expert feedback enhanced the trustworthiness of the findings.

Limitations include the possibility that our search strategy may have inadvertently missed potentially relevant sources. Additionally, to be considered for this review, papers had to contain an exploration, description or definition of scholarly practice, scholar, or scholarly practitioner, and/or related concepts. There were instances where the research team had to decide whether the description of scholarly practice was sufficient to be included. This may have resulted in missing some papers. We mitigated this by including calibration exercises at multiple stages and conducted frequent check-ins with the research assistant and larger research team. Furthermore, the research team members might possess a different understanding of the concepts, which could have influenced the interpretation of the literature. We addressed this by consulting experts outside the core research team and including their perspectives in the results. Finally, we may have also missed relevant papers published in a language other than English or French.

Conclusion

The various terms used to describe scholarly practice indicate that it is most likely an overarching concept rather than a discrete definable entity. Many authors from the included papers conceptualized scholarly practice as the interdependent relationship between scholarship and practice and related it to Boyer's scholarship of application to help describe or simplify scholarly practice for readers. There are strong parallels between scholarly practitioners and knowledge brokers regarding their attributes and how they operationalize scholarly practice, differentiating them from other clinicians. Individuals engaged in the teaching, research and/or assessment of scholarly practice should be deliberate in their definitions and expectations regarding scholarly practice for learners and clinicians.

Figure 1-PRISMA Flow Diagram

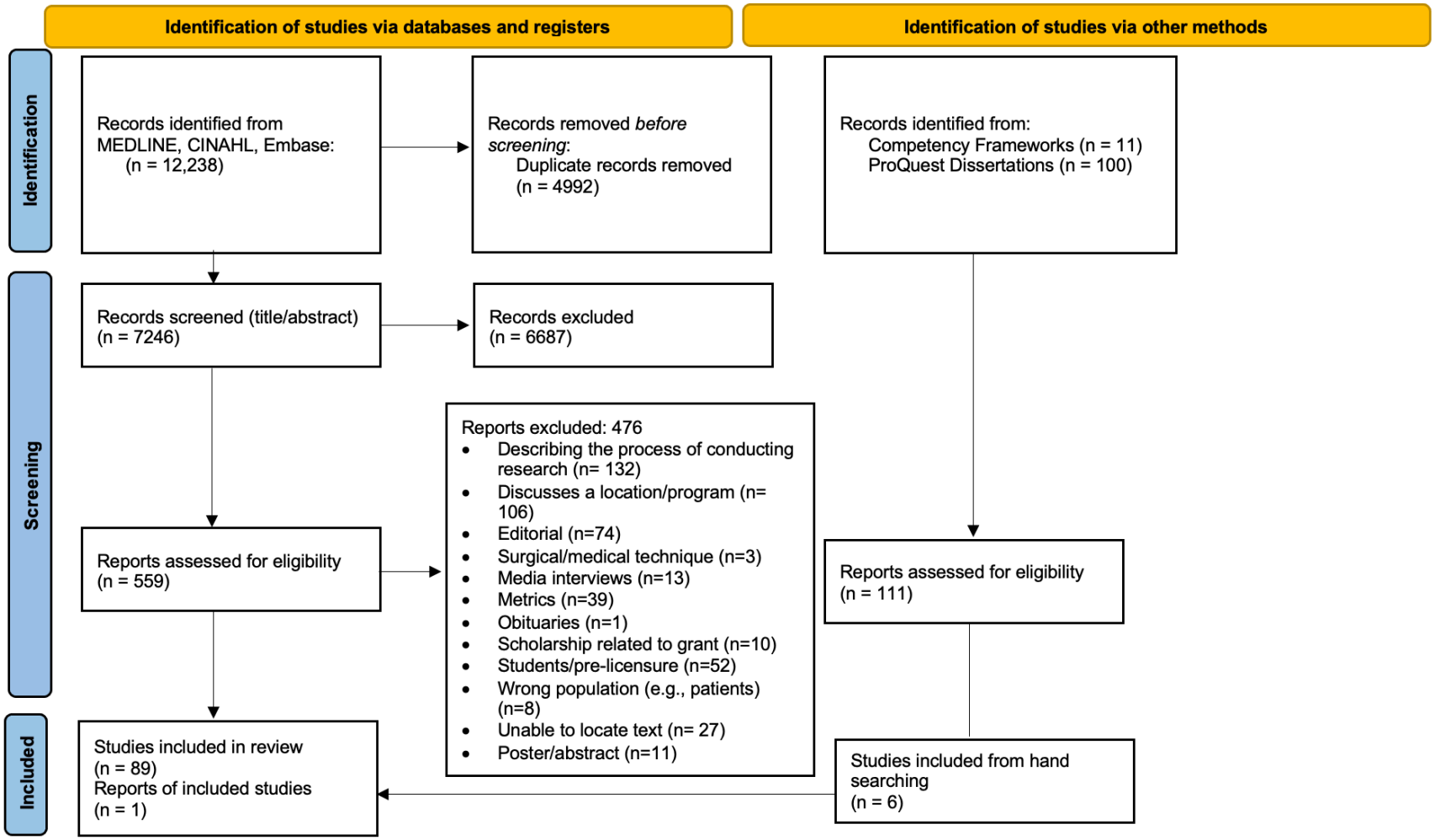


Table 1- General Characteristics

Summary of included articles	
Country	No. (% of 90)
United States	58 (65)
Canada	10 (11)
Australia	11 (12)
Europe	7 (8)
South Africa	2 (2)
Japan	1 (1)
China	1 (1)
Paper type	
Reflective paper	46 (51.1)
Research paper	32 (35.5)
Review	9 (10)
Guideline	1 (1.1)
Framework	1 (1.1)
Thesis	1 (1.1)
Research paradigm	
Not specified	48 (53.3)
Quantitative	20 (22.2)
Qualitative	12 (13.3)
Review	9 (10)
Mixed/Multi-Method	1 (1.1)
Population	
Nursing	51 (57)
Physicians	13 (15)
Occupational Therapists	13 (15)
Psychologists	5 (6)
Pharmacists	2 (2)
Dieticians	1 (1)
Social workers	1 (1)
Mixed population	4 (3)
Terms used to describe the individual who engages scholarly practice	
“Scholarship” i.e., the academic study of certain topics	32 (35.5)
"Scholar" i.e., the clinician as a specialist or expert	28 (31.1)
"Practice" i.e., the location of enacting evidence	23 (25.5)
Other terms	7 (7.7)
Terms with referenced definitions	
Explicit with reference	27 (30)
Implicit	63 (70)

Table 2- Operationalization of scholarly practice

Main Theme	No. (% of 201)	Sub-Themes	Specific examples
Dissemination	82 (41)	Grey literature	• Social media (e.g., Twitter) • Blogs
		Conference activity	• Presentations (local, national, international) • Workshops • Seminars • Posters
		Peer-reviewed publications	• Publications in academic journals
Professional advancement	56 (28)	Influencing legislation	• Working with regulatory body
		Endorsing discipline	• Publicly advocating for the profession.
		Working with national bodies	• Examples of tasks include attempts at increasing membership
		Professional documents	• Professional practice guidelines. • Standards of practice documents. • Hospital protocols • Position statements
		Committee work	• Volunteering on hospital planning groups. • Volunteering on editorial boards of journals
		Consulting	• Consultation reports • Entrepreneurial activities • Medical product development
Research	26 (13)	Funding	• Obtaining grants
		Participating in research	• Not as a primary investigator but as a key stakeholder or data collector
Continuing professional development	19 (11)	Academic development	• Earning higher degrees • Earning extra certifications
		Continuing education	• Formal courses (e.g., attending workshops)

		Developing clinical skills	• Simulation training
		Reviewing articles	• Seeking and reading articles in peer-reviewed journals
		Critical appraisal	• Learning and enacting formal critical appraisal checklists
		Engaging in reflective practice	• Writing reflective practice in portfolios
Advisor	15 (7)	Mentorship	• Student supervision • Teaching within or outside the milieu • Acting as mentor to new employees
		Coaching	• Coaching employees

References

1. Frank JR, Snell L, Sherbino J. *CanMEDS 2015 Physician Competency Framework.* Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.
2. Canadian Association of Occupational Therapists. Profile of Practice of Occupational Therapist in Canada. 2012.
3. National Physiotherapy Advisory Group. Competency profile for Physiotherapists in Canada (2017). 2017.
4. Harding K, Lynch L, Porter J, Taylor NF. Organisational benefits of a strong research culture in a health service: a systematic review. *Aust Health Rev.* 2017;41(1):45-53. doi:10.1071/AH15180.
5. Hanney S, Boaz A, Jones T, Soper B. Engagement in research: an innovative three-stage review of the benefits for health-care performance. In: *Health Services and Delivery Research.* Southampton (UK). 2013.
6. Schroeter K. Certified registered nurses: results of the study of the certified workforce. *AORN Journal.* 2002;75(4):864-865.
7. Tingen MS, Burnett AH, Murchinson RB, Zhu H. The importance of nursing research *The Journal of Nursing Education.* 2009;48(3):167-170. doi:10.3928/01484834-20090301-10.
8. Black AT, Balneaves LG, Garossino C, Puyat JH, Qian H. Promoting evidence-based practice through a research training program for point-of-care clinicians. *J Nurs Adm.* 2015;45(1):14-20. doi:10.1097/NNA.0000000000000151.
9. Brandt TL, Romme CR, LaRusso NF, Lindor KD. A Novel Incentive System for Faculty in an Academic Medical Center. *Annals of Internal Medicine.* 2002;137(9):738-743. doi:10.7326/0003-4819-137-9-200211050-00009.
10. Levin RF, Fineout-Overholt E, Melnyk BM, Barnes M, Vetter MJ. Fostering evidence-based practice to improve nurse and cost outcomes in a community health setting: a pilot test of the advancing research and clinical practice through close collaboration model. *Nurs Adm Q.* 2011;35(1):21-33. doi:10.1097/NAQ.0b013e31820320ff.
11. Roets L, Botma Y, Grobler C. Scholarship in nursing: Degree-prepared nurses versus diploma-prepared nurses. *Health SA Gesondheid.* 2016;21:422-430. doi:10.1016/j.hsag.2016.08.002.

12. Salge T, Vera A. Hospital innovativeness and organizational performance: Evidence from English public acute care. *Health Care Manage Rev.* 2009;34(1):54-67. doi:10.1097/01.HMR.0000342978.84307.80.
13. Dahrouge S, Armstrong CD, Hogg W, Singh J, Liddy C. High-performing physicians are more likely to participate in a research study: findings from a quality improvement study. *BMC Med Res Methodol.* 2019;19(1):171. doi:10.1186/s12874-019-0809-6.
14. Aiken LH, Sloane DM, Bruyneel L, et al. Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. *The Lancet.* 2014;383(9931):1824-1830. doi:10.1016/s0140-6736(13)62631-8.
15. Rochette A, Brousseau M, Vachon B, Engels C, Amari F, Thomas A. What occupational therapists' say about their competencies' enactment, maintenance and development in practice? A two-phase mixed methods study. *BMC Med Educ.* 2020;20(1):191. doi:10.1186/s12909-020-02087-4.
16. Solaja O, Skinner TAA, McGregor TB, Siemens DR. CanMEDS scholars: A national survey on urology residents' attitudes towards research during training. *Can Urol Assoc J.* 2018;12(4):E191-E196. doi:10.5489/cuaj.4927.
17. Ologunde R, Di Salvo I, Khajuria A. The CanMEDS scholar: the neglected competency in tomorrow's doctors. *Adv Med Educ Pract.* 2014;5:383-384. doi:10.2147/AMEP.S71763.
18. Svab I. Changing research culture. *Ann Fam Med.* 2004;2 (2):S30-34. doi:10.1370/afm.150.
19. Stutsky BJ, Singer M, Renaud R. Determining the weighting and relative importance of CanMEDS roles and competencies. *BMC research notes.* 2012;5:354. doi:10.1186/1756-0500-5-354.
20. Friedman RH, Wahi-Gururaj S, Alpert J, et al. The Views of U.S. Medical School Deans Toward Academic Primary Care. *Academic Medicine.* 2004;79(11):1095-1102.
21. Siemens DR, Punnen S, Wong J, Kanji N. A survey on the attitudes towards research in medical school. *BMC medical education.* 2010;10:4. doi:10.1186/1472-6920-10-4.
22. Burgoyne LN, O'Flynn S, Boylan GB. Undergraduate medical research: the student perspective. *Medical education online.* 2010;15. doi: 10.3402/meo.v15i0.5212.

23. Binnendyk J, Pack R, Field E, Watling C. Not wanted on the voyage: highlighting intrinsic CanMEDS gaps in Competence by Design curricula. *Can Med Educ J.* 2021. doi:10.36834/cmej.70950.
24. Kazevman G, Marshall JL, Shachar B, Slater M, Leung F-H, Guiang CB. Uncovering Hidden Scholar Feedback with Field Notes. *MedEdPublish.* 2021;10(1). doi:10.15694/mep.2021.000168.1.
25. Chou S, Cole G, McLaughlin K, Lockyer J. CanMEDS evaluation in Canadian postgraduate training programmes: tools used and programme director satisfaction. *Med Educ.* 2008;42(9):879-886. doi:10.1111/j.1365-2923.2008.03111.x.
26. Thomas A, Ellaway RH. Rethinking implementation science for health professions education: A manifesto for change. *Perspect Med Educ.* 2021;10(6):362-368. doi:10.1007/s40037-021-00688-3.
27. Thomas A, Bussières A. Leveraging knowledge translation and implementation science in the pursuit of evidence informed health professions education. *Adv Health Sci Educ Theory Pract.* 2021;26(3):1157-1171. doi:10.1007/s10459-020-10021-y.
28. Squires JE, Cho-Young D, Aloisio LD, et al. Inappropriate use of clinical practices in Canada: a systematic review. *Canadian Medical Association Journal.* 2022;194(8):E279-E296. doi:10.1503/cmaj.211416.
29. Bammeke F, Liddy C, Hogel M, Archibald D, Chaar Z, MacLaren R. Family medicine residents' barriers to conducting scholarly work. *Can Fam Physician.* 2015;61:780-787.
30. Smesny AL, Williams JS, Brazeau GA, Weber RJ, Matthews HW, Das SK. Barriers to scholarship in dentistry, medicine, nursing, and pharmacy practice faculty. *American Journal of Pharmaceutical Education.* 2007;71(5):91. doi:10.5688/aj710591.
31. Institute of Medicine (US) Committee on the Health Professions Education Summit. The Core Competencies Needed for Health Care Professionals. In: Greiner AC, Knebel E, eds. *Health Professions Education: A Bridge to Quality.* Washington, DC: Institute of Medicine of the National Academies; 2003.
32. Grace PJ, Zumstein-Shaha M. Using Ockham's razor to redefine "nursing science". *Nurs Philos.* 2020;21(2):e12246. doi:10.1111/nup.12246.

33. Stockhausen L, Turale S. An explorative study of Australian nursing scholars and contemporary scholarship. *J Nurs Scholarsh.* 2011;43(1):89-96. doi:10.1111/j.1547-5069.2010.01378.x.
34. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology.* 2005;8(1):19-32. doi:10.1080/1364557032000119616.
35. Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implement Sci.* 2010;5(69). doi:10.1186/1748-5908-5-69.
36. Peters MDJ, Godfrey C, McInerney P, Munn Z, Tricco AC, Khalil H. Chapter 11: Scoping Reviews (2020 version). In: Aromataris E, Munn Z, eds. *JBI Manual for Evidence Synthesis.*2020.
37. Zaccagnini M, Bussières A, West A, Boruff J, Thomas A. Features of scholarly practice in health care professionals: A scoping review protocol. *Can J Resp Ther.* 2020;56:38-41. doi:10.29390/cjrt-2020-007.
38. McGowan J, Sampson M, Salzwedel DM, Cogo E, Foerster V, Lefebvre C. PRESS Peer Review of Electronic Search Strategies: 2015 Guideline Statement. *J Clin Epidemiol.* 2016;75:40-46. doi:10.1016/j.jclinepi.2016.01.021.
39. Boruff J, Zaccagnini M. Search strategy for Scholarly Practice and Health Care Professionals. In. V1 ed: Scholars Portal Dataverse; 2022. doi:10.5683/SP3/4C25SM
40. Pham MT, Rajic A, Greig JD, Sargeant JM, Papadopoulos A, McEwen SA. A scoping review of scoping reviews: advancing the approach and enhancing the consistency. *Res Synth Methods.* 2014;5. doi:10.1002/jrsm.1123.
41. Maggio LA, Larsen K, Thomas A, Costello JA, Artino AR, Jr. Scoping reviews in medical education: A scoping review. *Med Educ.* 2021;55(6):689-700. doi:10.1111/medu.14431.
42. Thomas A, Lubarsky S, Durning SJ, Young ME. Knowledge Syntheses in Medical Education: Demystifying Scoping Reviews. *Acad Med.* 2017;92(2):161-166. doi:10.1097/ACM.0000000000001452.
43. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res.* 2005;15(9):1277-1288. doi:10.1177/1049732305276687.

44. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Syst Rev.* 2021;10(1):89. doi:10.1186/s13643-021-01626-4.
45. Tricco AC, Lillie E, Zarin W, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169(7):467-473. doi:10.7326/M18-0850.
46. Boyer EL. *Scholarship Reconsidered: Priorities of the Professoriate.* New Jersey. 1990.
47. Vespia KM, Sauer EM. Defining characteristic or unrealistic ideal: Historical and contemporary perspectives on scientist-practitioner training in counselling psychology. *Counselling Psychology Quarterly.* 2006;19(3):229-251. doi:10.1080/09515070600960449.
48. Taylor RR, Fisher G, Kielhofner G. Synthesizing research, education, and practice according to the scholarship of practice model: two faculty examples. *Occup Ther Health Care.* 2005;19(1-2):107-122. doi:10.1080/J003v19n01_08.
49. Neale AV, Schwartz KL, Schenk M, Roth LM. Scholarly development of clinician faculty using evidence-based medicine as an organizing theme. *Med Teach.* 2003;25(4):442-447. doi:10.1080/0142159031000137481.
50. Neuman B, Newman D, Holder P. Leadership-Scholarship Integration: Using the Neuman Systems Model for 21st-Century Professional Nursing Practice. *Nursing Science Quarterly.* 2000;13(1):60-63.
51. Kluijtmans M, de Haan E, Akkerman S, van Tartwijk J. Professional identity in clinician-scientists: brokers between care and science. *Med Educ.* 2017;51(6):645-655. doi:10.1111/medu.13241.
52. Strout TD, Lancaster K, Schultz AA. Development and implementation of an inductive model for evidence-based practice: A grassroots approach for building evidence-based practice capacity in staff nurses. *Nurs Clin North Am.* 2009;44(1):93-102, xi. doi:10.1016/j.cnur.2008.10.007.
53. Forsyth K, Melton J, Raber C, Burke JP, Piersol CV. Scholarship of Practice in the Care of People with Dementia: Creating the Future Through Collaborative Efforts. *Occup Ther Health Care.* 2015;29(4):429-441. doi:10.3109/07380577.2015.1075668.

54. Riley J, Omery A. The scholarship of a practice discipline. *Hollistic Nursing Practice.* 1996;10(3):7-14.
55. Roberts KL. A snapshot of Australian nursing scholarship 1993–1994. *Collegian.* 1996;3(1):4-10. doi:10.1016/s1322-7696(08)60136-5.
56. Smith MJ, Liehr P. Story Theory: Advancing Nursing Practice Scholarship. *Hollistic Nursing Practice.* 2005;19(6):272-276.
57. Thomas A, Law M. Research utilization and evidence-based practice in occupational therapy: a scoping study. *Am J Occup Ther.* 2013;67(4):e55-65. doi:10.5014/ajot.2013.006395.
58. Thompson MR, Schwartz Barcott D. The Role of the Nurse Scientist as a Knowledge Broker. *J Nurs Scholarsh.* 2019;51(1):26-39. doi:10.1111/jnu.12439.
59. Riley JM, Beal JA. Scholarly nursing practice from the perspectives of early-career nurses. *Nurs Outlook.* 2013;61(2):e16-24. doi:10.1016/j.outlook.2012.08.010.
60. Ridley C, Laird V. The scientist–practitioner model in counseling psychology programs: a survey of training directors. *Counselling Psychology Quarterly.* 2015;28(3):235-263. doi:10.1080/09515070.2015.1047440.
61. Nelson ML. A model for scholarship in nursing: the case of a private liberal arts college. *Nurs Outlook.* 2001;49(5):217-222. doi:10.1067/mno.2001.116015.
62. Leininger M. Scholars, scholarship, and nursing scholarship. *Journal of Nursing Scholarship.* 1974;6(2):5-14.
63. Hammel J, Magasi S, Mirza MP, et al. A Scholarship of Practice Revisited: Creating Community-Engaged Occupational Therapy Practitioners, Educators, and Scholars. *Occup Ther Health Care.* 2015;29(4):352-369. doi:10.3109/07380577.2015.1051690.
64. Hautz SC, Hautz WE, Feufel MA, Spies CD. What makes a doctor a scholar: a systematic review and content analysis of outcome frameworks. *BMC Med Educ.* 2016;16:119. doi:10.1186/s12909-016-0627-z.
65. Hickey J, Duffy LV, Hinkle JL, et al. Scholarship in Neuroscience Nursing. *J Neurosci Nurs.* 2019;51(5):243-248. doi:10.1097/JNN.0000000000000465.
66. Kielhofner G. A scholarship of practice: creating discourse between theory, research and practice. *Occup Ther Health Care.* 2005;19(1-2):7-16. doi:10.1080/J003v19n01_02.

67. Overholser JC. Ten Criteria to Qualify As a Scientist-Practitioner in Clinical Psychology: An Immodest Proposal for Objective Standards. *Journal of Contemporary Psychotherapy.* 2009;40(1):51-59. doi:10.1007/s10879-009-9127-3. Published 51.
68. Pape T. Boyer's Model of Scholarly Nursing Applied to Professional Development. *AORN.* 2000;71(5):995-1003.
69. Fillion B, Rochette A, Girard A. Challenges of being a scholarly clinician as perceived by stroke rehabilitation professionals. *Disabil Rehabil.* 2014;36(6):521-528. doi:10.3109/09638288.2013.797516.
70. Hertig JB, Weber RJ. Incorporating Pharmacy Scholarship to Management Responsibilities. *Hosp Pharm.* 2015;50(8):739-743. doi:10.1310/hpj5008-739.
71. Crist PA. Adapting research instruction to support the scholarship of practice: practice-scholar partnerships. *Occup Ther Health Care.* 2010;24(1):39-55. doi:10.3109/07380570903477000.
72. Joubert L, Hocking A. Academic Practitioner Partnerships: A Model for Collaborative Practice Research in Social Work. *Australian Social Work.* 2015;68(3):352-363. doi:10.1080/0312407x.2015.1045533. Published 352.
73. Logsdon MC, Kleiner C, Oster CA, et al. Description of Nurse Scientists in a Large Health Care System. *Nurs Adm Q.* 2017;41(3):266-274. doi:10.1097/NAQ.0000000000000237.
74. Prideaux D, Alexander H, Bower A, et al. Clinical teaching: maintaining an educational role for doctors in the new health care environment. *Medical Education.* 2000;34:820-826.
75. Abramson EL, Naifeh MM, Stevenson MD, et al. Scholarly Activity Training During Residency: Are We Hitting the Mark? A National Assessment of Pediatric Residents. *Acad Pediatr.* 2018;18(5):542-549.
76. Thoun DS. Toward an appreciation of nursing scholarship: recognizing our traditions, contributions, and presence. *J Nurs Educ.* 2009;48(10):552-556. doi:10.3928/01484834-20090716-01.
77. Turale S, Shih FJ, Klunklin A, Chontawan R, Ito M, Nakao F. Asia-Pacific nursing scholarship development: qualitative exploration of nurse scholars in Taiwan (Republic

of China). *J Clin Nurs.* 2010;19(17-18):2601-2610. doi:10.1111/j.1365-2702.2009.03100.x.

78. Wilkes L, Mannix J, Jackson D. Practicing nurses perspectives of clinical scholarship: a qualitative study. *BMC Nursing.* 2013;12(21).
79. Frank JR, Danoff D. The CanMEDS initiative: implementing an outcomes-based framework of physician competencies. *Med Teach.* 2007;29(7):642-647. doi:10.1080/01421590701746983.
80. Hojat M, Veloski J, Nasca TJ, Erdmann JB, Gonnella JS. Assessing physicians' orientation towards lifelong learning. *J Gen Intern Med.* 2006;21:931-936. doi:10.1111/j.1525-1497.2006.00500.x.
81. Acorn S, Osborne M. Scholarship in Nursing: Current View. *Nursing Leadership.* 2013;26(1):24-29.
82. Wright SCD. A conceptual framework for teaching research in nursing. *Curationis.* 2005;28(3):4-10.
83. Diers D. Clinical Scholarship. *Journal of Professional Nursing.* 1995;11:24-35.
84. Mosey AC. The Competent Scholar. *American Journal of Occupational Therapy.* 1998;52(9):760-764.
85. Smith TL. It's a question of scholarship. *The Internet Journal of Allied Health Sciences and Practice.* 2005;3(2).
86. Cusick A. The Experience of Clinician-Researchers in Occupational Therapy. *The American Journal of Occupational Therapy.* 2001;55(9-18).
87. Crites GE, Gaines JK, Cottrell S, et al. Medical education scholarship: an introductory guide: AMEE Guide No. 89. *Med Teach.* 2014;36(8):657-674. doi:10.3109/0142159X.2014.916791.
88. Carter LW, Snell R. Nurse academics meeting the challenges of scholarship and research. *Contemporary Nurse.* 2004;16(1-2):71-79. doi:10.5172/conu.16.1-2.40.
89. Ventres W, Whiteside-Mansell L. Getting started in research, redefined: five questions for clinically focused physicians in family medicine. *Fam Med Community Health.* 2019;7(2):e000017. doi:10.1136/fmch-2018-000017.
90. Davidson PM. The surgeon for the future and implications for training. *ANZ J Surg.* 2002;72:822-828.

91. Riley J, Beal JA, Lancaster D. Scholarly nursing practice from the perspectives of experienced nurses. *J Adv Nurs.* 2008;61(4):425-435. doi:10.1111/j.1365-2648.2007.04499.x.
92. Conard PL, Pape T. Roles and responsibilities of the nursing scholar. *Pediatric Nursing.* 2014;40(2):87-90.
93. Mannix J, Wilkes L, Jackson D. Marking out the clinical expert/clinical leader/clinical scholar: perspectives from nurses in the clinical arena. *BMC Nursing.* 2013;12(12).
94. Stull A, Lantz C. An Innovative Model for Nursing Scholarship. *Journal of Nursing Education.* 2005;44(11):493-497.
95. Ramcharan P, Ashmore R, Nicklin L, Drew J. Nursing scholarship within the British university system. *Br J Nurs.* 2001;21(10):196-202. doi:10.12968/bjon.2001.10.3.5383.
96. Forsyth K, Duncan EA, Mann LS. Scholarship of practice in the United kingdom: an occupational therapy service case study. *Occup Ther Health Care.* 2005;19(1-2):17-29. doi:10.1080/J003v19n01_03.
97. Currey J, Considine J, Khaw D. Clinical nurse research consultant: a clinical and academic role to advance practice and the discipline of nursing. *J Adv Nurs.* 2011;67(10):2275-2283. doi:10.1111/j.1365-2648.2011.05687.x.
98. Morris CT, Hatton RC, Kimberlin CL. Factors associated with the publication of scholarly articles by pharmacists. *Am J Health Syst Pharm.* 2011;68(17):1640-1645. doi:10.2146/ajhp100660.
99. Turale S, Ito M, Murakami K, Nakao F. Nursing scholarship in Japan: development, facilitators, and barriers. *Nurs Health Sci.* 2009;11(2):166-173. doi:10.1111/j.1442-2018.2009.00447.x.
100. Christmas C, Kravet SJ, Durso SC, Wright SM. Clinical excellence in academia: perspectives from masterful academic clinicians. *Mayo Clin Proc.* 2008;83(9):989-994. doi:10.4065/83.9.989.
101. Sherwen LN. When the Mission Is Teaching: Does Nursing Faculty Practice Fit? *Journal of Professional Nursing.* 1998;14(3):137-143.
102. Vessey JA, McCabe M, Lulloff AJ. Nurse scientists: one size doesn't fit all. *Nursing Management.* 2017.

103. Ribbons B, Vance S. Using E-mail to Facilitate Nursing Scholarship. *Computers in Nursing.* 2001;19(3):105-110.
104. Storch J, Gamroth L. Scholarship revisited: A collaborative nursing education program's journey. *Journal of Nursing Education.* 2002;52(23):524-530.
105. Donohue-Porter P. Creating a culture of shared Governance begins with developing the nurse as scholar. *Creat Nurs.* 2012;18(4):160-167. doi:10.1891/1078-4535.18.4.160.
106. Lochnan H, Kitto S, Danilovich N, et al. Conceptualization of Competency-Based Medical Education Terminology in Family Medicine Postgraduate Medical Education and Continuing Professional Development: A Scoping Review. *Acad Med.* 2020;95(7):1106-1119. doi:10.1097/ACM.0000000000003178.
107. Young M, Thomas A, Gordon D, et al. The terminology of clinical reasoning in health professions education: Implications and considerations. *Med Teach.* 2019;41(11):1277-1284. doi:10.1080/0142159X.2019.1635686.
108. Varpio L, Gruppen L, Hu W, et al. Working Definitions of the Roles and an Organizational Structure in Health Professions Education Scholarship: Initiating an International Conversation. *Acad Med.* 2017;92(2):205-208. doi:10.1097/ACM.0000000000001367.
109. Teunissen PW, Atherley A, Cleland JJ, et al. Advancing the science of health professions education through a shared understanding of terminology: a content analysis of terms for "faculty". *Perspect Med Educ.* 2021. doi:10.1007/s40037-021-00683-8.
110. Young ME, Thomas A, Lubarsky S, et al. Mapping clinical reasoning literature across the health professions: a scoping review. *BMC Med Educ.* 2020;20(1):107. doi:10.1186/s12909-020-02012-9.
111. Eva KW. What's in a name? Definitional clarity and its unintended consequences. *Med Educ.* 2017;51(1):1-2. doi:10.1111/medu.13233.
112. Young ME. Crystallizations of constructs : Lessons learned from a literature review. *Perspect Med Educ.* 2018;7(Suppl 1):21-23. doi:10.1007/s40037-018-0422-0.
113. Wynia MK, Papadakis MA, Sullivan WM, Hafferty FW. More than a list of values and desired behaviors: a foundational understanding of medical professionalism. *Acad Med.* 2014;89(5):712-714. doi:10.1097/ACM.0000000000000212.

114. Halle MC, Bussieres A, Asseraf-Pasin L, et al. Building evidence-based practice competencies among rehabilitation students: a qualitative exploration of faculty and preceptors' perspectives. *Adv Health Sci Educ Theory Pract.* 2021. doi:10.1007/s10459-021-10051-0.
115. St-Onge C, Young M, Eva KW, Hodges B. Validity: one word with a plurality of meanings. *Adv Health Sci Educ Theory Pract.* 2017;22(4):853-867.
116. Kahlke R, Eva K. Constructing critical thinking in health professional education. *Perspect Med Educ.* 2018;7(3):156-165. doi:10.1007/s40037-018-0415-z.
117. Mak S, Hunt M, Boruff J, Zaccagnini M, Thomas A. Exploring professional identity in rehabilitation professions: a scoping review. *Advances In Health Sciences Education.* 2022. doi:10.1007/s10459-022-10103-z.
118. Gordon D, Rencic JJ, Lang VJ, Thomas A, Young M, Durning SJ. Advancing the assessment of clinical reasoning across the health professions: Definitional and methodologic recommendations. *Perspect Med Educ.* 2022. doi:10.1007/s40037-022-00701-3.
119. Floren LC, Donesky D, Whitaker E, Irby DM, Ten Cate O, O'Brien BC. Are We on the Same Page? Shared Mental Models to Support Clinical Teamwork Among Health Professions Learners: A Scoping Review. *Acad Med.* 2018;93(3):498-509. doi:10.1097/ACM.0000000000002019.
120. Edgar L, Jones MD, Jr., Harsy B, Passiment M, Hauer KE. Better Decision-Making: Shared Mental Models and the Clinical Competency Committee. *J Grad Med Educ.* 2021;13(2 Suppl):51-58. doi:10.4300/JGME-D-20-00850.1.
121. Limoges J, Acorn S, Osborne M. The scholarship of application: recognizing and promoting nurses' contribution to knowledge development. *J Contin Educ Nurs.* 2015;46(2):77-82. doi:10.3928/00220124-20151217-02.
122. Varpio L, Paradis E, Uijtdehaage S, Young M. The Distinctions Between Theory, Theoretical Framework, and Conceptual Framework. *Acad Med.* 2020;95(7):989-994. doi:10.1097/ACM.0000000000003075.
123. Riley J, Beal JA, Levi P, McCausland MP. Revisioning Nursing Scholarship. *Journal of Nursing Scholarship.* 2002;34(4):383-389.

124. Patel RS, Bachu R, Adikey A, Malik M, Shah M. Factors Related to Physician Burnout and Its Consequences: A Review. *Behav Sci (Basel).* 2018;8(11). doi:10.3390/bs8110098.
125. Gaid D, Mate K, Ahmed S, Thomas A, Bussieres A. Nationwide Environmental Scan of Knowledge Brokers Training. *J Contin Educ Health Prof.* 2021. doi:10.1097/CEH.0000000000000355.
126. Dobbins M, Robeson P, Ciliska D, et al. A description of a knowledge broker role implemented as part of a randomized controlled trial evaluating three knowledge translation strategies. *Implement Sci.* 2009;4:23. doi:10.1186/1748-5908-4-23.
127. Russell DJ, Rivard LM, Walter SD, et al. Using knowledge brokers to facilitate the uptake of pediatric measurement tools into clinical practice: a before-after intervention study. *Implement Sci.* 2010;5(92):1-17. doi:10.1186/1748-5908-5-992.
128. Meyer M. The Rise of the Knowledge Broker. *Science Communication.* 2010;32(1):118-127. doi:10.1177/1075547009359797.
129. Ward V, House A, Hamer S. Knowledge Brokering: The missing link in the evidence to action chain? *Evid Policy.* 2009;5(3):267-279. doi:10.1332/174426409X463811.
130. Christensen KM, Sean ME. Quantifying scholarly production among recently tenured landscape architecture faculty. *Research Record.* 2014;2:31-39.
131. Lewandowska K, Kulczycki E. Academic research evaluation in artistic disciplines: the case of Poland. *Assessment & Evaluation in Higher Education.* 2022;47(2):284-296. doi:10.1080/02602938.2021.1893651.

Appendices

Supplementary Appendix 1-Data Extraction Tool

Author	
Title	
Year of publication	
Geography (Where was the study conducted?)	
Type of article (conceptual, empirical, position paper, editorial)	
Study objective	
Study design	
Methodology (Qual, Quan, Mixed-Methods or N/A)	
Study design	
Profession(s)	
Sample Population (n=)	
Do they explicitly cite a competency framework? Which one?	
Theoretical Framework explicitly stated (if any) yes or no	
If yes, which theoretical framework	
What term is used to describe scholarly practice?	
RQ1) How is scholarly practice defined (what do they call it and the definition)	
RQ2) What components (if any) are involved in scholarly practice (i.e., the pieces that make-up scholarly practice)	
Q2A) Attributes of scholarly practice (i.e., the inherent characteristics of scholarly practice/the individual)	
Q2B) Pieces/Dimensions/indicators of scholarly practice (the things that are specific, observable and measurable)	
Q3) What are the outputs (if any) of scholarly practice (i.e., research, teaching, publications etc.)	
Authors results/main conclusion	
Study limitations	
Areas for future research	
Comments	

Supplementary File Appendix 2-Citation list for included articles

- Abramson, E. L., Naifeh, M. M., Stevenson, M. D., Mauer, E., Hammad, H. T., Gerber, L. M., & Li, S. T. (2018). Scholarly Activity Training During Residency: Are We Hitting the Mark? A National Assessment of Pediatric Residents. *Acad Pediatr, 18*(5), 542-549. doi:10.1016/j.acap.2018.02.002
- Acorn, S., & Osborne, M. (2013). Scholarship in Nursing: Current View. *Nursing Leadership, 26*(1), 24-29.
- Adegbola, M. (2010). Nurses Collaborating with Cross Disciplinary Networks: Starting to integrate genomics into practice. *The Journal of the National Black Nurses Association, 21*(1), 46-49.
- Barnett, J. E. (2009). The Complete Practitioner: Still a Work in Progress. *American Psychologist, 64*(8), 793-801. doi:10.1037/0003-066X.64.8.793
- Barrett, E. A. M. (2002). What Is Nursing Science? *Nursing Science Quarterly, 15*(1).
- Bellini, S., McCauley, P., & Cusson, R. M. (2012). The doctor of nursing practice graduate as faculty member. *Nurs Clin North Am, 47*(4), 547-556. doi:10.1016/j.cnur.2012.07.004
- Bookey-Bassett, S., Bianchi, A., Richards, J., & Kelly, H. (2019). Overcoming challenges to support clinician-scientist roles in Canadian Academic Health Sciences Centres. *Healthcare Quarterly, 22*(1).
- Buchholz, S. W., Budd, G. M., Courtney, M. R., Neiheisel, M. B., Hammersla, M., & Carlson, E. D. (2013). Preparing practice scholars: teaching knowledge application in the Doctor of Nursing Practice curriculum. *J Am Assoc Nurse Pract, 25*(9), 473-480. doi:10.1002/2327-6924.12050
- Bunkers, S. S. (2000). The Nurse Scholar of the 21st Century. *Nursing Science Quarterly, 13*(2), 116-123.
- Burgener, S. C. (2001). Scholarship of practice for a practice profession. *J Prof Nurs, 17*(1), 46-54. doi:10.1053/jpnu.2001.20246
- Carter, E. J., Hessels, A., Cato, K., Sun, C., Cohen, B., Rivera, R. R., & Larson, E. (2020). Evaluation of the joint nurse scientist role across academia and practice. *Nurs Outlook, 68*(3), 261-269. doi:10.1016/j.outlook.2019.10.003
- Carter, J. A. (2002). Integrating science and practice: Reclaiming the science in practice. *J Clin Psychol, 58*(10), 1285-1290. doi:10.1002/jclp.10112
- Carter, L. W., & Snell, R. (2004). Nurse academics meeting the challenges of scholarship and research. *Contemporary Nurse, 16*(1-2), 71-79. doi:10.5172/conu.16.1-2.40
- Chen-Lim, M. L. (2019). *The practice of scholarly inquiry in post licensure nurses.* (Doctor of Philosophy). Widener University,
- Christmas, C., Kravet, S. J., Durso, S. C., & Wright, S. M. (2008). Clinical excellence in academia: perspectives from masterful academic clinicians. *Mayo Clin Proc, 83*(9), 989-994. doi:10.4065/83.9.989
- Colborn, A. P. (1993). Combining practice and research. *The American Journal of Occupational Therapy, 47*, 693-703. doi:10.5014/ajot.47.8.693
- Conard, P. L., & Pape, T. (2014). Roles and responsibilities of the nursing scholar. *Pediatric Nursing, 40*(2), 87-90.
- Crist, P., Munoz, J. P., Witchger Hansen, A. M., Benson, J., & Provident, I. (2005). The practice-scholar program: an academic-practice partnership to promote the scholarship of "best practices". *Occup Ther Health Care, 19*(1-2), 71-93. doi:10.1080/J003v19n01_06
- Crist, P. A. (2010). Adapting research instruction to support the scholarship of practice: practice-scholar partnerships. *Occup Ther Health Care, 24*(1), 39-55. doi:10.3109/07380570903477000
- Crites, G. E., Gaines, J. K., Cottrell, S., Kalishman, S., Gusic, M., Mavis, B., & Durning, S. J. (2014). Medical education scholarship: an introductory guide: AMEE Guide No. 89. *Med Teach, 36*(8), 657-674. doi:10.3109/0142159X.2014.916791

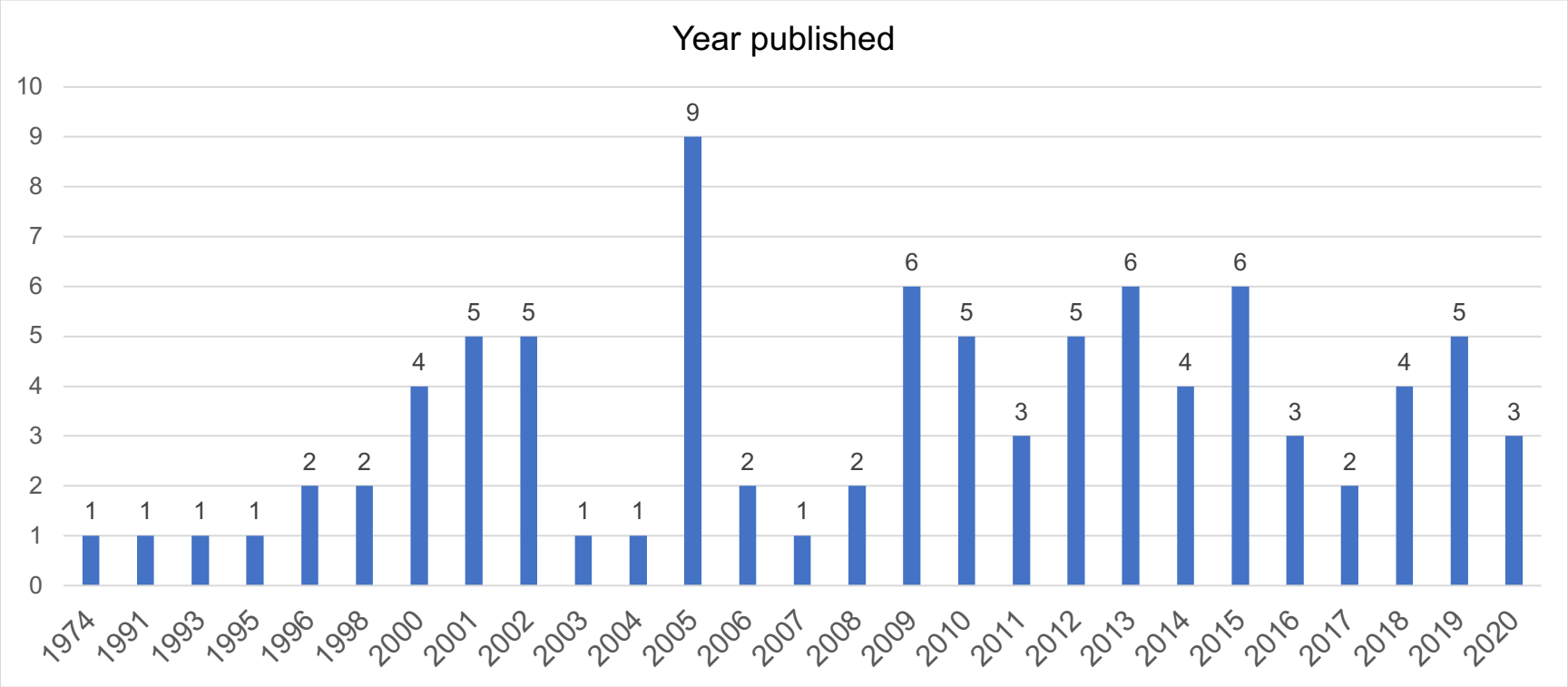
- Currey, J., Considine, J., & Khaw, D. (2011). Clinical nurse research consultant: a clinical and academic role to advance practice and the discipline of nursing. *J Adv Nurs, 67*(10), 2275-2283. doi:10.1111/j.1365-2648.2011.05687.x
- Cusick, A. (2001). The Experience of Clinician-Researchers in Occupational Therapy. *The American Journal of Occupational Therapy, 55*(9-18).
- Davidson, P. M. (2002). The surgeon for the future and implications for training. *ANZ J. Surg., 72*, 822-828.
- Diers, D. (1995). Clinical Scholarship. *Journal of Professional Nursing, 11*, 24-35.
- Donohue-Porter, P. (2012). Creating a culture of shared Governance begins with developing the nurse as scholar. *Creat Nurs, 18*(4), 160-167. doi:10.1891/1078-4535.18.4.160
- Dupin, C. M., Borglin, G., Debout, C., & Rothan-Tondeur, M. (2014). An ethnographic study of nurses' experience with nursing research and its integration in practice. *J Adv Nurs, 70*(9), 2128-2139. doi:10.1111/jan.12371
- Education, C. o. (2009). Scholarship in Occupational Therapy. *The American Journal of Occupational Therapy, 63*(6), 790-796. doi:10.5014/ajot.63.6.790.
- Fillion, B., Rochette, A., & Girard, A. (2014). Challenges of being a scholarly clinician as perceived by stroke rehabilitation professionals. *Disabil Rehabil, 36*(6), 521-528. doi:10.3109/09638288.2013.797516
- Forsyth, K., Duncan, E. A., & Mann, L. S. (2005). Scholarship of practice in the United kingdom: an occupational therapy service case study. *Occup Ther Health Care, 19*(1-2), 17-29. doi:10.1080/J003v19n01_03
- Forsyth, K., Melton, J., Raber, C., Burke, J. P., & Piersol, C. V. (2015). Scholarship of Practice in the Care of People with Dementia: Creating the Future Through Collaborative Efforts. *Occup Ther Health Care, 29*(4), 429-441. doi:10.3109/07380577.2015.1075668
- Frank, J. R., & Danoff, D. (2007). The CanMEDS initiative: implementing an outcomes-based framework of physician competencies. *Med Teach, 29*(7), 642-647. doi:10.1080/01421590701746983
- Grace, P. J., & Zumstein-Shaha, M. (2020). Using Ockham's razor to redefine "nursing science". *Nurs Philos, 21*(2), e12246. doi:10.1111/nup.12246.
- Grady, E. C., Roise, A., Barr, D., Lynch, D., Lee, K. B., Daskivich, T., . . . Butler, P. D. (2012). Defining scholarly activity in graduate medical education. *J Grad Med Educ, 4*(4), 558-561. doi:10.4300/JGME-D-12-00266.1
- Hammel, J., Magasi, S., Mirza, M. P., Fischer, H., Preissner, K., Peterson, E., & Suarez-Balcazar, Y. (2015). A Scholarship of Practice Revisited: Creating Community-Engaged Occupational Therapy Practitioners, Educators, and Scholars. *Occup Ther Health Care, 29*(4), 352-369. doi:10.3109/07380577.2015.1051690
- Hartjes, T. M. (2018). Academic nursing scholarship redefined. *J Am Assoc Nurse Pract, 30*(12), 664-666. doi:10.1097/JXX.0000000000000156
- Hautz, S. C., Hautz, W. E., Feufel, M. A., & Spies, C. D. (2016). What makes a doctor a scholar: a systematic review and content analysis of outcome frameworks. *BMC Med Educ, 16*, 119. doi:10.1186/s12909-016-0627-z
- Hertig, J. B., & Weber, R. J. (2015). Incorporating Pharmacy Scholarship to Management Responsibilities. *Hosp Pharm, 50*(8), 739-743. doi:10.1310/hpj5008-739
- Hickey, J., Duffy, L. V., Hinkle, J. L., Prendergast, V., Rhudy, L. M., Sullivan, C., & Villanueva, N. E. (2019). Scholarship in Neuroscience Nursing. *J Neurosci Nurs, 51*(5), 243-248. doi:10.1097/JNN.0000000000000465
- Hojat, M., Veloski, J., Nasca, T. J., Erdmann, J. B., & Gonnella, J. S. (2006). Assessing physicians' orientation towards lifelong learning. *J Gen Intern Med, 21*, 931-936. doi:10.1111/j. 1525-1497.2006.00500.x
- Joubert, L., & Hocking, A. (2015). Academic Practitioner Partnerships: A Model for Collaborative Practice Research in Social Work. *Australian Social Work, 68*(3), 352-363. doi:10.1080/0312407x.2015.1045533
- Kielhofner, G. (2005a). Scholarship and Practice: Bridging the Divide. *The American Journal of Occupational Therapy, 59*, 231-239.

- Kielhofner, G. (2005b). A scholarship of practice: creating discourse between theory, research and practice. *Occup Ther Health Care, 19*(1-2), 7-16. doi:10.1080/J003v19n01_02
- Kluijtmans, M., de Haan, E., Akkerman, S., & van Tartwijk, J. (2017). Professional identity in clinician-scientists: brokers between care and science. *Med Educ, 51*(6), 645-655. doi:10.1111/medu.13241
- Langabeer, J., Gottlieb, M., Kraus, C. K., Lotfipour, S., Murphy, L. S., & Langdorf, M. I. (2018). Scholarship in Emergency Medicine: A Primer for Junior Academics: Part II: Promoting Your Career and Achieving Your Goals. *West J Emerg Med, 19*(4), 741-745. doi:10.5811/westjem.2018.5.37539
- Leininger, M. (1974). Scholars, scholarship, and nursing scholarship. *Journal of Nursing Scholarship, 6*(2), 5-14.
- Limoges, J., Acorn, S., & Osborne, M. (2015). The scholarship of application: recognizing and promoting nurses' contribution to knowledge development. *J Contin Educ Nurs, 46*(2), 77-82. doi:10.3928/00220124-20151217-02
- Logsdon, M. C., Kleiner, C., Oster, C. A., Smith, C. D., Bergman-Evans, B., Kempnich, J. M., . . . Myers, J. (2017). Description of Nurse Scientists in a Large Health Care System. *Nurs Adm Q, 41*(3), 266-274. doi:10.1097/NAQ.0000000000000237
- Mackay, M. (2009). Why nursing has not embraced the clinician–scientist role. *Nursing Philosophy, 10*, 287-296.
- MacMaster, F. P., Cohen, J., Waheed, W., Magaud, E., Sembo, M., Langevin, L. M., & Rittenbach, K. (2016). The psychiatry resident research experience. *BMC Res Notes, 9*(1), 486. doi:10.1186/s13104-016-2290-1
- Mahant, S., Jovcevska, V., & Wadhwa, A. (2012). The nature of excellent clinicians at an academic health science center: a qualitative study. *Acad Med, 87*(12), 1715-1721. doi:10.1097/ACM.0b013e3182716790
- Mannix, J., Wilkes, L., & Jackson, D. (2013). Marking out the clinical expert/clinical leader/clinical scholar: perspectives from nurses in the clinical arena. *BMC Nursing, 12*(12).
- Morris, C. T., Hatton, R. C., & Kimberlin, C. L. (2011). Factors associated with the publication of scholarly articles by pharmacists. *Am J Health Syst Pharm, 68*(17), 1640-1645. doi:10.2146/ajhp100660
- Mosey, A. C. (1998). The Competent Scholar. *American Journal of Occupational Therapy, 52*(9), 760-764.
- Neale, A. V., Schwartz, K. L., Schenk, M., & Roth, L. M. (2003). Scholarly development of clinician faculty using evidence-based medicine as an organizing theme. *Med Teach, 25*(4), 442-447. doi:10.1080/0142159031000137481
- Nelson, M. L. (2001). A model for scholarship in nursing: the case of a private liberal arts college. *Nurs Outlook, 49*(5), 217-222. doi:10.1067/mno.2001.116015
- Neuman, B., Newman, D., & Holder, P. (2000). Leadership-Scholarship Integration: Using the Neuman Systems Model for 21st-Century Professional Nursing Practice. *Nursing Science Quarterly, 13*(1), 60-63.
- Overholser, J. C. (2009). Ten Criteria to Qualify As a Scientist-Practitioner in Clinical Psychology: An Immodest Proposal for Objective Standards. *Journal of Contemporary Psychotherapy, 40*(1), 51-59. doi:10.1007/s10879-009-9127-3
- Pape, T. (2000). Boyer's Model of Scholarly Nursing Applied to Professional Development. *AORN, 71*(5), 995-1003.
- Pinnock, D., Whittingham, K., & Hodgson, L. J. (2012). Reflecting on sharing scholarship, considering clinical impact and impact factor. *Nurse Educ Today, 32*(7), 744-746. doi:10.1016/j.nedt.2012.05.031
- Prideaux, D., Alexander, H., Bower, A., Dacre, J., Haist, S., Jolly, B., . . . Tallett, S. (2000). Clinical teaching: maintaining an educational role for doctors in the new health care environment. *Medical Education, 34*, 820-826.
- Ramcharan, P., Ashmore, R., Nicklin, L., & Drew, J. (2001). Nursing scholarship within the British university system. *Br J Nurs, 21*(10), 196-202. doi:10.12968/bjon.2001.10.3.5383.
- Ribbons, B., & Vance, S. (2001). Using E-mail to Facilitate Nursing Scholarship. *Computers in Nursing, 19*(3), 105-110.
- Ridley, C., & Laird, V. (2015). The scientist–practitioner model in counseling psychology programs: a survey of training directors. *Counselling Psychology Quarterly, 28*(3), 235-263. doi:10.1080/09515070.2015.1047440

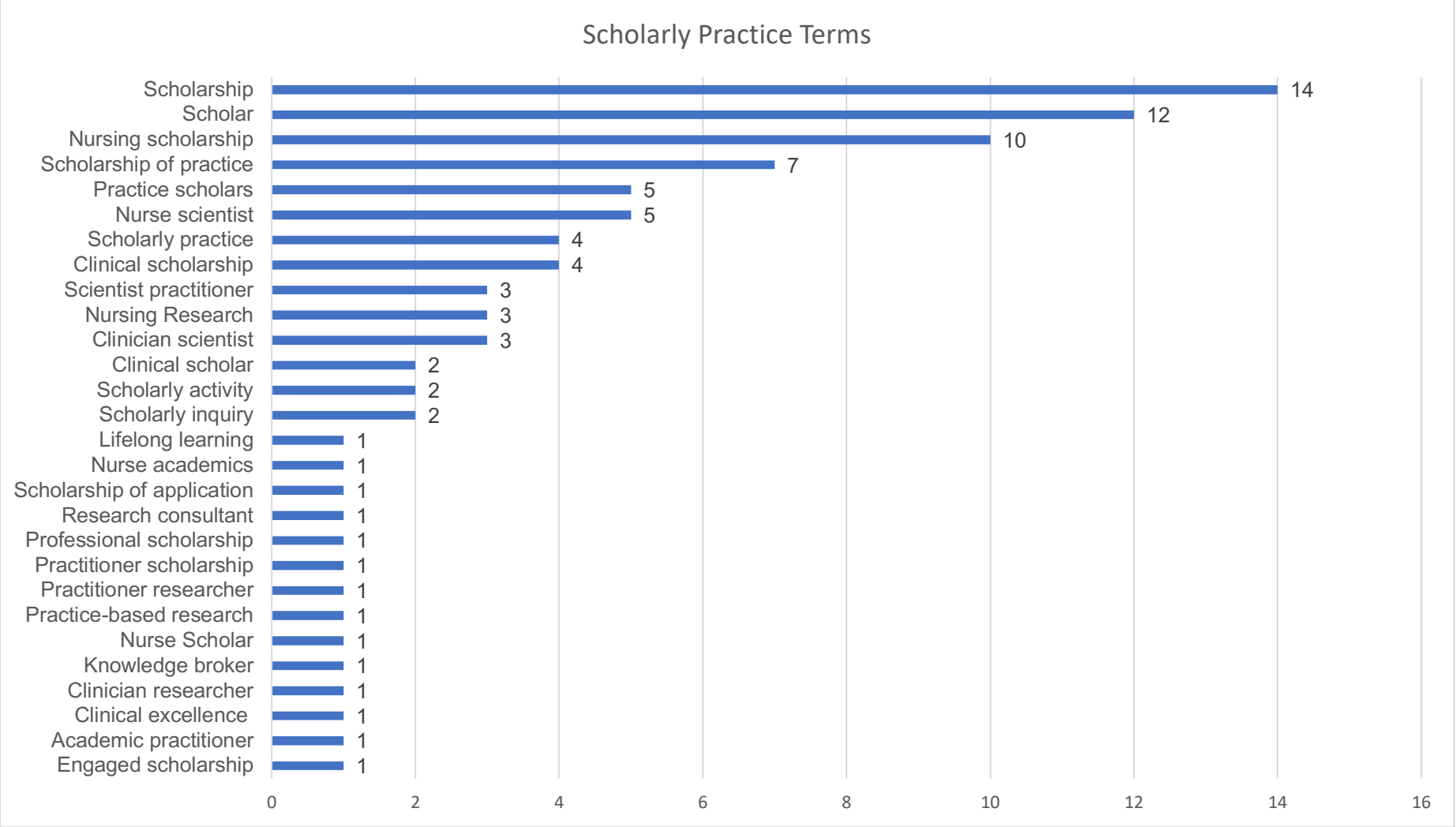
- Riley, J., Beal, J. A., & Lancaster, D. (2008). Scholarly nursing practice from the perspectives of experienced nurses. *J Adv Nurs, 61*(4), 425-435. doi:10.1111/j.1365-2648.2007.04499.x
- Riley, J., Beal, J. A., Levi, P., & McCausland, M. P. (2002). Revisioning Nursing Scholarship. *Journal of Nursing Scholarship, 34*(4), 383-389.
- Riley, J., & Omery, A. (1996). The scholarship of a practice discipline. *Hollistic Nursing Practice, 10*(3), 7-14.
- Riley, J. M., & Beal, J. A. (2013). Scholarly nursing practice from the perspectives of early-career nurses. *Nurs Outlook, 61*(2), e16-24. doi:10.1016/j.outlook.2012.08.010
- Roberts, K. L. (1996). A snapshot of Australian nursing scholarship 1993–1994. *Collegian, 3*(1), 4-10. doi:10.1016/s1322-7696(08)60136-5
- Roets, L., Botma, Y., & Grobler, C. (2016). Scholarship in nursing: Degree-prepared nurses versus diploma-prepared nurses. *Health SA Gesondheid, 21*, 422-430. doi:10.1016/j.hsag.2016.08.002
- Sawin, K. J., Gralton, K. S., Harrison, T. M., Malin, S., Balchunas, M. K., Brock, L. A., . . . Schiffman, R. F. (2010). Nurse researchers in children's hospitals. *J Pediatr Nurs, 25*(5), 408-417. doi:10.1016/j.pedn.2009.07.005
- Schutzenhofer, K. K. (1991). Scholarly pursuit in the Clinical setting: an obligation of professional nursing. *Journal of Professional Nursing, 7*(1), 10-15.
- Sherwen, L. N. (1998). When the Mission Is Teaching: Does Nursing Faculty Practice Fit? *Journal of Professional Nursing, 14*(3), 137-143.
- Smith, M. J., & Liehr, P. (2005). Story Theory: Advancing Nursing Practice Scholarship. *Hollistic Nursing Practice, 19*(6), 272-276.
- Smith, T. L. (2005). It's a question of scholarship. *The Internet Journal of Allied Health Sciences and Practice, 3*(2).
- Stockhausen, L., & Turale, S. (2011). An explorative study of Australian nursing scholars and contemporary scholarship. *J Nurs Scholarsh, 43*(1), 89-96. doi:10.1111/j.1547-5069.2010.01378.x
- Storch, J., & Gamroth, L. (2002). Scholarship revisited: A collaborative nursing education program's journey. *Journal of Nursing Education, 52*(23), 524-530.
- Strout, T. D., Lancaster, K., & Schultz, A. A. (2009). Development and implementation of an inductive model for evidence-based practice: A grassroots approach for building evidence-based practice capacity in staff nurses. *Nurs Clin North Am, 44*(1), 93-102, xi. doi:10.1016/j.cnur.2008.10.007
- Stull, A., & Lantz, C. (2005). An Innovative Model for Nursing Scholarship. *Journal of Nursing Education, 44*(11), 493-497.
- Taylor, R. R., Fisher, G., & Kielhofner, G. (2005). Synthesizing research, education, and practice according to the scholarship of practice model: two faculty examples. *Occup Ther Health Care, 19*(1-2), 107-122. doi:10.1080/J003v19n01_08
- Thomas, A., & Law, M. (2013). Research utilization and evidence-based practice in occupational therapy: a scoping study. *Am J Occup Ther, 67*(4), e55-65. doi:10.5014/ajot.2013.006395
- Thompson, M. R., & Schwartz Barcott, D. (2019). The Role of the Nurse Scientist as a Knowledge Broker. *J Nurs Scholarsh, 51*(1), 26-39. doi:10.1111/jnu.12439
- Thoun, D. S. (2009). Toward an appreciation of nursing scholarship: recognizing our traditions, contributions, and presence. *J Nurs Educ, 48*(10), 552-556. doi:10.3928/01484834-20090716-01
- Turale, S., Ito, M., Murakami, K., & Nakao, F. (2009). Nursing scholarship in Japan: development, facilitators, and barriers. *Nurs Health Sci, 11*(2), 166-173. doi:10.1111/j.1442-2018.2009.00447.x
- Turale, S., Shih, F. J., Klunklin, A., Chontawan, R., Ito, M., & Nakao, F. (2010). Asia-Pacific nursing scholarship development: qualitative exploration of nurse scholars in Taiwan (Republic of China). *J Clin Nurs, 19*(17-18), 2601-2610. doi:10.1111/j.1365-2702.2009.03100.x

- Ventres, W., & Whiteside-Mansell, L. (2019). Getting started in research, redefined: five questions for clinically focused physicians in family medicine. *Fam Med Community Health, 7*(2), e000017. doi:10.1136/fmch-2018-000017
- Vespia, K. M., & Sauer, E. M. (2006). Defining characteristic or unrealistic ideal: Historical and contemporary perspectives on scientist-practitioner training in counselling psychology. *Counselling Psychology Quarterly, 19*(3), 229-251. doi:10.1080/09515070600960449
- Vessey, J. A., McCabe, M., & Lulloff, A. J. (2017). Nurse scientists: one size doesn't fit all. *Nursing Management*.
- Whalen, M., Baptiste, D. L., & Maliszewski, B. (2020). Increasing Nursing Scholarship Through Dedicated Human Resources: Creating a Culture of Nursing Inquiry. *J Nurs Adm, 50*(2), 90-94. doi:10.1097/NNA.0000000000000847
- Wilkes, L., Mannix, J., & Jackson, D. (2013). Practicing nurses perspectives of clinical scholarship: a qualitative study. *BMC Nursing, 12*(21).
- Wright, S. C. D. (2005). A conceptual framework for teaching research in nursing. *Curationis, 28*(3), 4-10.

Supplementary Appendix 3-Years of publication



Supplementary Appendix 4- Scholarly Practice Terms



Supplementary Appendix 5-Definitions

Author	Title	Year	Implicit/Explicit	Q1) how is scholarly practice defined (what do they call it and the definition)
Schutzenhofer	Scholarly Pursuit in the Clinical Setting: An Obligation of Professional Nursing	1991	Implicit	Influence clinical practice through research that addresses nursing phenomena viewed by clinicians
Colborn	Combining practice and research	1993	Implicit	Therapists who are in clinical practice and wish to remain there, but wish to acquire further research skills in order to participate more effectively in the development and assessment of clinical methods
Diers	Clinical scholarship	1995	Implicit	Scholarship, then, is certain habits of mind. Clinical scholarship modifies the noun only by focusing on observation in and of the work, including the perception of one's own participation in it
Riley	The scholarship of a practice discipline	1996	Implicit	Nursing scholarship in practice is a creative revisioning of connected scholarship. The synthesis of a practice discipline is inextricably woven into a practice framework that supports and enhances caregiving practices that benefit the health and wellbeing of society
Sherwen	When the Mission Is Teaching: Does Nursing Faculty Practice Fit?	1998	Implicit	Alludes to Boyer's model of scholarship
Mosey	The Competent Scholar	1998	Implicit	As a person who engages in scholarly inquiry with the intent of creating an integrated body of abstract information that, having been evaluated and having withstood the test of time, is found to be accurate, efficacious in its use, or heuristic.
Prideaux	Clinical teaching: maintaining an educational role for doctors in the new health care environment	2000	Implicit	Clinicians as scholars locate, use and appraise the best available evidence to inform their practice.
Pape	Boyer's Model of Scholarly Nursing Applied	2000	Implicit	Scholarship involves a lifelong commitment to thinking, questioning, and pursuing answers. Scholars desire to achieve and develop useful knowledge in their discipline.

	to Professional Development			
Nelson	A model for scholarship in nursing: the case of a private liberal arts college.	2001	Implicit	Professional endeavors which advance the art and science of nursing.
Cusik	The Experience of Clinician-Researchers in Occupational Therapy	2001	Implicit	A process of role change, during which the person changed from clinician to clinician-researcher.
Ribbons	Using E-mail to Facilitate Nursing Scholarship	2001	Implicit	Being a scholar within a particular discipline means becoming a participant in an ongoing scholarly dialogue, using the forms and conventions of that particular "discourse community
Ramcharan	Nursing scholarship within the British university system	2001	Implicit	The acquisition of knowledge through study. The gathering of information, synthesizing of new ideas and generating new meanings all constitute scholarship
Burgener	Scholarship of practice for a practice profession	2001	Implicit	Reference to Boyer's principles of scholarship of application. No unified definition but rather defined by its attributes and dimensions
Davidson	THE SURGEON FOR THE FUTURE AND IMPLICATIONS FOR TRAINING	2002	Implicit	Learner, Scientist
Storch	Scholarship revisited: a collaborative nursing education program's journey	2002	Implicit	Alludes to Boyer
Riley	Revisioning nursing scholarship	2002	Implicit	Scholarship has traditionally been viewed as knowledge development within an academic environment.
Carter	Integrating Science and Practice: Reclaiming the Science in Practice	2002	Implicit	Scholarship has many forms, each of which provides an important piece of the puzzle of advancing knowledge. By scholarship I am referring both to the activities of the individual who is engaging in scholarly behavior and to the output of scholarly work.

Neale	Scholarly development of clinician faculty using evidence-based medicine as an organizing theme	2003	Implicit	The hallmark of academic faculty is the dissemination of knowledge (giving presentations, conducting research and writing manuscripts) in their area of expertise.
Worral Carter	Nurse academics meeting the challenges of scholarship and research	2004	Implicit	Alludes to "redefining of, what scholarship is." Some academics perceived scholarship to be necessary to inform their teaching and to enable them to make changes in clinical practice.
Smith	It's a question of scholarship	2005	Implicit	The use of discipline inquiry and critical thought to create or acquire new knowledge.
Stull	An Innovative Model for Nursing Scholarship	2005	Implicit	Scholarship. is a rigorous academic process aimed at furthering the shaping and understanding of all aspects of nursing through discovery, application, teaching, and integration.
Wright	A conceptual framework for teaching research in nursing	2005	Implicit	A nurse with an inquiring mind, a nurse who is not willing to accept the status quo, and a nurse that can see patterns and ask the question: why?
Taylor	Synthesizing Research, Education, and Practice According to the Scholarship of Practice Model: Two Faculty Examples	2005	Implicit	The Scholarship of Practice involves an ongoing, reflective discourse among the theoretical concepts of occupational therapy, the empirical verification of those concepts through research, and the application of those concepts in real-world clinical practice.
Forsyth	Scholarship of Practice in the United Kingdom: An Occupational Therapy Service Case Study	2005	Implicit	Occupational therapy endorses the importance of research findings in shaping practice
Kielhofner	Research Concepts in Clinical Scholarship—Scholarship and practice: Bridging the divide	2005	Implicit	Engaged scholarship seeks to discover new ways of addressing and solving everyday life problems of people and society. This movement has also redefined what is meant by knowledge and how it should be judged.
Crist	The Practice-Scholar Program: An Academic-Practice Partnership to	2005	Implicit	By answering practice questions relevant to everyday occupational therapy contexts, meaningful contemporary health issues can be addressed and provide evidence to support the practice of occupational therapy.

	Promote the Scholarship of “Best Practices”			
Hojat	Assessing Physicians' Orientation Toward Lifelong Learning	2006	Implicit	Lifelong learning is the development of human potential through a continuously supportive process which stimulates and empowers individuals to acquire all the knowledge, values, skills, and understanding they will require throughout their lifetimes and to apply them with confidence, creativity and enjoyment in all roles, circumstances and environments. It is a concept that involves a set of self-initiated activities (behavioral aspect), and information seeking skills (capabilities) that are activated in individuals with a sustained motivation to learn and the ability to recognize their own learning needs (cognition)."
Vespia	Defining characteristic or unrealistic ideal: Historical and contemporary perspectives onscientist-practitioner training in counselling psychology	2006	Implicit	The scientist-practitioner model of education and training in psychology is an integrative approach to science and practice wherein each must continually inform the other. This model represents more than a summation of both parts. Scientist-practitioner psychologists embody a research orientation in their practice and a practice relevance in their research
Riley	Scholarly nursing practice from the perspectives of experienced nurses	2008	Implicit	There is little common understanding of the meaning of clinical scholarship among practicing nurses.
Thoun	Toward an Appreciation of Nursing Scholarship: Recognizing Our Traditions, Contributions, and Presence	2009	Implicit	This pattern of scholarship involves systematic inquiry of professional practice that is imaginative, artistic, and resourceful.
Padilla	Scholarship in Occupational Therapy	2009	Implicit	Scholarly practice involves using the knowledge base of the profession or discipline in one’s practice. As occupational therapy practitioners we, call this scholarly practice evidence-based practice.
Turale	Nursing scholarship in Japan: Development, facilitators, and barriers	2009	Implicit	Describe it as the development of attributes

Barnett	The Complete Practitioner: Still a Work in Progress	2009	Implicit	He or she participates in scholarly activities even if not a fulltime academic, recognizing that the advancement of the profession through scholarly activities is an essential aspect of professional identity.
Mackay	Why nursing has not embraced the clinician-scientist role	2009	Implicit	A qualified healthcare professional from any health discipline (e.g., medicine, nursing, rehabilitation science, dietetics, clinical psychology, dentistry) who functions primarily as a career scientist, with portions of time also devoted to clinical practice and education
Crist	Adapting Research Instruction to Support the Scholarship of Practice: Practice-Scholar Partnerships	2010	Implicit	The evidence to support everyday practice in the form of outcome studies and practice-based research approaches. The goal of scholarship of practice is to provide meaningful information from research to guide professional decision-making and clinical reasoning.
Adegbola	Nurses collaborating with Cross disciplinary networks: starting to integrate genomics into practice	2010	Implicit	The zenith of excellence is scholarship that involves generating, sharing and utilizing knowledge and documentation of accomplishments
Sawin	Nurse Researchers in Children's Hospitals	2010	Implicit	Author states that the role has no definition
Turale	Asia-Pacific nursing scholarship development: qualitative exploration of nurse scholars in Taiwan (Republic of China)	2010	Implicit	Nursing scholarship involves those activities that systematically advance teaching, research and practice through rigorous enquiry, that are significant to the profession, creative, and can be documented, replicated or elaborated and peer reviewed Participants tried to define scholarship but reverted to attributes
Stockhausen	An Explorative Study of Australian Nursing Scholars and Contemporary Scholarship	2011	Implicit	All participants had defined views of what comprised scholarship, with subtle differences. Academics tended to view scholarship as theoretical, whereas CCs expressed a practical, learning, and action-oriented dimension to scholarship. The academics viewed scholarship as " . . . operating on multiple levels . . . excellence marked by the rigor of research and dissemination"; " . . . creativity, discovery, [and] . . . innovation using . . . multidisciplinary approaches and also mixed methodology"; " . . . which conceptualizes, moves beyond the subconscious and allows critical interrogation"; and involves " . . . pushing the boundaries of knowledge." CCs considered scholarship differently, involving the generation,

				creation, modification of things known around nursing, moving this into action: teaching, publishing, research, deepening, a broadening, questioning, dealing with knowledge. It's about an embodying process . . . not just doing research and publishing findings . . . changing the culture of learning.
Currey	Clinical nurse research consultant: a clinical and academic role to advance practice and the discipline of nursing	2011	Implicit	Evidence-based nursing practice is critical to deliver high-quality patient care and outcomes and is expected to form a part of all nurses' practice.
Donohue-Porter	Creating a Culture of Shared Governance Begins With Developing the Nurse as Scholar	2012	Implicit	A powerful intellectual endeavor that seeks to uncover the humanity and meaning in the experience of the patient.
Pinnock	Reflecting on sharing scholarship, considering clinical impact and impact factor	2012	Implicit	Reference to Boyer. Authors don't provide concise definition.
Bellini	The Doctor of Nursing Practice Graduate as Faculty Member	2012	Implicit	Clinical scholarship as a concept requires astute observation on behalf of an expert clinician, which provides context, substantial nursing experience, extensive scientific knowledge, and intellectual activity and which can take various forms
Mahant	The Nature of Excellent Clinicians at an Academic Health Science Center: A Qualitative Study	2012	Implicit	Scholarship as a vehicle that improved clinical performance by stimulating insight and reflection on practice.
Grady	Defining scholarly activity in graduate medical education	2012	Implicit	Boyer's definition of scholarship: discovery, integration, application, and teaching.

Wilkes	Practicing nurses' perspectives of clinical scholarship: a qualitative study	2013	Implicit	Scholarship is seen as creative intellectual work that adds to our intellectual history through its communication and is valued by those for whom it was intended. Clinical scholarship is difficult to conceptualise. The results indicate that the component parts contribute to the definition
Mannix	Marking out the clinical expert/clinical leader/ clinical scholar: perspectives from nurses in the clinical arena	2013	Implicit	This article's purpose was to define clinical scholar. Rather than defining it, the participants saw distinct differences in being a clinical scholar, clinical expert or clinical leader.
Thomas	Research Utilization and Evidence-Based Practice in Occupational Therapy: A Scoping Study	2013	Implicit	Scholarship of practice is a collaborative model in which theory, research, and practice are interwoven
Acorn	Scholarship in Nursing: Current View	2013	Implicit	Any activity to be designated as scholarship should manifest at least three key characteristics: it should be (a) public, (b) open to critical review and evaluation and (c) accessible for exchange and use by others. There are many definitions of scholarship, but elements common to all include documentation, peer review and public dissemination
Buchholz	Preparing practice scholars: Teaching knowledge application in the Doctor of Nursing Practice Curriculum	2013	Implicit	Able to provide expert consultation and judgment on practice issues to support the best possible patient care
Grites	Medical education scholarship: An introductory guide: AMEE Guide No. 89	2014	Implicit	The authors also emphasize that their definition of educational scholarship evolves from activities within medical educational systems that impact teachers and learners in these systems.
Marie Dupin	An ethnographic study of nurses' experience with nursing research and its integration in practice	2014	Implicit	Nursing research should be a source of useful evidence for patients and communities and should involve solving complex problems that are inherent in nursing and health care

Joubert	Academic Practitioner Partnerships: A Model for Collaborative Practice Research in Social Work	2015	Implicit	Practice-based research (PBR) as questions that emerge from practice and results that feed back into practice. PBR is also defined as "research conducted by practitioners for practice purposes"
Limogues	The Scholarship of Application: Recognizing and Promoting Nurses' Contribution to Knowledge Development	2015	Implicit	Through nurses' commitment to scholarly practice and effective patient care, they are prompted to use theory and research to improve nursing practices. As these practice innovations are implemented and evaluated, new knowledge and understanding are developed
Roets	Scholarship in nursing: Degree-prepared nurses versus diploma-prepared nurses	2016	Implicit	Boyer's model "not only research (the scholarship of discovery) but also the scholarship of integration (critical thinking), the scholarship of application (knowledge translation), and the scholarship of teaching.
Vessey	Nurse scientists: one size doesn't fit all.	2017	Implicit	Lacks a precise definition. The definition is described by its component pieces.
Logdson	Description of Nurse Scientists in a Large Health Care System	2017	Implicit	Nurses with a PhD degree are scholars and investigators who advance the knowledge base for clinical nursing practice as well as for other relevant areas such as health policy and informatics.
Lagabeer	Scholarship in Emergency Medicine: A Primer for Junior Academics: Part II: Promoting Your Career and Achieving Your Goals	2018	Implicit	Scholarship can be defined in many ways, including excellence, higher learning, or achievement
Abramson	Scholarly Activity Training During Residency: Are We Hitting the Mark? A National Assessment of Pediatric Residents	2018	Implicit	Specifically stated they did not define it because outcome frameworks did not define it.
Kluijtmans	Professional identity in clinician-scientists: brokers between care and science	2019	Implicit	Three important characteristics that together define clinician- scientists: an overarching view on a health care specialty (nursing or physiotherapy); a critical attitude towards current practice, and advancing the care field by connecting science and care

Bookey-Bassett	Overcoming challenges to support clinican-scientist roles in Canadian academic health sciences centres	2019	Implicit	Table 1 in article
Whalen	Increasing Nursing Scholarship Through Dedicated Human Resources: Creating a Culture of Nursing Inquiry	2020	Implicit	EBP has become the criterion standard for integrating key findings from scientific literature to influence clinical problem solving and decision making and health outcomes
Carter	Evaluation of the joint nurse scientist role across academia and practice	2020	Implicit	Strategic relationships between educational and clinical practice settings that are established to advance their mutual interests related to practice, education, and research”
Leininger	scholars. scholarship, and nursing scholarship	1974	Explicit	A person who rigorously pursues intellectual ideas in a disciplined manner about a special field or school of thought, and who influences the thoughts and actions of others.
Roberts	A snapshot of Australian nursing scholarship1993-1994	1996	Explicit	Person who develops or integrates knowledge based on theory, research and practice. Scholarship is defined as a creative, intellectual activity that involves generation, evaluation, synthesis, and integration of knowledge based on theory, research and practice. It makes a vital contribution to the development of nursing's unique body of knowledge.
Neuman	Leadership-Scholarship Integration: Using the Neuman Systems Model for 21st-Century Professional Nursing Practice	2000	Explicit	The ability to identify and control factors and elements that influence the reliability and validity of knowledge and its use in the delivery of healthcare.
Bunkers	The Nurse Scholar of the 21st Century	2000	Explicit	“1. One who attends school or studies under a teacher; 2. a: one who has done advanced study in a special field; b: a learned person”

Barrett	What Is Nursing Science?	2002	Explicit	Identifiable, discrete body of knowledge comprising paradigms, frameworks, and theories. Nursing science represents clusters of precisely selected beliefs and values that are crafted into distinct theoretical structures. The discipline encompasses all that nursing is and all that nurses do, overlaps with other disciplines, and is more than the theory and research base. The discipline of nursing requires knowledge and methods other than nursing science, but nursing science is the essence of nursing as a scholarly discipline; without it there would be no nursing, only care.
Smith	Story Theory: Advancing Nursing Practice Scholarship	2005	Explicit	The intentional integration of education, research, and clinical care in an academic setting for the purpose of advancing the science and shaping the structure and quality of healthcare.
Kielhofner	A Scholarship of Practice: Creating Discourse Between Theory, Research and Practice	2005	Explicit	A dialectic in which theoretical and empirical knowledge is brought to bear on the practical problems of therapeutic work and in which the latter raise questions to be addressed through scholarship.
Frank	The CanMEDS initiative: implementing an outcomes-based framework of physician competencies	2007	Explicit	Demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge.
Christmas	Clinical Excellence in Academia: Perspectives From Masterful Academic Clinicians	2008	Explicit	Clinical excellence in academia as a coming together of multiple characteristics and aptitudes: communication and interpersonal skills, professionalism and humanism, diagnostic acumen, skillful negotiation of the health care system, knowledge, taking a scholarly approach to clinical practice, and having passion for clinical medicine.
Strout	Development and Implementation of an Inductive Model for Evidence-Based Practice: A Grassroots Approach for Building Evidence-Based Practice Capacity in Staff Nurses	2009	Explicit	An approach that enables evidence-based nursing and development of best practices to meet the needs of clients efficiently and effectively. It requires the identification of desired outcomes; the use of systematic observation and scientifically based methods to identify and solve clinical problems; the substantiation of practice and clinical decisions with reference to scientific principles, current research, consensus-based guidelines, quality improvement data, and other forms of evidence; the evaluation, documentation, and dissemination of outcomes and improvements in practice through a variety of

				mechanisms including publication, presentations, consultation, and leadership; and the use of clinical knowledge and expertise to anticipate trends, predict needs, create effective clinical products and services, and manage outcomes.
Overholser	Ten Criteria to Qualify As a Scientist-Practitioner in Clinical Psychology: An Immodest Proposal for Objective Standards	2010	Explicit	A) The scientist-practitioner contributes to the field through scholarly work 1: A scientist-practitioner remains active in scholarship 2: A scientist-practitioner contributes scholarly works at a national level 3: Scholarship extends beyond teaching B) The scientist-practitioner remains active in clinical practice 4: A scientist-practitioner provides clinical service on a regular basis 5: A scientist-practitioner provides clinical services that are similar to standard clinical practice 6: Clinical practice extends beyond supervision C) The scientist-practitioner integrates the science and practice of psychology 7: A scientist-practitioner adheres to recommendations for evidence-based practice 8: A scientist-practitioner focuses on issues that are central to clinical psychology 9: A scientist-practitioner in clinical psychology works with medical or psychiatric patients 10: A scientist-practitioner in clinical psychology relies on psychological measures that have adequate psychometric properties and can be easily collected in most mental health treatment centers
Morris	Factors associated with the publication of scholarly articles by pharmacists	2011	Explicit	The creation, advancement, or transformation of knowledge that is distributed from an individual or group to the scientific community.
Riley	Scholarly nursing practice from the perspectives of early-career nurses	2013	Explicit	A multidimensional way of thinking about practice that includes the role attributes of active learner, out-of-the-box thinker, passionate about nursing, available, and confident, and the role processes of lead, give care, share knowledge, evolve, and reflect. (Figure in manuscript)

Fillion	Challenges of being a scholarly clinician as perceived by stroke rehabilitation professionals	2014	Explicit	1) maintain and enhance professional activities through ongoing learning; 2) critically evaluate information and its sources and apply this appropriately to practice decisions; 3) facilitate the learning of patients, families, students, residents, other health professionals, the public, and others, as appropriate; 4) contribute to the creation, dissemination, application, and translation of the new medical knowledge and practices. Reflective practice, knowledge translation (integrating new research into clinical practice).
Connard	Roles and responsibilities of the nursing scholar	2014	Explicit	a) a person who attends school or studies under a teacher, b) a person who has done advanced study in a special field or c) a learned person.
Hertig	Incorporating Pharmacy Scholarship to Management Responsibilities	2015	Explicit	The creation, advancement, or transformation of knowledge that is distributed from an individual or group to the scientific community
Forsyth	Scholarship of Practice in the Care of People with Dementia: Creating the Future Through Collaborative Efforts	2015	Explicit	Scholarship of Practice has been defined by its proponents as a dialectic in which theoretical and empirical knowledge are brought to bear on the practical problems of therapeutic work and in which the latter raise questions to be addressed through scholarship
Hammel	A Scholarship of Practice Revisited: Creating Community-Engaged Occupational Therapy Practitioners, Educators, and Scholars	2015	Explicit	Reflects the dialectic between occupational therapy practice and the realm of occupational therapy theory and research in which both inform each other and are transformed to better meet the health care needs of society
Ridley	The scientist–practitioner model in counseling psychology programs: a survey of training directors	2015	Explicit	(1) Integration of science and practice (2) Equal and balanced emphasis/focus on research and practice (3) Practice-based research and Research based practice (e.g. EBPs)
Hautz	What makes a doctor a scholar: a systematic review and content	2016	Explicit	As Scholars, physicians demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge

	analysis of outcome frameworks			
MacMaster	The psychiatry resident research experience	2016	Explicit	As Scholars, physicians demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge
Thompson	The Role of the Nurse Scientist as a Knowledge Broker	2018	Explicit	One who connects science and society by building networks and facilitating opportunities between and among knowledge producers and knowledge users to share knowledge, learn from it, apply it meaningfully in research, practice, education, and policy, and to create new knowledge together.
Hartjes	Academic nursing scholarship redefined	2018	Explicit	The generation, synthesis, translation, application and dissemination of knowledge that aims to improve health and transform health care
Hickey	Scholarship in Neuroscience Nursing	2019	Explicit	Is the generation, synthesis, translation, application, and dissemination of knowledge that aims to improve health and transform health care. Scholarship is the communication of knowledge generated through multiple forms of inquiry that inform clinical practice, nursing education, policy, and health care delivery. The hallmark attribute of scholarship is the cumulative impact of the scholar's work on nursing and health care.
Grace	Using Ockham’s razor to redefine “nursing science”	2020	Explicit	Nursing science is both the process of inquiry and the accumulating body of contingent truths, that support the historically derived unifying focus of nursing and the goals of nursing. Nursing science viewed as process and content serves as the basis for refining existing philosophies and theories about the reason for the discipline's existence and conceptualizing new theories as necessary. Nursing science exists to facilitate the profession's advancement as provider of a distinct critical human service.
Ventres	Getting started in research, redefined: five questions for clinically focused physicians in family medicine	2019	Explicit	Ask and answer questions relating to the process, context and outcome of their work with patients and families, as well as those pertaining to the organisational milieus in which they practise.
Chen-Lim	THE PRACTICE OF SCHOLARLY INQUIRY	2019	Explicit	Operational definition of scholarly inquiry as research in a field of study that requires education, skills, and collaboration, using literature and non-literature

	IN POST LICENSURE NURSES (dissertation)			evidence to generate knowledge or its application for advancement of a profession or society

CHAPTER 4: Bridge between manuscript 1 and 2

4.1 Research questions of manuscript 1 and 2

Manuscript 1: The overarching objective of the first study was to determine what is known about scholarly practice amongst licensed healthcare professionals. The specific goals were to determine: (1) how is scholarly practice conceptualized and defined in licensed healthcare professionals, (2) What are the component parts of scholarly practice in licensed healthcare professionals and (3) how has scholarly practice been operationalized in clinical practice among licensed healthcare professionals?

Manuscript 2: The objective of this second study was to explore licensed Canadian RTs' knowledge and perceptions of scholarly practice. Specifically, I wanted to explore what scholarly practice means and how it manifests in daily practice from the perspectives of RTs.

4.2 Integration of manuscript 1 and 2

Manuscript 1 provided a synthesis of the breadth and depth regarding what is known about scholarly practice amongst licensed healthcare professionals, specifically clinical psychologists, dietitians, nurses, pharmacists, physicians, social workers and rehabilitation professionals (OTs, PTs, RTs, and SL-Ps). Through this review, I gained a deeper understanding of scholarly practice, which were organized into three themes: the interdependent relationship between scholarship and practice, helps advance the profession, and is core to being a healthcare practitioner.

Additionally, I identified common attributes of scholarly practitioners as documented in the published literature. These attributes included possessing a commitment to excellence in practice, a collaborative nature, the presence of virtuous qualities, effective communication skills, and having an adaptive change ethos. However, it is important to note that I found several gaps in the literature. Namely, no single unified definition of scholarly practice exists, with the majority (70%) of the included articles lacking an explicit definition, and there is considerable variability in the terms used to describe scholarly practice. These findings suggest that scholarly practice is a broad and overarching concept rather than one that can be precisely defined.

Given these gaps, individuals engaged in the teaching, research, and assessment of scholarly practice should clearly articulate their definitions and communicate their expectations for healthcare professionals. Furthermore, it is worth highlighting that despite an extensive literature search, there were no articles specifically addressing RTs. The absence of respiratory therapy representation in the published literature underscores the need for further research and exploration of scholarly practice within the context of RTs. This lack of representation underscores the importance of addressing the challenges faced by RTs in scholarly practice, as it indicates a historical neglect of their professional needs and contributions within the academic discourse. Taking this absence of representation into account, I used the findings from the scoping review as the foundation for conducting a qualitative study to acquire a deeper understanding of the perceptions of RTs regarding the relationship between scholarly practice and routine care. Thus, the aim of *Manuscript 2* was to explore what scholarly practice means and how it manifests in daily practice from the perspectives of RTs.

CHAPTER 5: Manuscript 2

Citation: Zaccagnini, M. Bussières, A. Kim, S. Nugus, P. West, A. Thomas, A. What scholarly practice means to respiratory therapists: an interpretive description study. *J Eval Clin Pract*. 2023; 29: 1314-1325. doi:10.1111/jep.13917

Marco Zaccagnini,[1,2] André Bussières,[1,2,3] Sungha Kim,[1,2] Peter Nugus,[4,5] Andrew West,[6] Aliki Thomas[1,2,4]

[1]School of Physical and Occupational Therapy, McGill University, Montréal, Québec. Canada
[2]Centre for Interdisciplinary Research in Rehabilitation of Greater Montréal, Montréal, Québec, Canada
[3]Département chiropratique, Université du Québec à Trois-Rivières, Trois-Rivières, Québec
[4]Institute of Health Sciences Education, McGill University, Montréal, QC, Canada
[5]Department of Family Medicine, McGill University, Montréal, QC, Canada
[6]The Canadian Society of Respiratory Therapists, Saint John, New Brunswick, Canada.

Corresponding author: Aliki Thomas**,** McGill University, School of Physical and Occupational Therapy**,** Charles Meredith House**,** Montréal, Québec, Canada, H3A 1A3**;** Telephone: 514-398-4496; Fax: 514-398-6360**;** Email: aliki.thomas@mcgill.ca

Abstract

Rationale: Engagement in scholarly practice has been associated with professional empowerment, role satisfaction and improvements in care delivery and patient outcomes across many healthcare professions. However, in evolving professions like respiratory therapy, scholarly practice is excluded from competency frameworks, resulting in a gap in education and subsequent application of this competency in practice. An exploration of scholarly practice in respiratory therapy may provide insights into evolving professions that face tensions between meeting competency requirements as outlined in frameworks and providing quality healthcare to the populations they serve.

Aims and objectives: The aim of the study was to explore what scholarly practice means, and how it manifests in practice from respiratory therapists' (RTs) perspectives.

Methods: We used interpretive description methodology. We purposively sampled participants to obtain varied perspectives of scholarly practice in respiratory therapy. We conducted 26 semi-structured interviews with RTs in different roles (clinicians, educators, researchers, leaders, and managers) across Canada and analyzed the data using inductive analysis. Data collection and analysis proceeded concurrently.

Results: We developed five main themes: (i) the identity of a scholarly practitioner in RTs; (ii) factors influencing scholarly practice; (iii) one's impression of their professional self-image; (iv) scholarly practice as a vehicle for changing practice; and (v) the complex interconnections between knowledges and practices.

Conclusion: Scholarly practice appears to be a multifaceted phenomenon encompassing a wide range of activities and skills including conducting research, reflective practice, application of research to practice, and contributing to the advancement of the profession and healthcare. Scholarly practice is influenced by organizational context and culture, available resources, intrinsic motivation, and external political context. We identified similarities between professional identity and the description of the scholarly practitioner, suggesting that these two phenomena may be interconnected. Furthermore, participants believed that scholarly practice could enhance the image, credibility, legitimacy, and professionalization of the profession.

Keywords: Scholarly practice; respiratory therapy; clinical competence; qualitative research; professional identity

1.0 Introduction

One in every three people (approximately 2.4 billion individuals) worldwide will need rehabilitation care sometime during their recovery from illness or injury.[1,2] Rehabilitation professionals (e.g., occupational therapists [OTs], physiotherapists [PTs], respiratory therapists [RTs]) are expected to integrate high-quality evidence into routine practice to ensure patients receive the most up-to-date care. The ability to ground one's practice in theory and research, question current practices, search and identify evidence-based literature, and integrate evidence into professional practice is associated with a professional competency referred to as scholarly practice.[3-7] Scholarly practice is broadly understood as a process whereby clinicians engage with and apply multiple sources of knowledge (i.e., experiential, evidence from research) in ongoing, critical, reflective and evaluative ways in their daily practice.[3-8] Scholarly practice has been associated with professional empowerment and role satisfaction, a positive work environment as well as improved care delivery and patient outcomes.[9-15] While many health professions education programs worldwide aim to support learners' development as scholarly practitioners, the teaching and assessment of this competency is challenging. A growing body of research suggests that this may be due to a lack of clarity about what scholarly practice *is,* how it develops, and what it looks like in practice.[8,16,17] Such definitional and operational challenges have not only impacted the teaching and assessment of scholarly practice, but appear to have negatively influenced clinicians' confidence in their ability to adopt this role successfully.[16-20]

Scholarly practice is widely discussed in the medical, nursing and occupational therapy literature, but research in other evolving rehabilitation professions, like respiratory therapy, which frequently faces challenges of legitimacy and limited public knowledge of the profession, is scarce.[8,21,22] Respiratory therapy is a relatively new rehabilitation profession whose origin lies in its focus on providing technical support to physicians.[22] However, over the last 60 years, RTs' roles have evolved from having a primarily technical focus to one that is more clinically-oriented, patient-centered and therapeutic.[22] This change reflects a rapidly evolving healthcare landscape where RTs, like many healthcare professionals,[3-7] are expected to deliver effective, efficient and evidence-based care, integrate into interprofessional teams, foster change within hospital systems as well as participate in, critique, and integrate research into practice.[23-25] Therefore, to meet these expectations, RTs could benefit from embracing and adopting a scholarly approach to practice. However, in North America, where the respiratory therapy

profession is most developed, the professional licensure bodies have not included scholarly practice as part of their competency frameworks for entry-to-practice.[26,27] Although there has been no justification cited for this decision, the result is that respiratory therapy graduates are not required to possess any of the component parts of this competency, which is central to professional frameworks of several other healthcare professions.[3-7]

In many countries worldwide, competency profiles are used to inform the design and implementation of educational curricula.[28] Therefore, if a specific competency is excluded from a professional competency framework, it is likely excluded from educational programs. Excluding this competency from entry-level education in respiratory therapy could have undesirable effects for the profession and, consequently, patient care. First, if RTs are perceived as the only professionals in an interprofessional team without this competency, they may be challenged to uphold their legitimacy and recognition as healthcare professionals among their interprofessional colleagues.[21,22] Second, RTs may not be compelled to engage in scholarly practice since it is not required of them as per their competency frameworks. Third, without targeted educational preparation, integrating new research findings into their practice, which is a core component of scholarly practice, may be challenging; this, in turn, may lead to using outdated treatment methods, ultimately leading to suboptimal care and a loss of trust and credibility in RTs' work.[29,30]

Given the positive association between scholarly practice and work satisfaction, improved care delivery, and better patient outcomes, a deeper understanding of how RTs perceive the relationship between scholarly practice and routine clinical care may assist in designing interventions to improve this competency in the profession. Moreover, an exploration of scholarly practice in respiratory therapy may provide valuable insights into evolving professions that face tensions between meeting competency requirements as outlined in professional frameworks and providing quality healthcare to the populations they serve. Thus, the aim of this study was to explore what scholarly practice means, and how it manifests in daily practice from the perspectives of RTs.

2.0 Methods

We used interpretive description (ID) methodology.[31,32] ID is grounded in a constructivist paradigm which recognizes that human experience is socially constructed and influenced by the context where the experience takes place. We chose ID as it is designed to generate meaningful,

clinically relevant findings while allowing for multiple possible viewpoints in contrast to other methodologies, such as Grounded Theory which aims to generate or develop a substantive theory.[31,32] Importantly, ID acknowledges that the researchers' theoretical and experiential knowledge they bring to a project influences and shapes the findings.[31,32] More specifically, the first author (MZ) used their professional knowledge as a practicing RT as the lens through which to better understand the data. This study was approved by McGill University's institutional review board (study number A01-E04-22A). We followed the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist to enhance the comprehensiveness of the analysis.[33] (Supplementary File 1)

2.1 Participants and recruitment

To be eligible to participate in this study, individuals had to be an RT holding credentials to practice in a Canadian jurisdiction. To enhance the comprehensiveness and diversity of understanding of the topic, we recruited participants with various professional roles, namely: (1) bedside care, (2) teaching in an academic institution, (3) having an active research program, (4) holding a leadership position in a provincial regulatory or national professional organization or (5) managing an RT department. We excluded student and retired RTs as they are considered not active in the profession. All potential participants were known to the research team and purposively sampled from across Canada based on their professional roles. To avoid any undue influence to participate, a research assistant who had no prior connection with the potential participants sent an e-mail invitation and a copy of the consent form. We then used snowball sampling to identify participants for specific professional roles who did not respond to the initial e-mail.

2.2 Data collection

The research team created a preliminary interview guide based on their subject matter expertise and the findings from a scoping review about scholarly practice.[8] The guide was then shared with a group of OTs, PTs and health professions educationalists currently registered in post-professional education (e.g., graduate and doctoral degrees) for feedback related to the length, language suitability and clarity of the questions. The research team revised the interview guide before conducting three pilot interviews (Supporting Information: Appendix 1). MZ then conducted the remaining individual semi-structured, virtual interviews in either English or French between April and July 2022.

2.3 Data analysis

Data collection and analysis occurred concurrently.[31,34] All interviews were audiotaped, transcribed verbatim and deidentified. The interview text was uploaded to the NVivo qualitative data analysis software program to facilitate data management, coding and sorting.[35] MZ conducted inductive coding on all transcripts to explore and identify commonalities and differences between participant accounts. The codes were initially kept broad to identify recurrent ideas and patterns.[31] These were then shared with the research team for feedback. We then began to aggregate codes to build categories. MZ used constant comparison analysis across the 26 transcripts to re-examine and refine the codes and categories. The organized categories were circulated to the full research team for critical review and feedback. MZ then applied the updated categories to all transcripts, while another research team member with qualitative research expertise (SK) applied the categories to 30% of the transcripts. MZ and SK had discussions about discrepancies between the proposed categories until reaching consensus. After reaching consensus, we organized the categories into preliminary themes. This involved a process of synthesizing and describing the meaning of the themes by examining the participant quotes and patterns of the data in relation to the research aim. The preliminary themes were critically reviewed with the full research team at multiple meetings to finalize the themes. Concurrently with data collection and analysis, we continued to recruit participants until we reached thematic sufficiency, defined as the stage in data analysis at which the categories we created appear to manage new data from the transcripts without requiring further modifications.[36-38] However, we acknowledge that there may exist alternative perspectives and experiences not captured with our collected data.

We integrated several steps in our analytical process based on Lincoln and Guba's quality criteria for trustworthiness.[34] Specifically, MZ wrote reflective memos to record and examine their assumptions about the research topic and reflected on the understanding of the data immediately after each interview. After each reflection, MZ wrote a synopsis of the interview process to ensure they remained mindful of the whole of each participant's responses. Another team member (SK) co-coded transcripts to enhance the credibility of the findings.[34] SK is knowledgeable about the phenomena and methodology but not about the context, positioning them well to facilitate intercoder agreement checks. The research team engaged in collaborative reflexivity by periodically coming together as a group to discuss the codes and themes and to

discuss any converging or contrasting views.[39] Finally, MZ recorded every step of the research path in an audit trail to enhance the dependability of the findings.[34]

3.0 Results

Twenty-six individuals were interviewed (Table 1). Sixteen were female (61.5%), with a median age of 41.5 years. In the following sections, we describe and provide illustrative quotes for each of the five themes that reflect RTs' views on scholarly practice, what scholarly practice means for them and how it might manifest in their practice. Supporting Information: Appendix 2 includes longer and more detailed excerpts to enrich the description of each theme and Supporting Information: Appendix 3 illustrates a simplified sample coding scheme.

3.1 The identity of a scholarly practitioner in RTs

Participants described what a scholarly practitioner might look like in practice and what they believe sets them apart in the profession. Specifically, they described what appeared to be a composite profile of the scholarly practitioner, as they thought of and spoke about individuals they currently or previously worked with. This first theme (i.e., the identity of a scholarly practitioner) was comprised of three sub-themes: who they are, their skills and what they do.

3.1.1 Who scholarly practitioners are

Participants described the apparently innate attributes, personality traits, or characteristics of scholarly practitioners in RTs that they inferred, such as being creative, inquisitive, having a flexible ethos and having emotional intelligence. Among these attributes, some were mentioned more frequently including: being intrinsically motivated ("*they're engaging, approachable, they definitely strive to better themselves, but also to better the people they're working with"* [P2-Educator]); ambitious ("*they're pushing, they're always looking at, yes, I'll do that, I'll take more responsibility on, I want to be part of this team*" [P12-Regulator]); and possessing an open and responsive attitude ("*they're going to be someone who isn't biased, they're open to seeing things from all sides so that they can actually think about the problem in a very well-rounded manner."* [P11-Manager])

Some participants also reported that they self-identified as a scholarly practitioner and found it difficult to connect with colleagues who they viewed as not possessing similar characteristics and values.

"*I'm at a loss, because for me, it [being a scholar] was such a natural thing. I have a hard time understanding the thought processes for someone who comes to work to get a paycheck and leave. My brain is just not wired that way."* [P4-Researcher]

Thus, participants described a sense of disconnect from colleagues who did not share their commitment to staying current with the latest research and advancements in their field.

3.1.2 Skills of a scholarly practitioner

Participants highlighted specific skills or abilities that they believed a scholarly practitioner possesses. For example, reflective practice was considered a critical skill, which involves examining their own practice. As one participant explained: "*[My colleague] set me down a path of reflective practice and a recognition that respiratory therapy should be evidence-based and should be a little bit self-critical*." [P15-Researcher]

Additionally, several participants mentioned that the skills of a scholarly practitioner often center on research literacy as it is critical for delivering competent and effective care. As one participant explained: *"In our profession, we are constantly evolving and constantly being exposed to [new research and new findings] and if you don't know how to read it and how to interpret it, you're not really effective [in practice]."* [P20-Clinician] Furthermore, participants highlighted the importance of possessing skills to effectively communicate the knowledge acquired through research to their colleagues and interprofessional teams.

3.1.3 What scholarly practitioners do

As a function of those apparently innate attributes and skills, participants described what they perceived scholarly practitioners to do in practice, or the specific roles they may adopt. Participants admired these individuals, emphasizing that they were role models or mentors. They mentioned that they guided students and novice clinicians from the beginning of their careers to when these individuals took on leadership positions. As one participant explained: *"[They] made me who I am today, but at the same time I think that mentorship and that buddy system earlier on with a leader would have helped me climb up the ladder and guided my practice."* [P9-Regulator]

Participants highlighted how important transferring and sharing knowledge was in the mentoring relationship. As one participant highlighted:

"*Once they feel educated enough in that topic I think they're also somebody that shares that knowledge, because they want everyone to come to the top of their scope and be as educated as they are. They want to lift their team so that you have everybody coming up."* [P11-Manager]

As such, individuals who were perceived to be scholarly practitioners were often involved in knowledge-sharing activities, including knowledge translation or knowledge brokering.

3.2 Factors influencing scholarly practice

This second theme captured participants' perceptions of the factors that influence scholarly practice. We categorized these factors into two sub-themes based upon whether they enabled or hindered the development of RTs as scholarly practitioners, namely, resources, culture, access to research and research training.

3.2.1 Enablers of scholarly practice

Participants frequently mentioned that resources (e.g., money, protected time) should be readily available to support RTs in being scholarly practitioners, as exemplified by one participant, *"[we need] support for ongoing engagement in the profession and care – whether it's travel and conference support to attend conferences and hear about new practices."* [P14-Clinician]. However, for these resources to be available, participants recognized that buy-in from multiple stakeholders (e.g., managers) is needed. Unless scholarly practice was a shared priority, it would be difficult to provide resources (e.g., money, protected time) needed to encourage scholarly practice. As one participant explained:

"*It's important that they [scholarly practitioners] engage with the management to be able to provide some mechanism to make it easier for them to do this; so that they're not doing it on their "free time;" so that it's actually incorporated within their position*." [P5-Researcher]

Participants also noted that a supportive workplace culture (e.g., open communication, collaborative, and sufficient resources) facilitated one's engagement in scholarly practice.

"I definitely noticed that where some sites seem to be a little bit more quality improvement focused, and that openness to new ideas and that openness to do better in that constant advancing of knowledge [and] that lifelong learning, and other sites that seemed to be a bit more like in the mud and slow to move forward." [P2-Educator]

Participants emphasized the importance of having readily available resources, such as funding, protected time, sufficient training, and a supportive work culture to support RTs in their scholarly practice.

3.2.2 Barriers to scholarly practice

Participants acknowledged that while scholarly practice can manifest in many ways, they found it difficult to enact, largely due to inadequate research literacy skills. They reported that challenges in locating, understanding, critically evaluating, and applying scholarly work hindered their ability to engage in scholarly practice. Because research literacy skills were seen as critical to scholarly practice, the absence of such skills was described as a main barrier to scholarly practice, as illustrated by the following participant: *"You can purposely read [research articles] and that's another skill that we're not taught in RT school, and that makes it a big deterrent to being able to apply research into our practice.*" [P1-Clinician]

Lack of formal research training was identified as a barrier across participants, who suggested that to be an effective healthcare professional in today's healthcare system, research literacy is a necessity, not an option.

"*There're always recommendations in various things like trauma practice, transfusion practice, and we're just not trained to keep up with that. We just rely on what other people tell us, and I think it makes you a better RT to, yourself, be able to look up papers, look things up.*" [P1-Clinician]

Participants underscored the need for increased emphasis on developing research literacy skills among RTs to help overcome barriers to scholarly practice.

3.3 One's impression of their professional self-image

This third theme captured participants' views of their professional identity, their skills, abilities, and competence in the respiratory therapy profession, and how other professionals (e.g., physicians, nurses) perceive the respiratory therapy profession. When reflecting on the potential responsibilities of an RT as a scholarly practitioner in the workplace and in healthcare, participants frequently expressed feelings of inadequacy. There was a desire to enhance the value and legitimacy of the profession, as one expressed: "*we need to feel valued in the workplace.*" [P12-Regulator] Another commented: "*the entire healthcare team must view the respiratory therapy department as, not just part of the team, [but] as a vital part of the team.*" [P13-Educator]

Such feelings of being undervalued led some participants to have negative views of the respiratory therapy profession; one participant shared: "*If I really pull myself out of that and look globally, the RT is just not there, it's not respected; [seen to be] easily replaceable, in my opinion*." [P20-Clinician]

Despite the negative views, some participants believed that scholarly practice could improve the credibility and legitimacy of the profession, possibly create new professional opportunities (i.e., novel areas to work as RTs) such as, telehealth/tele-ICU, public health, and enhance the professionalization of the respiratory therapy profession:

> "*RTs are tired of seeing a new role come up in the hospital and nursing grab it or physio[therapy], or another profession. We're tired of being told this is going to be what the focus or the priority area is for our department or our hospital. We're tired of not seeing ourselves in the research. We're tired of being overlooked for other professions, and by other professions, but we're not doing anything to push our practice."* [P8-Regulator]

During the interviews, participants also talked about how certain engagement in scholarly practice, such as pursuing higher degrees or conducting research, could enhance the legitimacy and credibility of the RT profession. As one participant mentioned:

> "*If RTs don't step it up [and gain higher education] (a) they'll be left behind when it comes to their own practice, because they're not involved in the evaluation process, and (b) I have a feeling that the perceptions of these other professions are that, they won't*

think RTs have valid opinions, because they haven't gone through this process [of earning higher degrees] which, you know, [might be] right or wrong." [P5-Researcher]

Participants expressed concern that the respiratory therapy profession may lose its relevance and become obsolete in healthcare unless efforts are made to support scholarly practice and help RTs develop as scholarly practitioners.

3.4 Scholarly practice as a vehicle for changing practice

This fourth theme captures the perspective of a smaller group of participants who associated the term *scholarly practice* with more than just research. For these participants, it involved a sense of obligation to advance the profession by introducing novel concepts into practice, emphasizing the importance of RT in healthcare, and keeping abreast of the latest research needed to apply evidence-based techniques for their patients. Scholarly practice could be the mechanism, or means, by which to achieve this goal, as suggested by one participant:

"*We're such a new profession, and the way that we're growing, I think that's exactly what we need. We started out just being people who were fixing machines, to being able to touch the machines, to being able to work with the machines, to being able to run them with open orders. Then you have people advancing their education. It just shows the world what we can do, and I don't think that we've tapped what we can do in terms of helping our clients. We still need people who are doing that masters and that PhD route to really do the research to show what we can do next."* [P11-Manager]

The participants perceived scholarly practice as an essential aspect of their professional development. It was seen to represent their commitment to advancing the profession by fostering innovation, emphasizing the critical role of this profession in healthcare, and using evidence-based practices to deliver optimal patient care.

3.5 The complex interconnections between knowledges and practices

This final theme highlights the intricate and dynamic relationship between theoretical knowledge and its practical application. Participants moved from discussing the benefits of

scholarly practice from a theoretical point of view to focusing on how to make the connection between knowledges and practices more tangible. Participants expressed that to engage in scholarly practice, there needs to be a meaningful connection between their clinical work and research, but that this connection is not well developed in the respiratory therapy profession, as one participant explained: "*Without doing scholarly activity, we can't demonstrate why we need to be there; we also can't figure out or answer the very questions that our own profession has.*" [P8-Regulator] Additionally, participants stated that RTs sometimes view clinical practice and academic research as relatively incompatible activities. As one participant said:

> "*RTs feel that they can't really merge [research] with their clinical practice. So, then they feel that if they really love the clinical piece of it, they feel that if they go too much into the research, they will have to eventually go somewhere else, like teaching, etc. and not really clinical practice [anymore].*" [P1-Clinician]

Conversely, participants who were more involved in research shared that, to stay connected with clinical practice, it is important to link knowledges to practices (and vice-versa) effectively. They recognised the need to keep both aspects of their work closely connected, as exemplified by this participant:

> "*To keep a foot in the clinical environment, stay connected, and be influenced by what the needs are in the clinical environment, then also be able to pursue research to address those same, questions or challenges or problems and have it function in the way that evidence-based medicine is intended to; where you've got clinical problems that are driving questions and hypotheses and leading to the design of interventions that you're then testing that whole cycle of knowledge creation and knowledge translation.*" [P15-Researcher]

The participants stated that to engage in scholarly practice, there must be a significant relationship between their clinical work and research. However, they also noted that this connection is poorly developed within respiratory therapy. Those who were more involved in research emphasized the crucial importance of maintaining a strong link between knowledge and

practice. They recognized the need to stay connected with clinical practice to translate research findings into practice and make their care more effective for patients.

4.0 Discussion

In this study, we explored what scholarly practice means, and how it manifests in daily practice from the perspectives of RTs practicing in various roles. This paper contributes to the understanding of the positioning of scholarly practice at the intersection of research and practice, with a particular focus on the respiratory therapy profession and highlights the importance of recognizing the value of scholarly practice within the respiratory therapy profession and the potential benefits it can bring to RTs and, eventually, patients.

The respiratory therapy profession has historically been rooted in technical skills, and formal competency requirements have not emphasized the role of scholar, scholarship, or scholarly practice. Our data suggest scholarly practice is a multifaceted phenomenon encompassing a wide range of activities and skills. It is not only about conducting research, but also about one's ability to reflect, critically evaluate and apply research findings to practice, and the ability to identify gaps in professional knowledge and contribute to advancing the profession and healthcare field. Scholarly practice is an ongoing process requiring continuous learning and engagement with new research and technology. Moreover, scholarly practice appears to be a function of the organizational culture and context, available resources, personal interest and motivation and external political context (Figure 1). It is not surprising that scholarly practice is interpreted as a multidimensional phenomenon, given the diverse literature on the topic and conflicting reports indicating that professionals often encounter difficulties fulfilling their roles as scholarly practitioners.[8,16,17,40]

Participants described the identity of a scholarly practitioner as being comprised of three dimensions: who they are (i.e., their personal attributes), the skills they possess, and what they do (i.e., the activities they engage in). These findings are consistent with the literature on the factors that influence professional identity formation in healthcare learners and professionals. Categories such as "who I am" and "what I do" have been identified as crucial for nurses' professional identity, as they are associated with increased job satisfaction, staff retention, and improved patient outcomes.[41] Similarly, attributes such as maturity, self-reflection, courage and personal experiences have been found to be important for building a strong professional identity in

nursing[42] and rehabilitation professionals.[43] The similarities between professional identity and the descriptions of scholarly practitioners suggest that these two phenomena may be interconnected. It is plausible that those who engage in scholarly practice may possess a stronger professional identity. Similarly, scholarly practice is a required competency in numerous healthcare professions,[3-7] and acquiring this competency can impact the development of their professional identity. Some researchers suggest that the acquisition of new knowledge, skills, and attitudes (in general and specific to scholarly practice) can give professionals a sense of confidence, mastery and expertise in their field, which can contribute to a positive professional identity.[44-46] The nature of the relationship between scholarly practice as a competency influencing individuals' professional identity warrants further investigation.

Our findings indicate that scholarly practice can potentially enhance the professional self-image of the respiratory therapy profession. Similarly, it might create new occupational opportunities and advance the professionalization of respiratory therapy, further increasing the legitimacy and credibility of the profession. Abbott's system of professions[47] is a helpful theory to better understand how RTs associate scholarly practice with a desire for enhanced professionalization. Abbott postulates that professions' statuses constantly fluctuate because they develop and exist within a complex environment of professional, social, and economic elements. All professions develop and evolve based on four interacting elements: their work (i.e., the sequence of logic and engagement to solve a problem), jurisdiction (i.e., control over a domain of work), competition (i.e., other professions adopting parts of the professions' jurisdiction) and abstract knowledge (i.e., the foundational information, principles, and concepts that are necessary to do the work).[47] Our data underscore the importance of understanding and conducting research, creating paths toward higher education, and translating research into practice for this profession and likely for other evolving ones. These are arguably critical components of developing abstract knowledge for a profession and is central to what it means to be a professional.[47-51] Abbott posits that professions are defined by their possession of abstract knowledge, which is knowledge that is not directly observable or measurable, but rather is theoretical and conceptual.[47] This knowledge is developed through education, research, and the application of research in practice, which aligns with our participants' discussions about the importance of scholarly practice and its actual enactment. Abstract knowledge demonstrates the rigour, clarity, and scientifically logical basis of the profession's work, which helps to establish

the legitimacy of a profession. Many participants in our study associated scholarly practice with this demonstration of coherence and scientific reasoning. Similarly, the ongoing pursuit and refinement of abstract knowledge enables professionals to adopt new jurisdictions of work and contribute to professionalization. Participants in this study emphasized the importance of scholarly practice, abstract knowledge, and professionalization to remain relevant in modern healthcare.[52-55]

While individual RTs can contribute to enhancing the credibility and legitimacy of the profession through scholarly practice, we contend that it is not solely their responsibility. Rather, we argue that it is a shared responsibility among multiple stakeholders. For example, healthcare professionals (both educators and clinicians) can engage in ongoing education and training to stay current with the latest research and best practices in their field and participate in scholarly activities (e.g., research and publishing, quality improvement initiatives).[56,57] This can help to improve the overall quality of care that is provided and potentially enhance the self-image of the profession.[58,59] Regulatory bodies are responsible for ensuring that healthcare professionals meet certain standards of knowledge, skills, attitudes, behaviours and ethics. They can play an important role in enhancing the self-image of the profession by enforcing these standards and holding professionals accountable.[60] Additionally, advocacy bodies (e.g., professional associations) can inform public policy decisions at a legislative level and increase the public's understanding and appreciation of the profession through media and education.[61] However, it is important to note that respiratory therapy is just one of many healthcare professions and that the boundaries between professions can overlap.[62] While enhancing credibility and legitimacy for RTs can be viewed as positive, it could also be viewed negatively by other professions as competition.[63-65]

Finally, while the data indicate that scholarly practice is a multifaceted phenomenon, our findings suggest a consensus that research literacy is a fundamental aspect of scholarly practice. While not all RTs actively conduct research, they should likely have some understanding of research, be critical consumers of research, and apply research findings in their practice to optimize patient care.[66,67] Without some research literacy, RTs may struggle to engage in scholarly practice, and understand and use research evidence to inform their practice, which can lead to suboptimal patient outcomes.[68] Interventions or programs such as regular continuing professional development focused on research literacy, training on critical appraisal, and

developing scholarly communication skills framed in adult and social learning theories could be avenues worth pursuing.[69-71]

Understanding the significance of scholarly practice in RTs has several practice implications. First, it highlights the need to promote a professional culture that values research and innovation by providing resources and opportunities for RTs to engage in scholarly activities (e.g., research opportunities, higher education, quality improvement initiatives). Second, ongoing professional development in research literacy is necessary to keep up with the latest evidence-based practices in the profession to improve quality of care and patient outcomes. Finally, understanding the importance of and engaging in scholarly practice can enhance the profession's knowledge base, promotes evidence-based practice and advances the profession, all of which can increase the credibility and recognition of the respiratory therapy profession.

4.1 Strengths and limitations

One strength of this study is that all participants were interviewed by MZ, who possesses intimate knowledge of the RT profession. Acknowledging and using one's knowledge of a practice context is a strength of ID methodology as it contributes to generating credible and meaningful disciplinary knowledge.[31,72] Additionally, another research team member who possesses knowledge about the phenomenon and methodology but not about the context, co-coded 30% of the transcripts and came to similar findings. This research also has limitations. Firstly, the transferability of these findings might be limited to the Canadian context in which this study took place. Secondly, it is also likely that those who chose to participate in this study voluntarily had a vested interest in the topic. Therefore, we potentially did not capture contrary opinions. However, our study included a broad sample of clinicians, educators, researchers, managers and regulators who represent many facets of the respiratory therapy profession.

5.0 Conclusion

The results of this study highlight the multifaceted nature of scholarly practice in the respiratory therapy profession and the need for a meaningful connection between clinical work and research. Promoting a professional culture that values research and innovation, ongoing professional development in research literacy, and understanding the importance of scholarly practice may increase the credibility and recognition of the respiratory therapy profession, potentially leading to improved patient outcomes and quality of care. RTs' feelings of inadequacy and desire to enhance the value and legitimacy of the profession suggest that it is vital to address

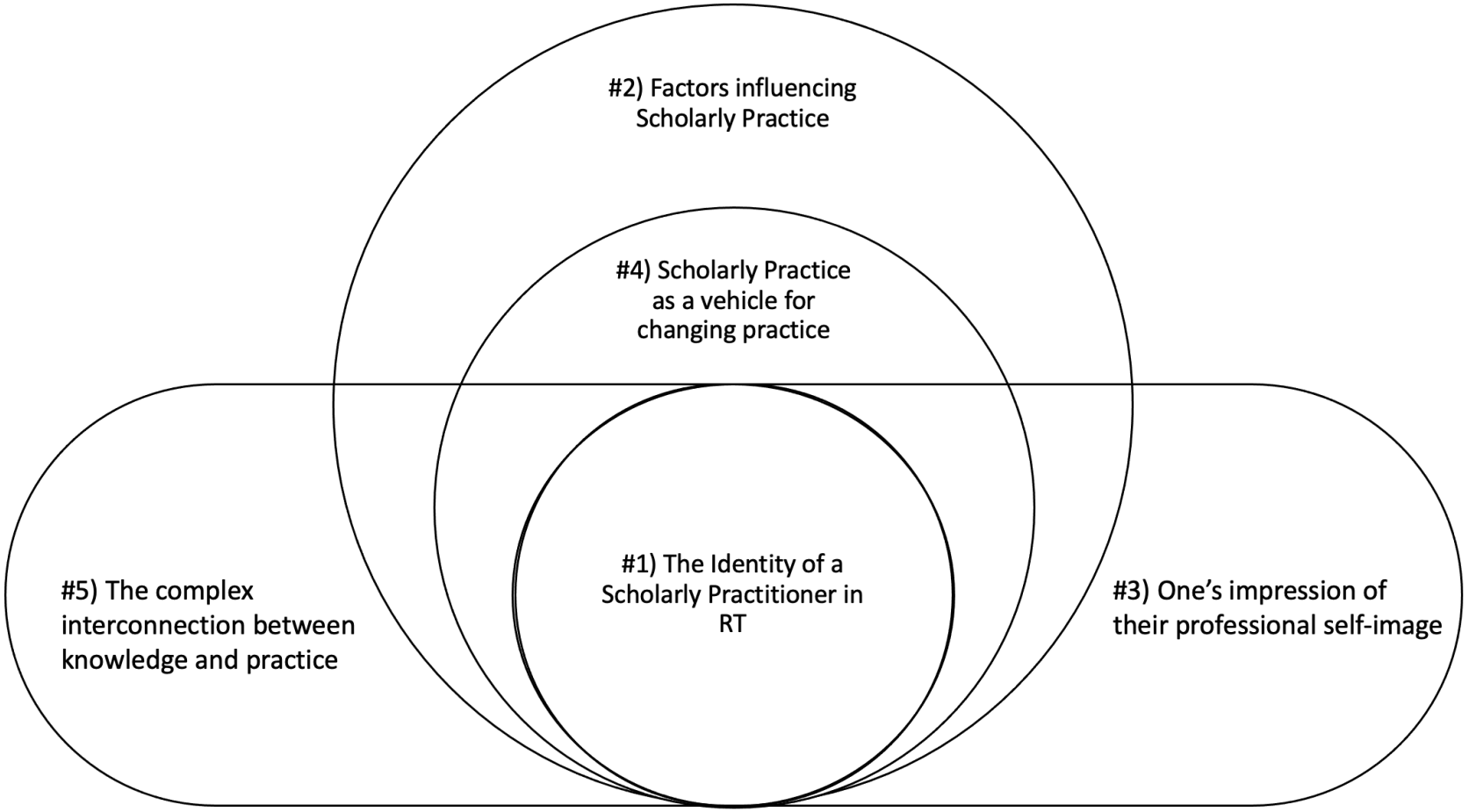
the gap between scholarly practice in their formative training and their continuous professional development such that they may progressively develop competence in their roles as scholarly practitioners.

Table 1-Characteristics of participants		
Demographic Characteristics	**n=26**	**%**
Gender		
Male	10	38.5
Female	16	61.5
Province		
Québec	8	30.7
Ontario	7	26.9
British Columbia	4	15.4
New Brunswick	3	11.5
Alberta	2	7.7
Nova Scotia	1	3.8
Saskatchewan	1	3.8
Age in years		
20 to 30 years old	2	7.7
31 to 40 years old	7	26.9
41 to 50 years old	13	50
51 to 60 years old	3	11.5
61 to 70 years old	1	3.8
Highest earned qualification		
Professional RT Diploma	5	19.2
Post RT Diploma (e.g., CRE)	3	11.5
Undergraduate degree	8	30.7
Graduate degree*	7	26.9
Doctoral degree*	3	11.5
Employment Status		
Educator	4	15.4
Regulator	5	19.2
Clinician	11	42.3

Manager	2	7.7
Researcher	4	15.4
Full-time (30-40 hours/week)	26	100
Years in practice		
Less than 5 years	1	3.8
From 5 to 9 years	3	11.5
From 10 to 14 years	4	15.38
From 15 to 19 years	6	23
20 years and over	12	46.2
Abbreviations: CRE = Certified Respiratory Educator; RT= Respiratory Therapist * = These graduate or doctoral degrees are in subjects outside of RT (No graduate or doctoral degrees in RT exist in Canada)		

Figure 1- Concept map of scholarly practice

Explanation: Identity is the core of the individual (#1) and scholarly practice is a vehicle for changing practice (#4) which is dictated by the context you work within and the associated factors influencing scholarly practice (#2). Simultaneously, your identity as a scholarly practitioner is being pulled in either direction and influenced by your impression of your self-image (#3) and the intricate and dynamic relationship between theoretical knowledge and practical application, which involves various factors, including how knowledge is generated and applied, and the social and cultural contexts that affect this relationship (#5)



References

1. Cieza A, Causey K, Kamenov K, Hanson SW, Chatterji S, Vos T. Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet.* 2020;396(10267):2006-2017. doi:10.1016/s0140-6736(20)32340-0.
2. Mills T, Marks E, Reynolds T, Cieza A. Rehabilitation: Essential along the Continuum of Care. In: Jamison DT, Gelband H, Horton S, eds. *Disease Control Priorities: Improving Health and Reducing Poverty.* 3rd ed. Washington, DC.: The International Bank for Reconstruction and Development / The World Bank; 2017.
3. Canadian Nurses Association. Advanced Nursing Practice: A National Framework. Canadian Nurses Association; 2008.
4. Canadian Association of Occupational Therapists. Profile of Practice of Occupational Therapist in Canada. Canadian Association of Occupational Therapists; 2012.
5. Frank JR, Snell LS, Sherbino J, editors. *CanMEDS 2015 Physician Competency Framework.* Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.
6. cational Physiotherapy Advisory Group. Competency profile for Physiotherapists in Canada (2017). National Physiotherapy Advisory Group; 2017.
7. The Canadian Alliance of Audiology and Speech-Language Pathology Regulators. National Speech-Language Pathology Competency Profile. 2018.
8. Zaccagnini M, Bussières A, Mak S, Boruff J, West A, Thomas A. Scholarly practice in healthcare professions: findings from a scoping review. *Adv Health Sci Educ Theory Pract.* 2022. doi:10.1007/s10459-022-10180-0.
9. Aiken LH, Sloane DM, Bruyneel L, et al. Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. *The Lancet.* 2014;383(9931):1824-1830. doi:10.1016/s0140-6736(13)62631-8.
10. Black AT, Balneaves LG, Garossino C, Puyat JH, Qian H. Promoting evidence-based practice through a research training program for point-of-care clinicians. *J Nurs Adm.* 2015;45(1):14-20. doi:10.1097/NNA.0000000000000151.
11. Dahrouge S, Armstrong CD, Hogg W, Singh J, Liddy C. High-performing physicians are more likely to participate in a research study: findings from a quality improvement study. *BMC Med Res Methodol.* 2019;19(1):171. doi:10.1186/s12874-019-0809-6.

12. Hanney S, Boaz A, Jones T, Soper B. Engagement in research: an innovative three-stage review of the benefits for health-care performance. In: *Health Services and Delivery Research.* Southampton (UK); 2013.
13. Harding K, Lynch L, Porter J, Taylor NF. Organisational benefits of a strong research culture in a health service: a systematic review. *Aust Health Rev.* 2017;41(1):45-53. doi:10.1071/AH15180.
14. Carrick-Sen D, Moore A. Editorial: Improving Care and Outcome through NMAHP Research-Focused Clinical Academic Roles –An International Perspective. *International Journal of Practice-based Learning in Health and Social Care.* 2019;7(2):ii-vi. doi:10.18552/ijpblhsc.v7i2.648.
15. Jonker L, Fisher SJ, Dagnan D. Patients admitted to more research-active hospitals have more confidence in staff and are better informed about their condition and medication: Results from a retrospective cross-sectional study. *J Eval Clin Pract.* 2020;26(1):203-208. doi:10.1111/jep.13118.
16. Fillion B, Rochette A, Girard A. Challenges of being a scholarly clinician as perceived by stroke rehabilitation professionals. *Disabil Rehabil.* 2014;36(6):521-528. doi:10.3109/09638288.2013.797516.
17. Rochette A, Brousseau M, Vachon B, Engels C, Amari F, Thomas A. What occupational therapists' say about their competencies' enactment, maintenance and development in practice? A two-phase mixed methods study. *BMC Med Educ.* 2020;20(1):191. doi:10.1186/s12909-020-02087-4.
18. Binnendyk J, Pack R, Field E, Watling C. Not wanted on the voyage: highlighting intrinsic CanMEDS gaps in Competence by Design curricula. *Can Med Educ J.* 2021;12(4):39-47. doi:10.36834/cmej.70950.
19. Friedman RH, Wahi-Gururaj S, Alpert J, et al. The Views of U.S. Medical School Deans Toward Academic Primary Care. *Academic Medicine.* 2004;79(11):1095-1102.
20. Solaja O, Skinner TAA, McGregor TB, Siemens DR. CanMEDS scholars: A national survey on urology residents' attitudes towards research during training. *Can Urol Assoc J.* 2018;12(4):E191-E196. doi:10.5489/cuaj.4927.

21. Prud'homme J. "Professional Techs": machines, technical skills and professional aspirations in hearing prosthetics and respiratory care in Quebec, 1950–1990 *Sci Can.* 2011;33(1):71-94. doi:10.7202/1000845ar.
22. Zaccagnini M, Bussières A, Nugus P, West A, Thomas A. Exploring the professionalization of respiratory therapy in Canada. *Can J Resp Ther.* 2021;57:129-137. doi:10.29390/cjrt-2021-046.
23. Barnes TA, Gale DD, Kacmarek RM, Kageler WV. Competencies Needed by Graduate Respiratory Therapists in 2015 and Beyond. *Respir Care.* 2010;55(5):601-616.
24. Kacmarek RM, Durbin CG, Barnes TA, Kageler WV, Walton JR, O'Neil EH. Creating a Vision for Respiratory Care in 2015 and Beyond. *Respir Care.* 2009;54(3):375-389.
25. Smith SG, Endee LM, Benz Scott LA, Linden PL. The Future of Respiratory Care: Results of a New York State Survey of Respiratory Therapists. *Respir Care.* 2017;62(3):279-287. doi:10.4187/respcare.04768.
26. The National Alliance of Respiratory Therapy Regulatory Bodies. *National Competency Framework for the Profession of Respiratory Therapy.* 2016.
27. American Association for Respiratory Care. *Competencies for Entry into Respiratory Therapy Practice.* Irving, TX; 2016.
28. Batt A, Tavares W, Williams B. The development of competency frameworks in healthcare professions: a scoping review. *Adv Health Sci Educ Theory Pract.* 2020;25(4):913-987. doi:10.1007/s10459-019-09946-w.
29. Carpenter S, Haber-Curran P. The role of research and scholarship in the professionalisation of student affairs. *Journal of Student Affairs in Africa.* 2013;1(1):1-9. doi:10.14426/jsaa.v1i1-2.20.
30. Ten Cate O. Health professions education scholarship: The emergence, current status, and future of a discipline in its own right. *FASEB Bioadv.* 2021;3(7):510-522. doi:10.1096/fba.2021-00011.
31. Thorne S. *Interpretive Description: Qualitative Research for Applied Practice.* 2nd ed. New York: Routledge; 2016.
32. Thompson Burdine J, Thorne S, Sandhu G. Interpretive description: A flexible qualitative methodology for medical education research. *Med Educ.* 2021;55(3):336-343. doi:10.1111/medu.14380.

33. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care.* 2007;19(6):349-357. doi:10.1093/intqhc/mzm042.
34. Lincoln YS, Guba EG. *Naturalistic Inquiry.* Newbury Park, California: Sage; 1985.
35. QSR International Pty Ltd. NVivo. QSR International Pty Ltd; 2020.
36. Bradshaw C, Atkinson S, Doody O. Employing a Qualitative Description Approach in Health Care Research. *Global Qualitative Nursing Research.* 2017;4(1-8). doi:10.1177/2333393617742282.
37. Thorne S. The Great Saturation Debate: What the "S Word" Means and Doesn't Mean in Qualitative Research Reporting. *Can J Nurs Res.* 2020;52(1):3-5. doi:10.1177/0844562119898554.
38. Varpio L, Ajjawi R, Monrouxe LV, O'Brien BC, Rees CE. Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. *Med Educ.* 2017;51(1):40-50. doi:10.1111/medu.13124.
39. Olmos-Vega FM, Stalmeijer RE, Varpio L, Kahlke R. A practical guide to reflexivity in qualitative research: AMEE Guide No. 149. *Med Teach.* 2022:1-11. doi:10.1080/0142159X.2022.2057287.
40. Kluijtmans M, de Haan E, Akkerman S, van Tartwijk J. Professional identity in clinician-scientists: brokers between care and science. *Med Educ.* 2017;51(6):645-655. doi:10.1111/medu.13241.
41. Rasmussen P, Henderson A, Andrew N, Conroy T. Factors Influencing Registered Nurses' Perceptions of Their Professional Identity: An Integrative Literature Review. *J Contin Educ Nurs.* 2018;49(5):225-232. doi:10.3928/00220124-20180417-08.
42. Ohlen J, Segesten K. The professional identity of the nurse: concept analysis and development. *J Adv Nurs.* 1998;28(4):720-727. doi:10.1046/j.1365-2648.1998.00704.x.
43. Mak S, Hunt M, Boruff J, Zaccagnini M, Thomas A. Exploring professional identity in rehabilitation professions: a scoping review. *Adv Health Sci Educ Theory Pract.* 2022;27(3):793-815. doi:10.1007/s10459-022-10103-z.
44. Fergusson L, Brömdal A, Gough M, Mears S. Competency, Capability and Professional Identity: The Case for Advanced Practice. *Work Based Learning e-Journal.* 2020;9(1):95-131.

45. Cavazos Montemayorr RN, Elizondo-Leal JA, Ramirez Flores YA, Cors Cepeda X, Lopez M. Understanding the dimensions of a strong-professional identity: a study of faculty developers in medical education. *Med Educ Online.* 2020;25(1):1808369. doi:10.1080/10872981.2020.1808369.
46. Parsons AS, Kon RH, Plews-Ogan M, Gusic ME. You can have both: Coaching to promote clinical competency and professional identity formation. *Perspect Med Educ.* 2021;10(1):57-63. doi:10.1007/s40037-020-00612-1.
47. Abbott A. *The system of professions: An essay on the division of expert labor.* Chicago: The University of Chicago Press; 1988.
48. Wilensky H. The Professionalization of Everyone? *American Journal of Sociology.* 1964;70(2):137-158.
49. Friedson E. *Professional Powers.* Chicago: University of Chicago Press; 1986.
50. Thomas A, Law M. Research utilization and evidence-based practice in occupational therapy: a scoping study. *Am J Occup Ther.* 2013;67(4):e55-65. doi:10.5014/ajot.2013.006395.
51. Jacob H. Why all doctors should be involved in research. *BMJ.* 2016. doi:10.1136/bmj.i164.
52. Johannessen LEF. Workplace assimilation and professional jurisdiction: How nurses learn to blur the nursing-medical boundary. *Soc Sci Med.* 2018;201:51-58. doi:10.1016/j.socscimed.2018.02.004.
53. Cooper JE. Reflections on the professionalization of occupational therapy: time to put down the looking glass. *Can J Occup Ther.* 2012;79(4):199-210. doi:10.2182/cjot.2012.79.4.2.
54. Yam B. From vocation to profession: the quest for professionaiization of nursing. *British Journal of Nursing.* 2004;13(16):978-982.
55. Cobban S, Edington E, Compton S. An argument for dental hygiene to develop as a discipline. *Int J Dent Hygiene.* 2007;5:13-21.
56. Clavelle JT, Porter O'Grady T, Weston MJ, Verran JA. Evolution of Structural Empowerment: Moving From Shared to Professional Governance. *J Nurs Adm.* 2016;46(6):308-312. doi:10.1097/NNA.0000000000000350.

57. Freeman A, McWilliam C, MacKinnon J, DeLuca S, Rappolt S. Health professionals' enactment of their accountability obligations: doing the best they can. *Soc Sci Med.* 2009;69(7):1063-1071. doi:10.1016/j.socscimed.2009.07.025.
58. Clearfield S. Professional Self-image of the Social Worker: Implications for Social Work Education. *Journal of Education for Social Work.* 1977;13(1):23-30. doi:10.1080/00220612.1977.10671409.
59. Milisen K, De Busser T, Kayaert A, Abraham I, de Casterlé B. The evolving professional nursing self-image of students in baccalaureate programs: a cross-sectional survey. *Int J Nurs Stud.* 2010;47(6):688-698. doi:10.1016/j.ijnurstu.2009.11.008.
60. Warren M, Braithwaite C. Understanding the Relationship Between Professional Regulation and Professional Identity in Health Care. *Journal of Medical Regulation.* 2020;106(2):7-14. doi:10.30770/2572-1852-106.2.7.
61. Girvin J, Jackson D, Hutchinson M. Contemporary public perceptions of nursing: a systematic review and narrative synthesis of the international research evidence. *J Nurs Manag.* 2016;24(8):994-1006. doi:10.1111/jonm.12413.
62. Nancarrow SA, Borthwick AM. Dynamic professional boundaries in the healthcare workforce. *Sociol Health Illn.* 2005;27(7):897-919. doi:10.1111/j.1467-9566.2005.00463.x.
63. Chen A, Brodie M. Resisting Outdated Models of Pedagogical Domination and Subordination in Health Professions Education. *AMA J Ethics.* 2016;18(9):903-909. doi:10.1001/journalofethics.2016.18.9.ecas3-1609.
64. Jovic L, Bianchi E, Decouflet S, Loizeau V, Amiot P, Teixeira M. Nurses in France: Between Autonomy and Subordination in Front Line Care. *Glob Qual Nurs Res.* 2015;2:2333393615584550. doi:10.1177/2333393615584550.
65. Fornasier R. A century-long struggle towards professionalism. Key factors in the growth of the physiotherapists' role in the United States, from subordinated practitioners to autonomous professionals. *Management & Organizational History.* 2017;12(2):142-162. doi:10.1080/17449359.2017.1329090.
66. Hines S. Research literacy: does education have something to teach us? *International Journal of Evidence-Based Healthcare.* 2016;14(4):202. doi:10.1097/01.XEB.0000511349.97198.c5.

67. Grimshaw J, Eccles M, Lavis J, Hill S, Squires J. Knowledge translation of research findings. *Implementation Sci.* 2012;7(50). doi:10.1186/1748-5908-7-50.
68. Lafuente-Lafuente C, Leitao C, Kilani I, et al. Knowledge and use of evidence-based medicine in daily practice by health professionals: a cross-sectional survey. *BMJ Open.* 2019;9(3):e025224. doi:10.1136/bmjopen-2018-025224.
69. Hines S, Ramsbotham J, Coyer F. The Effectiveness of Interventions for Improving the Research Literacy of Nurses: A Systematic Review. *Worldviews Evid Based Nurs.* 2015;12(5):265-272. doi:10.1111/wvn.12106.
70. Forehand JA, Levis M, Watts BV, Finn CT, Shiner B. Research Literacy for Psychiatry Residents: a 10-Session Curriculum Using a Problem-Based Learning Approach. *Acad Psychiatry.* 2022;46(4):504-509. doi:10.1007/s40596-021-01487-y.
71. Hines S, Ramsbotham J, Coyer F. A theory-based research literacy intervention for nurses: A pilot study. *Nurs Forum.* 2022;57(6):1052-1058. doi:10.1111/nuf.12780.
72. Thorne S, Kirkham SR, O'Flynn-Magee K. The Analytic Challenge in Interpretive Description. *International Journal of Qualitative Methods.* 2004;3(1):1-11. doi:10.1177/160940690400300101.

Appendices

Appendix 1- Interview Guide

Preamble:
Thank you for taking the time to speak with me today. Before we begin, I would like to review a few things with you. This interview should last no more than 60 minutes and will be audio-recorded and transcribed for analysis later. I would like to remind you that no confidential or identifying information will appear in any analysis or discussion of the results. Do you agree to me recording this interview? [once consent is given, start recording]

At any time during the interview, you can choose not to answer any of the questions or to end the interview. If you use names of people or places, these will not be included in any analysis or publication of this research; all names will be removed from the transcripts. No confidential or identifying information will appear in any analysis or discussion of the results.

In this interview, we're interested in your perspectives and experiences. There are no right or wrong answers. I want to understand your perspective and your experience. Do you have any questions for me before we start?

3 ICE BREAKER QUESTIONS
Questions 1-3

Question 1:
To begin with, without naming them, I'd like you to think of an RT you currently or previously work with that you really admire – someone you think either you wanted to be like as an RT or someone you think is an exemplary RT. What is it about this RT that you admire?

Prompts:
- What specifically do you notice about the way they work that makes them exemplary? Please provide an example.
- How could you better emulate their qualities?

Question 2:
Can you think of the most difficult day of your working life? Please tell me about it. What made it difficult?
Prompts:
- What did you do?
- Why did you do that?
- What made you decide to do that?
- What else could you have done? Why didn't you do that?
- How did others react? How did that make you feel?
- What would you do in retrospect?"

*** These could be asked for single events, or one major event

Question 3:
What do you now know that you wish you'd known when you started working as an RT?

START OF QUESTIONS/BDY OF THE INTERVIEW
Question 4-9

Question 4: Now focusing on your work, I'd like you to think about a time that you had to make a decision in your work/practice, what influenced you in making that decision?
Prompts:
- What prompted you to use that information/resource/etc…?
- How did you find that information?
- How could you tell that the information you found was credible and trustworthy to make that decision?

Question 5: What do the words "scholarly practice" mean to you?
Prompts:
- How would you define "scholarly practice?"
- [if participant cannot answer]: Based on our research, when we say scholarly practice, we are referring to clinicians who champion the integration research into practice or a clinician who blends research and practice.

Question 6:
What would a clinician who champions integrating research into practice (i.e., scholarly practitioner) look like?
Prompts:
- What are the qualities of a scholarly practitioner?
- What "things" make up a scholarly practitioner

Question 7:
Why should RTs strive to be scholarly practitioners, what are the benefits? (RQ3)
Prompts:
- What are the advantages for themselves?
- What are the advantages for their workplace?
- What are the advantages for the patients?

Question 8: What are some challenges associated with being a scholarly practitioner as an RT? (RQ3)
- What makes it difficult/challenging to integrate research into your practice?
- What are some skills you think are lacking?

Question 9:
What would it take for RTs to become scholarly practitioners? (RQ3)
Prompts:
- How can it be developed/encouraged?
- What types of supports need to be in-place?

CLOSING

Question 10:

Is there anything else you would like to add to any of your previous answers or is there anything else you feel is important to add in general?

Participant is thanked for their time and perspective, reassure them that confidentiality will be maintained. The interviewer asks the participant if they have their permission to follow-up to clarify anything said and recorder stop.

Appendix 2 – Themes, subthemes, categories and illustrative quotes

Theme	Sub-Theme	Categories and individual Codes to build the theme	Excerpts
• **THE IDENTITY OF A SCHOLARLY PRACTITIONER IN RT** **Description:** What a scholarly practitioner looks like according to RTs and what sets them apart in the RT profession.	Sub theme 1- WHO THEY ARE **Description**: *Combination of innate attributes, personality traits, or inner characteristics of the RT-Scholarly practitioner*	• Ambitious • Challenging the status quo • Creative • Dedicated to patient care • Emotional intelligence • Flexible ethos • Forward thinking • Inquisitive nature • Intrinsically motivated • Open and responsive • Quality improvement mindset • Remaining at the forefront • Seeing the big picture	*He always knew the most about the equipment, he always was very innovative, did research outside of what was presented to him in the department, just always went above and beyond in that way.* ***SPID12-Regulator*** *They're sort of fearless. That they're willing to try things that make them uncomfortable, sort of like stepping outside of their comfort zone, and just doing things constantly, learning. So not just relying on oh, I do this and I'm good at it so I'm just gonna keep doing it but to constantly be learning, stretching and moving out of their comfort zone.* ***SPID07-Educator***
	Sub Theme 2- SKILLS OF A SCHOLARLY PRACTITIONER **Description:** *The ability to do things as a scholarly practitioner*	• Clarity in communication • Converging of multiple sources of knowledge • Critical thinking skills • Experiential knowledge • Leadership skills • Non-technical skills • Reflective practice • Research literacy	*But on top of just pure recall these persons could kind of look into research and look at it with a discerning eye, and try and tease out potential advantages, or even just you know the idea of being curious about what something could mean as in like, Okay, I you know this information this research, maybe I don't necessarily disagree with it or there's things that I would disagree with, type of thing* ***SPID10-Educator*** *So the first is just epic knowledge of the profession, their craft like they know their pathophysiology inside and out, the math, how that affects their clients, and what they're*

		• Scholarship creates dialogue • Strong foundational knowledge	*doing when they're working with life support.* ***SPID11-Manager*** *it's not really high-quality evidence and then well, what's high quality evidence? Well, you know, a scholarly practitioner would understand the varying levels of evidence, and what you can really jump on.* **SPID17-Regulator** *Like, I would say majority of us, I don't include myself because I tend to read a lot of papers and look up studies and stuff, but we aren't trained in research, we're not trained to look up papers, read papers, understand papers, and not really trained to keep up with the current evidence and current best practice guidelines, and I think that's kind of what scholarly means to me.* ***SPID21-Clinician***
	Sub Theme 3- WHAT THEY DO **Description:** *The activities they do, what sets them apart, behaviours*	• Acting as a mentor • Flexible roles • Knowledge brokering • Knowledge translation • Reliance on peers • Role modelling	*so there's us folks who have been around a while who sort of came up the ranks with very strong mentorship and leadership and people coming and telling us when we did things wrong, and having to sort of, not get in line but, you know, we were told when things were done wrong, and we were given a chance to fix them, and we got up and over it, and we moved on.* ***SPID04-Researcher*** *they're the preceptors who don't wait for the student to come to them. They go to the student lab at the hospital, open the door and grab that that student say, let's go see a pacemaker get put in. Let's go do a procedural sedation. Do you want to go see a delivery, like they're grabbing that student between around and saying I just know something great is happening in this in this area the hospital, even though it's not being covered by us let's go take a look at this.* ***SPID13-Educator***

			So this RT I'm thinking of actually did help me get involved with some activities outside of the bedside, helped me join a working group and encourage me to participate in research that did, sort of, get me more involved with things. ***SPID19-Clinician*** *I guess mentoring. Mentoring is probably the easiest thing right? The fastest, most effective way is having someone who's able to just bridge the gap, and be able to do that on a on a day-to-day, you know.* ***SPID22-Clinician*** *Those people generally want to…….are more involved in teaching and wanting to teach. I find those are the ones that are more willing to impart knowledge on others and RTs included if they're willing and open and they're contributing to medicine and science, and how everything evolves. You Just look at COVID-19 and all the changes, there's the people who sat back, not bothering to learn anything about it, just complaining or being afraid and then there's the people who constantly kept up with the data and understood the evolution of COVID-19.* ***SPID21-Clinician***
• **FACTORS INFLUENCING SCHOLARLY PRACTICE** **Description:** Circumstances (positive and negative) that influence individuals to develop as scholarly	Sub-theme 1: BARRIERS TO SCHOLARLY PRACTICE	• Influence from context (Negative) • Lack of deliberate research training • Lack of funding	*But what really disturbs me is once they become practicing clinicians, I've actually some seen some of them revert back to techniques that were taught in the '90s because they're being surrounded by older respiratory therapists who have refused to change and it bothers me because I'm seeing these young respiratory therapists being swayed by someone simply because they've been there forever, as opposed to standing up and asking them, why are they still doing this?* ***SPID13-Educator***

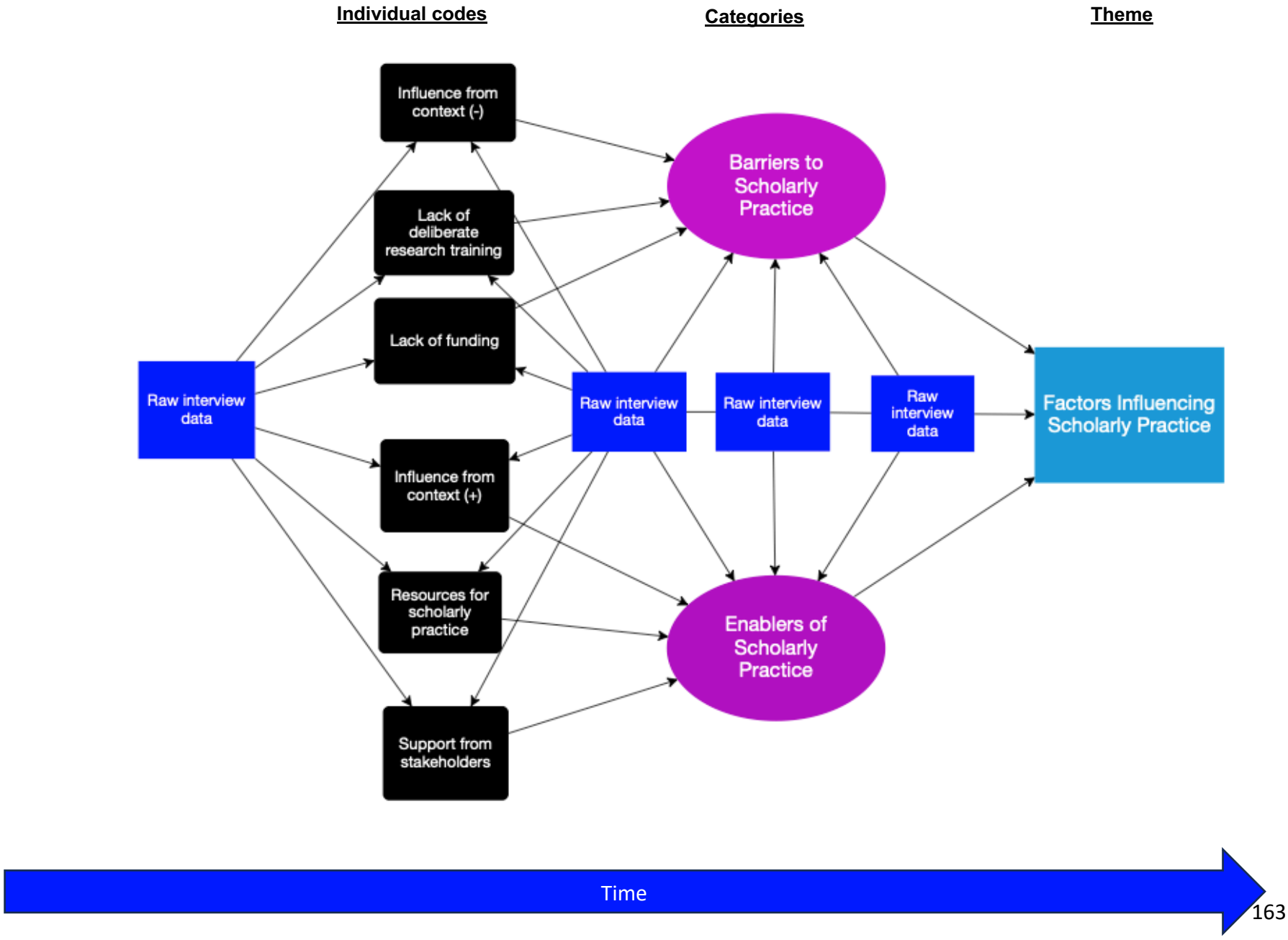
practitioners or enact scholarly practice.			*I mean culture of the hospitals, right? I see, I think less and less but I still see it where that new person trying to change culture, trying to do things or trying to set standards high there's kind of that group of, I don't necessarily want to say it's always the older ones, but there's that group of people who tends, to like, don't make me work harder right?* ***SPID02-Educator*** *...policy procedure and stuff, but even clinical guidelines, medical directives, those types of things are all evidence driven, but I mean, just to pick up an article and be able to evaluate and ensure that it's actually a valid study, and that the data is in the references that you're using from that are valid. I would say that 90% of my staff wouldn't have the ability to do that.* ***SPID03-Educator***
	Sub-theme 2: ENABLERS OF SCHOLARLY PRACTICE	• Influence from context (Positive) • Resources to support scholarly practice Support from key stakeholders	*I don't want to stay behind and like volunteer on my days off to, you know, collect data or do your research project as much as I love research, you know there needs to be protected time for it and again, you can't advocate for RTs and research when you don't protect time like that's the whole point of it, right, you got to protect the time so that RTs can get that opportunity to do it.* ***SPID01-Clinician*** *and I feel like scholarly practice is something that you kind of need some time to actually like sit down and think and review. So I think just finding that time but you know, if the organization or the team is prioritizing it then it's doable. So it's just being thoughtful about how it's gonna be done.* ***SPID16-Manager***

			I mean, financial support for RTs willing to go back to school and do this stuff. Opening up opportunities for RTs who do have the education to participate in things. To suggest projects, to be paid for projects that they participated in. ***SPID21-Clinician***
• **ONE'S IMPRESSION OF THEIR PROFESSIONAL SELF-IMAGE** **Description:** There is a desire from the professionals to enhance the perceived worth of the profession, to create occupational opportunities (i.e., novel areas to work as RTs) and enhance the professionalization of RT. Scholarly practice (broadly) and conducting research (in particular) are avenues and mechanisms for enhancing the legitimacy and credibility of the RT profession.	N/A	THE DESIRE FOR ENHANCED PROFESSIONAL SELF-WORTH • Being the minority • Carving out a path for scholarship • Degree as entry to practice • Desire to be felt as a valued part of the team • Doubting own expertise • Lack of clarity regarding the roles of RTs • Lack of recognition • Negative perception of the profession • Self-advocacy • The value of scholarship	*I think it just creates that feeling of, in it together, that team collaboration, we're all out for the same goal which is great patient care. Mutual respect for one another because I feel sometimes that lacks.* ***SPID12-Regulator*** *I'd like to be recognized just as equally as, you know, a nurse or a nurse practitioner and, you know, I'd like for us to not be known as just, you know, the knob turners, or you know, O2 therapy givers or aerosol treatment, all that stuff.* ***SPID20-Clinician*** *I find that other clinicians have a better practice than us on that side, I look at pharmacists, occupational therapists, nutritionists, physiotherapists. I find that the doctors let, as the pharmacist does, evaluate the medications of this patient, and then we talk about it later. So the pharmacist, he looks at everything the patient has, the labs, the antibiotics, he's like I think I'd change this drug for that drug to do it for the doctor. Often he goes ahh. Yes I agree. I would like to have this autonomy, this practice with the doctors.* ***SPID24-Clinician***
• **SCHOLARLY PRACTICE AS A VEHICLE FOR CHANGING PRACTICE**	N/A	SCHOLARLY PRACTICE IS A NECESSITY IN MODERN HEALTHCARE • Professional Advocacy	*basically as a scholarly practitioner for a patient, I think it benefits the patient a whole lot in the sense that you are very mindful about evidence-based practices and that you try to practice so that you're you know not that anybody does any*

Description: Scholarly practice encompasses more than clinical practice and research. It's about a responsibility of challenging the status quo, driving their profession forward and advocating for best patient care. Scholarly practice is a means/the vehicle.		• Scholarship for patient advocacy • Self-advocacy • Understanding research supports best patient care • Unique opportunities	*harm on patients but you're really trying your best to make it the best outcome possible for your patient, and I think that's the like ultimate benefit for your patient in that sense.* ***SPID01-Clinician*** *I think it's an unrealistic expectation for everyone entering the profession to be a scholar. So be a scholarly practitioner in the sense that they are speaking at conferences, they're presenting their work, they're, you know, doing that so I don't think that's a realistic expectation. From a clinical perspective, I think ongoing professional development is really the most important thing to bring people through that process, and I think they have to have a few positive experiences in making change happen to kind of develop their skills and scholarly practice to see the value in keeping up to date and making changes and doing good things for the patients.* ***SPID14-Clinician*** *Now I think that's a perception problem. I went to grad school, I have a very interesting career that I would not have been able to have if I had not done, you know, 75% of the things that I've done let's say, you know, grad school, for me, opened up a totally different career path and allowed me to do things that I wouldn't otherwise have been able to do, and to have an expertise that I definitely wouldn't have had if I had stayed in clinical practice.* ***SPID15-Researcher*** *Oh, I definitely felt like…. this was when I was sort of a new grad and didn't feel like I had a stronger voice. And now I feel like I could do a better job of advocating for my patients, because I do know research better, and I know best*

			practice guidelines a little more intimately and I can speak confidently to them. ***SPID19-Clinician***
• **THE COMPLEX INTERCONNECTIONS BETWEEN KNOWLEDGES AND PRACTICES** **Description:** Participants acknowledge that to conduct scholarly practice there should be a bi-directional relationship between their bedside clinical practice and scholarship/academic research, however, that bi-directional relationship is not well established in the RT profession.	N/A	• Blurring the boundaries between scholarship and practice • Misalignment between research and practice • Practice informs scholarship • The influence of practice on scholarship	*I think my bedside practice makes me a better researcher because I understand the….. not only do I understand what is….. some of the questions or some of the particular nuances or specific things that make my research more powerful or more adaptable, but I think I also understand the pitfalls or the challenges in rolling out research at the bedside.* ***SPID04-Researcher***

Appendix 3- Coding structure example



Explanation: This figure illustrates a simplified sample coding scheme for theme number 2 *Factors influencing scholarly practice.* As time progressed, the primary author (MZ) conducted individual, semi-structured interviews with participants resulting in the raw interview data. Codes were created from the raw interview data and data collection and analysis occurred concurrently. That is, MZ continuously collected raw data from interviews and used the findings to confirm the previous codes and ensured the data from new interviews still contributed to the categories being created. This iterative cycle of collecting data, analyzing data and reflexive team meetings happened simultaneously and consistently to ensure trustworthiness of the findings. We continued to recruit participants until the team came to consensus that new, raw interview data was being included in existing codes, categories and themes without requiring further modifications.

Appendix 4/Supplementary File 1

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

****Checklist submitted as part of manuscript submission to *Journal of Evaluation in Clinical Practice***

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	9
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	2
Occupation	3	What was their occupation at the time of the study?	8
Gender	4	Was the researcher male or female?	N/A
Experience and training	5	What experience or training did the researcher have?	8
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	8
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	8
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	9
Domain 2: Study design			
Theoretical framework			

Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	8
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	8
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	8
Sample size	12	How many participants were in the study?	10
Non-participation	13	How many people refused to participate or dropped out? Reasons?	N/A
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	9
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	9
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	10
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	8-9. Appendix
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	10
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	9
Field notes	20	Were field notes made during and/or after the interview or focus group?	9

Duration	21	What was the duration of the inter views or focus group?	N/A
Data saturation	22	Was data saturation discussed?	9
Transcripts returned	23	Were transcripts returned to participants for comment and/or correction?	N/A
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	9-10
Description of the coding tree	25	Did authors provide a description of the coding tree?	Appendix 2
Derivation of themes	26	Were themes identified in advance or derived from the data?	9
Software	27	What software, if applicable, was used to manage the data?	9
Participant checking	28	Did participants provide feedback on the findings?	N/A
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	10-17
Data and findings consistent	30	Was there consistency between the data presented and the findings?	10-17
Clarity of major themes	31	Were major themes clearly presented in the findings?	10-17
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	10-17

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

CHAPTER 6: Bridge between manuscript 2 and 3

6.1 Research questions of manuscript 2 and 3

Manuscript 2: The objective of this second study was to explore licensed Canadian RTs' knowledge and perceptions of scholarly practice. Specifically, I wanted to explore what scholarly practice means and how it manifests in daily practice from the perspectives of RTs.

Manuscript 3: The objective of this third study was to obtain a comprehensive portrait of the respiratory therapy profession across Canada. Specifically, to describe the demographic characteristics, scholarly and practice profile of the Canadian respiratory therapy profession.

6.2 Integration of manuscript 2 and 3

Manuscript 2 reports on a study that aimed to explore what scholarly practice means, and how it manifests in practice from RTs' perspectives using an interpretive description methodology. Using the findings from the scoping review (*Manuscript 1*), I used purposive sampling to recruit participants with varied perspectives of scholarly practice in respiratory therapy. I conducted 26 semi-structured interviews with RTs in different roles (clinicians, educators, researchers, leaders, and managers) across Canada. The data were organised into five themes: (i) the identity of a scholarly practitioner in RTs; (ii) factors influencing scholarly practice; (iii) one's impression of their professional self-image; (iv) scholarly practice as a vehicle for changing practice; and (v) the complex interconnections between knowledges and practices.

The findings indicate that scholarly practice is a multifaceted phenomenon encompassing various activities and requiring several skills. Scholarly practice extends beyond conducting research, and involves the ability to reflect, critically evaluate, and apply research findings to practice. Additionally, scholarly practice requires that RTs identify knowledge gaps and contributes to advancing the profession. Scholarly practice was viewed as a continuous process that necessitates ongoing learning and engagement with new research and technology. This research suggests that various factors influence RTs' ability to enact scholarly practice, including organizational culture, contextual elements, available resources, personal interest, motivation,

and external political factors. These factors might shape the extent to which scholarly practice can be integrated into the respiratory therapy profession. Importantly, the findings indicate that engaging in scholarly practice can enhance RTs' professional self-image, create new opportunities within the profession and contribute to the professionalization of respiratory therapy. This, in turn, can enhance the profession's legitimacy and credibility.

In *Manuscript 2*, I collected qualitative data from a purposive sample of RTs across Canada to understand the perspectives and perceived gaps in scholarly practice. Early in the process, I recognized that these findings might not apply to the broader respiratory therapy population, and that there was a lack of broader metrics available about the profession in Canada. For example, I could not assess the state of scholarly practice in Canada because there is insufficient information on factors such as gender distribution, years of experience, practice locations, research involvement, and scholarly achievements within the profession. To address this gap, I conducted a quantitative cross-sectional study to explore scholarly practice and key demographic variables more comprehensively. By employing a multiple-method approach, which involves using more than one method of data collection or research in a related set of studies (i.e., the qualitative study followed by the quantitative study), I was able to obtain a comprehensive understanding of the practice and scholarly profile of RTs in Canada. Specifically, I used excerpts and themes from *Manuscript 2* to design the quantitative survey items. In this way, the codes from the qualitative study became variables, the themes became scales, and the quotations became survey items. The objective of this third study was to provide a detailed description of the demographic characteristics, scholarly activities, and practice profiles of RTs across Canada.

CHAPTER 7: Manuscript 3

Citation: Zaccagnini, M. Bussières, A. Nugus, P. West, A. Thomas, A. The scholarly and practice profile of respiratory therapists in Canada: A cross-sectional survey. *Canadian Journal of Respiratory Therapy.* 2024;60:122-139. doi:10.29390/001c.122345

Marco Zaccagnini,[1,2] André Bussières,[1,2,3] Peter Nugus,[4,5] Andrew West,[6] Aliki Thomas[1,2,4]

[1]School of Physical and Occupational Therapy, McGill University, Montréal, Québec. Canada
[2]Centre for Interdisciplinary Research in Rehabilitation of Greater Montréal, Montréal, Québec, Canada
[3]Département chiropratique, Université du Québec à Trois-Rivières, Trois-Rivières, Québec
[4]Institute of Health Sciences Education, McGill University, Montréal, QC, Canada
[5]Department of Family Medicine, McGill University, Montréal, QC, Canada
[6]The Canadian Society of Respiratory Therapists, Saint John, New Brunswick, Canada.

Corresponding author: Aliki Thomas**,** McGill University, School of Physical and Occupational Therapy**,** Charles Meredith House**,** Montréal, Québec, Canada, H3A 1A3**;** Telephone: 514-398-4496; Fax: 514-398-6360**;** Email: aliki.thomas@mcgill.ca

Abstract Introduction: Respiratory therapists (RTs) are expected to provide high-quality care for patients with chronic and acute cardiopulmonary conditions across the lifespan by staying abreast of emerging scientific evidence and effectively integrating it into clinical practice. This integration of evidence is encompassed within the competency of scholarly practice. However, there is currently a limited understanding of RTs' scholarly practice. Furthermore, despite RTs' widespread presence in the Canadian healthcare system, comprehensive studies describing the profiles of RTs are lacking. This study aimed to describe the demographic characteristics, scholarly and practice profiles of the respiratory therapy profession in Canada.

Methods: A cross-sectional survey was distributed via the national professional association and regulatory bodies. The survey contained seven sections with 52 items. We calculated means and standard deviations, or medians and interquartile ranges for continuous variables and frequencies and proportions for categorical variables. Open-ended questions were analyzed using summative content analysis.

Results: We analyzed data from 832 participants (6.8% response rate) from Ontario (17.8%), Québec (15.7%), and Alberta (13.3%), and across other provinces. Nearly 40% had completed an undergraduate degree beyond their respiratory therapy diploma. Few participants had authored or co-authored peer-reviewed publications. RTs reported reading approximately 2.2 peer-reviewed publications monthly. Most participants agreed on the importance of critical reflection in practice (93.1%) and that having a supportive work environment was vital. Almost three quarters of participants (73.4%) reported that they believe that RTs are valued members of interprofessional teams, and 78% agreed that understanding research enables them to engage in patient advocacy.

Conclusion: This survey provides a portrait of the practice and scholarly profile of the respiratory therapy profession in Canada. While the profession shows potential for growth, concerns persist regarding limited engagement in activities related to scholarly practice. Addressing these challenges and nurturing a culture of scholarly practice are likely necessary to support the development of scholarly practice in the profession. Creating supportive environments, providing access to resources, and encouraging professional development activities may advance the scholarly practice of RTs. Future national surveys could employ random sampling strategies to achieve a more representative sample of the profession.

Keywords: Respiratory Therapy; Scholarly practice; Competencies; Allied health personnel; Education, medical; Surveys and questionnaires

Background

Over 1 million healthcare professionals are currently ensuring services to more than 38 million people living in Canada.[1] Among them, approximately 12,200 respiratory therapists (RTs) play a vital role in delivering essential care to patients with chronic and acute cardiopulmonary issues across all age groups and in various practice settings, ranging from home ventilation care to neonatal intensive care.[1] Despite the widespread presence of RTs in the Canadian healthcare system, the critical nature of their work, and their diverse roles, there are very few studies that describe the profiles of RTs in Canada.[2] The available literature often focuses on discrete tasks that RTs might perform, such as using high-frequency jet ventilation[3] or performing endotracheal intubation.[4] These studies overlook the need to understand the broader scope of the profession in the Canadian context. Descriptive data about the emerging roles of RTs in countries outside of North America (e.g., China, India) exist;[5,6] however, data from these international studies may not be comparable with the Canadian healthcare system considering its unique characteristics, such as a publicly funded, universally accessible system,[7] and differences in educational and practice standards among healthcare professionals.[8] Alongside their clinical duties, RTs are expected to be aware of and effectively integrate emerging high-quality scientific evidence into routine practice to ensure patients receive the most up-to-date care. The knowledge, attitudes, behaviours, and skills associated with integrating evidence into practice are encompassed within a competency referred to as scholarly practice.

Scholarly practice is broadly understood as a process whereby clinicians engage with and apply multiple sources of knowledge (i.e., experiential, research evidence) in ongoing, critical, reflective and evaluative ways in their daily practice.[9-14] Engagement in scholarly practice has been associated with several positive outcomes, such as professional empowerment and role satisfaction, a positive work environment, as well as improved care delivery and patient outcomes.[15-19] Further, a recent qualitative study of 26 RTs shed light on the multifaceted nature of scholarly practice.[20] Many participants conveyed that scholarly practice encompassed a wide range of activities and skills, including, but not limited to, conducting research, reflective thinking, research literacy, knowledge translation, the ability to identify gaps in professional knowledge, and to contribute to advancing the profession and healthcare field. Moreover, the participants discussed how engaging in scholarly practice could elevate the status of respiratory therapy as a profession. It enhances the self-image and professionalization of respiratory therapy,

which, in turn, augments its legitimacy and credibility amongst the interprofessional team and the public.[20] Collectively, these activities, skills and behaviours are likely to foster a deeper appreciation for the respiratory therapy profession and encourage RTs' continued engagement in their profession, potentially reducing attrition[21] and burnout rates.[22-24] Nurturing practitioners' dedication towards their profession may also translate into improved patient outcomes and enhanced quality of care.[25]

Despite the recognized benefits of engaging in scholarly practice, a growing body of evidence indicates that many clinicians in various professions lack adequate preparation and confidence to fulfill this role effectively.[26-30] This is particularly noticeable in respiratory therapy, as this competency is not explicitly included in their competency framework,[31,32] suggesting that this competency is superficially— if at all— taught and assessed during entry-level education. Consequently, graduates may not fully grasp the importance of scholarly practice or possess the necessary knowledge, skills, attitudes and behaviours to implement it in their practice.

A comprehensive understanding of the current state of the practice and scholarly profile of the respiratory therapy profession can help stakeholders such as policymakers, decision-makers, professional associations, scholars, employers, and patients to have a clearer understanding of the value and significance of RTs in healthcare. For example, documenting factors such as gender distribution, years of experience, practice locations, engagement in research, and accomplishments in scholarly activities is essential for professional associations to shape their strategic planning efforts,[33-35] educators to design and refine curricula to match the evolving needs of the profession and healthcare system, and offer RTs opportunities to enhance their skills and expertise.[36] Moreover, this knowledge can provide evidence to inform public policy development, including regulatory requirements, scope of practice guidelines, and workforce planning strategies to ensure that RTs can effectively meet the needs of patients and communities.[37] The overall aim of this study was to describe the demographic characteristics and scholarly and practice profiles of the respiratory therapy profession in Canada.

Methods

Study Design

We administered a cross-sectional survey to a convenience sample of Canadian RTs. The results are reported using the Consensus-Based Checklist for Reporting of Survey Studies (CROSS).[38]

Participants & Recruitment

We aimed to recruit a convenience sample from the pool of 12,291 registered Canadian RTs. To achieve this, we invited all members of the Canadian Society of Respiratory Therapists (CSRT) or their respective Canadian provincial regulatory body[39] who agreed to be contacted for research and had a valid email address to participate in this study. To be eligible to participate, RTs had to: 1) hold a valid credential or license to practice in Canada; 2) be employed either part-or-full-time; and 3) be able to read in either English or French. We excluded students, retired RTs and licensed RTs practicing outside of Canada because they could not provide information regarding their current practice.

We recruited participants using two parallel methods to optimize response rate and minimize the potential for selection bias.[40] Recruitment emails were sent through both the CSRT and the nine provincial regulatory bodies' email lists, considering that membership to the CSRT is voluntary. The first author (MZ) sent an email explaining the purpose of the study, the research team's contact information, the consent form, and a recruitment poster (which included a link and QR code for the study) to the director of the national association and every provincial regulatory body. Each director either chose to circulate the email to their professional member list or include the recruitment poster in their regular communications to their members.

Data Collection

The survey was mounted onto the Research Electronic Data Capture (REDCap) survey platform, which assigns each participant a unique identification number to ensure anonymity. The survey link was then distributed through the CSRT and regulatory bodies' email lists. The survey was open from November 1 to December 20, 2023 (7 weeks in total), coinciding with all the communications the CSRT and regulatory bodies had planned to send to their members. Reminders were sent at two, four and six weeks after the initial email.

Instrument

The survey consisted of an online questionnaire that was based on the findings of a related scoping review[41] and a qualitative study[20] exploring what scholarly practice means and how it manifests in practice from the perspective of RTs. The survey was created following best

practice guidelines[42] and a detailed description of its development is currently being prepared for publication. Briefly, the scoping review results informed the semi-structured interview guide for the qualitative interpretive description study.[41] The participants' excerpts from the qualitative study provided the foundation for crafting the survey items. The full team participated in creating and reviewing the items. The draft survey was then shared with three content and three measurement experts outside the research team to gain feedback on wording of the items, clarity, suggest changes and overall length. Once the feedback was integrated, the survey was mounted on REDCap and pilot-tested with 81 participants to provide evidence of validity for the survey. Following the pilot results, we updated the survey and professionally translated it to French.[43,44]

The final survey contained seven sections, with a total of 52 items. Section 1 contained six items exploring scholarly activities, such as the number of papers read, funding received to conduct research, and the number of scientific presentations given. Section 2 contained nine items focused on the identity of a scholarly practitioner in respiratory therapy, mentorship, supervision of students, and critical appraisal of the literature. Section 3 included eight items on the factors (positive and negative) that might influence scholarly practice, such as knowledge of research methodology, a supportive work environment and availability of resources. Section 4 contained six items about participants' perceptions regarding the image and legitimacy of the respiratory therapy profession, the level of respiratory therapy education and RTs' standing amongst the interprofessional team. Section 5 contained seven items about how scholarly practice might influence the respiratory therapy profession, about using research to advocate on behalf of patients, and about the feasibility of scholarly activities during practice. Section 6 contained two open-ended questions about benefits and challenges of scholarly practice, and section 7 contained 10 items about demographics.

Participants indicated their responses to section 1 by estimating percentages or by giving a numerical value (e.g., I read 10 empirical papers in a regular month). Sections 2 to 5 were answered using a 6-point Likert scale ranging from *completely disagree* (1) to *completely agree* (6). Section 6 contained two open-ended questions related to scholarly practice, "*Please list 2-3 benefits of being or becoming a scholarly practitioner"* and "*Please list 2-3 of the most significant challenges you've encountered/anticipate in becoming a scholarly practitioner."* Supplementary File 1 contains the full survey.

Research Ethics

This study was approved by the McGill University's institutional review board (study number A01-E04-22A). Informed consent was obtained through accepting the survey link, completing, and returning the questionnaire.

Data Analysis

During the data collection phase, our survey was shared on social media via a third party. Soon after the survey launch, we noticed the response rate increased rapidly (>200 responses within minutes). We paused the survey to review the responses and determined that our survey was targeted by spambots and/or non-eligible participants seeking the participation incentive. We re-opened the survey link after 24 hours, asked participants not to share the link (either personally or via social media) and created a protocol to clean the data before analysis. See Supplementary File 2 for full details about the data cleaning procedure.

Data analysis involved reporting continuous variables as means and standard deviations (SD) or medians and interquartile ranges. Categorical variables were reported as frequencies and proportions. Data collection, retrieval and generation of descriptive statistics were conducted using the Statistical Package for the Social Sciences (SPSS) version 29.0 (SPSS Inc., Chicago, Illinois).

Each open-ended question was analyzed using summative content analysis, which starts with attributing a code to each statement, collapsing similar codes into categories and counting the frequency of different codes and categories to identify patterns, themes and trends across the data.[45]

Results

The full survey was accessed 1618 times. After removing fully incomplete data, students, participants outside of Canada, duplicates and cleaning the data, we analyzed full survey data from 832 participants. The response rate was 6.8% (Figure 1).

Demographic characteristics

Table 1 presents demographic information. Most of the respondents were from Ontario (17.8%; n=148), Québec (15.7%; n=131), and Alberta (13.3%; n=111). A large proportion of respondents self-identified as white (81.6%; n=703), women (75.2%; n=627) and were between the ages of 30 to 39 (34%; n=283). Most participants had completed an undergraduate degree

(above their respiratory therapy diploma) as the highest educational attainment (39.9%; n=332). One-third (33.3%; n=277) of participants reported that their respiratory therapy professional diploma was their highest level of education. Few participants were enrolled in graduate studies (13.6%; n=113).

Scholarly activities

Table 2 presents common scholarly activities in which RTs engaged in. 12.1% had received some form of financial support for engaging in research activities and few participants had authored or co-authored any peer-reviewed publications (mean=0.64; SD=3.9). Additionally, RTs reported reading an average of 2.2 (SD = 3.8) peer-reviewed publications each month. Of the participants who reported attending online or in-person conferences in the last 12 months, 72% (n=597) attended an average of 4.1 (SD=7.3) presentations locally and 39.2% (n=326) attended an average of 1.0 (SD=2.7) provincial conference. Finally, of the participants who reported giving scientific presentations, 20% (n=166) gave an average of 1.0 (SD=5.5) presentation in a local setting and 9.5% (n=79) gave an average of 0 (SD=2.0) presentations at provincial conferences.

Practice Profile

Table 3 describes respondents' practice profile. The majority of respondents worked full-time (82%; n=682). Over two-thirds (69.7%; n=580) worked in an urban setting, and less than half (45.3%; n=377) worked in a tertiary care hospital. In a typical week, respondents spend an average of 17.6% of their time working in adult intensive care units, followed by 13.1% of their time in community and primary care and 11.6% in anesthesia. In contrast, they spent a small portion of their time in research (1.5%), marketing and sales (1.1%), and clinical support for industry (0.8%). Respondents often distributed their time across multiple practice areas. See Supplementary File 3 for the distribution across practice locations.

Scholarly Practice (Section 1): The identity of a scholarly practitioner in RT

Table 4 (section 1) summarizes the results regarding RTs' views of what a scholarly practitioner looks like and what sets them apart in the respiratory therapy profession. Most respondents (93.1%; n=793) either agreed or completely agreed that being able to critically

reflect on one's practice is an important part of being a RT. Further, a large majority of respondents agreed or completely agreed that having a mentor helps RTs become scholarly practitioners (81.8%; n=681), and that taking the time to mentor other RTs (78.2%; n=651) and to supervise students (86.9%; n=723) are important for developing a scholarly practitioner identity.

Scholarly Practice (Section 2): Factors supporting scholarly practice

Table 4 (section 2) contains the responses regarding the circumstances that influence the development of scholarly practice or its enactment. Most respondents agreed or completely agreed that the following are necessary for developing as a scholarly practitioner: having a supportive work environment (93.4%; n=777), access to resources (e.g., funding opportunities, protected time, online databases, CPD opportunities) (82.8%; n=689) and possessing the skills to apply research findings into practice (78.6%; n=654). Conversely, slightly over one-third of the respondents (35%; n=288) disagreed that having access to higher education (e.g., MSc. PhD) is necessary for developing as a scholarly practitioner.

Scholarly Practice (Section 3): The image and legitimacy of the RT profession

Table 4 (section 3) contains the results on the self-perceived image, legitimacy and value of the respiratory therapy profession. While 73.4% (n=611) of respondents agreed or completely agreed that RTs are valued members of the interprofessional team, just over half (53.1%; n=442) agreed or completely agreed that RTs would be more valued as part of an interprofessional team if they held an undergraduate degree (e.g., BSc.RT., BRT) or that the entry-to-practice qualification for RT should be an undergraduate degree (56.9%; n=473).

Scholarly Practice (Section 4): Scholarly practice influencing your practice

Table 4 (section 4) summarizes the results related to the relationship between RTs' bedside clinical practice and scholarship/academic research. Most respondents (78%; n=649) agreed or completely agreed that understanding research enables them to advocate on behalf of patients, and that clinical work is necessary for generating research questions in respiratory care (78%; n=646). Two-thirds of respondents agreed or completely agreed that research findings are useful in their day-to-day practice (67.3%; n=560), and participating in scholarly activities (such

as research, quality improvement, program evaluation) enabled them to better understand the connection between research and clinical practice (65.8%; n=548).

Open-ended questions

Over two-thirds of participants provided a response to the open-ended questions: "*Please list 2-3 benefits of being or becoming a scholarly practitioner"* (67.5%; n=562) and "*Please list 2-3 of the most significant challenges you've encountered/anticipate in becoming a scholarly practitioner"* (66.8%; n=556). 8.2% (n=217) of respondents reported that the benefit of being or becoming a scholarly practitioner is to provide more efficient and better patient care and 22.9% (n=278) responded that the most significant challenge encountered or anticipate in becoming a scholarly practitioner is the lack of time (Table 5).

Discussion

This study described the practice and scholarly profile of a subset of RTs in Canada. Overall, our data suggest that scholarly practice among this group is limited; very few RTs publish peer-reviewed work, participate in conferences, and an equally small number give scientific lectures. There is a recognition of the importance of critical reflection, receiving mentorship, and mentoring others in developing a scholarly practitioner identity; however, there are challenges related to accessing resources and higher education to support aspects of scholarly practice. Furthermore, there is a discrepancy among participants about the perceived value of RTs within interprofessional teams as well as about having an undergraduate degree as entry-to-practice.

In our sample, 75.5% of respondents reported being below 49 years of age, and half of our sample indicated working in the profession for 15 years or less. These data are consistent with national registries on the respiratory therapy profession.[46-50] Our findings suggest that the respiratory therapy profession is relatively young. Similar to many young and emerging healthcare professions (e.g., physician assistants), clinicians transitioning into scholarly roles have not yet had the time or expertise to conduct empirical research to establish a robust evidence base for their profession.[51] However, if given the opportunity to engage in research, RTs' roles may expand, much like it has with nurses and pharmacists who now have prescribing privileges, as one example.[52,53] Such role expansion could positively affect the profession by

creating new job opportunities, such as telehealth and physician extender roles, that enable RTs to provide more specialized care, thereby enhancing the overall quality of care.[54,55]

The gender distribution of our sample aligns with national registries on the respiratory therapy profession,[46-50] with approximately 75% of our respondents identifying as women. Given that female healthcare professionals may be less involved in various aspects of scholarly practice, such as publishing papers and receiving research grants,[56-59] further studies are needed to explore how gender stereotypes affect scholarly practice at both the professional level (e.g., power imbalances with male physicians despite having a strong scientific foundation)[60,61] and the personal level (e.g., parenthood, home caregiver roles post-pandemic).[62,63] These studies could help design strategies to create a more inclusive environment for scholarly practice within the respiratory therapy profession.

Similarly, our survey results show a higher proportion of respondents identifying as white (81.6%) compared to other races, such as Indigenous (3.0%), South Asian (2.7%) or East Asian (2.6%). Future research should systematically investigate whether the profile of the respiratory therapy profession in Canada resemble the general population they are providing care for.[64]

The results of this survey indicate that scholarly practice among RTs in Canada is limited. Respondents reported infrequently reviewing peer-reviewed publications, rarely participating in the writing of scientific manuscripts, receiving minimal financial support for engaging in research activities, and few presented at scientific conferences. While the reasons for the lack of engagement in such activities are unclear, we can surmise that RTs may not be taking an active role in driving their own learning, relying instead on knowledge and education from other professions, such as medicine or physiotherapy. This reliance on other professions may not fully account for the unique nuances of respiratory therapy practice.[51,65,66] Based on our findings, RTs typically read an average of 2.2 articles per month. While this figure might initially appear low, it aligns with reading habits observed in other rehabilitation professions (e.g. occupational and physiotherapists), which typically range between 2 to 5 articles per month.[67,68] Also consistent with other rehabilitation professionals, RTs in this study frequently cited time constraints and limited access to resources (e.g., articles, professional activities) as primary barriers to reading research. In contrast, physicians typically read a significantly higher volume of articles, averaging between 12 to 15 articles per month.[69] However, it's important to note that these statistics are derived from older literature, and accessing research and the volume of research

available has changed significantly since then. Recent observations highlight the overwhelming challenge of keeping pace with the ever-expanding body of research in health. For instance, there has been a 20-fold increase in the number of systematic reviews published between 2009 and 2019; this is equivalent to 80 new systematic reviews per day.[70] These numbers highlight the importance for clinicians to rely on guidelines and other evidence-based knowledge sources (e.g., Cochrane Podcasts, HealthEvidence.org), to stay abreast of current literature.[71-73] Nevertheless, the impact these sources of knowledge will have on professionals' practice depends on them possessing a fundamental understanding of research evidence.[74,75] Unfortunately, this is currently not the case in the respiratory therapy profession; given that scholarly practice is not included in respiratory therapy competency frameworks, participants have expressed a desire to enhance their abilities.

For the most part, respondents' primary work responsibilities entailed full-time direct clinical care, with very few reporting involvements in marketing, clinical support for industry or research. Additionally, only a minority hold a research degree (e.g., MSc, PhD), and most respondents are not currently enrolled in post-professional education. This may be concerning as it suggests that only a small number of RTs have the required competencies to produce research at a level that would advance the respiratory therapy profession, enabling RTs to adapt to evolving healthcare needs and deliver optimal patient care.[76] Addressing this challenge requires innovative strategies to enhance the research capacity within the respiratory therapy profession. One approach could involve establishing a community of practice for RTs who are actively engaged in research. These communities are recognized for their effectiveness in enhancing research skills and facilitating the sharing of evidence-based practices.[77] Another approach could be creating and implementing a mentoring program where experienced researchers (be they RTs or other professionals) are paired with those looking to enhance their research skills.[78] Finally, it would be important to systematically create a research agenda through a consensus process to guide funding allocation decisions.[51,79,80] Given the identified challenges in research capacity within the respiratory therapy profession, exploring innovative solutions to empower RTs to contribute meaningfully to advancing the profession is imperative.

While respondents generally agreed on questions about the identity of a scholarly practitioner, the factors supporting scholarly practice and how it influences practice, participants' responses regarding the image, legitimacy and education in the respiratory therapy profession were more

varied. For example, while most participants completely agreed that possessing skills to apply research findings in practice and knowledge about research methodologies are necessary for developing as a scholarly practitioner, they did not agree that having access to higher education (e.g., MSc. PhD) is a necessary condition. This raises the question: how can these skills and competencies be taught, assessed, and supported if not through higher education? Recent studies suggest that most RTs who engage in research have learned research methodologies and developed research literacy skills through an apprenticeship-type model after graduation rather than through formal education.[81,82] While this approach can be beneficial, it comes with limitations. For example, RTs may lack exposure to concepts such as methodological rigour, which may lead to problems in understanding study designs. Similarly, a limited understanding of statistical analysis can result in potential misinterpretation of statistical results. Several empirical studies have emphasized the challenges faced by RTs regarding their understanding of research methodology, their research literacy and their ability to conduct independent research.[82-85] These challenges potentially hinder their ability to contribute new scientific evidence for the respiratory therapy profession.[82-85] The findings of this survey underscore these challenges, emphasizing the need for future research to investigate innovative methods to support RTs in developing these skills. For example, exploring avenues such as post-professional micro-credentials or continuing professional development programs could be beneficial,[86] especially as RTs often lack adequate training to engage in scholarly practice at entry-to-practice. Additionally, future research could explore what factors may hinder the pursuit of research degrees in respiratory therapy and identify novel facilitators.

Finally, respondents completely agreed that multiple affordances need to be in place to support scholarly practice in respiratory therapy, namely, having a supportive working environment, having access to resources and being allowed to participate in professional development activities, such as professional and practice working groups. These findings align with existing literature in nursing, occupational and physiotherapy, highlighting the importance of such factors.[87-89] For example, some researchers indicate that manager-staff partnerships play a crucial role in translating research evidence into practice and supporting clinicians in their scholarly practice endeavours, such as participating in working groups on aspects about professional practice and in research projects.[87-89] Therefore, it may be worthwhile to invest in

the scholarly practice of RTs by allocating protected time, funding additional education, and providing necessary resources within respiratory therapy departments.[16,90]

Strengths and Limitations

Strengths of this work include applying a consultative and multi-stage methodology during the survey constructing process.[91] Further, the survey items were developed based on previously published research by our group,[20,41] built using best practices, underwent pilot testing, and was translated using best practices before being distributed.[43,44,91]

Nonetheless, our study has some limitations. Our response rate was low, despite including two parallel methods, frequent reminders, and incentives, which are seen to be best practices in recruitment.[42,92,93] However, low response rates are not limited to this population. Survey response rates have seen a notable decline since the COVID-19 pandemic, likely due to an increase in survey studies and survey fatigue.[94] Consequently, our findings may not be generalizable to the entire respiratory therapy population in Canada. Future national surveys could employ random sampling strategies to achieve a more representative sample of the profession.[42] Moreover, strategies such as personalized email outreach to managers overseeing respiratory therapy departments, using online professional message board or paid advertisements on relevant professional society websites may enhance participant recruitment in this population.[95]

The low response rate and incomplete survey responses may also be linked to the perceived sensitivity of the general topic and/or specific items.[96] For example, items about funding received, the number of published papers, or presentations given, might be interpreted as sensitive topics. Participants could be reluctant to disclose such information, possibly due to concerns about being perceived as not actively contributing to their profession and would prefer to abandon the survey.

Finally, our survey was targeted by spam bots attempting to claim the incentive rewards, despite implementing practices to prevent such occurrences. These practices included inserting a CAPTCHA security measure, incorporating reverse-coded items in the survey, and instructing distributors to share it exclusively through internal email communications rather than social media. Nevertheless, we are confident that by applying a rigorous data-cleaning protocol, we successfully mitigated the impacts of the spam bot responses on the study's findings.

Conclusion

The results of this national survey provide a portrait of the demographic distribution, practice and scholarly profile of a subset of the respiratory therapy profession in Canada. The findings suggest a young profession with the potential for growth to meet the demands of an evolving healthcare landscape. However, there is an urgent need to build research capacity and foster a culture of scholarly practice within the profession to match the growing demands of specialized respiratory patient care. Moving forward, creating supportive environments, providing access to resources, encouraging professional development activities and creating innovative strategies to enhance the research capacity will be essential to advancing the scholarly practice of RTs.

Figure 1- Study flow diagram

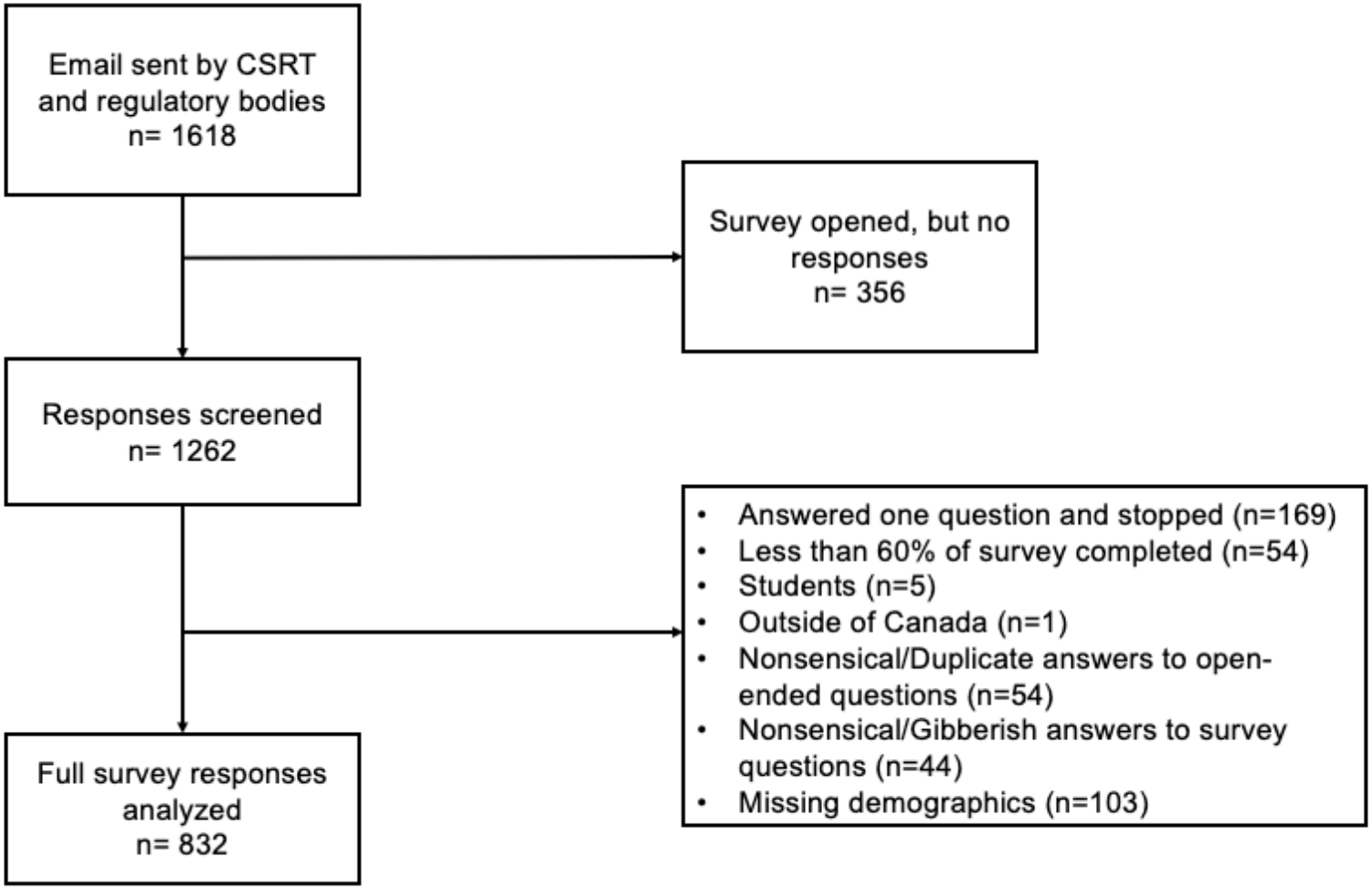


Table 1- Demographics

Demographics (n=832)	
Age n (%)	
Under 29	124 (14.9)
30 to 39	283 (34.0)
40 to 49	221 (26.6)
50 to 59	168 (20.2)
Over 60	36 (4.3)
Years in practice	
Less than 5 years	159 (19.1)
6 to 10 years	149 (17.9)
11 to 15 years	133 (16.0)
16 to 20 years	106 (12.7)
21 to 25 years	108 (13.0)
Over 26 years	177 (21.3)
Gender* n (%)	
Woman	627 (75.2)
Man	186 (22.3)
Non-Binary	2 (0.2)
Gender-Queer	2 (0.2)
Self-identify as another option	4 (0.5)
Prefer not to answer	13 (1.6)
Race* n (%)	
White	703 (81.6)
Indigenous	26 (3.0)
South Asian	23 (2.7)
East Asian	22 (2.6)
Southeast Asian	19 (2.2)
Middle Eastern	11 (1.3)
Black	11 (1.3)

Latin American	5 (0.6)
Something else	13 (1.5)
Don’t know	6 (0.7)
Prefer not to answer	23 (2.7)
Province currently practicing in n (%)	
Ontario	148 (17.8)
Nova Scotia	70 (8.4)
Québec	131 (15.7)
British Columbia	108 (13.0)
Alberta	111 (13.3)
Manitoba	53 (6.4)
Prince Edward Island	17 (2.0)
Newfoundland and Labrador	45 (5.4)
Saskatchewan	58 (7.0)
New Brunswick	88 (10.6)
Nunavut	1 (0.1)
Northwest Territories	1 (0.1)
Yukon	1 (0.1)
Highest education n (%)	
Professional Diploma	277 (33.3)
Post-RT diploma (e.g., CCAA, CRE)	158 (19.0)
Bachelor	332 (39.9)
Master	59 (7.1)
Doctorate	6 (0.7)
Currently enrolled in post-professional education?	
Yes	113 (13.6)
No	719 (86.4)
**Participants could select more than one answer*	
Note: CCAA=Certified Clinical Anesthesia Assistant; CRE= Certified Respiratory Educator; RT= Respiratory Therapy	

Table 2- Scholarly Activities (n=832)	**Mean (SD)**
Number of published papers as author/co-author	0 (3.9)
Number of peer-reviewed papers read in 30 days	2.2 (3.8)
Number of trainees supervised for research in last 5 years	3.2 (18.8)
Scientific presentations attended (online or in-person) in last 12 months*	**Mean (SD)**
Local conference (e.g., in place of practice) (n=597; 72%)	4.1 (7.3)
Provincial conference (n=326; 39.2%)	1.0 (2.7)
National conference (n=171; 29.6%)	0.5 (1.3)
International conference (n=70; 8.4%)	0.2 (1.1)
Number of presentations given in the last 5 years*	**Mean (SD)**
Local conference (e.g., in place of practice) (n=166; 20%)	1.0 (5.5)
Provincial conference (n=79; 9.5%)	0.0 (2.2)
National conference (n=72; 8.6%)	0.0 (2.7)
International conference (n=30; 3.6%)	0.0 (1.2)
History of financial support for research activities*	
I have never received any funding to conduct research	731 (87.9)
Local	51 (6.1)
University	30 (3.6)
Provincial	23 (2.8)
Federal	21 (2.5)
International	7 (0.8)
Other	33 (4.0)
**Participants could select more than one answer*	

Table 3- Practice profile (n=832)	**n (%)**
Primary work setting	
Tertiary care hospital	377 (45.3)
Community hospital	131 (15.7)
Rehabilitation hospital	11 (1.3)
Outpatient clinic	40 (4.8)
Community care/primary care	120 (14.4)
Higher Education institution	46 (5.5)
Medical Device/pharmaceutical	24 (2.9)
Other	78 (9.4)
Undisclosed	5 (0.6)
Average percent of time spent in each type of work area in a week (n=830)	M (SD)
Adult ICU	17.6 (24.9)
Neonatal ICU	5.5 (14.5)
Pediatric ICU	2.2 (9.5)
Anesthesia	11.6 (29.9)
Hospital (non-ICU)	9.1 (16)
Emergency	8.3 (12.2)
Diagnostics	7.2 (20.5)
Community and Primary Care	13.1 (29.9)
Leadership, administration, or policy	10.4 (25.7)
Teaching	8.2 (20.9)
Research	1.5 (9.0)
Clinical product support for industry	0.8 (6.8)
Marketing/Sales	1.1 (8.0)
Other	4.2 (17.5)
Employment Status	
Full-time	682 (82.0)
Part-time	126 (15.1)

Not currently working (e.g., maternity, leaves of absence)	24 (2.9)
Geographic Setting	
Urban	580 (69.7)
Suburban	157 (18.9)
Rural	92 (11.1)
Don’t know	3 (0.4)
Organization	
Public	720 (86.5)
Private	103 (12.4)
Don’t know	9 (1.1)
Organization associated with university (n=831)	
Yes	265 (31.9)
No	536 (64.4)
Don’t know	30 (3.6)
Note: ICU= Intensive Care Unit	

Table 4: Results from scholarly practice survey (n=832)							
Section 1: The identity of a scholarly practitioner in RT		6-point Likert scale from 1-6 (Completely Disagree to Completely Agree)					
Items:	M (IQR)	CD (1) n (%)	D (2) n (%)	SD (3) n (%)	SA (4) n (%)	A (5) n (%)	CA (6) n (%)
I identify as a scholarly practitioner in my practice	4 (3-5)	58 (7.0)	95 (11.4)	65 (7.8)	220 (26.4)	254 (30.5)	140 (16.8)
I am confident in my ability to summarize research evidence for my peers (e.g., clinicians, managers)	4 (4-5)	21 (2.5)	79 (9.5)	94 (11.3)	288 (34.6)	252 (30.3)	98 (11.8)
I am confident in my ability to apply research findings into practice	5 (4-5)	8 (1.0)	20 (2.4)	53 (29.9)	249 (29.9)	374 (45.0)	128 (15.4)
I seek the advice from expert colleagues for more complex clinical cases	5 (5-6)	2 (0.2)	8 (1.0)	12 (1.4)	95 (11.4)	352 (56.4)	363 (43.6)
I take the time to mentor other RTs	5 (5-6)	12 (1.4)	16 (1.9)	32 (3.8)	121 (14.5)	352 (42.3)	299 (35.9)
I take the time to supervise student RTs in clinical practice, if the opportunity arises	6 (5-6)	17 (2.0)	7 (0.8)	16 (1.9)	69 (8.3)	294 (35.3)	429 (51.6)
Being able to critically reflect about my practice is an important part of being an RT	6 (5-6)	1 (0.1)	2 (0.2)	2 (0.2)	52 (6.3)	315 (37.9)	460 (55.3)
Being able to critically appraise research articles is an important part of being an RT	5 (4-6)	3 (0.4)	29 (3.5)	57 (6.9)	225 (27.0)	312 (37.5)	206 (24.8)
Having a mentor helps RTs become scholarly practitioners	5 (5-6)	3 (0.4)	8 (1.0)	30 (3.6)	338 (40.6)	338 (40.6)	343 (41.2)
Section 2: Factors supporting scholarly practice							
Knowledge in research methodology is necessary for developing as a scholarly practitioner	5 (4-6)	4 (0.5)	7 (0.8)	26 (3.1)	201 (24.2)	375 (45.1)	219 (26.3)
Skills to apply research findings to practice are necessary for developing as a scholarly practitioner	5 (5-6)	1 (0.1)	4 (0.5)	17 (2)	156 (18.8)	412 (49.5)	242 (29.1)
Having a supportive working environment is necessary for developing as a scholarly practitioner	6 (5-6)	0 (0.0)	3 (0.4)	3 (0.4)	49 (5.9)	311 (37.4)	466 (56.0)
Access to higher education (e.g., MSc. PhD) is necessary for developing as a scholarly practitioner	4 (3-5)	28 (3.4)	93 (11.2)	167 (20.1)	242 (29.1)	186 (22.4)	116 (13.9)
My peers' valuing research is necessary for developing as a scholarly practitioner	5 (4-5)	2 (0.2)	34 (4.1)	91 (10.9)	266 (32.0)	322 (38.7)	117 (14.1)
Formal mentorship is necessary for developing as a scholarly practitioner	4 (4-5)	6 (0.7)	32 (3.8)	107 (12.9)	279 (33.5)	282 (33.9)	126 (15.1)

Access to resources (e.g., funding opportunities, protected time, online databases, CPD opportunities) is necessary for developing as a scholarly practitioner	5 (5-6)	3 (0.4)	6 (0.7)	19 (2.3)	115 (13.8)	356 (42.8)	333 (40.0)
Participating in professional development activities (e.g., working groups, CPD) is necessary for developing as a scholarly practitioner	5 (5-6)	1 (0.1)	4 (0.5)	27 (3.2)	153 (18.4)	362 (43.5)	285 (34.3)
Section 3: The image and legitimacy of the RT profession							
RTs are valued members of the interprofessional team	5 (4-6)	3 (0.4)	34 (4.1)	51 (6.1)	133 (16.0)	289 (34.7)	322 (38.7)
RTs would be more valued as part of an interprofessional team if they held an undergraduate degree (e.g., BSc.RT., BRT)	5 (3-6)	46 (5.5)	73 (8.8)	117 (14.1)	154 (18.5)	181 (21.8)	261 (31.4)
The entry-to-practice qualification for RT should be an undergraduate degree	5 (3-6)	52 (6.3)	73 (8.8)	112 (13.5)	122 (14.7)	182 (21.9)	291 (35.0)
Access to post-professional degrees (MSc, PhD) in RT would contribute to a more positive perception of the profession	5 (4-6)	19 (2.3)	32 (3.8)	75 (9.0)	172 (20.7)	221 (26.6)	313 (37.6)
The profession would be more credible if RTs contributed to research projects as members of the research team	5 (4-6)	20 (2.4)	31 (3.7)	94 (11.3)	206 (24.8)	226 (27.2)	255 (30.6)
The profession would be more credible if RTs lead research projects	5 (4-6)	18 (2.2)	35 (4.2)	101 (12.1)	216 (26.0)	224 (26.9)	238 (28.6)
Section 4: Scholarly practice influencing your practice							
Research findings are useful in my day-to-day practice	5 (4-6)	3 (0.4)	16 (1.9)	43 (5.2)	210 (25.2)	342 (41.1)	218 (26.2)
Understanding research enables me to advocate on behalf of my patients	5 (5-6)	3 (0.4)	8 (1.0)	26 (3.1)	146 (17.5)	411 (49.4)	238 (28.6)
Clinical work is necessary for generating research questions in respiratory care	5 (5-6)	3 (0.4)	12 (1.4)	22 (2.6)	149 (17.9)	390 (46.9)	256 (30.8)
Participating in scholarly activities (such as research, quality improvement, program evaluation) helps improve the care I deliver to patients	5 (4-5)	6 (0.7)	18 (2.2)	57 (6.9)	217 (26.1)	327 (39.3)	207 (24.9)
Participating in scholarly activities (such as research, quality improvement, program evaluation) enables me to better understand the connection between research and clinical practice	5 (4-5)	4 (0.5)	10 (1.2)	44 (5.3)	226 (27.2)	366 (44.0)	182 (21.9)
**Participating in scholarly activities (such as research, quality improvement, program evaluation) negatively affects my bedside clinical skills	2 (1-3)	239 (28.7)	291 (35.0)	108 (13.0)	70 (8.4)	72 (8.7)	52 (6.3)

Participating in scholarly activities (such as research, quality improvement, program evaluation) is feasible during clinical practice	4 (3-5)	25 (3.0)	93 (11.2)	185 (22.2)	284 (34.1)	184 (22.1)	61 (7.3)
Note: ** = Negatively worded item; M=Median; IQR = Interquartile Range; CD = Completely disagree; D=Disagree; SD= Somewhat disagree; SA=Somewhat agree; A= Agree; CA = Completely agree							

Table 5- Themes from summative content analysis	
Question: "*Please list 2-3 benefits of being or becoming a scholarly practitioner*"	Total responses (n=1192)
1) More efficient and better patient outcomes	18.2% (n=217)
2) Being a respected and recognized professional	17.3% (n=206)
3) Being up-to-date and knowledgeable about practice	16.6% (n=198)
4) The ability to understand, discuss and use research in day-to-day practice	15.6% (n=186)
5) The ability to advance the practice and profession of respiratory therapy	10.7% (n=127)
Question: "*Please list 2-3 of the most significant challenges you've encountered/anticipate in becoming a scholarly practitioner*"	Total responses (n=1214)
1) Lack of time	22.9% (n=278)
2) Lack of financial support	14.9% (n=181)
3) Limited recognition and respect of respiratory therapy profession	10.1% (n=123)
4) Uninterested and disengaged peers and leaders	10.1% (n=123)
5) Being overworked while understaffed	8.6% (n=105)

References

1. Canadian Institute for Health Information. Canada's Health Care Providers, 2016 to 2020 — Data Tables. In. Ottawa, ON.: CIHI; 2022.
2. Quach S, Zaccagnini M, Packham TL, Goldstein R, Brooks D. The Role of Canadian respiratory therapists in adult critical care (ICURT-CAN): A scoping review. *Canadian Journal of Respiratory, Critical Care, and Sleep Medicine.* 2023;7(3):158-170. doi:10.1080/24745332.2023.2226411.
3. Varty D, Minhas K, Gillis S, Rourke S. Skin-to-Skin Therapy on High-Frequency Jet Ventilation: A Trauma-Informed Best Practice. *Can J Respir Ther.* 2023;59:175-182. doi:10.29390/001c.84446.
4. Miller AG, Gentile MA, Coyle JP. Respiratory Therapist Endotracheal Intubation Practices. *Respir Care.* 2020;65(7):954-960. doi:10.4187/respcare.07338.
5. Shevade MS, Yeravdekar RC, Salvi SS. A Cross-Sectional Survey of Practice Patterns and Selected Demographics of Respiratory Therapists in India. *Respir Care.* 2021;66(1):66-72. doi:10.4187/respcare.07823.
6. Li J, Ni Y, Tu M, et al. Respiratory Care Education and Clinical Practice in Mainland China. *Respir Care.* 2018;63(10). doi:10.4187/respcare.06217.
7. Allin S, Marchildon G, Peckham A. Canada. In: Tikkanen R, Osborn R, Mossialos E, Djordjevic A, Wharton G, eds. *International Health Care System Profiles.* The Commonwealth Fund: https://www.commonwealthfund.org/international-health-policy-center/countries/canada. Accessed Febrauary 22, 2023.
8. Leslie K, Moore J, Robertson C, et al. Regulating health professional scopes of practice: comparing institutional arrangements and approaches in the US, Canada, Australia and the UK. *Hum Resour Health.* 2021;19(1):15. doi:10.1186/s12960-020-00550-3.
9. Canadian Association of Occupational Therapists. Profile of Practice of Occupational Therapist in Canada: 2012.
10. Canadian Association of Occupational Therapists, Association of Canadian Occupational Therapy Regulatory Organizations, Association of Canadian Occupational Therapy University Programs. *Competencies for Occupational Therapists In Canada.* 2021.
11. Canadian Nurses Association. Framework for the Practice of Registered Nurses in Canada. In. 2nd ed. Ottawa, ON.: Canadian Nurses Association; 2015.

12. National Physiotherapy Advisory Group. Competency profile for Physiotherapists in Canada (2017). 2017.
13. Richardson D, Oswald A, Chan M-K, Lang ES, Harvey BJ. Scholar. In: Frank JR, Snell LS, Sherbino J, eds. *CanMEDS 2015 Physician Competency Framework.* Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.
14. World Health Organization. *Evidence, policy, impact. WHO guide for evidence-informed decision-making.* Geneva: World Health Organization; 2021.
15. Hanney S, Boaz A, Jones T, Soper B. Engagement in research: an innovative three-stage review of the benefits for health-care performance. In: *Health Services and Delivery Research.* Southhampton (UK): NIHR Journals Library; 2013.
16. Harding K, Lynch L, Porter J, Taylor NF. Organisational benefits of a strong research culture in a health service: a systematic review. *Aust Health Rev.* 2017;41(1):45-53. doi:10.1071/AH15180.
17. Kitson A. The relevance of scholarship for nursing research and practice. *Journal of Advanced Nursing.* 2006;55(5):541-543. doi:10.1111/j.1365-2648.2006.04004_1.x.
18. Masic I, Miokovic M, Muhamedagic B. Evidence based medicine - new approaches and challenges. *Acta Inform Med.* 2008;16(4):219-225. doi:10.5455/aim.2008.16.219-225.
19. Rosenberg LE. Exceptional economic returns on investments in medical research. *Med J Aust.* 2002;177(7):368-371. doi:10.5694/j.1326-5377.2002.tb04840.x.
20. Zaccagnini M, Bussieres A, Kim S, Nugus P, West A, Thomas A. What scholarly practice means to respiratory therapists: An interpretive description study. *J Eval Clin Pract.* 2023.
21. Liss-Levinson R, Bharthapudi K, Leider JP, Sellers K. Loving and Leaving Public Health: Predictors of Intentions to Quit Among State Health Agency Workers. *J Public Health Manag Pract.* 2015;21(Suppl 6):S91-101. doi:10.1097/PHH.0000000000000317.
22. PRC National Nursing Engagement Report. *Trends and Implications with Nursing Engagement.* Omaha, Nebraska2023.
23. Vargas-Benitez MA, Izquierdo-Espin FJ, Castro-Martinez N, et al. Burnout syndrome and work engagement in nursing staff: a systematic review and meta-analysis. *Front Med (Lausanne).* 2023;10:1125133. doi:10.3389/fmed.2023.1125133.

24. Miller A, Burr K, Juby J, et al. Enhancing Respiratory Therapists' Well-Being: Battling Burnout in Respiratory Care. *Respir Care.* 2023;68(5):692-705. doi:10.4187/respcare.10632.
25. Janes G, Mills T, Budworth L, Johnson J, Lawton R. The Association Between Health Care Staff Engagement and Patient Safety Outcomes: A Systematic Review and Meta-Analysis. *J Patient Saf.* 2021;17(3):207-216. doi:10.1097/PTS.0000000000000807.
26. Binnendyk J, Pack R, Field E, Watling C. Not wanted on the voyage: highlighting intrinsic CanMEDS gaps in Competence by Design curricula. *Can Medl Educ J.* 2021;12(4):39-47. doi:10.36834/cmej.70950.
27. Fillion B, Rochette A, Girard A. Challenges of being a scholarly clinician as perceived by stroke rehabilitation professionals. *Disabil Rehabil.* 2014;36(6):521-528. doi:10.3109/09638288.2013.797516.
28. Koo J, Bains J, Collins MB, Dharamsi S. Residency research requirements and the CanMEDS-FM scholar role: Perspectives of residents and recent graduates. *Can Fam Physician.* 2012;58(6):e330-e336.
29. Ologunde R, Di Salvo I, Khajuria A. The CanMEDS scholar: the neglected competency in tomorrow's doctors. *Adv Med Educ Pract.* 2014;5:383-384. doi:10.2147/AMEP.S71763.
30. Rochette A, Brousseau M, Vachon B, Engels C, Amari F, Thomas A. What occupational therapists' say about their competencies' enactment, maintenance and development in practice? A two-phase mixed methods study. *BMC Med Educ.* 2020;20(1):191. doi:10.1186/s12909-020-02087-4.
31. American Association for Respiratory Care. *Competencies for Entry into Respiratory Therapy Practice.* Irving, TX2016.
32. The National Alliance of Respiratory Therapy Regulatory Bodies. *National Competency Framework for the Profession of Respiratory Therapy.* 2016.
33. Zaccagnini M, Bussières A, Nugus P, West A, Thomas A. Exploring the professionalization of respiratory therapy in Canada. *Canadian Journal of Respiratory Therapy.* 2021;57:129-137. doi:10.29390/cjrt-2021-046.

34. Byrne N, Cole DC, Woods N, et al. Strategic Planning in Health Professions Education: Scholarship or Management? *Acad Med.* 2019;94(10):1455-1460. doi:10.1097/ACM.0000000000002852.
35. Morciano C, Errico MC, Faralli C, Minghetti L. An analysis of the strategic plan development processes of major public organisations funding health research in nine high-income countries worldwide. *Health Res Policy Syst.* 2020;18(1):106. doi:10.1186/s12961-020-00620-x.
36. Belita E, Carter N, Bryant-Lukosius D. Stakeholder Engagement in Nursing Curriculum Development and Renewal Initiatives: A Review of the Literature. *Quality Advancement in Nursing Education - Avancées en formation infirmière.* 2020;6(1). doi:10.17483/2368-6669.1200.
37. Nelson S, Turnbull J, Bainbridge L, et al. *Optimizing Scopes of Practice: New Models for a New Health Care System.* Ottawa, ON; 2014.
38. Sharma A, Minh Duc NT, Luu Lam Thang T, et al. A Consensus-Based Checklist for Reporting of Survey Studies (CROSS). *J Gen Intern Med.* 2021;36(10):3179-3187. doi:10.1007/s11606-021-06737-1.
39. Canadian Institute of Health Information. Respiratory Therapists. https://www.cihi.ca/en/respiratory-therapists. Published 2023. Accessed June 13, 2023.
40. Bethlehem J. Selection Bias in Web Surveys. *International Statistical Review.* 2010;78(2):161-188. doi:10.1111/j.1751-5823.2010.00112.x. Published 161.
41. Zaccagnini M, Bussières A, Mak S, Boruff J, West A, Thomas A. Scholarly practice in healthcare professions: findings from a scoping review. *Adv Health Sci Educ Theory Pract.* 2022. doi:10.1007/s10459-022-10180-0.
42. Dillman DA, Smyth JD, Christian L-M. *Internet, Mail, and mixed-mode surveys: The tailored design method.* 3rd ed. New Jersey: John Wiley & Sons; 2014.
43. Pan Y, de la Puente M. *Census Bureau Guideline for the Translation of Data Collection Instruments and Supporting Materials: Documentation on how the Guideline Was Developed.* 2005.
44. Beaton D, Bombardier C, Guillemin F, Ferraz M. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine (Phila Pa 1976).* 2000;25(24):3186-3191. doi:10.1097/00007632-200012150-00014.

45. Hsieh H, Shannon S. Three approaches to qualitative content analysis. *Qual Health Res.* 2005;15(9):1277-1288. doi:10.1177/1049732305276687.
46. Government of Canada. Respiratory Therapist in Canada. https://www.jobbank.gc.ca/marketreport/outlook-occupation/22786/ca. Published 2024. Accessed April 11, 2024.
47. College of Respiratory Therapists of Alberta. *Annual Report 2022-2023.* Calgary, AB: College of Respiratory Therapists of Alberta;2023.
48. Mirshahi R, Manogaran M, Gamble B. Respiratory Therapists. In: Bourgeault IL, ed. *Introduction to the Health Workforce in Canada.* Canadian Health Workforce Network.; 2021.
49. College of Respiratory Therapists of Ontario. *2022-2023 Annual Report.* 2023.
50. Canadian Institute for Health Information. *Health Workforce in Canada, 2017 to 2021: Overview.* 2022.
51. Zaccagnini M, West A, Khor E, Quach S, Nonoyama ML. Exploring knowledge gaps and research needs in respiratory therapy: a qualitative description study. *Can J Respir Ther.* 2024;60:1-12. doi:10.29390/001c.91184.
52. Latter S, Blenkinsopp A, Smith A, et al. *Evaluation of nurse and pharmacist independent prescribing.* University of Southampton: Keele University;2010.
53. Bond C, Bruhn H, de Bont A, et al. The iMpact on practice, oUtcomes and costs of New roles for health pROfeSsionals: a study protocol for MUNROS. *BMJ Open.* 2016;6(4):e010511. doi:10.1136/bmjopen-2015-010511.
54. Strickland SL, Varekojis SM, Goodfellow LT, et al. Physician Support for Non-Physician Advanced Practice Providers for Persons With Cardiopulmonary Disease. *Respir Care.* 2020;65(11):1702-1711. doi:10.4187/respcare.07387.
55. Pierce M, Gudowski SW, Roberts KJ, et al. The Rapid Implementation of Ad Hoc Tele-Critical Care Respiratory Therapy (eRT) Service in the Wake of the COVID-19 Surge. *J Clin Med.* 2022;11(3). doi:10.3390/jcm11030718.
56. Snyder A, Xiang D, Smith A, et al. Gender disparities among medical students choosing to pursue careers in medical research: a secondary cross-sectional cohort analysis. *BMC Med Educ.* 2021;21(1):591. doi:10.1186/s12909-021-03004-z.

57. Murrar S, Johnson PA, Lee YG, Carnes M. Research Conducted in Women Was Deemed More Impactful but Less Publishable than the Same Research Conducted in Men. *J Womens Health (Larchmt).* 2021;30(9):1259-1267. doi:10.1089/jwh.2020.8666.
58. Chatterjee P, Werner RM. Gender Disparity in Citations in High-Impact Journal Articles. *JAMA Netw Open.* 2021;4(7):e2114509. doi:10.1001/jamanetworkopen.2021.14509.
59. Llorens A, Tzovara A, Bellier L, et al. Gender bias in academia: A lifetime problem that needs solutions. *Neuron.* 2021;109(13):2047-2074. doi:10.1016/j.neuron.2021.06.002.
60. Teresa-Morales C, Rodriguez-Perez M, Araujo-Hernandez M, Feria-Ramirez C. Current Stereotypes Associated with Nursing and Nursing Professionals: An Integrative Review. *Int J Environ Res Public Health.* 2022;19(13). doi:10.3390/ijerph19137640.
61. Freire de Araújo Lima EM, Lima de Paula I. Women, feminism, and occupational therapy: A critical analysis of the literature on gender issues impacting the profession. *Revista Ocupación Humana.* 2023;23(2). doi:10.25214/25907816.1583.
62. Staniscuaski F, Kmetzsch L, Soletti RC, et al. Gender, Race and Parenthood Impact Academic Productivity During the COVID-19 Pandemic: From Survey to Action. *Front Psychol.* 2021;12:663252. doi:10.3389/fpsyg.2021.663252.
63. Davis PB, Meagher EA, Pomeroy C, et al. Pandemic-related barriers to the success of women in research: a framework for action. *Nat Med.* 2022;28(3):436-438. doi:10.1038/s41591-022-01692-8.
64. The Sullivan Commission. *Missing Persons: Minorities in the Health Professions.* 2016.
65. Chatburn R, Ford R, Kauffman G. Determining the Value-Efficiency of Respiratory Care. *Respir Care.* 2021;66(12):1892-1897. doi:10.4187/respcare.09100.
66. Hess D. Using evidence to adjust productivity: bringing respiratory care into the 21st century. . *Respir Care.* 2021;66(12). doi:10.4187/respcare.09637.
67. Lindstrom AC, Bernhardsson S. Evidence-Based Practice in Primary Care Occupational Therapy: A Cross-Sectional Survey in Sweden. *Occup Ther Int.* 2018;2018:5376764. doi:10.1155/2018/5376764.
68. Gleadhill C, Bolsewicz K, Davidson SRE, et al. Physiotherapists' opinions, barriers, and enablers to providing evidence-based care: a mixed-methods study. *BMC Health Serv Res.* 2022;22(1):1382. doi:10.1186/s12913-022-08741-5.

69. Tenopir C, King D, Clarke M, Na K, Zhou X. Journal reading patterns and preferences of pediatricians. *J Med Libr Assoc.* 2007;95(1):56-63.
70. Hoffmann F, Allers K, Rombey T, et al. Nearly 80 systematic reviews were published each day: Observational study on trends in epidemiology and reporting over the years 2000-2019. *J Clin Epidemiol.* 2021;138:1-11. doi:10.1016/j.jclinepi.2021.05.022.
71. Kamtchum-Tatuene J, Zafack JG. Keeping Up With the Medical Literature: Why, How, and When? *Stroke.* 2021;52(11):e746-e748. doi:10.1161/STROKEAHA.121.036141.
72. Rochette A, Thomas A, Salbach NM, et al. Expected Health Benefits as the Ultimate Outcome of Information Available on Stroke Engine, a Knowledge Translation Stroke Rehabilitation Website: Web-Based Survey. *JMIR Rehabil Assist Technol.* 2023;10:e44715. doi:10.2196/44715.
73. Hess DR. AARC Clinical Practice Guidelines: Phase 4. *Respir Care.* 2021;66(1):177-178. doi:10.4187/respcare.08624.
74. Abu-Odah H, Said NB, Nair SC, et al. Identifying barriers and facilitators of translating research evidence into clinical practice: A systematic review of reviews. *Health Soc Care Community.* 2022;30(6):e3265-e3276. doi:10.1111/hsc.13898.
75. Cochrane LJ, Olson CA, Murray S, Dupuis M, Tooman T, Hayes S. Gaps between knowing and doing: understanding and assessing the barriers to optimal health care. *J Contin Educ Health Prof.* 2007;27(2):94-102. doi:10.1002/chp.106.
76. Canadian Institute for Health Information. Impact of COVID-19 on Canada's health care systems. https://www.cihi.ca/en/covid-19-resources/impact-of-covid-19-on-canadas-health-care-systems. Published 2022. Accessed March 9, 2024.
77. Noar AP, Jeffery HE, Subbiah Ponniah H, Jaffer U. The aims and effectiveness of communities of practice in healthcare: A systematic review. *PLoS One.* 2023;18(10):e0292343. doi:10.1371/journal.pone.0292343.
78. da Silva Souza RC, Bersaneti MDR, Dos Santos Yamaguti WP, Baia WRM. Mentoring in research: development of competencies for health professionals. *BMC Nurs.* 2023;22(1):244. doi:10.1186/s12912-023-01411-9.
79. Quach S, Veitch A, Zaccagnini M, West A, Nonoyama ML. Underrepresentation of Respiratory Therapists as Experts in Delphi Studies on Respiratory Practices and Research Priorities. *Respir Care.* 2022;67(12):1609-1632. doi:10.4187/respcare.10012.

80. Waggoner J, Carline J, Durning S. Is There a Consensus on Consensus Methodology? Descriptions and Recommendations for Future Consensus Research. *Acad Med.* 2016;91(5):663-668. doi:10.1097/ACM.0000000000001092.
81. Kallet RH. Developing a Research Program Within a Respiratory Care Department. *Respir Care.* 2020;65(3):388-399. doi:10.4187/respcare.07478.
82. Willis LD, Rintz J, Zaccagnini M, Miller AG, Li J. Barriers to Respiratory Care Research in the United States. *Respir Care.* 2023;68(8):1112-1118. doi:10.4187/respcare.10899.
83. Barnes TA, Kacmarek RM, Kageler WV, Morris MJ, Durbin CG, Jr. Transitioning the respiratory therapy workforce for 2015 and beyond. *Respir Care.* 2011;56(5):681-690. doi:10.4187/respcare.01169.
84. Martins C, Kenaszchuk C. Research capacity of respiratory therapists: a survey of views, opinions, and barriers. *Canadian Journal of Respiratory Therapy.* 2013;49(4):15-198.
85. Nonoyama M, Mathur S, Herbert R, Jenkins H, Lobchuk M, McEvoy M. Past, present and future of respiratory research: A survey of Canadian health care professionals. *Can Respir J.* 2015;22:275-281. doi:10.1155/2015/968450.
86. Tamoliune G, Greenspon R, Tereseviciene M, Volungeviciene A, Trepule E, Dauksiene E. Exploring the potential of micro-credentials: A systematic literature review. *Frontiers in Education.* 2023;7. doi:10.3389/feduc.2022.1006811.
87. Gifford WA, Squires JE, Angus DE, et al. Managerial leadership for research use in nursing and allied health care professions: a systematic review. *Implement Sci.* 2018;13(1):127. doi:10.1186/s13012-018-0817-7.
88. Dannapfel P, Peolsson A, Nilsen P. What supports physiotherapists' use of research in clinical practice? A qualitative study in Sweden. *Implement Sci.*8(31). doi:10.1186/1748-5908-8-31.
89. Nilsagård Y, Westerdahl E, Forsberg A. Engagement in performing clinical physiotherapy research: Perspectives from leaders and physiotherapists. *Physiother Res Int.* 2019;24(2):e1767. doi:10.1002/pri.1767.
90. Kim S, Rochette A, Ahmed S, et al. Creating synergies among education/research, practice, and policy environments to build capacity for the scholar role in occupational therapy and physiotherapy in the Canadian context. *Adv Health Sci Educ Theory Pract.* 2023. doi:10.1007/s10459-023-10298-9.

91. DeVellis R, Thorpe C. *Scale Development: Theory and Applications.* 5th ed: SAGE Publications Inc.; 2021.
92. Treweek S, Lockhart P, Pitkethly M, et al. Methods to improve recruitment to randomised controlled trials: Cochrane systematic review and meta-analysis. *BMJ Open.* 2013;3(2):e002360. doi:10.1136/bmjopen-2012-002360.
93. Shiyab W, Ferguson C, Rolls K, Halcomb E. Solutions to address low response rates in online surveys. *Eur J Cardiovasc Nurs.* 2023;22(4):441-444. doi:10.1093/eurjcn/zvad030.
94. Krieger N, LeBlanc M, Waterman P, Reisner S, Testa C, Chen J. Decreasing Survey Response Rates in the Time of COVID-19: Implications for Analyses of Population Health and Health Inequities. *Am J Public Health.* 2023;113(6):667-670. doi:10.2105/AJPH.2023.307267.
95. McRobert CJ, Hill JC, Smale T, Hay EM, van der Windt DA. A multi-modal recruitment strategy using social media and internet-mediated methods to recruit a multidisciplinary, international sample of clinicians to an online research study. *PLoS One.* 2018;13(7):e0200184. doi:10.1371/journal.pone.0200184.
96. McNeeley S. Sensitive Issues in Surveys: Reducing Refusals While Increasing Reliability and Quality of Responses to Sensitive Survey Items. In: Gideon L, ed. *Handbook of Survey Methodology for the Social Sciences.* New York: Springer; 2012:520.

Appendices

Supplementary File 1-Final survey

Understanding of Scholarly Practice:

For this survey**,** ***Scholarly Practice*** is understood as an **interactive, reflective,** and **dynamic** process by which practitioners **integrate credible sources of information into practice** to improve the quality of healthcare services**.** Scholarly practice occurs at the **intersection** of the values and missions of various stakeholders, including **universities** and **research centres, practice settings,** and **policy and regulatory organizations.** Under optimal circumstances, these stakeholders work together to develop mechanisms and procedures that enable scholarly practice within healthcare organizations and **empower individual** professionals to engage in scholarly practice.

Total questions: 52

Section 1- Scholarly Activities

Preamble: This section asks you about scholarly activities you may have engaged in within the respiratory therapy (RT) profession (6 items).

1) How many papers have you published in peer-reviewed journals in the last 5 years (as either primary or co-author)

2) How many scientific presentations have you given in the last 5 years?
   - At a local conference (e.g., in your place of practice)
   - At a provincial conference
   - At a Canadian conference
   - At an international conference

3) Tick all the different funding sources you have received to conduct research:
   - I have never received any funding to conduct research.
   - Local (e.g., hospital, workplace)
   - University
   - Provincial
   - Federal (i.e., Canadian)
   - International
   - Other: Please specify

4) How many trainees (e.g., student RTs, undergraduate students, peers, etc.) have you supervised to conduct research in the last 5 years?
5) How many peer-reviewed papers related to your practice do you read on average in one month (30 days)?
6) How many conferences or presentations (online and/or in-person) have you attended in the past 12 months? ▪ Local conference (e.g., hospital, workplace) ▪ Provincial conference ▪ Canadian conference ▪ International conference
Section 2: The identity of a scholarly practitioner in respiratory therapy **<u>Preamble</u>: This section asks you about what a scholarly practitioner looks like and what may set them apart in the RT profession (9 items)** Likert Scale: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)
7) I identify as a scholarly practitioner in my practice
8) I am confident in my ability to summarize research evidence for my peers (e.g., clinicians, managers)
9) I am confident in my ability to apply research findings into practice
10) I seek the advice from expert colleagues for more complex clinical cases
11) I take the time to mentor other RTs
12) I take the time to supervise student RTs in clinical practice, if the opportunity arises
13) Being able to critically reflect about my practice is an important part of being an RT
14) Being able to critically appraise research articles is an important part of being an RT
15) Having a mentor helps RTs become scholarly practitioners
Section 3: Factors supporting scholarly practice **<u>Preamble</u>: This section asks you about the circumstances that influence the development as scholarly practitioners (8 items)** **Likert Scale**: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)
16) Knowledge in research methodology is necessary for developing as a scholarly practitioner

17) Skills to apply research findings to practice are necessary for developing as a scholarly practitioner
18) Having a supportive working environment is necessary for developing as a scholarly practitioner
19) Access to higher education (e.g., MSc. PhD) is necessary for developing as a scholarly practitioner
20) My peers' valuing research is necessary for developing as a scholarly practitioner
21) Formal mentorship is necessary for developing as a scholarly practitioner
22) Access to resources (e.g., funding opportunities, protected time, online databases, CPD opportunities) is necessary for developing as a scholarly practitioner
23) Participating in professional development activities (e.g., working groups, CPD) is necessary for developing as a scholarly practitioner
Section 4: The image and legitimacy of the RT profession. **<u>Preamble</u>: This section asks items related to how the RT profession is perceived by you and/or others (6 items)** **Likert Scale**: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)
24) RTs are valued members of the interprofessional team
25) RTs would be more valued as part of an interprofessional team if they held an undergraduate degree (e.g., BSc.RT., BRT)
26) The entry-to-practice qualification for RT should be an undergraduate degree
27) Access to post-professional degrees (MSc, PhD) in RT would contribute to a more positive perception of the profession
28) The profession would be more credible if RTs contributed to research projects as members of the research team
29) The profession would be more credible if RTs lead research projects
Section 5: Scholarly practice influencing your practice **<u>Preamble</u>: This section asks you about how scholarly practice might influence the RT profession (7 items)** **Likert Scale**: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)
30) Research findings are useful in my day-to-day practice
31) Understanding research enables me to advocate on behalf of my patients
32) Clinical work is necessary for generating research questions in respiratory care

33) Participating in scholarly activities (such as research, quality improvement, program evaluation) helps improve the care I deliver to patients

34) Participating in scholarly activities (such as research, quality improvement, program evaluation) enables me to better understand the connection between research and clinical practice

35) Participating in scholarly activities (such as research, quality improvement, program evaluation) negatively affects my bedside clinical skills

36) Participating in scholarly activities (such as research, quality improvement, program evaluation) is feasible during clinical practice

Section 6- Open text:

37) Please list 2-3 benefits of being or becoming a scholarly practitioner (open text)

38) Please list 2-3 of the most significant challenges you've encountered/anticipate in becoming a scholarly practitioner (open text)

Section 7- Demographics (10 questions)

39) What Province or Territory do you currently practice in? Choose one answer.

- British Columbia
- Alberta
- Saskatchewan
- Manitoba
- Ontario
- Québec
- New Brunswick
- Newfoundland and Labrador
- Prince Edward Island
- Nova Scotia
- Nunavut
- Northwest Territories
- Yukon
- Outside of Canada, please specify: _____

40) Which best describes your current gender identity? Check all that apply.
- Man
- Woman
- Non-binary
- Gender Fluid
- Gender Queer
- Two-spirit
- I self-identify as:_____
- I don't identify with any option provided.
- I prefer not to answer

41) In our society, people are often described by their race or racial background. These are not based in science, but our race may influence the way we are treated by individuals and institutions, and this may affect our health or education. Which category(ies) best describes you? Check all that apply
- Black (African, African Canadian, Afro-Caribbean descent)
- East Asian (Chinese, Japanese, Korean, Taiwanese descent)
- Indigenous (First Nations, Inuk/Inuit, Métis descent)
- Latin American (Hispanic or Latin American descent)
- Middle Eastern (Arab, Persian, West Asian descent (e.g., Afghan, Egyptian, Iranian, Kurdish, Lebanese, Turkish)
- South Asian (South Asian descent (e.g., Bangladeshi, Indian, Indo-Caribbean, Pakistani, Sri Lankan)
- Southeast Asian (Cambodian, Filipino, Indonesian, Thai, Vietnamese, or other Southeast Asian descent)
- White (European descent)
- Another race category: please specify_____
- Do not know
- Prefer not to answer

42) What is your language at home?
- English
- French
- Other:
- I prefer not to answer

43) What is the geographic setting you work in?

- Urban (population >100,000)
- Suburban (population >10,000)
- Rural (population < 10,000)
- I do not know

44) What is your highest level of education?
- Student RT
- Professional diploma
- Post RRT credential (e.g., CRE, CCAA)
- Bachelor (e.g., BSc. BA, BHSc)
- Master (e.g., MSc. MA, MBA, MEd)
- Doctorate (e.g., PhD, EdD)
  - Please specify: _____

45) Are you in the process of completing post-professional education?
- No
- Yes
- If yes, which level of education?
  - Post RRT credential (e.g., CRE, CCAA)
  - Bachelor (e.g., BHSc, BSc, BA)
  - Master (e.g., MSc, MA, MBA, MEd)
  - Doctorate (e.g., PhD, EdD)
  - Please specify the degree and program: _____

46) What is your employment status?
- Full-time (35-40 hours/week)
- Part-time (<35 hours/week)
- Not currently working (e.g., leave of absence, maternity leave)

47) What is your age?

48) Number of years in practice?

49) What is the setting of the organization you are primarily working in? (Choose one)
- Tertiary care hospital
- Community hospital
- Rehabilitation hospital
- Outpatient clinic

- Community care/primary care
- Higher Education institution
- Medical device/pharmaceutical industry
- Other (please specify)

50) Is the organization you are currently working in:
- Private
- Public

51) What is the percentage of time you spend in each area of practice?
- Adult ICU (includes medical ICUs, cardiac care units and high-dependance units)
- Neonatal ICU
- Pediatric ICU
- Anesthesia
- Hospital care (non-ICU)
- Emergency rooms
- Diagnostics
- Leadership, administration or policy
- Community care/primary care
- Teaching
- Research
- Clinical product support for industry
- Marketing/Sales
- Other: Please specify

52) Is your main practice setting affiliated with a university (e.g., University of Toronto, McGill University, etc.)?
- Yes
- No
- I do not know

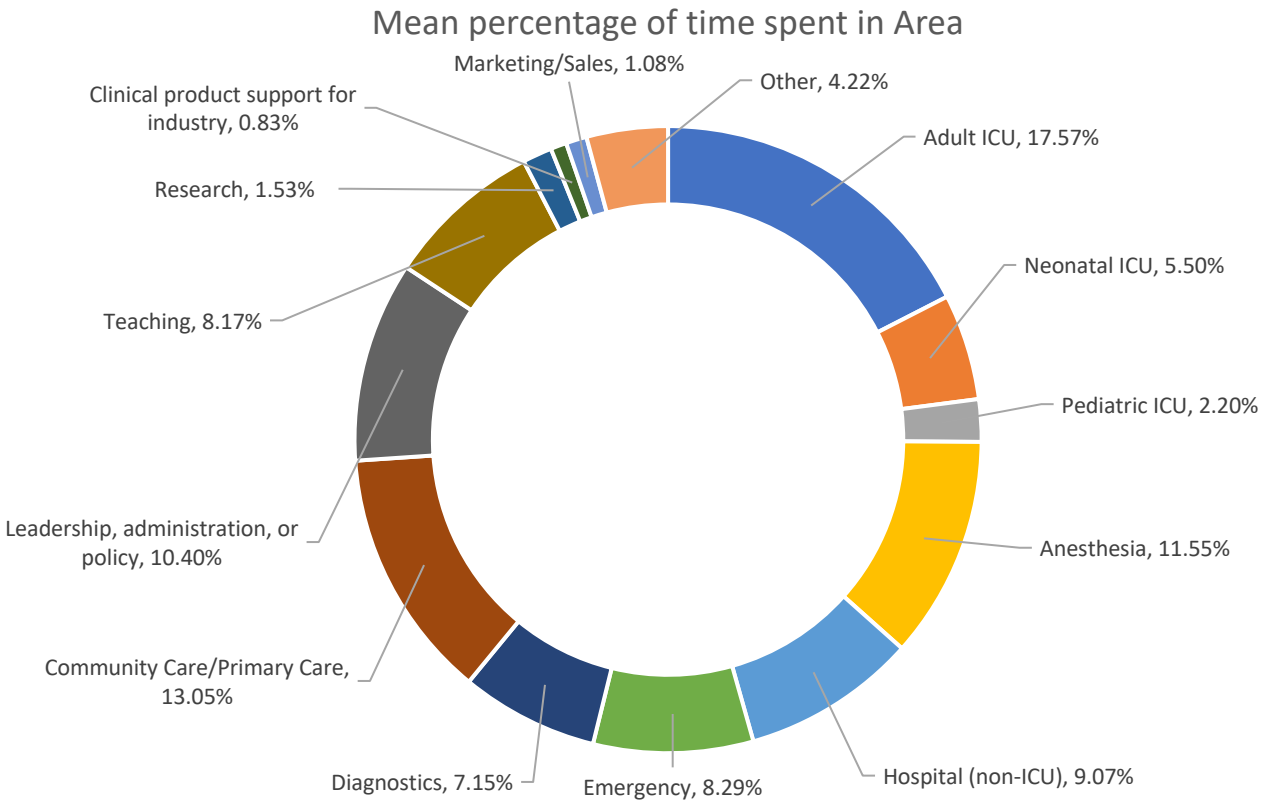
Supplemental File 2-Data cleaning protocol

After the survey was shared on social media via a third party (i.e., by an individual), we noticed the response rate had a large increase (>200 responses within minutes). Because of this, we paused the survey to review the responses; it raised suspicions of receiving potential responses from spambots and/or non-eligible participants seeking the incentive reward. The responses were reviewed, and it was determined that our survey was targeting by spambots. As a result, we re-opened the survey link after 24 hours, asked participants not to share the link (either personally or via social media) and created a protocol to clean the data before analysis. Specifically, we 1) removed respondents who indicate student as highest level of training; 2) removed respondents who indicate outside of Canada as main location of practice; 3) removed respondents that did not complete at least 60-100% of the survey; 4) removed any responses to the qualitative survey question "*Please list 2-3 benefits of being or becoming a scholarly practitioner*" and "*Please list 2-3 of the most significant challenges you've encountered/anticipate in becoming a scholarly practitioner*" that are exact duplicates or nonsensical. The remaining responses were checked for conflicting data. If any responses had two or more conflicting data, they were removed. These might include, (*i*) respondents with outlier response times, defined as under 12 and over 28 minutes. These time limits are based on the average time it took participants to complete the survey during the pilot testing of the survey. During this process, the average time for completion of the survey was 17.7 minutes; (*ii*) respondents who provided same response to every closed-ended item on a survey page (i.e., straight lining);[1] (*iii*) responses that were gibberish (i.e., unintelligible responses) or nonsensical responses (e.g., responses that did not make sense in the context of the items asked). For example, indicating their age is 150 years old or they've supervised 20,000 students in the last 5 years; (*iv*) respondents who provided a contact email with random letters or end in numbers exceeding four digits as these characteristics are an indication of a bot generated email address and had similar characteristics of examples from Gmail bulk account creators that can be built or bought online.[2] Finally, to claim incentives, respondents had to provide their full name and province of practice. With that information, they were cross-checked in their respective regulatory member public registry as proof that they were RTs. If they could not be cross-checked and would not provide proof of licensure, their data were removed.

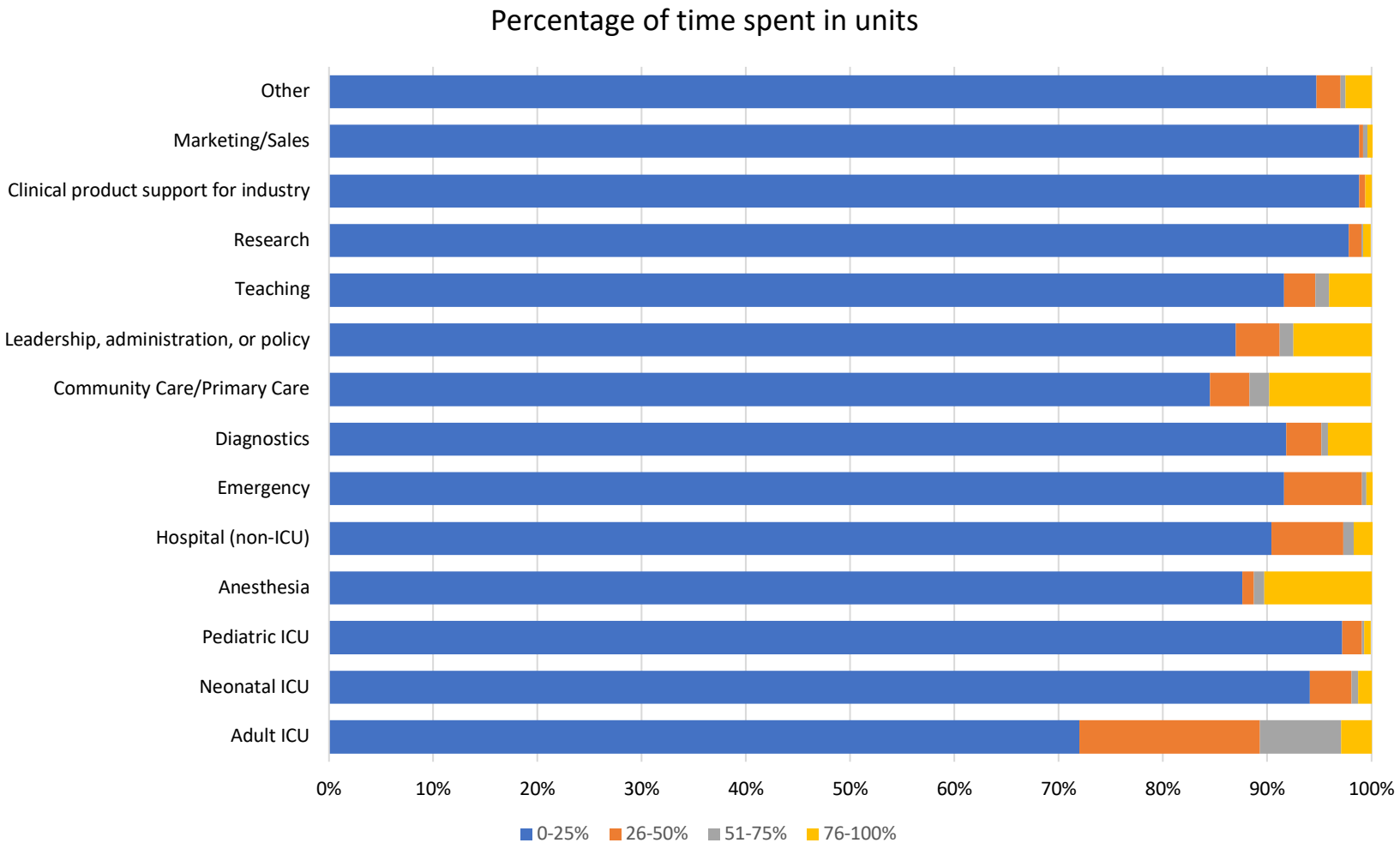
Reference

1. Kim Y, Dykema J, Stevenson J, Black P, Moberg D. Straightlining: Overview of Measurement, Comparison of Indicators, and Effects in Mail–Web Mixed-Mode Surveys. *Social Science Computer Review.* 2019;37(2):214-233. doi:10.1177/0894439317752406.
2. Wang Z, Qin M, Chen M, Jia C. Hiding Fast Flux Botnet in Plain Email Sight. *ATCS/SePrIoT@SecureComm.* 2017.

Supplemental File 3 – A) Percentage of time spent in each type of work area.



B) Percentage of time spent in units


Percentage of time spent in units
Other
Marketing/Sales
Clinical product support for industry
Research
Teaching
Leadership, administration, or policy
Community Care/Primary Care
Diagnostics
Emergency
Hospital (non-ICU)
Anesthesia
Pediatric ICU
Neonatal ICU
Adult ICU
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
0-25%
26-50%
51-75%
76-100%

Appendix 4- Checklist for Reporting Of Survey Studies (CROSS) submitted with Manuscript 3

Section/topic	Item	Item description	Reported on page #
Title and abstract			
Title and abstract	1a	State the word "survey" along with a commonly used term in title or abstract to introduce the study's design.	1
	1b	Provide an informative summary in the abstract, covering background, objectives, methods, findings/results, interpretation/discussion, and conclusions.	1
Introduction			
Background	2	Provide a background about the rationale of study, what has been previously done, and why this survey is needed.	2
Purpose/aim	3	Identify specific purposes, aims, goals, or objectives of the study.	2
Methods			
Study design	4	Specify the study design in the methods section with a commonly used term (e.g., cross-sectional or longitudinal).	3
	5a	Describe the questionnaire (e.g., number of sections, number of questions, number and names of instruments used).	4
Data collection methods	5b	Describe all questionnaire instruments that were used in the survey to measure particular concepts. Report target population, reported validity and reliability information, scoring/classification procedure, and reference links (if any).	3-4
	5c	Provide information on pretesting of the questionnaire, if performed (in the article or in an online supplement). Report the method of pretesting, number of times questionnaire was pre-tested, number and demographics of participants used for pretesting, and the level of similarity of demographics between pre-testing participants and sample population.	3
	5d	Questionnaire if possible, should be fully provided (in the article, or as appendices or as an online supplement).	Supl. 1
Sample characteristics	6a	Describe the study population (i.e., background, locations, eligibility criteria for participant inclusion in survey, exclusion criteria).	3

	6b	Describe the sampling techniques used (e.g., single stage or multistage sampling, simple random sampling, stratified sampling, cluster sampling, convenience sampling). Specify the locations of sample participants whenever clustered sampling was applied.	3
	6c	Provide information on sample size, along with details of sample size calculation.	3
	6d	Describe how representative the sample is of the study population (or target population if possible), particularly for population-based surveys.	N/A
Survey administration	7a	Provide information on modes of questionnaire administration, including the type and number of contacts, the location where the survey was conducted (e.g., outpatient room or by use of online tools, such as SurveyMonkey).	3-4
	7b	Provide information of survey's time frame, such as periods of recruitment, exposure, and follow-up days.	4
	7c	Provide information on the entry process: –>For non-web-based surveys, provide approaches to minimize human error in data entry. –>For web-based surveys, provide approaches to prevent "multiple participation" of participants.	N/A
Study preparation	8	Describe any preparation process before conducting the survey (e.g., interviewers' training process, advertising the survey).	4
Ethical considerations	9a	Provide information on ethical approval for the survey if obtained, including informed consent, institutional review board [IRB] approval, Helsinki declaration, and good clinical practice [GCP] declaration (as appropriate).	4
	9b	Provide information about survey anonymity and confidentiality and describe what mechanisms were used to protect unauthorized access.	4
Statistical analysis	10a	Describe statistical methods and analytical approach. Report the statistical software that was used for data analysis.	5
	10b	Report any modification of variables used in the analysis, along with reference (if available).	N/A
	10c	Report details about how missing data was handled. Include rate of missing items, missing data mechanism (i.e., missing completely at random [MCAR], missing at random [MAR] or missing not at random [MNAR]) and methods used to deal with missing data (e.g., multiple imputation).	5 + Supl 2
	10d	State how non-response error was addressed.	N/A

	10e	For longitudinal surveys, state how loss to follow-up was addressed.	N/A
	10f	Indicate whether any methods such as weighting of items or propensity scores have been used to adjust for non-representativeness of the sample.	N/A
	10g	Describe any sensitivity analysis conducted.	N/A
Results			
Respondent characteristics	11a	Report numbers of individuals at each stage of the study. Consider using a flow diagram, if possible.	Figure 1
	11b	Provide reasons for non-participation at each stage, if possible.	Figure 1
	11c	Report response rate, present the definition of response rate or the formula used to calculate response rate.	Figure 1
	11d	Provide information to define how unique visitors are determined. Report number of unique visitors along with relevant proportions (e.g., view proportion, participation proportion, completion proportion).	N/A
Descriptive results	12	Provide characteristics of study participants, as well as information on potential confounders and assessed outcomes.	N/A
Main findings	13a	Give unadjusted estimates and, if applicable, confounder-adjusted estimates along with 95% confidence intervals and p-values.	N/A
	13b	For multivariable analysis, provide information on the model building process, model fit statistics, and model assumptions (as appropriate).	N/A
	13c	Provide details about any sensitivity analysis performed. If there are considerable amount of missing data, report sensitivity analyses comparing the results of complete cases with that of the imputed dataset (if possible).	N/A
Discussion			
Limitations	14	Discuss the limitations of the study, considering sources of potential biases and imprecisions, such as non-representativeness of sample, study design, important uncontrolled confounders.	11
Interpretations	15	Give a cautious overall interpretation of results, based on potential biases and imprecisions and suggest areas for future research.	8-11

Generalizability	16	Discuss the external validity of the results.	8-11
Other sections			
Role of funding source	17	State whether any funding organization has had any roles in the survey's design, implementation, and analysis.	1 (cover letter)
Conflict of interest	18	Declare any potential conflict of interest.	1 (cover letter)
Acknowledgements	19	Provide names of organizations/persons that are acknowledged along with their contribution to the research.	1 (cover letter)

CHAPTER 8: Bridge between manuscript 3 and 4

8.1 Research questions of manuscript 3 and 4

Manuscript 3: The objective of this third study was to obtain a comprehensive portrait of the respiratory therapy profession across Canada. Specifically, to describe the demographic characteristics, scholarly and practice profile of the Canadian respiratory therapy profession.

Manuscript 4: The objective of this fourth study was to develop and provide evidence of validity for a comprehensive tool to measure scholarly practice in RTs. Specifically, I used DeVellis' 9-step process for scale development to develop and pilot a new tool.[247] I then conducted an exploratory factor analysis (EFA) to identify the underlying relationships among observed variables and uncover the latent factors.

8.2 Integration of manuscript 1, 2, 3 and 4

Manuscript 2 reports on a study that aimed to explore what scholarly practice means, and how it manifests in practice from RTs' perspectives using an interpretive description methodology. Using the findings from the scoping review included in this dissertation (*Manuscript 1*), I built a semi-structured interview guide to conduct in-depth qualitative interview with purposively sampled participants to obtain varied perspectives of scholarly practice in respiratory therapy. I conducted 26 semi-structured interviews with RTs in different roles (clinicians, educators, researchers, leaders, and managers) across Canada. The data were organised into five themes: (i) the identity of a scholarly practitioner in RTs; (ii) factors influencing scholarly practice; (iii) one's impression of their professional self-image; (iv) scholarly practice as a vehicle for changing practice; and (v) the complex interconnections between knowledges and practices.

The scoping review (*Manuscript 1*) and qualitative study (*Manuscript 2*) results lay the groundwork to begin documenting and measuring scholarly practice. Specifically, the scoping review findings revealed an absence of tools to measure scholarly practice. Therefore, using the results of the cross-sectional survey to describe the demographic characteristics, scholarly and practice profile of the Canadian respiratory therapy profession (*Manuscript 3*)**,** the objective of

the fourth study was to develop and provide preliminary evidence of validity for a comprehensive tool to measure scholarly practice in RTs.

Using a validated measure to assess scholarly practice is helpful for the following reasons: 1) it can help identify and evaluate the diverse dimensions of professionals' engagement and enactment of scholarly practice; 2) it can encourage self-reflection and peer-based reflection, facilitating the identification of personal strengths and areas requiring improvement. This, in turn, allows for targeted interventions and professional development opportunities; 3) it may empower researchers to collect data for various purposes, ranging from evaluating individual performance evaluation to informing broader organizational strategies aimed at fostering a culture of scholarly practice.

The resulting data can enhance our understanding of scholarly practice in a given context, foster accountability toward the society that a professional is expected to serve and contribute insights to the body of knowledge about this topic. Thus, the aim of *Manuscript 4* was to develop and provide evidence of validity for a comprehensive tool to measure scholarly practice in RTs.

CHAPTER 9: Manuscript 4

Citation: Zaccagnini, M. Bussières, A. Nugus, P. West, A. Thomas, A. Measuring scholarly practice in respiratory therapists: the development and initial validation of a scholarly practice tool. Under review as of May 10, 2024, in the *Journal of Continuing Education in the Health Professions*

Marco Zaccagnini,[1,2] André Bussières,[1,2,3] Peter Nugus,[4,5] Andrew West,[6] Aliki Thomas[1,2,4]

[1]School of Physical and Occupational Therapy, McGill University, Montréal, Québec. Canada
[2]Centre for Interdisciplinary Research in Rehabilitation of Greater Montréal, Montréal, Québec, Canada
[3]Département chiropratique, Université du Québec à Trois-Rivières, Trois-Rivières, Québec
[4]Institute of Health Sciences Education, McGill University, Montréal, QC, Canada
[5]Department of Family Medicine, McGill University, Montréal, QC, Canada
[6]The Canadian Society of Respiratory Therapists, Saint John, New Brunswick, Canada.

Corresponding author: Aliki Thomas**,** McGill University, School of Physical and Occupational Therapy**,** Charles Meredith House**,** Montréal, Québec, Canada, H3A 1A3**;** Telephone: 514-398-4496; Fax: 514-398-6360**;** Email: aliki.thomas@mcgill.ca

Abstract

Introduction Respiratory therapists (RTs) must apply competencies to address the healthcare needs of the public. While all competencies are deemed essential, scholarly practice requires that professionals critically assess their practices, integrate evidence-based literature, and enhance the care they deliver to patients. Though scholarly practice is also associated with professional empowerment, role satisfaction and improved patient care, it is rarely measured. The purpose of this study was to develop, pilot and generate preliminary validity evidence of a tool designed to measure scholarly practice among RTs.

Methods: We used DeVellis' 9-step scale development process and exploratory factor analysis (EFA) to develop the tool. The results of a scoping review and qualitative study were used to generate an item pool and pilot-test it with 81 RTs across Canada. The refined tool was tested on a larger sample (n=832) and analyzed using EFA.

Results: Using principal axis factoring with Promax rotation, we retained 18 items across 4 factors, explaining 56.7% of the variance in the data (31.7%, 10.2%, 8.6%, 6.2%): Factor 1) *professional development and credibility,* Factor 2) *elements supporting scholarly practice,* Factor 3) *the perceived impact of scholarly activities on practice* and Factor 4) s*cholarly practitioner identity and ability.* Internal consistency of the final 18-item scale was suitable overall (Cronbach's alpha=0.879) and for each factor (F1=0.888; F2=0.774; F3=0.842; F4=0.746).

Discussion: Our results provide preliminary evidence for a scholarly practice tool that can encourage self-reflection and/or foster peer-based reflection. Using the tool with other healthcare professionals and conducting confirmatory factor analysis could generate additional validity evidence.

Keywords: Respiratory Therapy; scholarly practice; competencies; allied health personnel; education, medical; psychometrics

Background

Healthcare professionals are expected to apply specific competencies to effectively address patients' healthcare needs. Competencies encompass agreed-upon sets of knowledge, skills, attitudes, and behaviours expected of individuals as they transition from students to professionals.[1-3] Healthcare professionals' competency frameworks commonly include roles such as expertise, scholar/scholarly practitioner, communicator, health advocate, and collaborator. While all competencies are deemed essential, scholarly practice, sometimes referred to as the scholar role or practice-based scholarship, is considered a fundamental competency in many healthcare professions.[2,4-10] Scholarly practice prepares healthcare professionals to critically evaluate their practices, explore, identify, and integrate evidence-based literature into their work.[7-9,11] Moreover, scholarly practice empowers professionals to contribute to the advancement of knowledge in their field by engaging in research and other scholarly activities, such as presentations, publications, and mentoring.[7-9,11] Finally, scholarly practice has been associated with several positive outcomes, such as professional empowerment, role satisfaction, a positive work environment, and patient outcomes.[5,12-16]

Despite being considered a fundamental competency,[5,12-16] several challenges persist regarding how scholarly practice is defined, taught, assessed, and how it might be enacted in daily practice.[17-19] These challenges primarily stem from a lack of conceptual clarity, likely due to the interchangeable use of various terms and the existence of multiple definitions and descriptions in the empirical research[20,21] and competency frameworks.[2,7-10] This lack of clarity also extends to the teaching and assessment of scholarly practice in both classroom education and clinical practicum settings.[17,18,22-25] For example, an analysis of the curricula of 18 physician residency-training programs revealed that the scholar role was one of the least frequently assessed competencies, possibly sending a message to learners that scholarly practice is of lesser importance.[17] This minimal emphasis on teaching and assessing scholarly practice among healthcare professionals has been highlighted elsewhere.[19,25-30] Furthermore, our recent scoping review revealed a notable absence of suitable measurement tools of scholarly practice among many healthcare professionals, including dieticians, nurses, physicians, psychologists, pharmacists, social workers, and rehabilitation professionals (occupational therapists [OTs], physiotherapists [PTs], respiratory therapists [RTs] and speech-language pathologists [SLP]).[20]

The absence of clear definitions of scholarly practice and the shortage of suitable measurement tools challenge researchers to advance the empirical and conceptual knowledge base regarding this competency.[23] The shortage of suitable tools may lead to infrequent or inadequate assessment of this competency. A tool to measure scholarly practice may enable stakeholders, such as educators, to assess students' knowledge, skills, and attitudes regarding this competency. This, in turn, can cultivate healthcare professionals' ability to enact scholarly practice, consequently shaping a more favorable perception of this competency.[19,25-30] It can also help identify learning gaps and inform the development or modification of curricula.[31]

In the context of a larger research program, we sought to understand how RTs conceptualize, describe and enact scholarly practice.[20,32] Our findings provided a foundation for the development of a measurement tool, particularly significant in a profession where scholarly practice has not traditionally been emphasized.[33,34]. Developing a tool to measure scholarly practice in respiratory therapy can 1) promote interdisciplinary collaboration by facilitating the exchange of ideas and best practices and 2) serve as the initial step in setting benchmarks and standards for practice, enabling RTs to identify areas for improvement and engage in continuous professional development. This approach of benchmarking and continuous improvement can serve as a model for other healthcare professions, including established and emerging ones, such as physician assistants[35] and genetic counsellors.[36] In a constantly evolving healthcare environment, having tools to measure scholarly practice helps healthcare professionals adapt to changing standards, ensuring their skills and practices remain relevant and current. To that end, we used the respiratory therapy profession as a case to develop a measurement tool to assess scholarly practice.

Objectives

The aim of this study was to develop, pilot and generate preliminary content validity evidence of a tool designed to measure scholarly practice among RTs.

Ethical considerations

Ethical approval for this study was received from the Institutional Review Board of McGill University (study number A01-E04-22A). Inferred consent was obtained through completion and return of the questionnaire.

Methods

We used DeVellis' 9-step process for scale development to develop and pilot a new tool followed by exploratory factor analysis (EFA) to begin identifying the underlying relationships among observed variables to uncover latent factors.[37] DeVellis' process offers a structured and systematic approach to scale development, ensuring that the resulting measurement tool accurately measures its intended aspects and consistently produces reliable results.[38]

Step 1: Determine the concept to be measured

A scoping review first mapped the breadth and depth of literature regarding what is known about scholarly practice in licensed healthcare professionals.[20] Included papers had to explore, describe, or define scholarly practice and/or related concepts in licensed healthcare professionals. Briefly, scholarly practice was conceptualized as: the interdependent relationship between scholarship and practice; necessary for advancing the profession; and core to being a healthcare practitioner. The attributes of scholarly practitioners clustered around five themes: commitment to excellence in practice, collaborative nature, presence of virtuous characteristics, having effective communication skills, and possessing an adaptive change ethos. Having confirmed that none of the populations within the included papers were RTs, we chose to further explore the phenomenon of scholarly practice in RTs using qualitative research.

We then conducted an interpretive description study whereby we interviewed 26 RTs in various roles in the profession across Canada (clinicians, educators, researchers, leaders and managers). We identified five main themes: (i) the identity of a scholarly practitioner in RT; (ii) factors influencing scholarly practice; (iii) one's impression of their professional self-image; (iv) scholarly practice as a vehicle for changing practice; and (v) the complex interconnections between knowledges and practices.[32] Through iterative discussion with the research team, we established a working definition of each theme (Appendix 1). Since the design and development of the tool was informed by a strong construct definition, it serves as evidence to support its content validity.

Step 2: Generate an item pool

The qualitative study yielded the main themes (i.e., scales) for the tool. The excerpts from the participants informed the development of the items. We treated these excerpts as representative of the variable of interest. We created multiple versions of each item per theme using different wording.[37] For example, *"skills to apply research findings to clinical practice are important/necessary/essential to develop as a scholarly practitioner."* We subsequently verified the alignment of the potential items with the conceptual definition, redundancy, clarity, quality, and wording (positive/negative). Since the item generation was informed by a knowledge synthesis[20] and a qualitative study,[32] it serves as evidence to support the content validity.

Step 3: Determine the format for measurement

We selected a 6-point Likert scale (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree) to comprehensively record the agreement level among participants. The bipolar scale compelled respondents to consider both positive and negative aspects of the statement, enabling us to obtain more nuanced response about their attitudes and opinions. We did not include a neutral response option (i.e., neither agree nor disagree) to avoid complacency and encourage participants to actively engage with the statement.

Step 4: Have initial item pool reviewed by experts

In consultation with a measurement expert, we reviewed the items generated in Step 2, our working definition of the construct and mounted the items on a Word document.. Three content and three measurement experts external to the research team provided feedback on every item. They 1) rated each item for relevance regarding the construct as we defined it using dichotomous responses (Yes/No) and suggested changes in an open-text box for each item when necessary; 2) commented on any gaps in content areas; and 3) suggested items that may be missing.

We decided a priori to use a cut-off value of three positive responses combined with expert feedback for keeping or discarding an item. Items with fewer than three positive responses were either revised based on the expert feedback or discarded. The external expert review served to provide evidence of content validity for the tool.

Step 5: Cognitive interviewing

We did not conduct cognitive interviews as optimizing language, format, and response options for the measurement tool were addressed when gathering expert feedback during Step 4 of the development process.

Step 6: Consider inclusion of validation items (i.e., social desirability)

We chose not to include items to test social desirability (i.e., respondents choose to answer questions in a way that makes them appear better or more socially acceptable) because we did not view the construct as particularly sensitive. Furthermore, if validation items are included in a survey, respondents may become aware of the purpose of the survey and modify their responses accordingly, making it difficult to accurately assess the desired construct.[39]

Step 7: Administer items to a development sample

We used convenience and snowball sampling techniques to recruit 50-75 participants to allow for sufficient data to evaluate the tool's feasibility, reliability, and validity and identify any areas needing improvement.[40] After revising the items based on the expert feedback, we pilot-tested the items on RTs across Canada. The pilot test was conducted over three weeks using Research Electronic Data Capture (REDCap), a web-based application designed for data collection and management. The survey consisted of 55 questions organized into 7 sections. Appendix 2 includes the pilot survey.

Step 8: Evaluate the items (pilot test)

Using the Statistical Package for Social Sciences (SPSS) software version 29, we calculated and assessed the item discrimination (i.e., item with corrected total score correlation) values for each scale and kept the items with higher discrimination values, provided that the value was higher than 0.3. If the corrected item-total correlation was lower than 0.3, we engaged in a reflexive team discussion to determine whether the item was theoretically important to the construct we aimed to measure. If it was, we opted to keep the item to test within the full sample.

We also explored the inter-item correlation for the retained items (per scale). We flagged any items that had negative or greater than 0.8 inter-item correlations and reworded them to ensure there was no overlap. We did this because a significant correlation (>0.8) suggests redundancy and a negative correlation suggests measurement error (i.e., noise) in estimating the

true score. We conducted a Cronbach's alpha (α) per scale for internal consistency, aiming to be above 0.7, deemed appropriate for an exploratory scale.[37,41,42] Finally, we performed item-wise descriptive statistics (mean and standard deviation) for each scale.

Additional Step: Translation

We conducted a forward-backward translation.[43,44] The items were first translated into French by a professional translator. The core research team (who are fluent in English and French) then reviewed and revised the translated items for accuracy. A different professional translator subsequently translated the French version into English. The research team compared the two translations and made minor modifications to the items to ensure consistency between both versions

Step 9: Optimize the Scale

In response to the problematic psychometric pilot results (i.e., too many negative inter-item correlations) observed for section 3 ("the image of the RT profession") and section 4 ("scholarly practice influencing your practice"), we revised the wording of these sections extensively and conducted a second pilot for these two sections only. We repeated the processes outlined in Step 8 to ensure that the psychometric properties of the new sections were satisfactory.

Step 9.1: Optimize the Scale Validation

Following the pilot test, scale optimization and translation, the tool was administered to a sample of RTs across Canada via an online survey of the scholarly and practice profile of RTs across Canada.[45] The survey was distributed from November 1 to December 20, 2023, through the Canadian Society of Respiratory Therapists and the nine Canadian regulatory bodies' email lists. Reminders were sent at two, four and six weeks after the initial email.

Data Analysis

We cleaned the data and determined suitability for EFA.[37] Of note, during the data collection phase, our survey was shared on social media via a third party (i.e., an individual not related to the project). Soon after, we noticed that the response rate increased rapidly (>200 responses within minutes). We suspected that our survey was targeted by spambots and/or non-

eligible participants seeking the participation incentive. We re-opened the survey link after 24 hours, asked participants not to share the link (either personally or via social media) and created a data cleaning protocol before analysis. Appendix 3 for data cleaning protocol.

The data were then imported into SPSS for analysis. All "negatively worded" items were recoded into the positive direction (i.e., a score of 1 was recoded as 6, 2 was recoded as 5, etc.). We visually inspected the observed distributions and conducted tests for skewness and kurtosis (i.e., assessment for normal distributions). Next, the Kaiser-Meyer-Olkin (KMO) statistic of sampling adequacy and Bartlett's test of sphericity were calculated to confirm that the data were suited for factor analysis. We aimed for a KMO ≥ 0.7 and a significant Bartlett test ($p < 0.05$) which suggests that the data are factorable.[46-49]

Through EFA, we explored the factor structure using principal axis factoring with oblique (i.e., Promax) rotation, as recommended when the factors relating to the theoretical construct are assumed to be intercorrelated and not normally distributed.[49,50] To identify the number of factors to extract, we examined the eigenvalues (following the Kaiser-Guttman Criterion, retaining factors with eigenvalues >1.0),[51,52] reviewed the "elbow" joint in the scree plot[53] and conducted Velicer's minimum average partial (MAP) criteria.[54-57] We considered items with cross-loading values of ≤ 0.3 as weak (and thereby as candidates for deletion).[48] Any items that did not load on any factors were also deleted. Each factor required at least 3 items to load onto it to be considered stable. Internal consistency analyses for the scholarly practice tool were conducted both overall and for each newly identified factor using Cronbach's alpha. Values above 0.7 were considered acceptable.[37,41,42,58]

To determine the sampling adequacy, researchers suggest targeting at least 5 to 10 participants per survey variable/item.[37,48-50] Given there are 30 items on the scholarly practice instrument, about 300 participants were minimally required to achieve a ratio of 10:1.

Results

Pilot Test

From our previous research,[20,32] we generated 32 items divided into 4 sections. These items were then reviewed and modified by a panel of experts (step 4) for the pilot survey, which contain the following sections: 1) the identity of a scholarly practitioner in RT (9 questions); 2) factors supporting scholarly practice (8 questions); 3) the image of the RT profession (8

questions); and 4) scholarly practice influencing one's practice (7 questions). We pilot tested the survey with 81 RTs across Canada. Based on the results, we revised and repiloted sections 3 (removing 2 questions) and 4 only. The final survey contained 30 items split into 4 sections. See Appendix 4 includes the pilot testing results and final survey.

Characteristics of the sample

The survey was accessed 1618 times. We analyzed the data from 832 complete surveys (English n=712 and French n=120). (Figure 1) When we conducted separate analyses (as outlined in Step 8), the English and French versions produced similar data. Thus, we present the pooled results. Sensitivity analyses with partial responses using median imputation for missing data provided similar results. Table 1 includes the sample characteristics of the participants.

Exploratory Factor Analysis Phase

Our exploration showed that the data were suitable for EFA. Our sample size had an exceptionally high participant-to-item ratio of 28:1. Several items exhibited an asymmetrical distribution, as confirmed by skewness and kurtosis results exceeding the range of -1 and +1.[59] As a result, we used principal axis factoring with oblique (i.e., Promax) rotation.

The KMO test yielded a statistic of 0.891, implying that the data set contained a significant number of factors, and the Bartlett's test of sphericity yielded significant results (p<0.001). The Kaiser criterion method showed that the data contained 7 factors with eigenvalues greater than 1. The MAP criteria suggested the number of factors to retain were 3 or 5.[55,57] The bend in the scree plot began to level off after 4 factors (Figure 2). A 4-factor structure would account for 48.1% of the total item variance. However, some items were not loading and/or cross-loading onto multiple factors. Consequently, we analyzed the rotated pattern matrix and repeatedly ran EFAs until a simple, interpretable structure was obtained. Specifically, some items were removed because they did not load above 0.3 onto any factors. They were: items Q10 "*I seek the advice from expert colleagues for more complex clinical cases*," Q13 "*being able to critically reflect about my practice is an important part of being an RT*," Q15 "*having a mentor helps RTs become scholarly practitioners,"* Q24 "*RTs are valued members of the interprofessional team*" and Q35 "*participating in scholarly activities (such as research, quality improvement, program evaluation) negatively affects my bedside clinical skills.*" Additionally,

items Q14 "*Being able to critically appraise research articles is an important part of being an RT,"* Q32 "*clinical work is necessary for generating research questions in respiratory care,*" and Q36 "*participating in scholarly activities (such as research, quality improvement, program evaluation) is feasible during clinical practice*" were removed because they loaded weakly (0.3-0.4) onto multiple factors. The last four items loaded onto two separate factors. These were: Q16 "*Knowledge in research methodology is necessary for developing as a scholarly practitioner,"* Q17 "*Skills to apply research findings to practice are necessary for developing as a scholarly practitioner*," and Q11 "*I take the time to mentor other RTs*" and Q12 "*I take the time to supervise student RTs in clinical practice, if the opportunity arises.*" Because the last four items did not meet the minimum threshold of 3 items per factor to be considered stable, they were removed from the final tool. Finally, 18 items were retained which loaded onto 4 factors, explaining 56.7% of the variance in the data (F1=31.7%, F2=10.2%, F3=8.6%, F4=6.2%). Table 2 summarizes the 4-factor structure of the scholarly practice tool along with the loading of the 18 items. Upon obtaining this simplified structure, we further specified the constructs represented by the 4 factors.

The first factor (F1) corresponds to *professional development and credibility* with 5 items capturing an individual's perceptions regarding the role of advancing education, professional qualifications, and contribution to research in shaping the credibility and professional development of the profession. The second factor (F2) represents the *elements supporting scholarly practice,* with 6 items capturing the different components which could support an individual's development as a scholarly practitioner. The third factor (F3) covers the *perceived impact of scholarly activities on practice.* The 4 items in this factor cluster around an individual's perceived benefits of engaging in scholarly activities, such as research, quality improvement, and program evaluation. These activities are seen to positively influence the delivery of patient care and enhance the understanding of the connection between research and clinical practice. The fourth factor (F4) corresponds to an individual's s*cholarly practitioner identity and ability.* These 3 items capture an individual's self-perceived identity and confidence in their ability to engage in scholarly activities within their professional practice. These items reflect an individual's confidence in their capacity to summarize research evidence for their peers (e.g., clinicians, managers), their ability to apply research findings into practice and their commitment to integrating evidence-based practices into their professional roles. The internal consistency of

the final 18-item scale was deemed suitable overall (α=0.879) and for each factor (α F1=0.888; F2=0.774; F3=0.842; F4=0.746). Appendix 5 includes the final tool.

Discussion

The purpose of this study was to develop, pilot and generate preliminary validity evidence of a tool for measuring scholarly practice following DeVellis' 9-step process for scale development.[37] Using our pilot and EFA results, we developed a short 18-item, 4-factor scale tool that measures various aspects of the multidimensional scholarly practice competency within RTs.

The first identified factor pertains to the professional development and credibility dimensions of scholarly practice. Our findings indicate that these two dimensions are closely intertwined and impact how individuals perceive scholarly practice. This factor emerged as the most influential, accounting for the largest percentage (31.7%) of the variance in the data. The strong association between professional development and credibility underscores the importance of continuous learning and skill enhancement in scholarly practice. This factor suggests that practitioners actively engaging in professional development activities (e.g., working on research teams, pursuing advanced degrees) are more likely to be perceived as scholarly practitioners in their profession. Professionals involved in research during clinical practice or pursuing higher education alongside their clinical roles tend to be highly respected by other professionals for their ability to engage in discussions at an advanced level.[60-63] They are perceived as credible sources of up-to-date knowledge and as individuals who actively contribute to enhancing patient care.[62,63] Notably, Andreassen et al.[62] reported that nurses with doctorates in their setting are key figures capable of elevating the nursing profession's standing. The authors anticipate that nurses holding doctorates (and, by association, their nursing colleagues) will garner greater influence, responsibility, and recognition within their organization and profession more broadly. Specifically, the participants in the study expressed aspirations for increased acknowledgment and inclusion, particularly by other healthcare professionals, such as physicians.[62]

The second factor accounted for 10.2% of the variance and includes the elements that support scholarly practice, such as the necessity of a supportive working environment, supportive peers, access to resources (e.g., funding opportunities, protected time, continuing professional development opportunities), mentorship, and access to higher education. These elements, which

appear to be crucial for fostering an environment conducive to scholarly practice, are not surprising, as they have been widely discussed in various forums, from nursing departments[64] to health system organizations.[65] These appear essential for supporting aspects of scholarly practice, such as increasing capacity for research and facilitating evidence-informed decision-making.[5,65,66]

The third factor accounted for 8.6% of the variance and focused on the perceived impact of scholarly activities on practice. This factor includes items related to the ability to use research, understanding how research applies to clinical practice and how research can facilitate advocacy efforts on behalf of patients. Recent systematic reviews found a positive association between professionals involved in research activities and the quality of patient care,[67,68] highlighting the need to support and encourage professionals in their involvement in research activities. Moreover, recent studies emphasized the importance of professionals serving as advocates, considering it a fundamental competency in their training.[69-71] Despite this importance, the definition of advocacy and its associated skills remain relatively underdeveloped.[69,70,72] Our findings, and those of others, in medicine and nursing, suggest that research utilization may be a component of advocacy.[71-74] For example, Abbasinia et al.[71] found that nurses often conceptualize advocacy as "safeguarding," which involves leveraging their professional and research knowledge to safeguard patients from potentially inappropriate (and presumably non-evidence-based) medical interventions.[71]

The fourth factor, accounting for 6.2% of the variance, relates to an individuals' perceived identity as a scholarly practitioner, suggesting that some individuals may be predisposed to scholarly practice because it is part of their personal and professional identity. This finding aligns with existing literature on professional identity formation, particularly in roles such as clinician-scientist[75,76] or clinician-educator.[77,78] This factor highlights the complex interplay between individual characteristics, motivations, and the adoption of scholarly practices, and suggests that fostering a sense of scholarly identity may be instrumental in encouraging individuals to engage in scholarly activities and contribute meaningfully to their profession.

Building on our previous research findings,[20,32] the outcomes of this EFA, alongside established empirical evidence,[4,12-16,27,66,79-82] demonstrate that our tool has identified new aspects pertaining to the scholarly practice competency. The findings produce additional insights into how scholarly practice may influence a profession’s credibility or the perceived impact that

scholarly activities have on practice, suggesting that scholarly practice extends beyond traditional definitions to encompass dimensions not previously considered.[79-82] Specifically, scholarly practice is not merely a set of discrete skills to be learned and applied, but rather, it requires that professionals deeply engage with their profession or field of practice, commit to continuous learning and improvement, and critically evaluate and apply research findings to real-world situations.

The four factors aim to capture this multidimensionality, moving beyond single aspects of scholarship, such as the number of publications a professional might have. Available measurement tools such as the Jefferson Scale of Physician Lifelong Learning[83] focus on discrete aspects of scholarly practice, like productivity metrics, such as the number of published papers, serving as principle investigator on projects or extramural funding. However, such metrics fail to fully capture the comprehensive spectrum of scholarly practice.[84,85] For example, Kim et al. adopted an integrated knowledge translation approach with representatives from three sectors, namely, education/research, practice, and policy/regulation in occupational and physiotherapy' to build capacity for scholarly practice.[82] Participants conceptualized scholarly practice as a multifaceted competency which includes aspects of evidence-based practice, reading articles, and participating in knowledge mobilization and mentorship activities. They also suggested that scholarly practice should be a shared responsibility between practitioners, institutions, and regulatory bodies.[82] Similarly, a group of researchers in the United States interviewed health professions education scholarship unit directors to understand how these institutional units might define and operationalize scholarship for their missions and learners. They concluded that scholarship is operationalized in many ways, including fostering cross-disciplinary connections, collaborations, knowledge mobilization and translation, and innovations.[81]

The current version of the scholarly practice tool may be used by clinicians to encourage self-reflection and/or foster peer-based reflection.[86] This process aids in recognizing personal strengths and areas needing improvement, facilitating targeted interventions and professional development opportunities. Moreover, having a tool for scholarly practice with some evidence of validity empowers researchers to collect data for various purposes, ranging from individual performance evaluation to informing broader organizational strategies aimed at fostering a culture of scholarly practice.[6,87] Our results provide preliminary validity evidence for this measurement tool of scholarly practice. Further validation studies, such as confirmatory factor

analysis among RTs and other health professions are needed.[88,89] The implications of our tool include advancing a shared understanding and evaluation of scholarly practice within the context of RTs, and contributing to the ongoing dialogue within health professions education that scholarly practice is important and necessary to improve professional practice, organizational culture, and patient care.[12-16]

Strengths and limitations

This research has limitations. First, we used a convenience sample. While our sample size exceeded general recommendations for scale development, it is possible that only engaged or interested participants completed the survey.[37,50,89] This scenario could introduce biases in the factor structure extracted from the EFA, which can potentially skew it towards aspects more appealing or relevant to this engaged subgroup. It may also fail to represent the true underlying dimensions of the construct. Consequently, findings might lack generalizability to the broader population of RTs.[90,91] However, we made efforts to mitigate this limitation by employing multiple recruitment methods and offering incentives to attract respondents who might not typically be interested in the construct, aiming to ensure that our respondents are a fair representation of the population. Second, this tool was developed in the respiratory therapy population in a Canadian context; therefore, the findings might not be applicable to other professions or contexts. For example, in Canada, the respiratory therapy profession requires a diploma for entry-level practice, whereas other professions such as medicine, occupational therapy, pharmacy, physiotherapy require master's or doctoral-level qualifications for entry-to-practice. Some of the items removed following the EFA could be pertinent to those professions. As a complex competency, scholarly practice should be studied in other professions and other contexts. Items might require modification if used in different professions or countries (e.g., cross cultural adaptations). Third, a confirmatory factor analysis should be completed with new data sets to test and confirm the factor structure of the measurement tool. Due to the limitations of using the same sample set to run an exploratory and confirmatory factor analysis, we opted to use our full sample to ensure a robust EFA. This decision resulted in a high sample size-to-item ratio, which enhances factor stability.[88]

Conclusion

Our results provide initial validity evidence for an 18-item scholarly practice self-report tool designed to measure scholarly practice of RTs. The factors identified in this tool align with existing literature and identified dimensions not previously considered in the traditional definitions of the scholarly practice competency for healthcare professionals. This tool can potentially aid healthcare professionals in self-reflection and foster peer-based reflection. Moreover, it can be utilized to inform broader organizational strategies aimed at fostering a culture of scholarly practice within healthcare settings.

Figure 1- Study Flow Diagram from original cross-sectional study

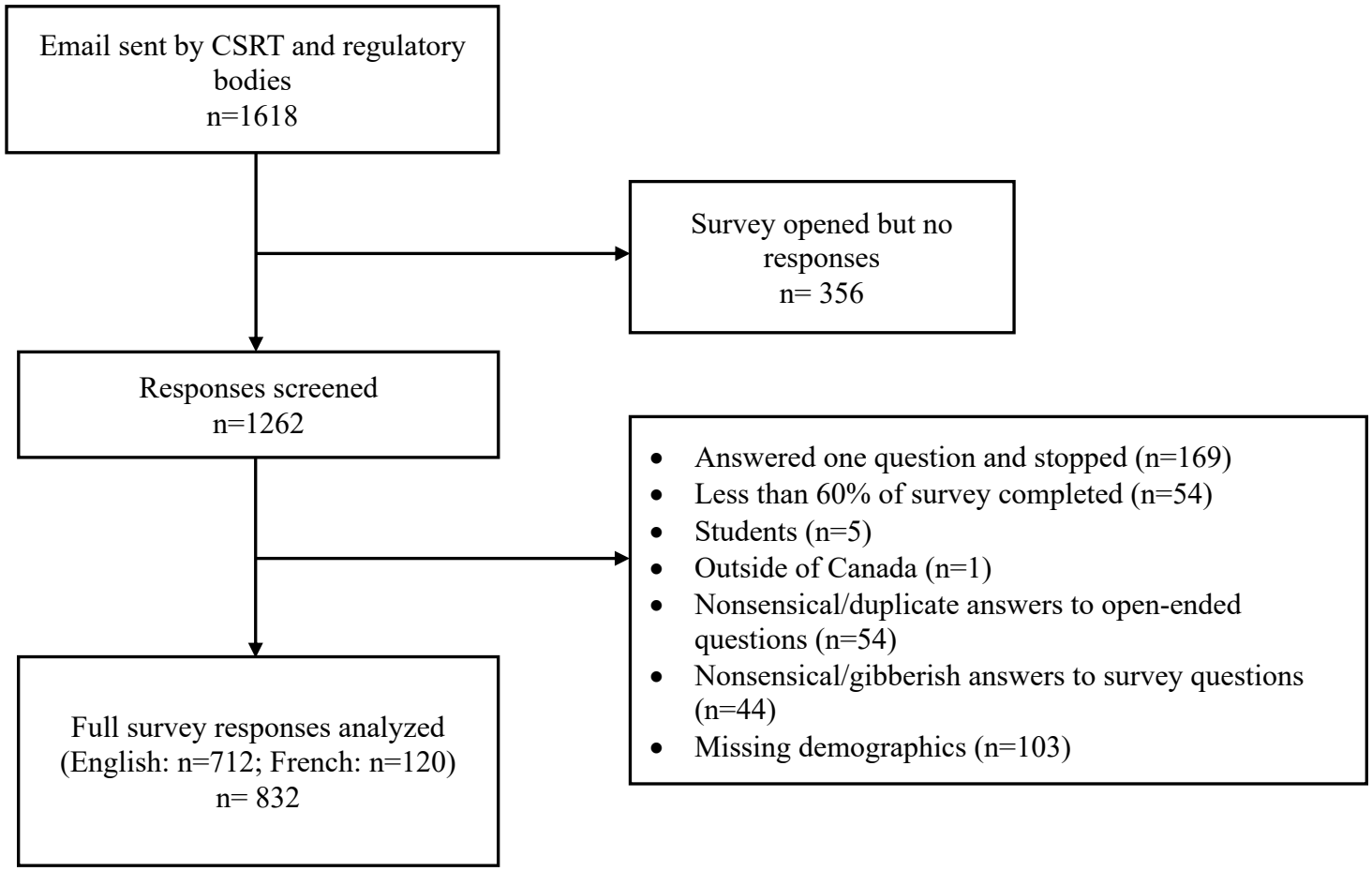


Figure 2- Scree plot

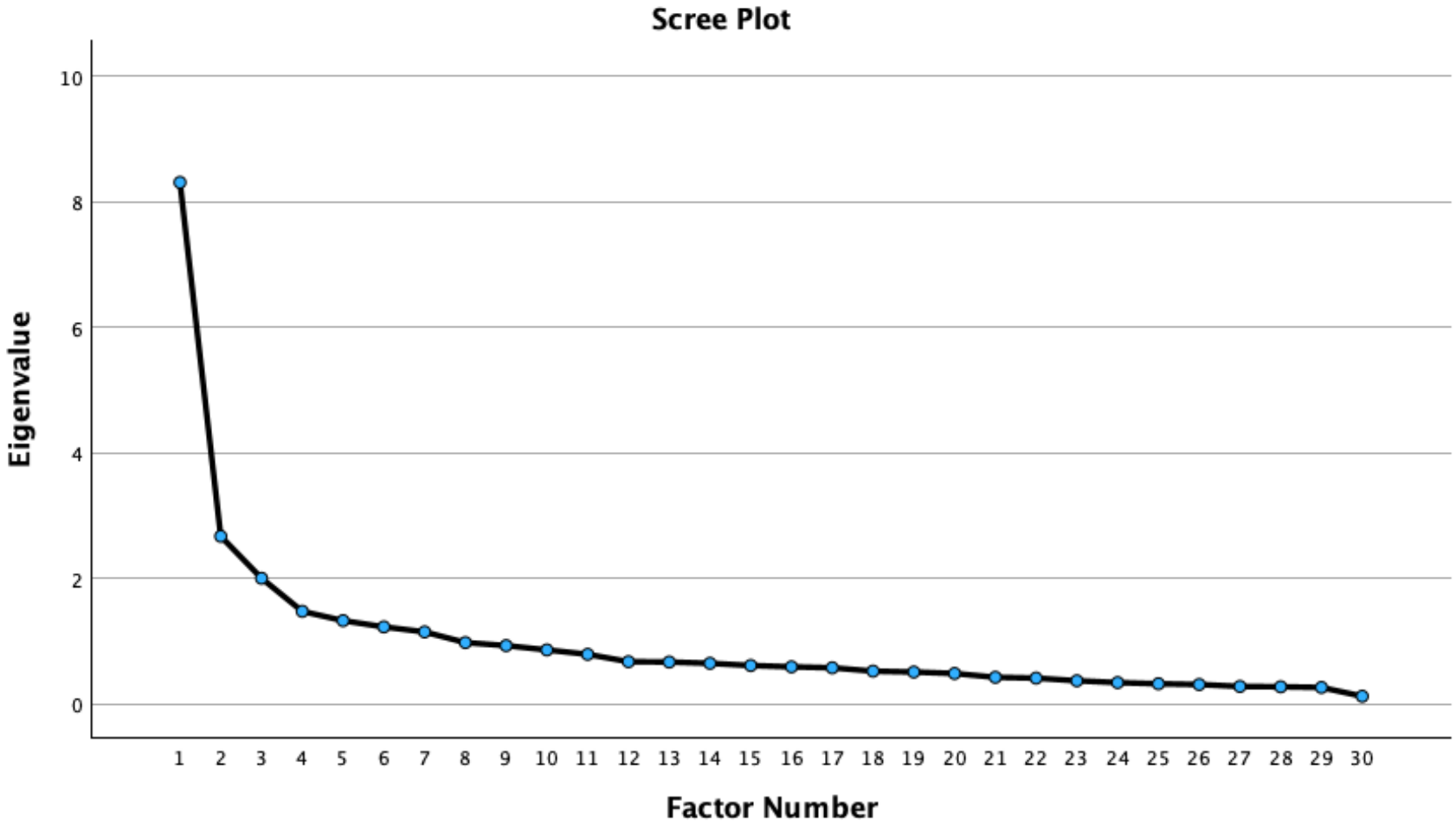


Table 1- Sociodemographic characteristics of full survey respondents

Demographics (n=832)	
Age n (%)	
Under 29	124 (14.9)
30 to 39	283 (34.0)
40 to 49	221 (26.6)
50 to 59	168 (20.2)
Over 60	36 (4.3)
Years in practice	
Less than 5 years	159 (19.1)
6 to 10 years	149 (17.9)
11 to 15 years	133 (16.0)
16 to 20 years	106 (12.7)
21 to 25 years	108 (13.0)
Over 26 years	177 (21.3)
Gender* n (%)	
Woman	627 (75.2)
Man	186 (22.3)
Non-Binary	2 (0.2)
Gender-Queer	2 (0.2)
Self-Identify as another option	4 (0.5)
Prefer not to answer	13 (1.6)
Race* n (%)	
White	703 (81.6)
Indigenous	26 (3.0)
South Asian	23 (2.7)
East Asian	22 (2.6)
Southeast Asian	19 (2.2)
Middle Eastern	11 (1.3)
Black	11 (1.3)

Latin American	5 (0.6)
Something else	13 (1.5)
Don’t know	6 (0.7)
Prefer not to answer	23 (2.7)
Province currently practicing in n (%)	
Ontario	148 (17.8)
Nova Scotia	70 (8.4)
Québec	131 (15.7)
British Columbia	108 (13.0)
Alberta	111 (13.3)
Manitoba	53 (6.4)
Prince Edward Island	17 (2.0)
Newfoundland and Labrador	45 (5.4)
Saskatchewan	58 (7.0)
New Brunswick	88 (10.6)
Nunavut	1 (0.1)
Northwest Territories	1 (0.1)
Yukon	1 (0.1)
Highest education n (%)	
Professional Diploma	277 (33.3)
Post-professional diploma	158 (19.0)
Bachelor	332 (39.9)
Master	59 (7.1)
Doctorate	6 (0.7)
Primary work setting n (%)	
Tertiary care hospital	377 (45.3)
Community hospital	131 (15.7)
Rehabilitation hospital	11 (1.3)
Outpatient clinic	40 (4.8)
Community care/primary care	120 (14.4)

Higher Education institution	46 (5.5)
Medical Device/pharmaceutical	24 (2.9)
Other	78 (9.4)
Undisclosed	5 (0.6)
Employment Status n (%)	
Full-time	682 (82.0)
Part-time	126 (15.1)
Not currently working (e.g., maternity, leaves of absence)	24 (2.9)
Geographic Setting n (%)	
Urban	580 (69.7)
Suburban	157 (18.9)
Rural	92 (11.1)
Don't know	3 (0.4)
Organization n (%)	
Public	720 (86.5)
Private	103 (12.4)
**Participants could select more than one answer*	

Table 2-Factor loading

Section Name	Scholarly Practice Measure	F1	F2	F3	F4
Professional development and credibility	S4_q27) Access to post-professional degrees (MSc, PhD) in RT would contribute to a more positive perception of the profession	.835			
	S4_q25) RTs would be more valued as part of an interprofessional team if they held an undergraduate degree (e.g., BSc.RT., BRT)	.831			
	S4_q26) The entry-to-practice qualification for RT should be an undergraduate degree	.815			
	S4_q28) The profession would be more credible if RTs contributed to research projects as members of the research team	.705			
	S4_q29) The profession would be more credible if RTs lead research projects	.681			
Elements supporting scholarly practice	S3_q21) Formal mentorship is necessary for developing as a scholarly practitioner		.798		
	S3_q22) Access to resources (e.g., funding opportunities, protected time, online databases, CPD opportunities) is necessary for developing as a scholarly practitioner		.623		
	S3_q23) Participating in professional development activities (e.g., working groups, CPD) is necessary for developing as a scholarly practitioner		.592		
	S3_q19) Access to higher education (e.g., MSc. PhD) is necessary for developing as a scholarly practitioner		.579		
	S3_q20) My peers' valuing research is necessary for developing as a scholarly practitioner		.561		
	S3_q18) Having a supportive working environment is necessary for developing as a scholarly practitioner		.327		
Perceived impact of scholarly activities on practice	S5_q31) Understanding research enables me to advocate on behalf of my patients			.832	
	S5_q30) Research findings are useful in my day-to-day practice			.764	
	S5_q33) Participating in scholarly activities (such as research, quality improvement, program evaluation) helps improve the care I deliver to patients			.724	
	S5_q34) Participating in scholarly activities (such as research, quality improvement, program evaluation) enables me to better understand the connection between research and clinical practice			.675	

Scholarly practitioner identity and ability	S2_q8) I am confident in my ability to summarize research evidence for my peers (e.g., clinicians, managers)				.785
	S2_q9) I am confident in my ability to apply research findings into practice				.653
	S2_q7) I identify as a scholarly practitioner in my practice				.593
	Internal consistency (Cronbach's alpha)	0.888	0.774	0.842	0.746
	Extraction Method: Principal Axis Factoring. Rotation Method: Promax with Kaiser Normalization.[a]				
	a. Rotation converged in 6 iterations.				

References

1. Langins M, Borgermans L. Strengthening a competent health workforce for the provision of coordinated/ integrated health services. In: World Health Organization; 2015.
2. Frank JR, Snell L, Sherbino J. *CanMEDS 2015 Physician Competency Framework.* Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.
3. Epstein RM, Hundert EM. Defining and Assessing Professional Competence. *JAMA.* 2002;287(2):226-235. doi:10.1001/jama.287.2.226.
4. Wilbur K. Should scholar be the new interprofessional competency? *Canadian Medical Education Journal.* 2019;10(4):e105-e107.
5. World Health Organization. *Evidence, policy, impact. WHO guide for evidence-informed decision-making.* Geneva: World Health Organization; 2021.
6. NHS England. *Multi-professional Practice-based Research Capabilities Framework.* 2024.
7. Canadian Association of Occupational Therapists. Profile of Practice of Occupational Therapist in Canada; 2012.
8. Canadian Association of Occupational Therapists, Association of Canadian Occupational Therapy Regulatory Organizations, Association of Canadian Occupational Therapy University Programs. *Competencies for Occupational Therapists In Canada;* 2021.
9. National Physiotherapy Advisory Group. Competency profile for Physiotherapists in Canada (2017). 2017.
10. Canadian Nurses Association. Framework for the Practice of Registered Nurses in Canada. In. 2nd ed. Ottawa, ON.: Canadian Nurses Association; 2015.
11. Richardson D, Oswald A, Chan M-K, Lang ES, Harvey BJ. Scholar. In: Frank JR, Snell LS, Sherbino J, eds. *CanMEDS 2015 Physician Competency Framework.* Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.
12. Hanney S, Boaz A, Jones T, Soper B. Engagement in research: an innovative three-stage review of the benefits for health-care performance. In: *Health Services and Delivery Research.* Southhampton (UK): NIHR Journals Library; 2013.
13. Harding K, Lynch L, Porter J, Taylor NF. Organisational benefits of a strong research culture in a health service: a systematic review. *Aust Health Rev.* 2017;41(1):45-53. doi:10.1071/AH15180.

14. Kitson A. The relevance of scholarship for nursing research and practice. *Journal of Advanced Nursing.* 2006;55(5):541-543. doi:10.1111/j.1365-2648.2006.04004_1.x.
15. Masic I, Miokovic M, Muhamedagic B. Evidence based medicine - new approaches and challenges. *Acta Inform Med.* 2008;16(4):219-225. doi:10.5455/aim.2008.16.219-225.
16. Rosenberg LE. Exceptional economic returns on investments in medical research. *Med J Aust.* 2002;177(7):368-371. doi:10.5694/j.1326-5377.2002.tb04840.x.
17. Binnendyk J, Pack R, Field E, Watling C. Not wanted on the voyage: highlighting intrinsic CanMEDS gaps in Competence by Design curricula. *Can Med Educ J.* 2021;12(4):39-47. doi:10.36834/cmej.70950.
18. Kazevman G, Marshall JL, Shachar B, Slater M, Leung F-H, Guiang CB. Uncovering Hidden Scholar Feedback with Field Notes. *MedEdPublish.* 2021;10(1). doi:10.15694/mep.2021.000168.1.
19. Stutsky BJ, Singer M, Renaud R. Determining the weighting and relative importance of CanMEDS roles and competencies. *BMC research notes.* 2012;5:354. doi:10.1186/1756-0500-5-354.
20. Zaccagnini M, Bussières A, Mak S, Boruff J, West A, Thomas A. Scholarly practice in healthcare professions: findings from a scoping review. *Adv Health Sci Educ Theory Pract.* 2022. doi:10.1007/s10459-022-10180-0.
21. Hautz SC, Hautz WE, Feufel MA, Spies CD. What makes a doctor a scholar: a systematic review and content analysis of outcome frameworks. *BMC Med Educ.* 2016;16:119. doi:10.1186/s12909-016-0627-z.
22. Barbour-Tuck E, Mutter T, O'Brien J, Girling L, Choo E, Gamble J. Benchmarking a Canadian Anesthesiology Resident Research Program against national norms using a logic model framework: a quality improvement study. *Can Med Educ J.* 2023;14(1). doi:10.36834/cmej.75306.
23. Teunissen PW, Atherley A, Cleland JJ, et al. Advancing the science of health professions education through a shared understanding of terminology: a content analysis of terms for "faculty". *Perspect Med Educ.* 2022;11(1):22-27. doi:10.1007/s40037-021-00683-8.
24. Chou S, Cole G, McLaughlin K, Lockyer J. CanMEDS evaluation in Canadian postgraduate training programmes: tools used and programme director satisfaction. *Med Educ.* 2008;42(9):879-868.

25. Ologunde R, Di Salvo I, Khajuria A. The CanMEDS scholar: the neglected competency in tomorrow's doctors. *Adv Med Educ Pract.* 2014;5:383-384. doi:10.2147/AMEP.S71763.
26. Friedman RH, Wahi-Gururaj S, Alpert J, et al. The Views of U.S. Medical School Deans Toward Academic Primary Care. *Academic Medicine.* 2004;79(11):1095-1102.
27. Koo J, Bains J, Collins MB, Dharamsi S. Residency research requirements and the CanMEDS-FM scholar role: Perspectives of residents and recent graduates. *Can Fam Physician.* 2012;58(6):e330-e336.
28. Ringsted C, Hansen T, Davis D, Scherpbier A. Are some of the challenging aspects of the CanMEDS roles valid outside Canada? *Med Educ.* 2006;40(8):807-815. doi:10.1111/j.1365-2929.2006.02525.x.
29. Solaja O, Skinner TAA, McGregor TB, Siemens DR. CanMEDS scholars: A national survey on urology residents' attitudes towards research during training. *Can Urol Assoc J.* 2018;12(4):E191-E196. doi:10.5489/cuaj.4927.
30. Svab I. Changing research culture. *Ann Fam Med.* 2004;2 (2):S30-34. doi:10.1370/afm.150.
31. Institute of Medicine. *Assessing Health Professional Education: Workshop Summary.* Washington, DC; 2014.
32. Zaccagnini M, Bussieres A, Kim S, Nugus P, West A, Thomas A. What scholarly practice means to respiratory therapists: An interpretive description study. *J Eval Clin Pract.* 2023.
33. American Association for Respiratory Care. *Competencies for Entry into Respiratory Therapy Practice.* Irving, TX; 2016.
34. The National Alliance of Respiratory Therapy Regulatory Bodies. National Competency Framework for the Profession of Respiratory Therapy. In. Ottawa, ON; 2016.
35. American Academy of Physician Associates. History of AAPA & the PA Profession. https://www.aapa.org/about/history/#. Published 2024. Accessed March 14, 2024.
36. Baty BJ. Genetic counseling: Growth of the profession and the professional. *Am J Med Genet Part C Semin Med Genet.* 2018;178C:54-62. doi:10.1002/ajmg.c.31601.
37. DeVellis R, Thorpe C. *Scale Development: Theory and Applications.* 5th ed: SAGE Publications Inc.; 2021.

38. Kyriazos TA, Stalikas A. Applied Psychometrics: The Steps of Scale Development and Standardization Process. *Psychology.* 2018;09(11):2531-2560. doi:10.4236/psych.2018.911145.
39. Fisher R. Social Desirability Bias and the Validity of Indirect Questioning. *Journal of Consumer Research.* 1993;20(2):303-315.
40. Johanson GA, Brooks GP. Initial Scale Development: Sample Size for Pilot Studies. *Educational and Psychological Measurement.* 2009;70(3):394-400. doi:10.1177/0013164409355692.
41. Nunnally J, Bernstein I. *Psychometric theory.* 3rd ed. New York: McGraw-Hill; 1994.
42. Tavakol M, Dennick R. Making sense of Cronbach's alpha. *Int J Med Educ.* 2011;2:53-55. doi:10.5116/ijme.4dfb.8dfd.
43. Pan Y, de la Puente M. *Census Bureau Guideline for the Translation of Data Collection Instruments and Supporting Materials: Documentation on how the Guideline Was Developed.* 2005.
44. Beaton D, Bombardier C, Guillemin F, Ferraz M. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine (Phila Pa 1976).* 2000;25(24):3186-3191. doi:10.1097/00007632-200012150-00014.
45. Zaccagnini M, Bussières A, Nugus P, West A, Thomas A. The scholarly and practice profile of respiratory therapists in Canada: A cross-sectional survey. *Can J Respir Ther.* (Under review).
46. Lloret S, Ferreres A, Hernández A, Tomás I. The exploratory factor analysis of items: Guided analysis based on empirical data and software. *Anales de Psicología.* 2017;33(2):417-432. doi:10.6018/analesps.33.2.270211.
47. Mvududu N, Sink C. Factor Analysis in Counseling Research and Practice. *Counseling Outcome Research and Evaluation.* 2013;4(2):75-98. doi:10.1177/2150137813494766.
48. Costello A, Osborne J. Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis. *Pract Assess Res Eval.* 2005;10:1-9.
49. Osborne J. *Best Practices in Exploratory Factor Analysis.* Scotts Valley, CA: CreateSpace Independent Publishing; 2014.

50. Watkins M. Exploratory Factor Analysis: A Guide to Best Practice. *Journal of Black Psychology.* 2018;44(3):219-246. doi:10.1177/0095798418771807.
51. Kaiser H. The application of electronic computers to factor analysis. *Educational and Psychological Measurement.* 1960;20:141-151.
52. Kaiser H. A second generation little jiffy. *Psychometrika.* 1970;35(4):401-415.
53. Cattell R. The scree test for the number of factors. *Multivariate Behavioral Research.* 1966;1(2):245-276.
54. Caron PO. Minimum average partial correlation and parallel analysis: The influence of oblique structures. *Communications in Statistics - Simulation and Computation.* 2018;48(7):2110-2117. doi:10.1080/03610918.2018.1433843.
55. Velicer W. Determining the number of components from the matrix of partial correlations. *Psychometrika.* 1976;41:321-327.
56. O'Connor B. SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instruments, & Computers.* 2000;32:396-402.
57. Velicer W, Eaton C, Fava J. Construct explication through factor or component analysis: A review and evaluation of alternative procedures for determining the number of factors or components. In: Goffin R, Helmes E, eds. *Problems and solutions in human assessment: Honoring Douglas N. Jackson at seventy.* Kluwer Academic/Plenum Publishers; 2000.
58. Bland J, Altman D. Cronbach's alpha. *BMJ.* 1997;314(7080):572.
59. Mishra P, Pandey CM, Singh U, Gupta A, Sahu C, Keshri A. Descriptive statistics and normality tests for statistical data. *Ann Card Anaesth.* 2019;22(1):67-72. doi:10.4103/aca.ACA_157_18.
60. Rahman S, Majumder MA, Shaban SF, et al. Physician participation in clinical research and trials: issues and approaches. *Adv Med Educ Pract.* 2011;2:85-93. doi:10.2147/AMEP.S14103.
61. Wenke R, Noble C, Weir KA, Mickan S. What influences allied health clinician participation in research in the public hospital setting: a qualitative theory-informed approach. *BMJ Open.* 2020;10(8):e036183. doi:10.1136/bmjopen-2019-036183.

62. Andreassen P, Christensen MK. "We're at a watershed": The positioning of PhD nurses in clinical practice. *J Adv Nurs.* 2018. doi:10.1111/jan.13581.
63. de Groot E, Baggen Y, Moolenaar N, et al. Clinician-Scientists in-and-between Research and Practice: How Social Identity Shapes Brokerage. *Minerva.* 2021;59(1):123-137. doi:10.1007/s11024-020-09420-7.
64. Powers J. Increasing capacity for nursing research in magnet-designated organizations to promote nursing research. *Appl Nurs Res.* 2020;55:151286. doi:10.1016/j.apnr.2020.151286.
65. Ellen M, Léon G, Bouchard G, Lavis J, Ouimet M, Grimshaw J. What supports do health system organizations have in place to facilitate evidence-informed decision-making? A qualitative study. *Implement Sci.* 2013;8(84). doi:10.1186/1748-5908-8-84.
66. The Royal College of Physicians, National Institute for Health and Care Research (NIH. Making research everybody's business; 2022.
67. Chalmers S, Hill J, Connell L, Ackerley S, Kulkarni A, Roddam H. The value of allied health professional research engagement on healthcare performance: a systematic review. *BMC Health Serv Res.* 2023;23(1):766. doi:10.1186/s12913-023-09555-9.
68. Boaz A, Hanney S, Jones T, Soper B. Does the engagement of clinicians and organisations in research improve healthcare performance: a three-stage review. *BMJ Open.* 2015;5(12):e009415. doi:10.1136/bmjopen-2015-009415.
69. Luft L. The essential role of physician as advocate: how and why we pass it on. *Can Med Educ J.* 2017;8(3):e109-e116.
70. Nsiah C, Siakwa M, Ninnoni JPK. Registered Nurses' description of patient advocacy in the clinical setting. *Nurs Open.* 2019;6(3):1124-1132. doi:10.1002/nop2.307.
71. Abbasinia M, Ahmadi F, Kazemnejad A. Patient advocacy in nursing: A concept analysis. *Nursing Ethics.* 2019;27(1):141-151. doi:10.1177/0969733019832950.
72. Earnest M, Wong S, Federico S. Perspective: Physician advocacy: what is it and how do we do it? *Acad Med.* 2011;85(1):63-67. doi:10.1097/ACM.0b013e3181c40d40.
73. Earnest M, Wong SL, Federico S, Cervantes L. A Model of Advocacy to Inform Action. *J Gen Intern Med.* 2023;38(1):208-212. doi:10.1007/s11606-022-07866-x.
74. Sinsky C, Ristow A. Advocating for Physician Well-Being at the Societal Level. In: Ripp J, Thomas L, eds. *Caring for Caregivers to Be: A Comprehensive Approach to*

Developing Well-Being Programs for the Health Care Learner. New York: Oxford Academic; 2023:334-351.

75. Kluijtmans M, de Haan E, Akkerman S, van Tartwijk J. Professional identity in clinician-scientists: brokers between care and science. *Med Educ.* 2017;51(6):645-655. doi:10.1111/medu.13241.
76. Rosenblum ND, Kluijtmans M, Ten Cate O. Professional Identity Formation and the Clinician-Scientist: A Paradigm for a Clinical Career Combining Two Distinct Disciplines. *Acad Med.* 2016;91(12):1612-1617. doi:10.1097/ACM.0000000000001252.
77. Dace W, Purdy E, Brazil V. Wearing hats and blending boundaries: harmonising professional identities for clinician simulation educators. *Adv Simul (Lond).* 2022;7(1):35. doi:10.1186/s41077-022-00229-w.
78. Sternszus R, Boudreau JD, Cruess RL, Cruess SR, Macdonald ME, Steinert Y. Clinical Teachers' Perceptions of Their Role in Professional Identity Formation. *Acad Med.* 2020;95(10):1594-1599. doi:10.1097/ACM.0000000000003369.
79. Cleland J, S. J, Kusurkar R, Ramani S, Wilkinson T, van Schalkwyk S. Redefining scholarship for health professions education: AMEE Guide No. 142. *Med Teach.* 2021;43(7):824-838. doi:10.1080/0142159X.2021.1900555.
80. Van Melle E, Curran V, Goldszmidt M, Lieff S, Lockyer J, St. Onge C. "Toward a Common Understanding" Advancing Education Scholarship for Clinical Faculty in Canadian Medical Schools. A position Paper. In. Ottawa, ON: Canadian Association for Medical Education (CAME); 2012.
81. O'Brien BC, Irby DM, Durning SJ, et al. Boyer and Beyond: An Interview Study of Health Professions Education Scholarship Units in the United States and a Synthetic Framework for Scholarship at the Unit Level. *Acad Med.* 2019;94(6):893-901. doi:10.1097/ACM.0000000000002625.
82. Kim S, Rochette A, Ahmed S, et al. Creating synergies among education/research, practice, and policy environments to build capacity for the scholar role in occupational therapy and physiotherapy in the Canadian context. *Adv Health Sci Educ Theory Pract.* 2023. doi:10.1007/s10459-023-10298-9.

83. Hojat M, Veloski J, Nasca TJ, Erdmann JB, Gonnella JS. Assessing physicians' orientation toward lifelong learning. *J Gen Intern Med.* 2006;21(9):931-936. doi:10.1111/j.1525-1497.2006.00500.x.
84. Murphy LS, Kraus CK, Lotfipour S, Gottlieb M, Langabeer JR, 2nd, Langdorf MI. Measuring Scholarly Productivity: A Primer for Junior Faculty. Part III: Understanding Publication Metrics. *West J Emerg Med.* 2018;19(6):1003-1011.
85. Ten Cate O. Health professions education scholarship: The emergence, current status, and future of a discipline in its own right. *FASEB Bioadv.* 2021;3(7):510-522. doi:10.1096/fba.2021-00011.
86. Prefontaine C, Gaboury I, Corriveau H, Beauchamp J, Lemire C, April MJ. Assessment tools for reflection in healthcare learners: A scoping review. *Med Teach.* 2022;44(4):394-400. doi:10.1080/0142159X.2021.1998400.
87. Cash P, Tate B. Fostering Scholarship Capacity: The Experience of Nurse Educators. *The Canadian Journal for the Scholarship of Teaching and Learning.* 2012;3(1). doi:dx.doi.org/10.5206/cjsotl-rcacea.2012.1.7.
88. Morgado FFR, Meireles JFF, Neves CM, Amaral ACS, Ferreira MEC. Scale development: ten main limitations and recommendations to improve future research practices. *Psicol Reflex Crit.* 2017;30(1):3. doi:10.1186/s41155-016-0057-1.
89. Boateng GO, Neilands TB, Frongillo EA, Melgar-Quinonez HR, Young SL. Best Practices for Developing and Validating Scales for Health, Social, and Behavioral Research: A Primer. *Front Public Health.* 2018;6:149. doi:10.3389/fpubh.2018.00149.
90. D'Urso ED, Tijmstra J, Vermunt JK, De Roover K. Awareness Is Bliss: How Acquiescence Affects Exploratory Factor Analysis. *Educ Psychol Meas.* 2023;83(3):433-472. doi:10.1177/00131644221089857.
91. Navarro-Gonzalez D, Lorenzo-Seva U, Vigil-Colet A. How response bias affects the factorial structure of personality self-reports. *Psicothema.* 2016;28(4):465-470. doi:10.7334/psicothema2016.113.

Appendices

Appendix 1- Definitions of Constructs[32]

Theme	Definition
1) The identity of a scholarly practitioner in respiratory therapy	What a scholarly practitioner looks like according to respiratory therapists and what sets them apart in the respiratory therapy profession.
2) Factors supporting scholarly practice	Circumstances (positive and negative) that influence individuals to develop as scholarly practitioners or enact scholarly practice.
3) The image of the respiratory therapy profession.	There is a desire from the professionals to enhance the perceived worth of the profession, to create occupational opportunities (i.e., novel areas to work as respiratory therapists) and enhance the professionalization of respiratory therapy. Scholarly practice (broadly) and conducting research (in particular) are avenues and mechanisms for enhancing the legitimacy and credibility of the respiratory therapy profession.
4) Scholarly practice influencing your practice	Participants acknowledge that to conduct scholarly practice there should be a bi-directional relationship between their bedside clinical practice and scholarship/academic research, however, that bi-directional relationship is not well established in the respiratory therapy profession.

Appendix 2- Pilot survey

Start of the survey **<u>Understanding of Scholarly Practice:</u>** **For this survey, *Scholarly Practice* is understood as an interactive, reflective, and dynamic process by which practitioners integrate credible sources of information into practice to improve the quality of healthcare services. Scholarly practice occurs at the intersection of the values and missions of various stakeholders, including universities and research centres, practice settings, and policy and regulatory organizations. under optimal circumstances, these stakeholders work together to develop mechanisms and procedures that enable scholarly practice within healthcare organizations and empower individual professionals to engage in scholarly practice.** **Total questions: 55**
Section 1- Scholarly Activities **<u>Preamble</u>: This section asks you about scholarly activities you may have engaged in within the respiratory therapy (RT) profession (8 questions).**
1) Approximately what percentage of your work time is spent on the following activities? **(Total must equal 100%)** o Research: X % o Teaching X % o Clinical Practice X % o Industry/Sales X % o Leadership/Administration/Policy X% o Other (please specify): X%
2) If feasible, what areas of research would you be most interested in doing? (e.g., basic science research, clinical research, education, health service research, etc.) (Open text to analyze thematically)
3) How many papers have you published in peer-reviewed journals in the last 5 years (as either primary or co-author) (#, analyze with descriptive statistics [Median]))
4) How many scientific presentations have you given in the last 5 years (#, analyze with descriptive statistics [Median])))) a. At a local conference (e.g., in your place of practice) b. At a provincial conference c. At a Canadian conference d. At an international conference

5) Tick all the different funding sources you have received to conduct research:
   i. I have never received any funding to conduct research.
   ii. Local (e.g., hospital, workplace)
   iii. University
   iv. Provincial
   v. Federal (i.e., Canadian)
   vi. International
   vii. Other: Please specify

6) How many trainees (e.g., student RTs, undergraduate students, peers, etc.) have you supervised to conduct research in the last 5 years? (#, analyze with descriptive statistics [Median]))

7) How often do you typically read peer-reviewed professional literature related to your practice in one month?
Scroll down menu including (Daily / Several times a week / Once a week / Several times a month / Once a month / Rarely / Never)

8) How many conferences or presentations (online and/or in-person) have you attended in the past year? (#, analyze with descriptive statistics [Median]))

Section 2: The identity of a scholarly practitioner in respiratory therapy
<u>Preamble</u>: This section asks you about what a scholarly practitioner looks like and what may set them apart in the RT profession (9 questions)
Likert Scale: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)

9) I identify as a scholarly practitioner in my practice.

10) I am confident in my ability to summarize research evidence for my peers (e.g., clinicians, managers)

11) I am confident in my ability to apply research findings into practice

12) I seek the advice from expert colleagues for more complex clinical cases

13) I take the time to mentor other RTs

14) I take the time to supervise student RTs

15) Being able to critically reflect about my practice is an important part of being an RT

16) Being able to critically appraise research articles is an important part of being an RT

17) Having a mentor helps RTs become scholarly practitioners

Section 3: Factors supporting scholarly practice
<u>Preamble</u>: This section asks you about the circumstances that influence the development as scholarly practitioners (8 questions)
Likert Scale: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)

18) Knowledge in research design/ research methods is necessary for developing as a scholarly practitioner

19) Skills to apply research findings to clinical practice are necessary for developing as a scholarly practitioner
20) Having a supportive working environment is necessary for developing as a scholarly practitioner
21) Access to higher education (e.g., MSc. PhD) is necessary for developing as a scholarly practitioner
22) My peers valuing the importance of research is necessary for developing as a scholarly practitioner
23) Formal mentorship is necessary for developing as a scholarly practitioner
24) Access to resources (e.g., funding opportunities, protected time, online databases, CPD opportunities) is necessary for developing as a scholarly practitioner
25) Participating in professional development activities (e.g., working groups, CPD) is necessary for developing as a scholarly practitioner
Section 4: The image of the RT profession. **Preamble: This section asks questions related to how the RT profession is perceived by you and/or others (8 questions)** **Likert Scale**: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)
26) I am confident in my ability to work within an interprofessional team
27) The interprofessional team values me as a RT
28) The interprofessional team seeks my expertise when making patient care decisions
29) RTs should hold an undergraduate degree (e.g., BSc) to work as part of an interprofessional team
30) The entry-to-practice qualification for RT should be an undergraduate degree
31) RTs should have direct access to Masters or Doctorate degrees in RT to further their training
32) RTs should participate in research to improve the legitimacy (i.e., perceived validity or credibility) of the RT profession
33) RTs should lead research projects to improve the practice of respiratory care
Section 5: Scholarly practice influencing your practice **Preamble: This section asks you about how scholarly practice might influence the RT profession (7 questions)** **Likert Scale**: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)
34) Research findings are useful in my day-to-day practice
35) Understanding research enables me to advocate on behalf of my patients
36) Participating in research helps improve the care I deliver to patients
37) Participating in research enables me to better understand the connection between research and clinical practice
38) Participating in research negatively affects my bedside clinical skills
39) Clinical work is necessary for generating research questions in respiratory care
40) Participating in research is feasible during clinical practice

Section 6- Open text:

41) Please list 2-3 benefits of being or becoming a scholarly practitioner (open text)

42) Please list 2-3 of the most significant challenges you've encountered/anticipate in becoming a scholarly practitioner (open text)

Section 7- Demographics (11 questions)

43) What Province or Territory do you currently practice in? Choose one answer.

a. British Columbia
b. Alberta
c. Saskatchewan
d. Manitoba
e. Ontario
f. Québec
g. New Brunswick
h. Newfoundland and Labrador
i. Prince Edward Island
j. Nova Scotia
k. Nunavut
l. Northwest Territories
m. Yukon

44) What sex were you assigned at birth, meaning on your original birth certificate?

a. Male
b. Female

45) Which best describes your current gender identity? do you identify? Choose one answer.

a. Male
b. Female
c. Non-binary
d. Indigenous or other cultural gender minority identity (e.g., two-spirit)
e. Something else (e.g., gender fluid, non-binary)
f. I don't identify with any option provided.
g. I prefer not to answer.
h. I identify as: _____

46) What is your language at home?
   a. English
   b. French
   c. Other:
   d. I prefer not to answer

47) Geographic setting
   a. Urban (population >100,000)
   b. Suburban (population >10,000)
   c. Rural (population < 10,000)
   d. I do not know

48) What is your highest level of education?
   a. Professional diploma
   b. Post RRT credential (e.g., CRE, CCAA)
   c. Bachelor (e.g., BSc. BA, BHSc)
   d. Master (e.g., MSc. MA, MBA, MEd)
   e. Doctorate (e.g., PhD, EdD)
      i. Please specify: _____

49) Are you in the process of completing post-professional education?
   a. No
   b. Yes
   c. If yes, which level of education?
      i. Post RRT credential (e.g., CRE, CCAA)
      ii. Bachelor (e.g., BHSc, BSc, BA)
      iii. Master (e.g., MSc, MA, MBA, MEd)
      iv. Doctorate (e.g., PhD, EdD)
      v. Please specify the degree and program: _____

50) What is your employment status?
   a. Full-time (35-40 hours/week)
   b. Part-time (<35 hours/week)
   c. Not currently working (e.g., leave of absence, maternity leave)

51) Number of years in practice?
   a. Open text for years in practice

52) What is the setting of the organization you are primarily working in? (Choose one)

a. Tertiary care hospital
b. Community hospital
c. Rehabilitation hospital
d. Outpatient clinic
e. Community care/primary care
f. Higher Education institution
g. Medical device/pharmaceutical industry
h. Other (please specify)

53) Is the organization you are currently working in:

a. Private
b. Public

54) What is the percentage of time you spend in each type of work area (**equal to 100%)**

a. Adult ICU (includes medical ICUs, cardiac care units and high-dependance units)
b. Neonatal ICU
c. Pediatric ICU
d. Emergency rooms
e. Diagnostics clinic
f. Community care/primary care unit
g. Higher education institution
h. Research center
i. Clinical product support/sales
j. Other: Please specify
k. **Total = 100%**

55) Is your main practice setting affiliated with a university (e.g., University of Toronto, University of British Columbia, etc.)?

a. Yes
b. No
c. I do not know

End of survey

Appendix 3- Data cleaning protocol

After the survey was shared on social media via a third party (i.e., by an individual), we noticed the response rate had a large increase (>200 responses within minutes). Because of this, we paused the survey to review the responses; it raised suspicions of receiving potential responses from spambots and/or non-eligible participants seeking the incentive reward. The responses were reviewed, and it was determined that our survey was targeting by spambots. As a result, we re-opened the survey link after 24 hours, asked participants not to share the link (either personally or via social media) and created a protocol to clean the data before analysis. Specifically, we 1) removed respondents who indicate student as highest level of training; 2) removed respondents who indicate outside of Canada as main location of practice; 3) removed respondents that did not complete at least 60% of the survey; 4) removed any responses to the qualitative survey question "*Please list 2-3 benefits of being or becoming a scholarly practitioner*" and "*Please list 2-3 of the most significant challenges you've encountered/anticipate in becoming a scholarly practitioner*" that are exact duplicates or nonsensical.

The remaining responses were checked for conflicting data. If any responses had two or more conflicting data, they were removed. (See supplemental data for the full data cleaning protocol) These might include, (*i*) respondents with outlier response times, defined as under 12 and over 28 minutes. These time limits are based on the average time it took participants to complete the survey during the pilot testing of the survey. During this process, the average time for completion of the survey was 17.7 minutes; (*ii*) respondents who provided same response to every closed-ended item on a survey page (i.e., straight lining);[1] (*iii*) responses that were gibberish (i.e., unintelligible responses) or nonsensical responses (e.g., responses that did not make sense in the context of the question asked). For example, indicating their age is 150 years old or they've supervised 20,000 students in the last 5 years; (*iv*) respondents who provided a contact email with random letters or end in numbers exceeding four digits as these characteristics are an indication of a bot generated email address and had similar characteristics of examples from Gmail bulk account creators that can be built or bought online.[2] Finally, to claim incentives, respondents had to provide their full name and province of practice. With that information, they were cross-checked in their respective regulatory member public registry as proof that they were RTs. If they could not be cross-checked and would not provide proof of licensure, their data was removed.

Reference

1. Kim Y, Dykema J, Stevenson J, Black P, Moberg D. Straightlining: Overview of Measurement, Comparison of Indicators, and Effects in Mail–Web Mixed-Mode Surveys. *Social Science Computer Review.* 2019;37(2):214-233. doi:10.1177/0894439317752406.
2. Wang Z, Qin M, Chen M, Jia C. Hiding Fast Flux Botnet in Plain Email Sight. *ATCS/SePrIoT@SecureComm.* 2017.

Appendix 4-Final survey and pilot testing results

Understanding of Scholarly Practice: For this survey**,** ***Scholarly Practice*** is understood as an **interactive, reflective,** and **dynamic** process by which practitioners **integrate credible sources of information into practice** to improve the quality of healthcare services**.** Scholarly practice occurs at the **intersection** of the values and missions of various stakeholders, including **universities** and **research centres, practice settings,** and **policy and regulatory organizations.** Under optimal circumstances, these stakeholders work together to develop mechanisms and procedures that enable scholarly practice within healthcare organizations and **empower individual** professionals to engage in scholarly practice. **Total questions: 52**
Section 1- Scholarly Activities **Preamble: This section asks you about scholarly activities you may have engaged in within the respiratory therapy (RT) profession (6 questions).**
1) How many papers have you published in peer-reviewed journals in the last 5 years (as either primary or co-author)
2) How many scientific presentations have you given in the last 5 years? a. At a local conference (e.g., in your place of practice) b. At a provincial conference c. At a Canadian conference d. At an international conference
3) Tick all the different funding sources you have received to conduct research: a) I have never received any funding to conduct research. b) Local (e.g., hospital, workplace) c) University d) Provincial e) Federal (i.e., Canadian) f) International g) Other: Please specify
4) How many trainees (e.g., student RTs, undergraduate students, peers, etc.) have you supervised to conduct research in the last 5 years?
5) How many peer-reviewed papers related to your practice do you read on average in one month (30 days)?
6) How many conferences or presentations (online and/or in-person) have you attended in the past 12 months? a) Local conference (e.g., hospital, workplace) b) Provincial conference c) Canadian conference

d) International conference
Section 2: The identity of a scholarly practitioner in respiratory therapy **<u>Preamble</u>: This section asks you about what a scholarly practitioner looks like and what may set them apart in the RT profession (9 questions)** Likert Scale: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)
7) I identify as a scholarly practitioner in my practice
8) I am confident in my ability to summarize research evidence for my peers (e.g., clinicians, managers)
9) I am confident in my ability to apply research findings into practice
10) I seek the advice from expert colleagues for more complex clinical cases
11) I take the time to mentor other RTs
12) I take the time to supervise student RTs in clinical practice, if the opportunity arises
13) Being able to critically reflect about my practice is an important part of being an RT
14) Being able to critically appraise research articles is an important part of being an RT
15) Having a mentor helps RTs become scholarly practitioners
Section 3: Factors supporting scholarly practice **<u>Preamble</u>: This section asks you about the circumstances that influence the development as scholarly practitioners (8 questions)** **Likert Scale**: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)
16) Knowledge in research methodology is necessary for developing as a scholarly practitioner
17) Skills to apply research findings to practice are necessary for developing as a scholarly practitioner
18) Having a supportive working environment is necessary for developing as a scholarly practitioner
19) Access to higher education (e.g., MSc. PhD) is necessary for developing as a scholarly practitioner
20) My peers' valuing research is necessary for developing as a scholarly practitioner
21) Formal mentorship is necessary for developing as a scholarly practitioner
22) Access to resources (e.g., funding opportunities, protected time, online databases, CPD opportunities) is necessary for developing as a scholarly practitioner
23) Participating in professional development activities (e.g., working groups, CPD) is necessary for developing as a scholarly practitioner
Section 4: The image and legitimacy of the RT profession. **<u>Preamble</u>: This section asks questions related to how the RT profession is perceived by you and/or others (6 questions)** **Likert Scale**: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)
24) RTs are valued members of the interprofessional team

25) RTs would be more valued as part of an interprofessional team if they held an undergraduate degree (e.g., BSc.RT., BRT)
26) The entry-to-practice qualification for RT should be an undergraduate degree
27) Access to post-professional degrees (MSc, PhD) in RT would contribute to a more positive perception of the profession
28) The profession would be more credible if RTs contributed to research projects as members of the research team
29) The profession would be more credible if RTs lead research projects
Section 5: Scholarly practice influencing your practice **Preamble: This section asks you about how scholarly practice might influence the RT profession (7 questions)** **Likert Scale**: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)
30) Research findings are useful in my day-to-day practice
31) Understanding research enables me to advocate on behalf of my patients
32) Clinical work is necessary for generating research questions in respiratory care
33) Participating in scholarly activities (such as research, quality improvement, program evaluation) helps improve the care I deliver to patients
34) Participating in scholarly activities (such as research, quality improvement, program evaluation) enables me to better understand the connection between research and clinical practice
35) Participating in scholarly activities (such as research, quality improvement, program evaluation) negatively affects my bedside clinical skills
36) Participating in scholarly activities (such as research, quality improvement, program evaluation) is feasible during clinical practice
Section 6- Open text:
37) Please list 2-3 benefits of being or becoming a scholarly practitioner (open text)
38) Please list 2-3 of the most significant challenges you've encountered/anticipate in becoming a scholarly practitioner (open text)
Section 7- Demographics (10 questions)
39) What Province or Territory do you currently practice in? Choose one answer. a. British Columbia b. Alberta c. Saskatchewan d. Manitoba e. Ontario f. Québec g. New Brunswick h. Newfoundland and Labrador i. Prince Edward Island j. Nova Scotia

k. Nunavut
l. Northwest Territories
m. Yukon
n. Outside of Canada, please specify: _____

40) Which best describes your current gender identity? Check all that apply.
a. Man
b. Woman
c. Non-binary
d. Gender Fluid
e. Gender Queer
f. Two-spirit
g. I self-identify as:_____
h. I don't identify with any option provided.
i. I prefer not to answer

41) In our society, people are often described by their race or racial background. These are not based in science, but our race may influence the way we are treated by individuals and institutions, and this may affect our health or education. Which category(ies) best describes you? Check all that apply
a. Black (African, African Canadian, Afro-Caribbean descent)
b. East Asian (Chinese, Japanese, Korean, Taiwanese descent)
c. Indigenous (First Nations, Inuk/Inuit, Métis descent)
d. Latin American (Hispanic or Latin American descent)
e. Middle Eastern (Arab, Persian, West Asian descent (e.g., Afghan, Egyptian, Iranian, Kurdish, Lebanese, Turkish)
f. South Asian (South Asian descent (e.g., Bangladeshi, Indian, Indo-Caribbean, Pakistani, Sri Lankan)
g. Southeast Asian (Cambodian, Filipino, Indonesian, Thai, Vietnamese, or other Southeast Asian descent)
h. White (European descent)
i. Another race category: please specify_____
j. Do not know
k. Prefer not to answer

42) What is your language at home?
a. English
b. French
c. Other:
d. I prefer not to answer

43) What is the geographic setting you work in?

a. Urban (population >100,000)
b. Suburban (population >10,000)
c. Rural (population < 10,000)
d. I do not know

44) What is your highest level of education?
a. Student RT
b. Professional diploma
c. Post RRT credential (e.g., CRE, CCAA)
d. Bachelor (e.g., BSc. BA, BHSc)
e. Master (e.g., MSc. MA, MBA, MEd)
f. Doctorate (e.g., PhD, EdD)

a) Please specify: _____

45) Are you in the process of completing post-professional education?
a. No
b. Yes
c. If yes, which level of education?
a) Post RRT credential (e.g., CRE, CCAA)
b) Bachelor (e.g., BHSc, BSc, BA)
c) Master (e.g., MSc, MA, MBA, MEd)
d) Doctorate (e.g., PhD, EdD)
e) Please specify the degree and program: _____

46) What is your employment status?
a. Full-time (35-40 hours/week)
b. Part-time (<35 hours/week)
c. Not currently working (e.g., leave of absence, maternity leave)

47) What is your age?

48) Number of years in practice?

49) What is the setting of the organization you are primarily working in? (Choose one)
a. Tertiary care hospital
b. Community hospital
c. Rehabilitation hospital
d. Outpatient clinic
e. Community care/primary care

f. Higher Education institution
g. Medical device/pharmaceutical industry
h. Other (please specify)

50) Is the organization you are currently working in:
a. Private
b. Public

51) What is the percentage of time you spend in each area of practice?
a. Adult ICU (includes medical ICUs, cardiac care units and high-dependance units)
b. Neonatal ICU
c. Pediatric ICU
d. Anesthesia
e. Hospital care (non-ICU)
f. Emergency rooms
g. Diagnostics
h. Leadership, administration or policy
i. Community care/primary care
j. Teaching
k. Research
l. Clinical product support for industry
m. Marketing/Sales
n. Other: Please specify

52) Is your main practice setting affiliated with a university (e.g., University of Toronto, McGill University, etc.)?
a. Yes
b. No
c. I do not know

End of survey

Demographic characteristics of pilot results

Eighty-one respiratory therapists across Canada participated in the pilot testing. (Supplemental Table 1). The years in practice mean was 15.05 (SD 10.35) and there were 47 (58%) females. Of the 81, most (n=42, 51.9%) practiced in Ontario, followed by Nova Scotia (n=9, 11.1%) and Québec (n=8, 9.9%). Most worked full-time (n=75, 92.6%), in a Tertiary care hospital (n=33, 40.7%) had a bachelor's degree as their highest level of education (n=27, 33.3%).

Supplemental Table 1	
Demographics (n=81)	
Years in practice, mean (SD) year	15.05 (10.35)
Female, n (%)	47 (58)
Province currently practicing in n (%)	
Ontario	42 (51.9)
Nova Scotia	9 (11.1)
Québec	8 (9.9)
British Columbia	7 (8.6)
Alberta	7 (8.6)
Manitoba	3 (3.7)
Prince Edward Island	2 (2.5)
Saskatchewan	2 (2.5)
New Brunswick	1 (1.2)
Highest education n (%)	

Professional Diploma	16 (19.8)
Post-RRT	14 (17.3)
Bachelor	27 (33.3)
Master	21 (25.9)
Doctorate	3 (3.7)
Primary work setting	
Tertiary care hospital	33 (40.7)
Community hospital	9 (11.1)
Community care/primary care	22 (27.2)
Higher Education	10 (12.3)
Other	7 (8.6)
Employment Status n (%)	
Full-time	75 (92.6)
Part-time	5 (6.2)
Not currently working	1 (1.2)
Geographic Setting n (%)	
Urban	62 (76.5)
Suburban	16 (19.8)
Rural	3 (3.7)
Organization n (%)	
Public	60 (74.1)
Private	21 (25.9)

Affiliated with a university? Yes	34 (42)

Section 1: The identity of a scholarly practitioner in respiratory therapy

We pilot tested 9 questions in this scale and kept all 9 based on the corrected item-total correlation (range 0.22 to 0.70). The inter-item correlation ranged from 0.02 to 0.66 and the Cronbach's alpha for this scale was 0.808

Items (n=9)	Corrected item-total correlation	Mean on 6 (SD)
I identify as a scholarly practitioner in my practice.	0.597	4.06 (1.3)
I am confident in my ability to summarize research evidence for my peers (e.g., clinicians, managers)	0.708	4.4 (1.1)
I am confident in my ability to apply research findings into practice	0.627	4.63 (0.90)
I seek the advice from expert colleagues for more complex clinical cases	0.496	5.33 (0.75)
I take the time to mentor other RTs	0.221	5.25 (0.91)
I take the time to supervise student RTs	0.248	5.11 (0.92)
Being able to critically reflect about my practice is an important part of being an RT	0.474	5.54 (0.57)
Being able to critically appraise research articles is an important part of being an RT	0.697	4.98 (0.96)
Having a mentor helps RTs become scholarly practitioners	0.563	5.27 (0.80)

Section 2: Factors supporting scholarly practice

We pilot tested 8 questions in this scale and kept all 8 based on the corrected item-total correlation (range 0.39 to 0.67). The inter-item correlation ranged from 0.05 to 0.7 and the Cronbach's alpha for this scale was 0.813

Items (n=8)	Corrected item-total correlation	Mean on 6 (SD)
Knowledge in research design/ research methods is necessary for developing as a scholarly practitioner	0.613	4.88 (0.98)
Skills to apply research findings to clinical practice are necessary for developing as a scholarly practitioner	0.518	5.1 (0.90)
Having a supportive working environment is necessary for developing as a scholarly practitioner	0.579	5.56 (0.61)
Access to higher education (e.g., MSc. PhD) is necessary for developing as a scholarly practitioner	0.391	4.05 (1.1)
My peers valuing the importance of research is necessary for developing as a scholarly practitioner	0.574	4.48 (0.96)
Formal mentorship is necessary for developing as a scholarly practitioner	0.556	4.33 (0.94)
Access to resources (e.g., funding opportunities, protected time, online databases, CPD opportunities) is necessary for developing as a scholarly practitioner	0.488	5.06 (0.94)
Participating in professional development activities (e.g., working groups, CPD) is necessary for developing as a scholarly practitioner	0.673	4.96 (0.87)

Section 3: The image of the RT profession (Pilot 1)

We pilot tested 8 questions in this scale and there were too many negatives. The corrected item-total correlation (range -0.13 to 0.7). The inter-item correlation ranged from -.27 to 0.8 and the Cronbach's alpha for this scale was 0.721

Items (n=8)	Corrected item-total correlation	Mean on 6 (SD)
I am confident in my ability to work within an interprofessional team	0.28	5.73 (0.475)
The interprofessional team values me as a RT	-0.013	5.06 (0.796)
The interprofessional team seeks my expertise when making patient care decisions	0.037	5.01 (0.798)
RTs should hold an undergraduate degree (e.g., BSc) to work as part of an interprofessional team	0.703	4.07 (1.73)
The entry-to-practice qualification for RT should be an undergraduate degree	0.702	4.4 (1.625)
RTs should have direct access to Masters or Doctorate degrees in RT to further their training	0.566	4.85 (1.05)
RTs should participate in research to improve the legitimacy (i.e., perceived validity or credibility) of the RT profession	0.491	4.65 (1.137)
RTs should lead research projects to improve the practice of respiratory care	0.496	4.99 (0.915)

Section 3: The image and legitimacy of the RT profession (Pilot 2, n=30)

We pilot tested 6 questions in this scale and kept all 6 based on the corrected item-total correlation (range 0.25 to 0.74). The inter-item correlation ranged from 0.13 to 0.94 and the Cronbach's alpha for this scale was 0.804

Items (n=6)	Corrected item-total correlation	Mean on 6 (SD)
RTs are valued members of the interprofessional team	0.258	4.71 (0.85)
RTs would be more valued as part of an interprofessional team if they held an undergraduate degree (e.g., BScRT, BRT)	0.665	4.96 (1.5)
The entry-to-practice qualification for RT should be an undergraduate degree	0.479	5.36 (0.91)
Access to post-professional degrees (MSc, PhD) in RT would contribute to a more positive perception of the profession	0.562	5.43 (0.87)
The RT profession would be more credible if RTs contributed to research projects as part of the research team	0.703	4.8 (1.3)
The RT profession would be more credible if RTs lead research projects	0.742	4.75 (1.4)

Section 4: Scholarly practice influencing your practice (Pilot 1)

We pilot tested 8 questions in this scale and there were too many negatives. The corrected item-total correlation (range -0.29 to 0.71). The inter-item correlation ranged from -.162 to 0.751 and the Cronbach's alpha for this scale was 0.661

Items (n=7)	Corrected item-total correlation	Mean on 6 (SD)
Research findings are useful in my day-to-day practice	0.504	4.95 (0.9)
Understanding research enables me to advocate on behalf of my patients	0.626	5.12 (0.79)
Participating in research helps improve the care I deliver to patients	0.710	4.82 (0.95)
Participating in research enables me to better understand the connection between research and clinical practice	0.699	5.02 (0.9)
Participating in research negatively affects my bedside clinical skills*	0.055	4.91 (1.1)
Clinical work is necessary for generating research questions in respiratory care	-0.029	4.4 (1.16)
Participating in research is feasible during clinical practice	0.357	4.06 (0.97)
**Negatively worded item*		

Section 4: Scholarly practice influencing your practice (Pilot 2, n=30)

We re-pilot tested 7 questions in this scale with 30 participants and kept all 7 based on the corrected item-total correlation (range 0.29 to 0.74). The inter-item correlation ranged from 0.1 to 0.79 and the Cronbach's alpha for this scale was 0.815

Items (n=7)	Corrected item-total correlation	Mean on 6 (SD)
Research findings are useful in my day-to-day practice	0.635	5.13 (0.81)
Understanding research enables me to advocate on behalf of my patients	0.746	5.23 (0.67)
Participating in research helps improve the care I deliver to patients	0.292	4.7 (1.05)
Participating in research (such as activities such as quality improvement, program evaluation) helps improve the care I deliver to patients	0.749	5.0 (0.83)
Participating in research (such as activities such as quality improvement, program evaluation) enables me to better understand the connection between research and clinical practice	0.611	5.23 (0.72)
Participating in research (such as activities such as quality improvement, program evaluation) negatively affects my bedside clinical skills*	0.609	5.4 (0.93)
Participating in research (such as activities such as quality improvement, program evaluation) is feasible during clinical practice	0.418	3.96 (0.99)
**Negatively worded item*		

Appendix 5: Final Scholarly Practice measurement tool

Understanding of Scholarly Practice:
For this survey**,** ***Scholarly Practice*** is understood as an **interactive, reflective,** and **dynamic** process by which practitioners **integrate credible sources of information into practice** to improve the quality of healthcare services**.** Scholarly practice occurs at the **intersection** of the values and missions of various stakeholders, including **universities** and **research centres, practice settings,** and **policy and regulatory organizations.** Under optimal circumstances, these stakeholders work together to develop mechanisms and procedures that enable scholarly practice within healthcare organizations and **empower individual** professionals to engage in scholarly practice.

Section 1: Scholarly practitioner identity and ability
Preamble: This section asks you about what a scholarly practitioner looks like and what may set them apart in the RT profession (3 questions)
Likert Scale: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)

	Score High (based on median)
1) I identify as a scholarly practitioner in my practice	≥ 4
2) I am confident in my ability to summarize research evidence for my peers (e.g., clinicians, managers)	≥ 4
3) I am confident in my ability to apply research findings into practice	≥ 5
	Total: ≥ 13

Section 2: Elements supporting scholarly practice
Preamble: This section asks you about the circumstances that influence the development as scholarly practitioners (6 questions)
Likert Scale: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)

	Score High (based on median)
4) Having a supportive working environment is necessary for developing as a scholarly practitioner	≥ 6
5) Access to higher education (e.g., MSc. PhD) is necessary for developing as a scholarly practitioner	≥ 4

6) My peers' valuing research is necessary for developing as a scholarly practitioner	≥ 5
7) Formal mentorship is necessary for developing as a scholarly practitioner	≥ 4
8) Access to resources (e.g., funding opportunities, protected time, online databases, CPD opportunities) is necessary for developing as a scholarly practitioner	≥ 5
9) Participating in professional development activities (e.g., working groups, CPD) is necessary for developing as a scholarly practitioner	≥ 5
	Total: ≥ 29
Section 3: Professional development and credibility **Preamble: This section asks questions related to how the RT profession is perceived by you and/or others (5 questions)** **Likert Scale**: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)	
	Score: **High (based on median)**
10) RTs would be more valued as part of an interprofessional team if they held an undergraduate degree (e.g., BSc.RT., BRT)	≥ 5
11) The entry-to-practice qualification for RT should be an undergraduate degree	≥ 5
12) Access to post-professional degrees (MSc, PhD) in RT would contribute to a more positive perception of the profession	≥ 5
13) The profession would be more credible if RTs contributed to research projects as members of the research team	≥ 5
14) The profession would be more credible if RTs lead research projects	≥ 5
	Total: ≥ 25
Section 4: Perceived impact of scholarly activities on practice **Preamble: This section asks you about how scholarly practice might influence the RT profession (4 questions)** **Likert Scale**: (1=Completely disagree; 2=Disagree; 3=Somewhat disagree; 4=Somewhat agree; 5=Agree; 6=Completely agree)	
	Score **High (based on median)**
15) Research findings are useful in my day-to-day practice	≥ 5

16) Understanding research enables me to advocate on behalf of my patients	≥ 5
17) Participating in scholarly activities (such as research, quality improvement, program evaluation) helps improve the care I deliver to patients	≥ 5
18) Participating in scholarly activities (such as research, quality improvement, program evaluation) enables me to better understand the connection between research and clinical practice	≥ 4
	Total: ≥ 19

CHAPTER 10: Integrated discussion

In this chapter, I summarize the four studies included in this doctoral research which are organized in distinct manuscripts and discuss their connection to the overall aim of the dissertation, which was to understand how practicing respiratory therapists (RTs) conceptualize, describe, and enact their roles as scholarly practitioners. I then discuss the theoretical, methodological and practice contributions of this dissertation. Finally, I highlight the strengths and limitations of my doctoral research, propose areas for future research, present a reflexivity statement and provide a concluding statement.

10.1 Summary of findings

Scholarly practice, a foundational competency in many healthcare professions, is positioned as a core aspect of what it means to be a professional and promoted as being essential for making informed decisions related to health policy and practice.[1-7] Engaging in scholarly practice has been associated with several positive outcomes, such as professional empowerment and role satisfaction,[8-12] a positive work environment,[13-17] and improved care delivery and patient outcomes.[18-22] According to competency profiles in occupational therapy,[1,2] physical therapy,[5] nursing,[3] and medicine,[4,6] scholarly practice encompasses the requisite knowledge, skills, attitudes, and behaviours for professionals to ground their practice in theory and research, critically evaluate their current practice, and actively consider and integrate evidence-based literature into their work.

Despite the purported benefits of scholarly practice, this competency is often not well understood. This misunderstanding appears to stem from a lack of conceptual and definitional clarity. Moreover, the terms used to refer to scholarly practice are used inconsistently and interchangeably (e.g., scholar, scholarly practitioner, practice scholars).[9,23-28] This inconsistency has two main downstream consequences: First, it can create misalignments between teaching methods and assessment criteria in healthcare professionals' education, making the education and evaluation of future healthcare professionals more tenuous. Second, healthcare professionals may find it challenging to effectively enact scholarly practice in their settings. Specifically, they may experience difficulties in integrating research findings into clinical practice, which in turn may adversely affect patient care. Consequently, many healthcare professionals may not fully

appreciate the importance of their roles as scholarly practitioners, perceiving it as less important for their education, and questioning its utility in patient care.[9,24,27,29-33]

The challenges listed above are particularly noticeable in younger rehabilitation professions like respiratory therapy. Though RTs are expected to enact aspects of scholarly practice for effective patient care,[34] scholarly practice is formally excluded from their competency frameworks.[35,36] Hence, the overarching objective of this dissertation was to understand how practicing RTs conceptualize, describe and enact their roles as scholarly practitioners. To achieve this objective, I conducted four distinct yet interconnected studies, each with its own specific aim.

Manuscript 1 reports on a study published in *Advances in Health Sciences Education,*[28] which aimed to determine what is known about scholarly practice amongst licensed healthcare professionals. In this scoping review, I included 90 papers that explored, described, or defined scholarly practice or related terms, such as scholar, practice-based scholar or scholarly practitioner in healthcare professionals. The scoping review results suggested that scholarly practice focuses on the interdependent relationship between scholarship and practice, advances a profession, and is core to what it means to be a healthcare practitioner. The review also revealed attributes of scholarly practitioners which were organized into five themes: 1) a commitment to excellence in practice, 2) having a collaborative nature, 3) the presence of virtuous characteristics, 4) having effective communication skills, and 5) possessing an adaptive change ethos. I also identified 28 unique terms used to characterize a scholarly practitioner, such as nursing scholarship, scholarship of practice, practice scholar or clinical scholarship. Notably, more than two-thirds of included articles (70%; n=63) did not contain an explicit definition of scholarly practice. Instead, authors provided a wide range of terms to refer to scholarly practice, often using them interchangeably. The variability of the terms used to describe scholarly practice suggests that it may be a complex and multifaceted concept, and that it likely manifests differently across various healthcare professions. Finally, the review revealed an absence of psychometrically validated measurement tools of scholarly practice. The findings of this study informed the next phase of my research, which involved a qualitative investigation of what scholarly practice means and how it is conceptualized from the perspective of RTs.

Manuscript 2 reports on a study published in the *Journal of Evaluation in Clinical Practice,*[37] which aimed to explore what scholarly practice means and how it manifests in daily

practice from the perspectives of RTs. Using the findings from *manuscript 1* as a framework, I developed an interview guide and conducted individual, semi-structured virtual interviews in either English or French with RTs in different roles (clinicians, educators, researchers, leaders and managers) across Canada. Using an interpretive description methodology, the participants' perspectives were categorized in five main themes: (i) the identity of a scholarly practitioner in RTs; (ii) factors influencing scholarly practice; (iii) one's impression of their professional self-image; (iv) scholarly practice as a vehicle for changing practice and (v) the complex interconnections between knowledges and practices. The results suggest that scholarly practice may be a multifaceted phenomenon encompassing a wide range of activities and skills, including conducting research, reflective practice, application of research to practice, and contribution to the advancement of the profession and healthcare. The results from *manuscript 1* and *2* served as the foundation for the next two phases of my research.

Manuscript 3 reports on a study published in the *Canadian Journal of Respiratory Therapy,*[38] which aimed to describe the demographic characteristics, scholarly and practice profile of the respiratory therapy profession in Canada. I administered a survey to a convenience sample of 832 practicing RTs in Canada. The survey consisted of an online questionnaire that was based on the findings published in *manuscripts 1* and *2*. Briefly, the scoping review results informed the semi-structured interview guide for the qualitative interpretive description study. The results and participant excerpts from the qualitative study were used as the foundation for creating the items for this survey. Data from 832 participants (response rate of 6.8%) were analyzed. Most of the respondents were from Ontario (17.8%; n=148), Québec (15.7%; n=131), and Alberta (13.3%; n=111). Most respondents self-identified as white (81.6%; n=703), women (75.2%; n=627) and were between the ages of 30 to 39 (34%; n=283). Forty percent (n=332) had completed an undergraduate degree (above their respiratory therapy diploma) as their highest educational attainment. Only a few participants had authored or co-authored a peer-reviewed publications (mean=0.64; SD=3.9). On average, RTs reported reading 2.2 (SD=3.8) peer-reviewed publications monthly. A high percentage of respondents agreed or completely agreed on the importance of critical reflection (93.1%; n=793), working within a supportive environment (93.4%; n=777), the value of RTs in interprofessional teams (73.4%; n=611), and the role of research in patient advocacy (78%; n=646) related to scholarly practice. The study findings suggest that the respiratory therapy profession should likely evolve to engage more fully

in aspects like research literacy and critical reflection, as there are concerns regarding the limited engagement in research activities and scholarly practice. Addressing these challenges, finding innovative solutions to build research capacity, and nurturing a culture of scholarly practice are likely necessary to support the development of scholarly practice in the respiratory therapy profession.

Finally, *manuscript 4* reports on a study currently under review in the *Journal of Continuing Education in the Health Professions,* which aimed to develop, pilot-test, and generate preliminary validity evidence for a tool designed to measure scholarly practice among RTs. I used DeVellis' 9-step scale development process to develop the tool and conducted an exploratory factor analysis (EFA) to begin identifying the underlying relationships among observed variables to uncover latent factors. Based on the results published in *manuscript 1* and *2*, I generated an item pool and pilot-tested the tool with 81 RTs across Canada. The refined tool was tested on a larger sample (n= 832) in *manuscript 3* and the responses were analyzed using EFA. Using principal axis factoring with Promax rotation, I retained 18 items across four factors (F), explaining 56.7% of the variance in the data (31.7%, 10.2%, 8.6%, 6.2%). Factors included F1) *professional development and credibility,* F2) *elements supporting scholarly practice,* F3) *the perceived impact of scholarly activities on practice* and F4) s*cholarly practitioner identity and ability.* The internal consistency of the final 18-item scale was deemed overall suitable (Cronbach's alpha=0.879) and for each factor (F1=0.888; F2=0.774; F3=0.842; F4=0.746). These results provide preliminary evidence for a scholarly practice measurement tool that can be used to encourage self-reflection, and/or foster peer-based reflection. Future research could consist of conducting confirmatory factor analysis and administering the tool to other healthcare professions, thereby generating additional validity evidence.

Building on the integrated empirical evidence resulting from my exploration of scholarly practice among RTs, this dissertation makes theoretical, methodological, and practice contributions.

10.2 Theoretical contributions

This dissertation makes two main theoretical contributions: (1) suggests that scholarly practice is likely a multidimensional phenomenon that is crucial for providing legitimacy and

credibility to a healthcare profession; (2) demonstrates the multifaceted dimensions of scholarly practice within RTs through measurement work, revealing new, never considered dimensions.

10.2.1 Scholarly practice is a phenomenon that provides legitimacy and credibility to a healthcare profession

Competency frameworks often break down the role of a scholar or scholarly practice into distinct categories of knowledge, skills, attitudes, and behaviours, such as critical appraisal, reflective practice, and knowledge about research designs.[1-3,5,6,35] This approach suggests that each category has a list of predefined observable behaviours. Many researchers argue that competence, particularly in complex roles like that of the scholar, communicator, and health advocate, cannot be neatly divided into discrete categories.[39-43] Identifying and defining all the necessary elements of knowledge, skills, attitudes, and behaviours for these multifaceted roles is challenging.[39-43] For example, this view of a professional competency has drawn criticism in the literature on Competency-Based Medical Education (CBME) for being reductionist.[39-43] Authors contend that competencies fall short in describing the complexity of human behaviour, emphasizing that what professionals do extends beyond the scope of any single competency.[41] Moreover, CBME is criticized for potentially sidelining the moral or humanistic aspects of healthcare. Its focus on competencies may detach the patient-healthcare professional relationship from its essential human element.[41] Additionally, some authors argue that the description, implementation, and assessment of certain competencies in curricula lack clarity.[42,43] This arguably reductionist approach to competencies can pose risks for stakeholders, such as students and educators, because it may obscure the broader understanding of what is involved in incorporating scholarly practice within a profession amidst the detailed elements found in competency frameworks. As demonstrated in this dissertation, scholarly practice plays a role in providing a degree of legitimacy and credibility to a profession, thereby influencing its status and evolution. I provide an illustration of this phenomenon in this dissertation through the context of the respiratory therapy profession.

In *manuscript 1*, I analyzed a large corpus of articles on the scholar role and scholarly practice to determine how different healthcare professionals (e.g., nurses, OTs, PTs, physicians) conceptualize scholarly practice. Among the findings, one particular theme stood out from many articles: advancing the profession.[28] Much of the data extracted from the included papers highlighted that the purpose of engaging in scholarly practice, or being a scholarly practitioner

was to change or guide professional practice, decision-making, and clinical reasoning. This literature suggests that scholarly practice ensures that practitioners acquire and use the best available knowledge in their practice, which can support optimal clinical practice and continued relevance in the healthcare field.

During the scoping review data analysis, I was concurrently completing my doctoral comprehensive exam, which required me to explore how generating new knowledge influences the professionalization (i.e., the process of becoming a profession) of respiratory therapy.[34] Through a review of various theories of professionalization using different professions as case studies (e.g., dental hygienist, hearing prosthetist, physiotherapist),[44-46] it became evident that professions possessing a specialized body of knowledge that is consistently refined through research are perceived as credible, legitimate and trustworthy in the eyes of the public and other professionals.[47] However, within the respiratory therapy profession, RTs face numerous challenges in generating and refining knowledge. For example, scholarly practice and many of its components (e.g., evidence-informed decision making, research literacy, knowledge translation) are formally excluded from their competency frameworks, limiting the opportunities for RTs to develop critical appraisal skills, research literacy, reflective thinking, and an ability to integrate evidence into practice;[36,48] consequently, this can impede their ability to generate new knowledge. Moreover, excluding scholarly practice from the competency profile sends an implicit message to all stakeholders that it holds less significance in the respiratory therapy profession, ultimately fostering a culture that undervalues it. Therefore, it is unsurprising that RTs experience difficulties in making significant contributions to the advancement of the profession.

These aforementioned challenges underscore the potential credibility concerns faced by professions that neglect the development of their specialized body of knowledge. In respiratory therapy, such concerns are evident in *manuscript 3*, where respondents reported infrequently reviewing peer-reviewed publications or presenting at scientific conferences, rarely participating in the writing of scientific manuscripts, and receiving minimal financial support for engaging in research activities. These are some examples of how RTs might develop and refine their knowledge and that of the profession.

Combined, these findings suggest that RTs may not be taking an active role in driving the formal bases of their own learning and knowledge creation, instead relying on knowledge and

education from other professions, such as medicine or physiotherapy.[49,50] This reliance on other professions may lead to perceptions of the respiratory therapy profession as lacking credibility. *Scholarly practice for bolstering credibility* was a recurring finding throughout this dissertation.

Participants in *manuscript 2* echoed concerns about the profession's legitimacy, credibility and relevance.[37] In this study, many participants described feeling undervalued and inadequate, but they also discussed how engaging in scholarly practice could be a potential avenue to enhance the profession's credibility and legitimacy. In parallel, participants expressed concern that the profession may lose its relevance and become obsolete in healthcare, unless efforts are made to support scholarly practice and help RTs develop as scholarly practitioners in areas such as research literacy, critical appraisal, the use of research evidence, and reflective practice. Similar findings were identified in *manuscript 4,* where the factor in the measurement tool that accounted for most of the variance related was *professional development and credibility.*

The strong association between professional development and credibility that recurred throughout *manuscripts 2* to *4* underscores how important it is to engage in continuous learning and skill enhancement for scholarly practice. This association suggests that practitioners who actively engage in professional development activities, such as collaborating on research teams and pursuing advanced degrees, are more likely to be perceived as scholarly practitioners in their profession, consequently, enhancing their perceived credibility and legitimacy.[10,51-53] For example, in a qualitative study by Andreassen et al.,[51] participants highlighted that nurses with doctorates (assumed to be scholarly practitioners as a result of this level of education) are key figures capable of elevating the nursing profession's standing. The authors predict that nurses with doctoral degrees, and by extension their nursing peers, will gain greater influence, responsibility, and recognition both within their organizations and the broader profession.[51] Participants expressed aspirations for increased professional acknowledgment and inclusion, particularly from other healthcare professionals like physicians. The authors concluded that these nurses are highly respected for their advanced level of engagement in discussions and are seen as valuable resources for generating and disseminating knowledge. They are considered credible sources of current knowledge, and are perceived as actively contributing to improving patient care and fostering job satisfaction among their peers.[51]

The combined results presented in this dissertation highlight that scholarly practice is more than a discrete set of knowledge, skills and attitudes to be learned and applied. Rather,

scholarly practice is a foundational part of professionalism within a given profession, in this case, respiratory therapy. Emphasizing the importance of scholarly practice throughout a professional's education and career may not only influence the quality of care delivered but also strengthen the profession's credibility, ensuring its ongoing relevance, evolution, and survival in the dynamic healthcare landscape.[54-57]

10.2.2 Identification of new, never considered dimensions of scholarly practice through measurement work

The absence of clear definitions and suitable measurement tools challenge researchers to advance the empirical and conceptual knowledge base regarding this complex competency. Accurately measuring and evaluating scholarly practice can underscore its importance in education and practice and ensure it is recognized and valued alongside other core competencies expected of healthcare professionals.[9,23,24,26,30,31] The few measurement tools available tend to focus on specific aspects of scholarly practice rather than include several components that would reflect a broader conceptualization of scholarly practice.[58,59] For example, the Jefferson Scale of Physician Lifelong Learning consists of 19 items assessing respondents' professional activities related to continuous learning, such as serving as a principal investigator, publishing peer-reviewed papers, and regularly attending medical grand rounds.[60] Similarly, the survey on the standard of practice for research training in Canadian psychiatry residents is a 34 item tool which includes questions such as whether current research informs clinical practice, how often residents publish research, and the usefulness of their training for writing grant applications.[61] The limited number of available tools and their focus on specific aspects of scholarly practice underscores the need for more comprehensive measurement work on this topic.

The results of each study in this dissertation contribute to the identification of latent constructs of scholarly practice. Latent constructs are defined as the hidden or unobserved elements that are not measured directly. They are inferred by measuring and interpreting the effects it has other observed variables.[62,63] Specifically, in *manuscript 1*, I report on the results of a scoping review to map the literature on scholarly practice in healthcare professionals and to identify the available tools used to measure scholarly practice.[28] This step informed the development of a semi-structured interview guide used in *manuscript 2*, which explored scholarly practice from the perspective of RTs.[37] The findings from *manuscript 2* were used to design the survey items in *manuscript 3*; in this way, the codes become variables, themes become

scales, and the quotations become survey items, resulting in questions that are grounded in the participants' culture and perspectives and reflective of their conceptualization of scholarly practice.[64] The items were reviewed by six experts external to the research team, pilot-tested, translated, and administered to RTs across Canada.[62,65,66] The tool has strong content validity evidence since its development was guided by empirical evidence during the item generation.

The results of these survey items formed the basis for further analysis in the study reported in *manuscript 4*, in which I employed EFA to identify underlying dimensions of scholarly practice.[62,67,68] For instance, this tool, which can be used to promote self-reflection, revealed new latent factors not previously described in available competency frameworks or identified in our scoping review. These factors include professional development and credibility, as well as an individual's identity as a scholarly practitioner. Identifying and understanding these dimensions contributes to the theoretical underpinning of the multifaceted nature of scholarly practice.[69]

The results of the EFA may also generate hypotheses or additional research questions for future studies on scholarly practice.[68,69] For example, the analysis revealed that access to resources and supportive peers may facilitate scholarly practice. Therefore, one might hypothesize that fostering collaborative networks or promoting interdisciplinary interactions may enhance one's scholarly practice.[70,71] Researchers could implement and explore these factors in relation to the tool, which may offer valuable insights into how to optimize its effectiveness in promoting scholarly practice among RTs.

The hypotheses generated from the EFA provide valuable insights for future research endeavours and contribute to the ongoing development of theory and advancement of knowledge about scholarly practice. In sum, the findings of this dissertation fill a gap in available measurement tools for scholarly practice in RT and lay the foundation for advancing the theoretical understanding of the components of scholarly practice within RT and possibly other healthcare professions.

10.3 Methodological contributions

The main methodological contribution of this dissertation is the use of a multi-method approach to the study of scholarly practice and, specifically, how such an approach can result in a deep and broad-based understanding of the topic.

10.3.1 Multi-method approach to understanding scholarly practice

In this dissertation, I used diverse methodologies within each individual study. I then examined all the findings as part of a cohesive program of research. These studies were intentionally structured to overcome the limitations of a mono-method approach (i.e., using a single research methodology or method to conduct studies),[72] which often provides a limited perspective about a topic, particularly one as complex as scholarly practice.

During my doctoral research, I had to navigate the ambiguity surrounding these methodologies. Though the term mixed-method research has become more widespread in the literature, there is still inconsistency in how it is used. Depending on the field of study, researchers may use "mixed-method" and "multi-method" interchangeably; this remains a contentious issue in the methodology literature.[73-75] Some authors argue that there are distinctions between the two approaches and propose that the differences stem from how projects are structured, while others suggest that it depends on the specific methods being combined (e.g., requiring both quantitative and qualitative methods to be combined for mixed methods).[64,76] Others claim that the terms are synonymous, and the debate is merely semantic.[75]

In my work, I align with researchers advocating for a clear distinction between multi-method and mixed-method approaches to ensure precision and intentionality when conducting research.[77,78] Specifically, mixed-methods refers to the use of two or more quantitative and/or qualitative *strategies* in a *single research project with one research question.* This includes a combination of quantitative and qualitative research methods, such as sampling, data collection, and analysis within a single research project. Conversely, multi-methods, is when two or more distinct research *projects* are conducted, to answer multiple research questions or explore a topic comprehensively. As with mixed methods, the individual studies may be a combination of quantitative methods, qualitative methods, or both. However, unlike mixed methods, each study project is independently planned and conducted to answer a particular sub-question.[79,80]

In this dissertation, each study (i.e., a scoping review, a qualitative interpretive description study, a cross-sectional study, and the development and preliminary validation of a measurement tool) represents an independent investigation, each addressing a different research question. This structured approach aligns with a multi-method approach, which allows for a comprehensive exploration of the topic of scholarly practice by combining the evidence obtained

from each study. As such, employing a multi-method approach to investigate scholarly practice represent a methodological contribution.

As evidenced in the findings of *manuscript 1*, among the 90 studies reviewed, more than half consisted of conceptual discussions about scholarly practice rather than empirical investigation using a specific methodology. Moreover, only one article utilized a mixed/multi-method approach.[81] These findings underscore the limited empirical study of scholarly practice, suggesting that is may be an underdeveloped area of research. Therefore, this dissertation represents the first attempt to apply a multi-method research approach to scholarly practice, incorporating both quantitative and qualitative methodologies to provide a comprehensive understanding of the topic.

Generating findings using multiple methodologies also allowed for triangulation of my data, which is a hallmark of conducting multi-method research.[77-80] Triangulation helped overcome fundamental limitations that may arise from using a single method, thus strengthening the trustworthiness of the conclusions that I drew from my research.[82-85] For example, in *manuscript 1*, I generated findings that provided a broad overview of existing literature and identified key themes of scholarly practice, attributes of scholarly practitioners, and possible ways it might be operationalized. In *manuscript 2*, I used the previous findings to conduct qualitative interpretive description interviews with RTs to explore their perspectives of scholarly practice. By comparing the themes and definitions identified in the scoping review with the insights gathered from RTs during interviews, I triangulated my findings. This process revealed an interesting alignment in the data: while the scoping review identified scholarly practice as core to being a healthcare practitioner, the qualitative interviews with RTs provided additional empirical support for this finding. In *manuscript 3*, I administered a survey to RTs across Canada to collect data about the demographic characteristics, their perspectives on scholarly practice and their involvement in scholarly activities. Contrasting the findings from *manuscript 1* and *2* revealed a consistent emphasis on the importance of credibility and recognition within the respiratory therapy profession, underscoring the fundamental role of scholarly practice in providing this legitimacy. The process of comparing findings across multiple studies and different methodologies (i.e., methodological triangulation) reinforced the findings, added robustness to the dissertation conclusions and contributed novel findings to the literature.

10.4 Practice contributions

This dissertation makes two main practice contributions: (1) helps advance the discourse of scholarly practice in respiratory therapy and (2) generated a tool that can be used to facilitate self-reflection by RTs about their scholarly practice.

10.4.1 Advancing the discourse of scholarly practice in respiratory therapy

The respiratory therapy profession operates within political and educational systems that do not prioritize scholarship and scholarly practice. One example of this is its exclusion from competency frameworks, which raises questions about the priorities assigned to this competency within the profession.[35,36,48,86,87] However, the data in this dissertation suggest that RTs aspire to gain respect, validation, and credibility for their profession despite such decisions that negatively affect their profession and its perception by others. This was a common finding across all studies. For example, in *manuscript 2*, RTs expressed feelings of inadequacy within interprofessional teams and fear that the profession will become obsolete if conditions remain unchanged. Similarly, the findings in *manuscript 3* revealed that many respondents believe RTs would be better recognized if they held an undergraduate degree and had research literacy skills, highlighting the disparity between RTs' aspirations and the current system.

The findings in this dissertation suggest that despite significant achievements and growth since the profession's creation in Canada in 1964, there are still substantial gaps in the professionalization of the respiratory therapy profession.[34] My research serves as a reflective lens for the profession, highlighting areas for improvement and offering preliminary evidence into how the profession can begin to attain the recognition it seeks. Furthermore, this research has already begun to influence the discourse about scholarly practice within the respiratory therapy profession.[88] Through my publications[28,34,37,49,89] and presentations at local, national and international conferences,[90-93] leaders in the profession have shared that they have begun to think more critically about related topics such as continuing professional development (CPD), the utility of reflection within the profession, and the role that scholarly practice may have on RTs' practice and development as healthcare professionals. They have also begun to explore ways to better support scholarly practice within the profession and to identify the necessary resources to foster its development. One noteworthy example includes the recent establishment of a competency framework for RTs working in primary care, which now incorporates the scholar role as a core competency.[94] While this framework pertains to a specialized post-entry-to-practice

competency profile rather than the baseline entry-to-practice framework for all RTs, it marks the first instance of any competency framework within the respiratory therapy profession that includes the scholar role. Anecdotally, I was informed by the CSRT leadership and participants in the development of the primary care competency framework that my work and presentations played a significant role in influencing this decision.

Finally, the research in this dissertation stresses the importance of integrating scholarly practice into the foundation of the respiratory therapy profession. Through empirical research about scholarly practice in respiratory therapy, my research has painted the first comprehensive portrait of the profession's practice and scholarly profile. This mosaic of insights allows RTs to reflect on who they are as healthcare professionals, their roles in the healthcare system, what value they bring to the healthcare team and how they may identify areas for improvement. Additionally, these results enable other professions (e.g., medicine, nursing) to gain a clearer understanding of the roles and contributions of RTs in healthcare. Furthermore, my research offers evidence for stakeholders (e.g., leaders and decision-makers) within the respiratory therapy profession to advocate for change. For instance, they can leverage the findings to support systems-level changes like advocating for higher education (e.g., undergraduate degrees) for RTs, formally integrating scholarly practice into the competency frameworks of the respiratory therapy profession and justifying the allocation of resources to support initiatives aimed at enhancing research capacity within the profession. These efforts can nurture a culture of scholarly practice within the profession, thereby contributing to its advancement and growth.

10.4.2 The scholarly practice measure: a framework for self-reflection

Because scholarly practice is not included in competency frameworks or their corresponding educational curricula,[36,48] RTs are often not formally instructed in aspects of scholarly practice. Instead, they are left to develop the knowledge, skills, behaviours and attitudes of scholarly practice informally, primarily through experiential learning during their clinical practice.[95-97] These challenges in scholarly practice leave many RTs aspiring to develop skills in research literacy, critical appraisal, and other facets of scholarly practice, as articulated in the perspectives shared by participants in *manuscript 2* and *3*.

Many participants expressed a need for guidance, resources, and opportunities to enhance their scholarly practice, acknowledging its significance for professional advancement and for ensuring high-quality patient care. In response to this need for support and to foster professional

growth, the scholarly practice tool developed through this research can allow RTs to reflect on their progress toward becoming a scholarly practitioner.

Briefly, reflection is a metacognitive process that enables professionals to gain insight into their practice by thinking about various aspects of it.[98-100] Existing literature supports reflection as a method to advance knowledge and professionalism, support self-regulated learning, guide future learning, and deepen understanding of complex concepts.[98,101-103] While reflection is advocated for in the healthcare professions,[1-6,36,98] mastering this intricate process is not without its challenges. For example, professionals must recognize its significance for personal and professional development,[98,104,105] otherwise, the process may be interpreted as futile. Additionally, effective reflection entails ongoing self-monitoring of thoughts and emotions, along with the ability to identify and challenge existing belief systems and assumptions. Portfolios, for example, are increasingly used to support reflective learning in postgraduate and continuing medical education.[98,106,107] The scholarly practice measurement tool developed in this dissertation can serve as a potential structured guide for RTs to reflect about scholarly practice, foster a deeper understanding of their strengths and areas in need of improvement, and identify strategies that may support their continuous improvement.

While the initial findings of this dissertation provide preliminary evidence of the tool's validity for measuring scholarly practice among RTs, further psychometric testing (e.g., discriminant validity, cross-cultural validity, reliability) testing is necessary.

10.5 Strengths and Limitations

10.5.1 Strengths

There are two central strengths of this dissertation that I would like to highlight that extend beyond those mentioned in individual studies. The first is that I adhered to established guidelines and best practices for each methodology employed. For example, in *manuscript 1,* I conducted a scoping review strictly adhering to every aspect of the Joanna Briggs Institute guidelines.[108] Noteworthy features include developing a comprehensive search strategy in collaboration with a health services librarian,[109] which was subjected to peer-review by a second librarian using the Peer Review of Electronic Search Strategies (PRESS) guidelines.[110] We deposited the search strategy into an open-access repository,[111] and a-priori published a peer-reviewed protocol of the scoping review.[89] Additionally, I conducted the optional (but valuable)

stage of integrating stakeholders' feedback in the final analysis, further supporting the methodological rigor and trustworthiness of the findings.[112,113] All of these features are best practice, but often overlooked by many authors within the field of scoping review methodology.[112-114] Other examples of using established methodological and reporting guidelines was using the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist to enhance the trustworthiness of the qualitative findings published in *manuscript 2*.[115] Furthermore, I provided an illustrative, simplified sample coding scheme of a final theme. Finally, for the cross-sectional study in *manuscript 3,* I adopted the most recent and widely adopted universal checklist for the reporting of survey studies (CROSS) reporting guidelines for both web-and non-web-based surveys.[116]

The second strength of this dissertation that I would like to highlight was the use of multiple recruitment strategies to reach a wide array of potential participants across Canada, who represented diverse roles within the respiratory therapy profession. These approaches ensured a diverse and comprehensive range of perspectives, thereby resulting in a more nuanced understanding of scholarly practice. In *manuscript 1*, I consulted four clinician-researchers (two nurses and two physicians) who represent the largest healthcare professions identified in the data set and asked them to review the results and provide feedback on whether the themes reflected the concept of scholarly practice from their perspectives. I incorporated their feedback into the final version of the themes, and their engagement shaped the results. In *manuscript 2*, I aimed to broaden the understanding of scholarly practice by recruiting participants with diverse professional roles, including clinicians, educators, researchers, leaders and managers. To avoid any undue influence on participants, a research assistant who had no prior connection with the potential participants sent an email invitation and a copy of the consent form. Using this strategy, I successfully recruited and interviewed 26 participants from across Canada representing the breadth of practice roles in the respiratory therapy profession. Finally, in *manuscript 3*, I recruited participants using two parallel methods to potentially reach a convenience sample from the 12,291 RTs currently practicing in Canada and minimize a potential selection bias.[117] Recruitment emails were sent both through the national professional association (i.e., CSRT's) distribution list and the nine Canadian regulatory bodies distribution list. I used this approach for two main reasons, the first is that the CSRT acts as the credentialling body in jurisdictions where respiratory therapy is an unregulated profession (BC, NU, NT, YT). Second, for RTs in provinces

where the profession is regulated, membership to the CSRT is voluntary, whereas membership to their provincial regulatory body is mandatory to be able to practice, thereby enhancing the likelihood of a larger response rate. I personally sent an email explaining the purpose of the study, the research team's contact information, the consent form, and a recruitment poster (which included a link and QR code for the study) to the director of the national association and every regulatory body across Canada. Each director either chose to circulate the email to their professional member list or include the recruitment poster in their regular communications to their members. Using this recruitment strategy, combined with three email reminders and incentive prizes,[118] I successfully recruited 832 participants. Additionally, *manuscript 3* included a broad representation of the profession and the full breadth of practice roles in the respiratory therapy profession across Canada, rather than a specific subset, such as recruiting only clinicians or only educators. This approach underscores the importance of embracing diverse viewpoints in healthcare research. Engaging stakeholders from varied backgrounds fosters their investment in the research outcomes, increasing the likelihood of their adoption and helping to contextualize the findings within the current healthcare landscape.[119]

10.5.2 Limitations

In addition to the specific limitations described in each individual manuscript, there is one central limitation that applies to this dissertation on a broader level. This dissertation primarily focuses on the respiratory therapy profession within Canada, which limits the transferability of the results both geographically, and to non-respiratory therapy professionals. The respiratory therapy profession is well established in several regions (e.g., Canada and the United States), while it is emerging and evolving in others (e.g., Latin America, China, Germany).[120-122] RTs in such areas may prioritize defining their roles within their healthcare systems and their scope of practice rather than addressing competencies like scholarly practice.[121,122] Furthermore, in certain regions of the world, respiratory therapy is not recognized as a distinct profession. Instead, some aspects of the clinical practice of RTs are conducted by specialized physiotherapists or respiratory nurses.[123,124] The insights presented in this dissertation predominantly stem from the perspectives of a subset of practicing RTs in Canada. For example, during the analytical phase of *manuscript 2*, I used my experience as a practicing respiratory therapist to interpret the data. This approach was grounded in the principles of interpretive description methodology, which acknowledges that researchers' theoretical and experiential

backgrounds can influence and shape the findings of a study.[125] Consequently, it is possible that the findings in this dissertation may not resonate with RTs and other professionals who practice aspects of respiratory therapy outside of Canada. However, using the Canadian respiratory therapy profession as a case to study where the profession is relatively well-established offers an opportunity to shed light on potential contextual factors relevant to scholarly practice at a critical juncture in the profession's evolution. The relatively young age of the profession, rooted in technical origins, provides a contrasting perspective, highlighting the tensions and opportunities in the relationship between scholarly practice and direct clinical work. This, in turn, yields transferable insights into how scholarly practice is perceived and enacted in healthcare.

Similarly, I conducted this research as part of my doctoral degree in an academic unit predominantly composed of physiotherapists and occupational therapists. While these professionals may be familiar with the topic of scholarly practice,[1,2,5] the specific findings and conclusions drawn from this research may not be directly applicable to these or to other healthcare professionals. For example, RTs possess unique roles, responsibilities, and practice environments that distinguish them from other professionals. A significant proportion of RTs operate in high-stress critical care settings (e.g., neonatal intensive care, adult intensive care, emergency departments) upon entry to practice and face daily challenges associated with high mortality rates.[126,127] Consequently, the factors influencing scholarly practice, as well as the barriers and facilitators to its implementation, might be unique to RTs. Therefore, conclusions drawn from this dissertation may not be directly transferable to professionals with diverse scopes of practice.

Furthermore, the educational backgrounds and training experiences of RTs in Canada differ significantly from those of other healthcare professionals. While scholarly practice is formally excluded from RTs' entry-to-practice framework, other professions like medicine, occupational therapy and physiotherapy have integrated this competency into their educational training.[1,2,5,6] Despite their primary focus on critical care and high-risk patients, RTs in Canada typically enter practice with a college-level diploma.[34] RTs have limited opportunities to pursue undergraduate and graduate degrees in respiratory therapy in Canada and no doctoral-level training programs in respiratory therapy.[128] Although this dissertation identifies specific educational needs, gaps, and preferences among RTs regarding scholarly practice, these findings

may not be broadly applicable to professionals with diverse educational backgrounds (e.g. entry-to-practice qualifications) or training curricula.

10.6 Future research

In addition to the potential avenues of research discussed in each manuscript, I have identified five avenues for future research: 1) explore different educational and pedagogical approaches for teaching scholarly practice to healthcare professionals; 2) explore the relationship between scholarly practice and public perception; 3) investigate how engagement in scholarly practice influences the professional identity and professional identity formation among RTs; 4) evaluate the impact of the scholarly practice tool on the CPD of RTs; and 5) conduct further psychometric testing of the scholarly practice tool.

First, because scholarly practice is not formally included in the competency frameworks of RTs, it is likely superficially (if at all) taught during their education. Despite this, my findings suggest that many RTs are eager to receive training in aspects of scholarly practice, such as research literacy and critical appraisal. Future research could involve designing, and implementing different educational interventions, such as experiential learning opportunities or micro-credential programs, and then evaluating the impact of different approaches on participants' research literacy, critical appraisal skills, and ability to integrate evidence into clinical practice.[129,130] Additionally, qualitative methods could be employed to explore participants' perceptions, preferences, and experiences with different educational approaches, providing valuable insights into their effectiveness and potential areas for improvement.[131,132]

Second, there is a need to understand the relationship between scholarly practice and public perception. Specifically, to understand how the public's awareness of healthcare professionals' involvement in scholarly practice influences their trust, confidence, and perception of expertise, competence, credibility, and legitimacy within the profession. While this was not explicitly discussed in the studies contained in this dissertation, it can be inferred that when participants expressed a desire to be viewed as credible, they would also desire recognition by the public they serve. Exploring the public's perceptions of healthcare professionals' engagement in scholarly practice could provide valuable insights for developing education, advocacy, and communication strategies aimed at enhancing public understanding and support for scholarly practice in healthcare.[47]

Third, how RTs perceive scholarly practice as integral to their professional role and identity, is another avenue to explore. Though there is a dearth of research on the professional identity and professional identity formation of RTs and empirical research on these topics is needed for understanding how individuals may develop and evolve within their professions.[133,134] This evidence can inform the design of educational programs, mentorship initiatives, and professional development opportunities. Furthermore, a strong professional identity is often associated with higher levels of job satisfaction, engagement, and effectiveness in professional practice.[133,135] In relation to the results of this dissertation, the "identity" of RTs was frequently discussed when participants explained scholarly practice. Future research could aim to gain an in-depth insight into RTs' beliefs, attitudes, and experiences regarding scholarly practice. This might include their perceived importance of scholarly practice for their professional identity formation and the ways in which engaging in scholarly practice contributes to their sense of professional identity.

Fourth, another avenue for future research could consist of longitudinal studies to evaluate the utility and impact of the scholarly practice tool on the CPD of RTs. While the findings of this dissertation offer a portrait of the current landscape of the respiratory therapy profession regarding their practice and scholarly profile, there is a need to explore how this may evolve over time. Implementing the tool in select respiratory therapy settings could provide an opportunity to track RTs' engagement with self-reflection and professional development activities over an extended period. This could enable researchers to identify changes in the scholarly practice competencies, professional growth, and patient care outcomes among RTs who use the tool compared to those who do not. Moreover, exploring the perceptions and experiences of RTs regarding the usability, effectiveness, and value of the tool in facilitating their CPD could provide insights for modifying the tool.

Finally, there is a need to further develop the psychometric properties of the scholarly practice tool. Given that it was developed for the respiratory therapy population in a Canadian context, it might not be applicable to other professions or contexts. Items might require modification if used in different professions or countries (e.g., cross cultural adaptations). Finally, confirmatory factor analysis will be needed to confirm the underlying structure of the tool. This process involves using the EFA results as a theoretical model representing the tool's underlying structure, outlining the relationships between observed items and the latent factors

they intend to measure. These indices provide information about how well the model fits the data relative to a perfectly fitting model, indicating its suitability for measuring scholarly practice.[136,137]

10.7 Reflexivity

At the start of my doctoral studies, I assumed that completing a PhD was a linear process involving course completion, acquisition of advanced methodological skills, securing funding, and publishing papers. However, as I delved deeper into my doctoral research, I realized that every aspect of my life profoundly impacted my academic journey and shaped my decisions throughout the various research projects. My personal background, professional experiences, values, and beliefs are fundamentally intertwined with the subject of scholarly practice in RT and significantly influenced my approach to my doctoral work. I elaborate on these factors in the following discussion using the categories from established reflexivity typologies.[138,139]

10.7.1 Personal Reflexivity

I identify as a white male settler with European roots raised in an English-speaking, middle-class household in Montréal, Québec. Despite residing in Montréal, my education was entirely conducted in English. I pursued a Diploma of College Studies (DEC) in respiratory therapy. Subsequently, I pursued both my undergraduate and graduate degrees through online education while maintaining full-time employment and various volunteer efforts. As a result of these achievements, I was admitted as a doctoral student in the rehabilitation sciences program at McGill University in 2019. I acknowledge the unique path that led me to this point. In Québec and much of Canada, most RTs cannot obtain admission to a university solely with their diploma/DEC. I recognize the privileges afforded to me by being a doctoral student at a prestigious English-speaking institution. Nevertheless, my journey in the respiratory therapy profession has been accompanied by a considerable amount of negativity, both from within the respiratory therapy community and from external sources such as the public and other healthcare professionals, all of which are the basis for my motivation to study the topic of this dissertation. I outline some examples in the subsequent sections.

10.7.2 Professional Reflexivity

Throughout my career, I have achieved numerous milestones, working as a clinician, a didactic and simulation educator, engaging in medical sales, working as a research assistant to

physicians, and participating in medical outreach volunteering. Despite these accomplishments, conversations about my profession with individuals outside of healthcare (i.e., the public) invariably begin with an explanation of what a respiratory therapist does, often culminating in the conclusion, "*so you're like a specialized nurse?"* These encounters can be frustrating for RTs collectively, as advocating for our profession becomes challenging when it is not well known. Although the COVID-19 pandemic unintentionally cast a spotlight on the important roles that RTs fill,[140] this acknowledgment seems to have been transient. As we transition to a post-COVID-19 society, that fleeting moment of recognition appears to have faded.

Moreover, even within hospital settings, where RTs primarily practice, various perceptions exist about our profession within the interprofessional team. Some members, including nurses and physicians, view us merely as technicians or "button turners." Contrary to this perception, the reality is that our role encompasses much more, and we have the capacity to make substantial contributions to patient care. For instance, within the hospital, RTs frequently care for high-risk patients, including both neonates from birth and adults until the end of life. We are consistently involved in life-saving maneuvers, such as responding to code blues, where we frequently encounter situations where the threat of death is imminent. Recently, there have been efforts to highlight the broader contributions of RTs, not just within the hospital setting but also in providing optimal care outside the hospital, such as in primary care settings.[141]

Based on my observations, experience, and broad knowledge of the respiratory therapy profession in Canada, there exists a perception among RTs *themselves* that they consider their profession to be, in their words, a "dead-end" career. This perception appears to stem from the fact that the entry-to-practice qualification in our profession is often a diploma, in contrast to other members of the interprofessional team who often hold master's or doctoral-level qualifications. Anecdotally, many RTs have expressed a strong sentiment that members of the interprofessional team frequently dismiss our professional opinions based on the perception that we are "only diploma trained." Compounding this issue is the absence of direct pathways for RTs to pursue higher education in Canada for those who aspire to do so. This leads to many RTs in the profession being content with maintaining the status quo, which, in turn, results in either not actively striving to bring about broader changes within the profession or leaving the profession entirely.[142]

The negative perceptions of my profession from various sources motivated me to pursue higher education. Essentially, I aimed to validate my worth as a healthcare professional and attain a level of competence comparable to those in the interprofessional team who have received master's or doctoral-level training. I chose to pursue my master's degree in education/health professions education because I perceived that many misconceptions about the respiratory therapy profession stemmed from our entry-to-practice requirement being only a diploma. I believed that exploring ways to transition the entry-to-practice requirements from a diploma to an undergraduate degree would be a worthwhile and noble goal. However, this "noble" goal wasn't widely embraced. Throughout my undergraduate and graduate studies, I felt ostracized by my peers due to my academic pursuits. Many dismissed it as a waste of time, asserting that RTs are solely meant for working full time, at the bedside, in the hospitals, deeming research as not a legitimate job and insisting that research does not impact their day-to-day responsibilities. Experiencing this sense of isolation in advocating for higher education and scholarly practice compelled much of the research and inquiry in this dissertation. I needed to understand why there was such resistance among RTs towards research, higher education, and scholarly practice. As a result, many of the research questions and applied methodologies were grounded in my experiential knowledge.

10.7.3 Methodological reflexivity

Adopting a multi-method approach in my dissertation necessitated that I engage in methodological reflexivity. This involves critically examining the nuances and consequences of my decisions about each research methodology. Employing a diverse range of methodologies might be perceived negatively by some readers or researchers who prescribe to a particular paradigm, such as post-positivism or constructivism. Paradigm, in this context, refers to an individual's worldview and their framework for understanding human experience.[143,144] Throughout my doctoral training, as I developed as a researcher, I found it necessary to reflect on my own personal paradigm and ask myself, "*How do I perceive the world? What are my beliefs? What do I deem important and how do these factors influence my methodological decisions, such as the choice of research strategy to the formulation of the problem, data collection, processing, analysis, and application of acquired data to the real world?"* One significant instance of such reflection occurred while writing one of my doctoral comprehensive papers, where I explored the ontological, epistemological, axiological perspectives and the strengths and shortcomings of

using mixed methods research in knowledge translation and implementation science. In my review of this literature, I learned that many researchers who discuss the foundations of mixed methods research often adopt pragmatism as a paradigm.[64,145-147] By adopting pragmatism, researchers move away from viewing post-positivism and constructivism as opposing and dichotomous concepts; instead, they focus on how to effectively combine these approaches.[148]

Mixed and multi-methods research addresses research questions that require insights from real-life contexts, multiple perspectives, and cultural influences at various levels.[149,150] Researchers appreciate that to effectively answer these types of questions, their methodologies often involve rigorous quantitative research to assess the magnitude and frequency of constructs, coupled with trustworthy qualitative research to explore the meaning and understanding of these constructs. The intentional combination of methodologies allows researchers to leverage the strengths of each. Essentially, while this dissertation employs a variety of methodologies, the foundational paradigm guiding me (as a researcher), and the research contained in this dissertation is pragmatism. My goal was to select the most appropriate methodology for each research question, with the overarching goal of generating insightful and actionable findings for applicability in the real world. I adopted a pragmatic approach in my research because I believe that complex problems, whether social or medical, require multifaceted approaches for optimal understanding. Like some researchers, I believe that knowledge is both constructed and based on the reality we experience, suggesting that while knowledge exists externally, individuals must personally *experience it* to make sense of its meaning.[64,147,151-154] Moreover, I was intrigued by the integrative thinking aspect of pragmatism. Embracing pragmatism encourages me to incorporate interdisciplinary perspectives into my research, thereby enriching it with diverse insights and fostering more holistic solutions to the problems I investigate.

10.7.4 Reflexivity Throughout the Research Process

Fortunately, I realized early on how my background influences and shapes my decisions in the research process. This understanding evolved through introspection during discussions with my supervisors regarding my history as a respiratory therapist, what led me to my admission to McGill University and through personal reflection while preparing for the doctoral comprehensive exams. Moreover, I remained committed to reflexivity throughout my program, employing various strategies to enhance the trustworthiness and relevance of my research. These strategies included regular consultations with my committee members, engagement with other

researchers and peers, and using reflexive journals to detail my assumptions and biases, as detailed in relevant manuscripts. Consequently, I believe that the reflexive approach I maintained throughout the studies contained in my dissertation was thorough and effective.

10.8 Concluding Statement

This dissertation presents an original contribution to the theory, methodology and practice of scholarly practice. Collectively, the four studies in this dissertation (1) illustrated how scholarly practice is a multidimensional phenomenon that plays a crucial role in providing legitimacy and credibility to a healthcare profession; (2) explored the multifaceted dimensions of scholarly practice within RTs through measurement work, which revealed new, never considered dimensions; (3) illustrated how using a multi-method approach to understanding scholarly practice resulted in a broader understanding of the topic; (4) advanced the discourse of scholarly practice in respiratory therapy and; (5) generated a measurement tool of scholarly practice. These contributions have advanced the body of knowledge and suggest promising directions for future research.

In today's healthcare landscape, professionals are expected to enter practice with the ability to ground their practice in theory and research, critically evaluate their current assessment and intervention approaches, and to actively explore and incorporate evidence-based literature into their work to ensure optimal patient care for the public they serve. However, this capacity is not well developed in respiratory therapy, impacting the profession's perceived credibility within interprofessional teams, and potentially hindering RTs ability to deliver up-to-date care. There is an urgent need to enhance RTs' ability to engage in scholarly practice, enabling them to meet the growing demands of healthcare and to effectively address the needs of all individuals living in Canada and globally.

References

1. Canadian Association of Occupational Therapists. Profile of Practice of Occupational Therapist in Canada. 2012.
2. Canadian Association of Occupational Therapists, Association of Canadian Occupational Therapy Regulatory Organizations, Association of Canadian Occupational Therapy University Programs. *Competencies for Occupational Therapists In Canada.* 2021.
3. Canadian Nurses Association. Framework for the Practice of Registered Nurses in Canada. In. 2nd ed. Ottawa, ON.: Canadian Nurses Association; 2015.
4. Frank JR, Snell L, Sherbino J. *CanMEDS 2015 Physician Competency Framework.* Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.
5. National Physiotherapy Advisory Group. Competency profile for Physiotherapists in Canada (2017). 2017.
6. Richardson D, Oswald A, Chan M-K, Lang ES, Harvey BJ. Scholar. In: Frank JR, Snell LS, Sherbino J, eds. *CanMEDS 2015 Physician Competency Framework.* Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.
7. World Health Organization. *Evidence, policy, impact. WHO guide for evidence-informed decision-making.* Geneva: World Health Organization; 2021.
8. Black AT, Balneaves LG, Garossino C, Puyat JH, Qian H. Promoting evidence-based practice through a research training program for point-of-care clinicians. *J Nurs Adm.* 2015;45(1):14-20. doi:10.1097/NNA.0000000000000151.
9. Ologunde R, Di Salvo I, Khajuria A. The CanMEDS scholar: the neglected competency in tomorrow's doctors. *Adv Med Educ Pract.* 2014;5:383-384.
10. Wenke R, Noble C, Weir KA, Mickan S. What influences allied health clinician participation in research in the public hospital setting: a qualitative theory-informed approach. *BMJ Open.* 2020;10(8):e036183. doi:10.1136/bmjopen-2019-036183.
11. Carpenter S, Haber-Curran P. The role of research and scholarship in the professionalisation of student affairs. *Journal of Student Affairs in Africa.* 2013;1(1):1-9. doi:10.14426/jsaa.v1i1-2.20.
12. Riley JM, Beal JA. Scholarly nursing practice from the perspectives of early-career nurses. *Nurs Outlook.* 2013;61(2):e16-24. doi:10.1016/j.outlook.2012.08.010.

13. Boaz A, Hanney S, Jones T, Soper B. Does the engagement of clinicians and organisations in research improve healthcare performance: a three-stage review. *BMJ Open.* 2015;5(12):e009415. doi:10.1136/bmjopen-2015-009415.
14. Chalmers S, Hill J, Connell L, Ackerley S, Kulkarni A, Roddam H. The value of allied health professional research engagement on healthcare performance: a systematic review. *BMC Health Serv Res.* 2023;23(1):766. doi:10.1186/s12913-023-09555-9.
15. Hanney S, Boaz A, Jones T, Soper B. Engagement in research: an innovative three-stage review of the benefits for health-care performance. In: *Health Services and Delivery Research.* Southhampton (UK): NIHR Journals Library; 2013.
16. Harding K, Lynch L, Porter J, Taylor NF. Organisational benefits of a strong research culture in a health service: a systematic review. *Aust Health Rev.* 2017;41(1):45-53. doi:10.1071/AH15180.
17. Wenke R, Mickan S. The role and impact of research positions within health care settings in allied health: a systematic review. *BMC Health Serv Res.* 2016;16(a):355. doi:10.1186/s12913-016-1606-0.
18. Kitson A. The relevance of scholarship for nursing research and practice. *Journal of Advanced Nursing.* 2006;55(5):541-543. doi:10.1111/j.1365-2648.2006.04004_1.x.
19. Masic I, Miokovic M, Muhamedagic B. Evidence based medicine - new approaches and challenges. *Acta Inform Med.* 2008;16(4):219-225. doi:10.5455/aim.2008.16.219-225.
20. Rosenberg LE. Exceptional economic returns on investments in medical research. *Med J Aust.* 2002;177(7):368-371. doi:10.5694/j.1326-5377.2002.tb04840.x.
21. Aiken L, Clarke S, Cheung R, Sloane D, Silber J. Educational Levels of Hospital Nurses and Surgical Patient Mortality. *JAMA.* 2003;290(12):1617-1623. doi:10.1001/jama.290.12.1617.
22. Aiken LH, Sloane DM, Bruyneel L, et al. Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. *The Lancet.* 2014;383(9931):1824-1830. doi:10.1016/s0140-6736(13)62631-8.
23. Barbour-Tuck E, Mutter T, O'Brien J, Girling L, Choo E, Gamble J. Benchmarking a Canadian Anesthesiology Resident Research Program against national norms using a logic model framework: a quality improvement study. *Can Med Educ J.* 2023.

24. Binnendyk J, Pack R, Field E, Watling C. Not wanted on the voyage: highlighting intrinsic CanMEDS gaps in Competence by Design curricula. *Can Med Educ J.* 2021;12(4):39-47. doi:10.36834/cmej.70950.
25. Hautz SC, Hautz WE, Feufel MA, Spies CD. What makes a doctor a scholar: a systematic review and content analysis of outcome frameworks. *BMC Med Educ.* 2016;16:119. doi:10.1186/s12909-016-0627-z.
26. Kazevman G, Marshall JL, Shachar B, Slater M, Leung F-H, Guiang CB. Uncovering Hidden Scholar Feedback with Field Notes. *MedEdPublish.* 2021;10(1). doi:10.15694/mep.2021.000168.1.
27. Svab I. Changing research culture. *Ann Fam Med.* 2004;2 (2):S30-34. doi:10.1370/afm.150.
28. Zaccagnini M, Bussieres A, Mak S, Boruff J, West A, Thomas A. Scholarly practice in healthcare professions: findings from a scoping review. *Adv Health Sci Educ Theory Pract.* 2022. doi:10.1007/s10459-022-10180-0.
29. Friedman RH, Wahi-Gururaj S, Alpert J, et al. The Views of U.S. Medical School Deans Toward Academic Primary Care. *Academic Medicine.* 2004;79(11):1095-1102.
30. Koo J, Bains J, Collins MB, Dharamsi S. Residency research requirements and the CanMEDS-FM scholar role: Perspectives of residents and recent graduates. *Can Fam Physician.* 2012;58(6):e330-e336.
31. Ringsted C, Hansen T, Davis D, Scherpbier A. Are some of the challenging aspects of the CanMEDS roles valid outside Canada? *Med Educ.* 2006;40(8):807-815. doi:10.1111/j.1365-2929.2006.02525.x.
32. Solaja O, Skinner TAA, McGregor TB, Siemens DR. CanMEDS scholars: A national survey on urology residents' attitudes towards research during training. *Can Urol Assoc J.* 2018;12(4):E191-E196. doi:10.5489/cuaj.4927.
33. Stutsky BJ, Singer M, Renaud R. Determining the weighting and relative importance of CanMEDS roles and competencies. *BMC research notes.* 2012;5:354. doi:https://dx.doi.org/10.1186/1756-0500-5-354.
34. Zaccagnini M, Bussieres A, Nugus P, West A, Thomas A. Exploring the professionalization of respiratory therapy in Canada. *Can J Respir Ther.* 2021;57:129-137. doi:10.29390/cjrt-2021-046.

35. American Association for Respiratory Care. Competencies for Entry into Respiratory Therapy Practice. https://www.aarc.org/education/educator-resources/competencies-entry-respiratory-therapy-practice/. Published 2016.
36. The National Alliance of Respiratory Therapy Regulatory Bodies. National Competency Framework for the Profession of Respiratory Therapy. In. Ottawa, ON.2016.
37. Zaccagnini M, Bussières A, Kim S, Nugus P, West A, Thomas A. What scholarly practice means to respiratory therapists: An interpretive description study. *J Eval Clin Pract.* 2023;29(8):1314-1325. doi:10.1111/jep.13917.
38. Zaccagnini M, Bussières A, Nugus P, West A, Thomas A. The scholarly and practice profile of respiratory therapists in Canada: A cross-sectional survey. *Canadian Journal of Respiratory Therapy.* 2024;60. doi:10.29390/001c.122345.
39. Boyd VA, Whitehead CR, Thille P, Ginsburg S, Brydges R, Kuper A. Competency-based medical education: the discourse of infallibility. *Med Educ.* 2018;52(1):45-57. doi:10.1111/medu.13467.
40. Sternszus R, Slattery NK, Cruess RL, Cate OT, Hamstra SJ, Steinert Y. Contradictions and Opportunities: Reconciling Professional Identity Formation and Competency-Based Medical Education. *Perspect Med Educ.* 2023;12(1):507-516. doi:10.5334/pme.1027.
41. Touchie C, Ten Cate O. The promise, perils, problems and progress of competency-based medical education. *Med Educ.* 2016;50(1):93-100. doi:10.1111/medu.12839.
42. Dubé T, Wagner M, Zaccagnini M, Gomez-Garibello C. Exploring stakeholder perspectives regarding the implementation of competency-based medical education: a qualitative descriptive study. *Can Med Educ J.* 2023;14(5):22-32. doi:10.36834/cmej.76245.
43. Hawkins R, Welcher C, Holmboe E, et al. Implementation of competency-based medical education: are we addressing the concerns and challenges? *Med Educ.* 2015;49:1086-1102. doi:10.1111/medu.12831.
44. Prud'homme J. 'Professional Techs': Machines, Technical Skills and Professional Aspirations in Hearing Prosthetics and Respiratory Care in Quebec, 1950-1990. *Scientia Canadensis.* 2011;33(1):71-94. doi:10.7202/1000845ar. Published 71.
45. Heap R. Physiotherapy's quest for professional status in Ontario, 1950-80. *Can Bull Med Hist.* 1995;12(1):69-99.

46. Cobban S, Edgington E, Compton S. An argument for dental hygiene to develop as a discipline. *Int J Dent Hyg.* 2007;5(1):13-21. doi:10.1111/j.1601-5037.2007.00223.x.
47. ten Hoeve Y, Jansen G, Roodbol P. The nursing profession: public image, self-concept and professional identity. A discussion paper. *J Adv Nurs.* 2014;70(2):295-309. doi:10.1111/jan.12177.
48. American Association for Respiratory Care. Entry to Respiratory Therapy Practice 2030. https://www.aarc.org/wp-content/uploads/2019/09/issue-paper-entry-to-respiratory-therapy-practice-2030.pdf. Published 2019. Accessed 2023.
49. Zaccagnini M, West A, Khor E, Quach S, Nonoyama ML. Exploring knowledge gaps and research needs in respiratory therapy: a qualitative description study. *Can J Respir Ther.* 2024;60:1-12. doi:10.29390/001c.91184.
50. Hess D. Using Evidence to Adjust Productivity: Bringing Respiratory Care into the 21st Century. *Respir Care.* 2021;66(12):1932-1934. doi:10.4187/respcare.09637.
51. Andreassen P, Christensen M. "We're at a watershed": The positioning of PhD nurses in clinical practice. *J Adv Nurs.* 2018. doi:10.1111/jan.13581.
52. Kluijtmans M, de Haan E, Akkerman S, van Tartwijk J. Professional identity in clinician-scientists: brokers between care and science. *Med Educ.* 2017;51(6):645-655. doi:10.1111/medu.13241.
53. Mickan S, Coates D. Embedded researchers in Australia: Survey of profile and experience across medical, nursing and midwifery and allied health disciplines. *J Clin Nurs.* 2022;31(3-4):417-426. doi:10.1111/jocn.15593.
54. Cooper JE. Reflections on the professionalization of occupational therapy: time to put down the looking glass. *Can J Occup Ther.* 2012;79(4):199-210. doi:10.2182/cjot.2012.79.4.2.
55. Martimianakis MA, Maniate JM, Hodges BD. Sociological interpretations of professionalism. *Med Educ.* 2009;43(9):829-837. doi:10.1111/j.1365-2923.2009.03408.x.
56. LaMere K. Reframing the Conversation about Doctoral Education: Professionalization and the Critical Role of Abstract Knowledge. *Iridescent.* 2016;2(1):40-49. doi:10.1080/19235003.2012.11428502.
57. Abbott A. *The system of professions: an essay on the division of expert labor.* Chicago, IL: University of Chicago Press; 1988.

58. Murphy LS, Kraus CK, Lotfipour S, Gottlieb M, Langabeer JR, 2nd, Langdorf MI. Measuring Scholarly Productivity: A Primer for Junior Faculty. Part III: Understanding Publication Metrics. *West J Emerg Med.* 2018;19(6):1003-1011.
59. Ten Cate O. Health professions education scholarship: The emergence, current status, and future of a discipline in its own right. *FASEB Bioadv.* 2021;3(7):510-522. doi:10.1096/fba.2021-00011.
60. Hojat M, Veloski J, Nasca TJ, Erdmann JB, Gonnella JS. Assessing physicians' orientation toward lifelong learning. *J Gen Intern Med.* 2006;21(9):931-936. doi:10.1111/j.1525-1497.2006.00500.x.
61. MacMaster FP, Cohen J, Waheed W, et al. The psychiatry resident research experience. *BMC Res Notes.* 2016;9(1):486. doi:10.1186/s13104-016-2290-1.
62. DeVellis R, Thorpe C. *Scale Development: Theory and Applications.* 5th ed: SAGE Publications Inc.; 2021.
63. Thompson B, Daniel L. Factor analytic evidence for the construct validity of scores: a historical overview and some guidelines. *Educ Psychol Measure.* 1996;56:197+208.
64. Creswell JW, Plano Clark VL. *Designing and Conducting Mixed Methods Research.* 3rd ed: SAGE Publications, Inc.; 2018.
65. Pan Y, de la Puente M. *Census Bureau Guideline for the Translation of Data Collection Instruments and Supporting Materials: Documentation on how the Guideline Was Developed.* Washington, DC.: U.S. Bureau of the Census;2005.
66. Beaton D, Bombardier C, Guillemin F, Ferraz M. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine (Phila Pa 1976).* 2000;25(24):3186-3191. doi:10.1097/00007632-200012150-00014.
67. Watkins M. Exploratory Factor Analysis: A Guide to Best Practice. *Journal of Black Psychology.* 2018;44(3):219-246. doi:10.1177/0095798418771807.
68. Osborne J. *Best Practices in Exploratory Factor Analysis.* Scotts Valley, CA: CreateSpace Independent Publishing; 2014.
69. Knekta E, Runyon C, Eddy S. One Size Doesn't Fit All: Using Factor Analysis to Gather Validity Evidence When Using Surveys in Your Research. *CBE Life Sci Educ.* 2019;18(1). doi:10.1187/cbe.18-04-0064.

70. Ellen M, Léon G, Bouchard G, Lavis J, Ouimet M, Grimshaw J. What supports do health system organizations have in place to facilitate evidence-informed decision-making? A qualitative study. *Implement Sci.* 2013;8(84). doi:10.1186/1748-5908-8-84.
71. The Royal College of Physicians, National Institute for Health and Care Research (NIH). Making research everybody's business. https://www.rcplondon.ac.uk/projects/outputs/rcp-nihr-position-statement-making-research-everybody-s-business. Published 2022. Accessed February 3, 2023.
72. Melnikovas A. Towards an Explicit Research Methodology: Adapting Research Onion Model for Futures Studies. *Journal of Future Studies.* 2018;23(2):29-44. doi:10.6531/JFS.201812_23(2).0003.
73. Anguera MT, Blanco-Villaseñor A, Losada JL, Sánchez-Algarra P, Onwuegbuzie A. Revisiting the difference between mixed methods and multimethods: Is it all in the name? *Qual Quant.* 2018;52:2757-2770. doi:10.1007/s11135-018-0700-2.
74. O'Reilly M, Kiyimba N, Drewett A. Mixing qualitative methods versus methodologies: A critical reflection on communication and power in inpatient care. *Couns Psychother Res.* 2021;21(1):66-76. doi:10.1002/capr.12365.
75. Timans R, Wouters P, Heilbron J. Mixed methods research: what it is and what it could be. *Theory and Society.* 2019;48(2):193-216. doi:10.1007/s11186-019-09345-5.
76. Smajic E, Avdic D, Pasic A, Prcic A, Stancic M. Mixed Methodology of Scientific Research in Healthcare. *Acta Inform Med.* 2022;30(1):57-60. doi:10.5455/aim.2022.30.57-60.
77. Morse J. Principles of mixed methods and multimethod research design. In: Tashakkori A, Teddlie C, eds. *Handbook of mixed methods in social & behavioral research.* Thousand Oaks: Sage Publications; 2003:189-208.
78. Morse JM, Niehaus L. *Mixed method design: Principles and procedures.* Walnut Creek, CA: Left Coast Press.; 2009.
79. Pashaie S, Abbaszadeh M, Abdavi F, Golmohammadi H. Improving the Validity of Mixed and Multi-Methods Through Triangulation in Sports Management Research. *Research in Sport Management and MarketingDO.* 2023;4(2):16-27. doi:10.22098/RSMM.2023.12593.1216.

80. Martha D, Sousa V, Mendes I. An overview of research designs relevant to nursing: Part 3: Mixed and multiple methods. *Rev Lat Am Enfermagem.* 2007;15(5):1046-1049. doi:10.1590/s0104-11692007000500025.
81. Ridley C, Laird V. The scientist–practitioner model in counseling psychology programs: A survey of training directors. *Counselling Psychology Quarterly.* 2015;28(3):235-263. doi:10.1080/09515070.2015.1047440.
82. Noble H, Heale R. Triangulation in research, with examples. *Evidence-Based Nursing.* 2019;22. doi:10.1136/ebnurs-2019-103145.
83. Morse SM. Approaches to Qualitative-Quantitative Methodological Triangulation. *Nurs Res.* 1991;40(2):120-123.
84. Kimchi J, Polivka B, Stevenson J. Triangulation: operational definitions. *Nurs Res.* 1991;40(6):364-366.
85. Johnson M, O'Hara R, Hirst E, et al. Multiple triangulation and collaborative research using qualitative methods to explore decision making in pre-hospital emergency care. *BMC Med Res Methodol.* 2017;17(1):11. doi:10.1186/s12874-017-0290-z.
86. D'Astous A. Québec refuse de rehausser la formation des inhalothérapeutes jugée inadéquate. *L'Horizon*2021.
87. American Association for Respiratory Care. Development of Baccalaureate and Graduate Degrees in Respiratory Care. https://www.aarc.org/wp-content/uploads/2017/03/issuepaper_baccalaureate_graduate_degrees.pdf. Published 2017. Accessed March, 16, 2023.
88. Canadian Society of Respiratory Therapists. CSRT Position Statement on Baccalaureate Degree as Entry-to-Practice. Canadian Society of Respiratory Therapists. https://www.csrt.com/wp-content/uploads/Degree-ETP-Position-2019.pdf. Published 2019. Accessed June, 2020.
89. Zaccagnini M, Bussières A, West A, Boruff J. Features of scholarly practice in health care professionals: A scoping review protocol. *Canadian Journal of Respiratory Therapy.* 2020;56:38-41. doi:10.29390/cjrt-2020-007.
90. Zaccagnini M, Bussières A, West A, Thomas A. Enhancing professionalization through scholarship. In. *Presentation at American Association for Respiratory Care (AARC) Congress*. Nashville, Tennessee, November 6, 2023.

91. Zaccagnini M. A primer on scholarly practice. In. *Presented to the Respiratory Therapy Professional Practice Group at The Hospital for Sick Children (SickKids)*. Toronto, Ontario.2023.
92. Zaccagnini M. The professionalization of respiratory therapists in Canada. In. *Presented at the Trinity University of Asia and International Council of Respiratory Care Conference*. October, 2022.
93. Zaccagnini M. *Keynote Address- The professionalization of respiratory therapists in Canada.. Online, May 5, 2022.
94. Maynard M, McCoy C. Establishing a practice framework for respiratory therapists in primary care. In. CSRT Annual Conference, Banff, AB.2024.
95. Martins C, Kenaszchuk C. Research capacity of respiratory therapists: a survey of views, opinions, and barriers. *Canadian Journal of Respiratory Therapy.* 2013;49(4):15-198.
96. Nonoyama M, Mathur S, Herbert R, Jenkins H, Lobchuk M, McEvoy M. Past, present and future of respiratory research: A survey of Canadian health care professionals. *Can Respir J.* 2015;22:275-281. doi:10.1155/2015/968450.
97. Willis LD, Rintz J, Zaccagnini M, Miller AG, Li J. Barriers to Respiratory Care Research in the United States. *Respir Care.* 2023;68(8):1112-1118. doi:10.4187/respcare.10899.
98. Sandars J. The use of reflection in medical education: AMEE Guide No. 44. *Med Teach.* 2009;31(8):685-695. doi:10.1080/01421590903050374.
99. Schön D. *Educating the reflective practitioner.* San Francisco: Jossey-Bass; 1987.
100. Kolb D. *Experiential learning: Experience as the source of learning and development.* New Jersey: Prrentice Hall; 1984.
101. Winkel AF, Yingling S, Jones AA, Nicholson J. Reflection as a Learning Tool in Graduate Medical Education: A Systematic Review. *J Grad Med Educ.* 2017;9(4):430-439. doi:10.4300/JGME-D-16-00500.1.
102. Fragkos K. Reflective Practice in Healthcare Education: An Umbrella Review. *Education Sciences.* 2016;6(4). doi:10.3390/educsci6030027.
103. Mann K, Gordon J, MacLeod A. Reflection and reflective practice in health professions education: a systematic review. *Adv Health Sci Educ Theory Pract.* 2009;14(4):595-621. doi:10.1007/s10459-007-9090-2.

104. Koole S, Dornan T, Aper L, et al. Factors confounding the assessment of reflection: a critical review. *BMC Med Educ.* 2011;11(104). doi:10.1186/1472-6920-11-104. .
105. Poirier J, Ouellet K, Desilets V, Graillon A, Xhignesse M, St-Onge C. Assessing commitment to reflection: perceptions of medical students. *Can Med Educ J.* 2023;14(4):105-111. doi:10.36834/cmej.74265.
106. Slepcevic-Zach P, Stock M. ePortfolio as a tool for reflection and self-reflection. *Reflective Practice.* 2018;19(3):291-307. doi:10.1080/14623943.2018.1437399.
107. Briceland L, Tackes C, Veselov M. A structured self-reflection approach to improve reflection quality and assessment of advanced pharmacy practice experience professionalization. *Advances in Clinical Pharmacy Education & Training.* 2021. doi:10.1002/jac5.1581.
108. Peters MDJ, Godfrey C, McInerney P, Munn Z, Tricco AC, Khalil H. Chapter 11: Scoping Reviews (2020 version). In: Munn Z, Aromataris E, eds. *JBI Manual for Evidence Synthesis.*2020.
109. Schellinger J, Sewell K, Bloss JE, Ebron T, Forbes C. The effect of librarian involvement on the quality of systematic reviews in dental medicine. *PLoS One.* 2021;16(9):e0256833. doi:10.1371/journal.pone.0256833.
110. McGowan J, Sampson M, Salzwedel DM, Cogo E, Foerster V, Lefebvre C. PRESS peer review of electronic search strategies: 2015 guideline statement. *Journal of Clinical Epidemiology.* 2016;75:40-46. doi:10.1016/j.jclinepi.2016.01.021.
111. Boruff J, Zaccagnini M. Search strategy for Scholarly Practice and Health Care Professionals. *Borealis V1.* 2022. doi:10.5683/SP3/4C25SM.
112. Pham MT, Rajic A, Greig JD, Sargeant JM, Papadopoulos A, McEwen SA. A scoping review of scoping reviews: advancing the approach and enhancing the consistency. *Res Synth Methods.* 2014;5(4):371-385.
113. Maggio LA, Larsen K, Thomas A, Costello JA, Artino AR, Jr. Scoping reviews in medical education: A scoping review. *Med Educ.* 2021;55(6):689-700. doi:10.1111/medu.14431.
114. Tricco AC, Lillie E, Zarin W, et al. A scoping review on the conduct and reporting of scoping reviews. *BMC Med Res Methodol.* 2016;16:15. doi:10.1186/s12874-016-0116-4.

115. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care.* 2007;19(6):349-357. doi:10.1093/intqhc/mzm042.
116. Sharma A, Minh Duc NT, Luu Lam Thang T, et al. A Consensus-Based Checklist for Reporting of Survey Studies (CROSS). *J Gen Intern Med.* 2021;36(10):3179-3187. doi:10.1007/s11606-021-06737-1.
117. Canadian Institute for Health Information. Canada's Health Care Providers, 2016 to 2020 — Data Tables. CIHI. https://www.cihi.ca/en/health-workforce-in-canada-in-focus-including-nurses-and-physicians/go-in-depth-most-recent-data-on. Published 2022. Accessed August 15, 2023.
118. Dillman DA, Smyth JD, Christian L-M. *Internet, Mail, and mixed-mode surveys: The tailored design method.* 3rd ed. New Jersey: John Wiley & Sons; 2014.
119. Boaz A, Hanney S, Borst R, O'Shea A, Kok M. How to engage stakeholders in research: design principles to support improvement. *Health Res Policy Syst.* 2018;16(1):60. doi:10.1186/s12961-018-0337-6.
120. International Council for Respiratory Care. About the ICRC. https://irccouncil.org/about/our-mission/. Published 2024. Accessed March 25, 2024.
121. Li J, Ni Y, Tu M, et al. Respiratory Care Education and Clinical Practice in Mainland China. *Respir Care.* 2018;63(10). doi:10.4187/respcare.06217. Accessed {Allin, 2020 #259}.
122. Shevade MS, Yeravdekar RC, Salvi SS. A Cross-Sectional Survey of Practice Patterns and Selected Demographics of Respiratory Therapists in India. *Respir Care.* 2021;66(1):66-72. doi:10.4187/respcare.07823.
123. Sajnic A, Kelly C, Smith S, et al. Need and baseline for harmonising nursing education in respiratory care: preliminary results of a global survey. *Breathe (Sheff).* 2022;18(3):210172. doi:10.1183/20734735.0172-2021.
124. Association of Chartered Physiotherapists in Respiratory Care. Association of Chartered Physiotherapists in Respiratory Care. https://www.acprc.org.uk. Published 2024. Accessed March 25, 2024.
125. Thorne S. *Interpretive Description: Qualitative Research for Applied Practice.* 2nd ed. New York: Routledge. 2016.

126. Canadian Society of Respiratory Therapists. Why Respiratory Therapists are Essential Across our Healthcare System. https://www.csrt.com/rt-profession/. Published 2024. Accessed March 25, 2024.
127. Adhikari NK, Fowler RA, Bhagwanjee S, Rubenfeld GD. Critical care and the global burden of critical illness in adults. *Lancet.* 2010;376(9749):1339-1346. doi:10.1016/S0140-6736(10)60446-1.
128. Commission on Accreditation for Respiratory Care. Find an accredited program. https://coarc.com/students/find-an-accredited-program/. Published 2024. Accessed March 24, 2024.
129. Tamoliune G, Greenspon R, Tereseviciene M, Volungeviciene A, Trepule E, Dauksiene E. Exploring the potential of micro-credentials: A systematic literature review. *Frontiers in Education.* 2023;7. doi:10.3389/feduc.2022.1006811.
130. Brown M, Giolla Mhichil MN, Beirne E, Mac Lochlainn C. The global micro-credential landscape: Charting a new credential ecology for lifelong learning. *Journal of Learning Development.* 2021;8(2):228-254. doi:10.56059/jl4d.v8i2.525.
131. Kirkpatrick J, Kirkpatrick W. *An introduction to the New World Kirkpatrick model.* Newnan, GA: Kirkpatrick Partners, LLC.; 2010.
132. Smidt A, Balandin S, Sigafoos J, Reed V. The Kirkpatrick model: A useful tool for evaluating training outcomes. *J Intellect Dev Disabil.* 2009;34(3):266-274. doi:10.1080/13668250903093125.
133. Mak S, Hunt M, Boruff J, Zaccagnini M, Thomas A. Exploring professional identity in rehabilitation professions: a scoping review. *Adv Health Sci Educ Theory Pract.* 2022;27(3):793-815. doi:10.1007/s10459-022-10103-z.
134. Rees C, Monrouxe L. Who are you and who do you want to be? Key considerations in developing professional identities in medicine. *Med J Aust.* 2018;209(5):202-203.
135. Toubassi D, Schenker C, Roberts M, Forte M. Professional identity formation: linking meaning to well-being. *Adv Health Sci Educ Theory Pract.* 2023;28(1):305-318. doi:10.1007/s10459-022-10146-2.
136. Rogers P. Best practices for your confirmatory factor analysis: A JASP and lavaan tutorial. *Behav Res Methods.* 2024. doi:10.3758/s13428-024-02375-7.

137. Jackson DL, Gillaspy JA, Purc-Stephenson R. Reporting practices in confirmatory factor analysis: an overview and some recommendations. *Psychol Methods.* 2009;14(1):6-23. doi:10.1037/a0014694.
138. Olmos-Vega FM, Stalmeijer RE, Varpio L, Kahlke R. A practical guide to reflexivity in qualitative research: AMEE Guide No. 149. *Med Teach.* 2022:1-11. doi:10.1080/0142159X.2022.2057287.
139. Walsh R. The Methods of Reflexivity. *The Humanistic Psychologist.* 2003;31(4):51-66.
140. American Association of Respiratory Care. Respiratory Therapists: Warriors in the Fight Against COVID-19. https://www.aarc.org/wp-content/uploads/2020/03/032020-COVID-19-RT-role-press-release.pdf. Published 2020. Accessed September 14, 2021.
141. Canadian Society of Respiratory Therapists. Announcement: CSRT Primary Care Initiative. https://www.csrt.com/2023/04/announcement-csrt-primary-care-initiative/?fbclid=IwAR0n8LYtyIZ2i0-Dm7VDS_-NehfHJ4KdC6NyBez5q7KNwiJBdNKdZkxAQls. Published 2023. Accessed February 6, 2024.
142. Smith SG, Endee LM, Benz Scott LA, Linden PL. The Future of Respiratory Care: Results of a New York State Survey of Respiratory Therapists. *Respir Care.* 2017;62(3):279-287. doi:10.4187/respcare.04768.
143. Kuhn TS. *The structure of scientific revolutions.* Chicago: University of Chicago Press; 1962.
144. Varpio L, MacLeod A. Philosophy of Science Series: Harnessing the Multidisciplinary Edge Effect by Exploring Paradigms, Ontologies, Epistemologies, Axiologies, and Methodologies. *Acad Med.* 2020;95(5):686-689. doi:10.1097/ACM.0000000000003142.
145. Teddlie C, Tashakkori A. *Foundations of Mixed Methods Research: Integrating Quantitative and Qualitative Approaches in the Social and Behavioral Sciences.* 2008.
146. Cleland J. Exploring versus measuring: considering the fundamental differences between qualitative and quantitative research. In: Cleland J, Durning SJ, eds. *Researching Medical Education.* Wiley Blackwell; 2015.
147. Kaushik V, Walsh CA. Pragmatism as a Research Paradigm and Its Implications for Social Work Research. *Social Sciences.* 2019;8(255):1-17. doi:10.3390/socsci8090255.

148. Hower K. Against the quantitative-qualitative incompatibility thesis or dogmas die hard. *Educational Researcher.* 1988;17(10-16).
149. Westerlund A, Nilsen P, Sundberg L. Implementation of Implementation Science Knowledge: The Research-Practice Gap Paradox. *Worldviews on Evidence-Based Nursing.* 2019;16(5):332-334. doi:10.1111/wvn.12403.
150. Peters DH, Tran NT, Adam T. *Implementation research in health: a practical guide.* Alliance for Health Policy and Systems Research: World Health Organization; 2013.
151. Johnson R, Onwuegbuzie A. Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher.* 2004;33(7):14-26. doi:10.3102/0013189X033007014.
152. Allemang B, Sitter K, Dimitropoulos G. Pragmatism as a paradigm for patient-oriented research. *Health Expect.* 2022;25(1):38-47. doi:10.1111/hex.13384.
153. Ivankova N, Herbey I, Roussel L. Theory and Practice of Using Mixed Methods in Translational Research: A Cross-disciplinary Perspective. *International Journal of Multiple Research Approaches.* 2018;10(1):356-372. doi:10.29034/ijmra.v10n1a24.
154. Creswell JW, Tashakkori A. Editorial: Differing Perspectives on Mixed Methods Research. *Journal of Mixed Methods Research.* 2007;1(4):303-308. doi:10.1177/1558689807306132.

Appendices

Appendix 1- Ethics approval certificate for dissertation

McGill | Faculty of Medicine and Health Sciences | Faculté de médecine et des sciences de la santé

3655 Promenade Sir William Osler #633
Montreal, QC H3G 1Y6

3655, Promenade Sir William Osler #633
Montréal, QC H3G 1Y6

T: (514) 398-3124

January 21, 2022

Aliki Thomas, PhD
School of Physical and Occupational Therapy
3654 Sir William Osler
Montreal, Quebec H3G 1Y5

eRAP/Info-Ed File Number: **22-01-044** **IRB Internal Study Number: A01-E04-22A**

Study Title*:* *Understanding registered respiratory therapists' role as scholarly practitioners: optimizing professional practice and patient outcomes*

McGill Principal Investigator: Aliki Thomas

McGill Student Investigator: Marco Zaccagnini

Dear Dr. Thomas,

Thank you for submitting the above-referenced study for an ethics review, on behalf of your PhD student, Marco Zaccagnini.

As this study involves no more than minimal risk, and in accordance with Articles 2.9 and 6.12 of the 2nd Edition of the Canadian Tri-Council Policy Statement of Ethical Conduct for Research Involving Humans (TCPS 2 2018) and U.S. Title 45 CFR 46, Section 110 (b), paragraph (1), we are pleased to inform you that an expedited/delegated review was conducted and ethics approval for the study is provided on 21-Jan-2022, valid until **20-Jan-2023**. The study proposal will be presented for corroborative approval at the next meeting of the Committee.

The following documents were reviewed and approved:

- Study protocol and instruments (Version 2, IRB dated January 11, 2022)
- English and French Invitation and recruitment documents (Version 2, IRB dated January 11, 2022)
- English and French consent forms (Version 2, IRB dated January 11, 2022)

The Faculty of Medicine and Health Sciences Institutional Review Board (IRB) is a registered University Research Ethics Board working under the published guidelines of the Tri-Council Policy Statement 2, in compliance with the Cadre de référence en recherche avec des participants humains (MSSS, 2020), and the Food and Drugs Act (17 June 2001); and acts in accordance with the U.S. Code of Federal Regulations that govern research on human subjects (**FWA 00004545**). The IRB working procedures are consistent with internationally accepted principles of good clinical practice.

The Principal Investigator is required to immediately notify the Institutional Review Board Office, via amendment or progress report, of:

- Any significant changes to the research project and the reason for that change, including an indication of ethical implications (if any);
- Serious Adverse Effects experienced by participants and the action taken to address those effects;
- Any other unforeseen events or unanticipated developments that merit notification;
- The inability of the Principal Investigator to continue in her/his role, or any other change in research personnel involved in the project;
- A delay of more than 12 months in the commencement of the research project, and;
- Termination or closure of the research project.

The Principal Investigator is required to submit an annual progress report (continuing review application) on the anniversary of the date of the initial approval (or see the date of expiration).

The Faculty of Medicine and Health Sciences IRB may conduct an audit of the research project at any time.

If the research project involves multiple study sites, the Principal Investigator is required to report all IRB approvals and approved study documents to the appropriate Research Ethics Office (REO) or delegated authority for the participating study sites. Appropriate authorization from each study site must be obtained before the study recruitment and/or testing can begin at that site. Research funds linked to this research project may be withheld and/or the study data may be revoked if the Principal Investigator fails to comply with this requirement. A copy of the study site authorization should be submitted the IRB Office.

It is the Principal Investigator's responsibility to ensure that all researchers associated with this project are aware of the conditions of approval and which documents have been approved.

The McGill IRB wishes you and your colleagues every success in your research.

Sincerely,

Roberta Palmour, PhD
Chair
Institutional Review Board

cc: Marco Zaccagnini
Sylvain Baillet, PhD, Associate Dean, Medicine Research
A01-E04-22A (22-01-044)

Appendix 2-Email recruitment script
La version française apparaît ci-dessous.

Subject Line: Request for participation in a research project

Content of the email:

Dear (insert name),

My name is Marco Zaccagnini, and I am currently a Ph.D. student at the School of Physical and Occupational Therapy at McGill University in Montréal, Québec, Canada under the supervision of Dr. André Bussières and Dr. Aliki Thomas.

This email serves as an invitation to participate in my doctoral research entitled "*Understanding registered respiratory therapists' role as scholarly practitioners: optimizing practice and patient outcomes."* The purpose of this study is to explore credentialled Canadian RRTs' knowledge and perceptions of scholarly practice. More specifically, the objectives are to understand how Canadian RRTs define scholarly practice, their perspectives regarding scholarly practice in daily practice and how scholarly practice is enacted in practice. The knowledge derived from this research may help shape future iterations of RRTs entry-to-practice frameworks and may lead to enhanced opportunities to integrate aspects of scholarly practice within the education and clinical practice of RRTs.

You have been identified by a peer, as someone who is a scholarly practitioner within your respective area of practice and have actively contributed to the growth of the respiratory therapy profession.

If you choose to participate, you would be involved in one (1) 60-minute virtual interview, scheduled at a time of your convenience to discuss your perceptions related to the concept of scholarly practice in the respiratory therapy profession. This interview will be audio recorded and then transcribed for analysis.

The data from this study will be used for my doctoral dissertation, conference presentations, publications and further research funding applications. To protect your confidentiality and ensure anonymity, all information that could potentially identify you or your place of work will be removed. Only myself (the doctoral student) and my supervisor and co-supervisor will have access to the collected and analyzed data.

If you are interested in participating in this study and agree to be contacted by a member of the research team, **please respond to this email indicating your decision.** For your consideration, I have attached the consent form to this message. Please note that this study has been reviewed by McGill University's Faculty of Medicine and Health Sciences Institutional Review Board.

If you would like to participate in this study or if you have any questions please contact Marco Zaccagnini at marco.zaccagnini@mail.mcgill.ca

Sincerely,

Marco Zaccagnini, MSc. RRT-CCAA. PhD candidate, School of Physical and Occupational Therapy, McGill University
André Bussières, DC. PhD, School of Physical and Occupational Therapy, McGill University
Peter Nugus, MA (Hons), PhD, Department of Family Medicine, McGill University
Andrew West, EdD, Canadian Society of Respiratory Therapists
Aliki Thomas, OT (c), PhD, School of Physical and Occupational Therapy, McGill University

---

Ligne d'objet : Demande de participation à un projet de recherche

Contenu du courriel :

Cher(e) (insérer le nom),

Je m'appelle Marco Zaccagnini et je suis actuellement étudiant au doctorat à l'École de physiothérapie et d'ergothérapie de l'Université McGill à Montréal, Québec, Canada, sous la supervision du Dr André Bussières et du Dre Aliki Thomas.

Ce courriel est une invitation à participer à ma recherche doctorale intitulée "*Comprendre le rôle de l'érudit chez les inhalothérapeutes afin d'optimiser la pratique professionnelle et la santé des patients.*" Le but de cette étude est d'explorer les connaissances et les perceptions des inhalothérapeutes canadiens sur la pratique érudite. Plus précisément, les objectifs sont de comprendre comment les inhalothérapeutes canadiens définissent la pratique érudite, leurs perspectives concernant la pratique érudite dans le milieu clinique et comment la pratique érudite est mise en œuvre dans la pratique. Les connaissances tirées de cette recherche peuvent aider à façonner les itérations futures des référentiels des compétences à l'entrée dans la profession de inhalothérapie et peuvent conduire à de meilleures possibilités d'intégrer les aspects de la pratique érudite dans la formation et la pratique clinique des inhalothérapeutes.

Vous avez été identifié par un pair comme un praticien érudit dans votre domaine de pratique et avez activement contribué à la croissance de la profession de l'inhalothérapie.

Si vous choisissez de participer, vous participerez dans une (1) entrevue virtuelle de 60 minutes, au moment qui vous convient, afin de discuter de vos perceptions relatives au concept de pratique érudite dans la profession de l'inhalothérapie. Cette entrevue sera enregistrée et transcrite pour analyse.

Les données de cette étude seront utilisées pour ma thèse de doctorat, des présentations de conférence, des publications et d'autres demandes de financement de recherche. Afin de protéger

votre confidentialité et de garantir votre anonymat, toutes les informations susceptibles de vous identifier ou d'identifier votre lieu de travail seront supprimées. Seuls moi-même (le doctorant), mon superviseur et mon co-superviseur auront accès aux données collectées et analysées.

Si vous êtes intéressé à participer à cette étude et acceptez d'être contacté par un membre de l'équipe de recherche, veuillez répondre à ce courriel en indiquant votre décision. Pour aider à votre prise de décision, j'ai joint le formulaire de consentement à ce message. Veuillez noter que cette étude a été examinée par le comité d'éthique de la recherche de la Faculté de médecine et des sciences de la santé de l'Université McGill.

Si vous souhaitez participer à cette étude ou si vous avez des questions, veuillez contacter Marco Zaccagnini à marco.zaccagnini@mail.mcgill.ca.

Cordialement,

Marco Zaccagnini, MSc. RRT-CCAA. Candidat au doctorat, École de physiothérapie et d'ergothérapie, Université McGill
André Bussières, DC. PhD, École de physiothérapie et d'ergothérapie, Université McGill
Peter Nugus, MA (Hons), PhD, Département de médecine familiale, Université McGill
Andrew West, EdD, Société canadienne des thérapeutes respiratoires
Aliki Thomas, OT (c), PhD, École de physiothérapie et d'ergothérapie, Université McGill

Appendix 3-Consent form for manuscript 2

McGill UNIVERSITY

Consent to Participate in a Research Study
Participant Consent

Study Title: An interpretive description study of respiratory therapists as scholarly practitioners

PhD Candidate and Principal Investigator
Marco Zaccagnini, MSc. RRT-CCAA. FCSRT
School of Physical and Occupational Therapy,
McGill University
Email: marco.zaccagnini@mail.mcgill.ca

PhD Supervisor
Aliki Thomas, PhD, OT(c), erg.
Associate Professor
School of Physical and Occupational Therapy,
McGill University
Email: Aliki.thomas@mcgill.ca

PhD Co-Supervisor
André Bussières DC, FCCS (C), PhD
Assistant Professor
School of Physical and Occupational Therapy,
McGill University
Email: andre.bussieres@mcgill.ca

Andrew West, EdD. FCSRT
Chief Executive Officer, Canadian Society of Respiratory Therapists.
Email: awest@csrt.ca

Peter Nugus, MA (Hons), PhD.
Associate Professor, Department of Family Medicine and Department of Oncology, McGill University
Email: Peter.nugus@mcgill.ca

Invitation and Purpose of the Study
We are seeking to explore credentialled Canadian RRTs' knowledge and perceptions of scholarly practice. We are inviting credentialled Canadian RRTs to participate in individual interviews.

To be eligible to participate in our study, you must meet the following criteria:
1) Possess the credentials to practice respiratory therapy according to the requirements of the province or territory the participant practices within.
2) Provide written, informed consent (including being audio-recorded for the interview)
3) Communicate in English or French
4) Have access to internet.

Study Procedures:
If you wish to participate, you will be asked to read this form and sign at the end of the document. You will be given a copy of this form for your records.

Your participation will consist of an individual interview at a date and time that is most convenient for you. Interviews will be conducted over Microsoft Teams and the consent form can be sent back to us by email. The interview will last approximately 60 minutes and can be conducted in English or French. The interview questions will focus on your knowledge, perception and understanding of scholarly practice in the context of the respiratory therapy profession. The interview will be audio-recorded so that the contents of the interview can be transcribed and analyzed.

It is possible that I may communicated with you at a later time after the interview to clarify certain aspects of your interview. This communication will consist of a brief (15-20 minutes) phone call.

Potential Benefits
You will not benefit directly from participation in this study. However, we anticipated that the findings from this study will provide information about how RRTs enact their roles as scholarly practitioners. This information may serve to inform entry-to-practice framework and design and revision of respiratory therapy programs.

Potential Risks
There is limited risk for individuals who participate in this research study. However, it is possible that you may be uncomfortable to speak about certain difficult situations which you may have encountered as a RRT. You do not need to speak about any situation that may make you uncomfortable. You are welcome to take a break during the session or leave the session entirely if you wish.

Subject Rights and Withdrawal from Study
Your participation in this research is voluntary. You have the right to ask questions regarding the project at any time. You may refuse to participate or may discontinue your participation at any time up until the start of data analysis without explanation, and without penalty or loss of benefits to which you are otherwise entitled. If you decide not to participate, or if you discontinue your participation, there will be no consequences to you.

Cost and compensation
No compensation will be offered for participation in the research. Participation will not create any additional costs for participants.

Confidentiality
Any personal information obtained during this project will be kept strictly confidential. In order to protect your identity, your name will be replaced with a unique identification code and any other information that could be used to identify you (e.g., location of work) will be anonymized with pseudonyms in the transcript. Only the members of this research team will have access to the de-identified files. Your information (e.g., consent forms, digital recordings) will be kept in locked cabinets or in a password-encrypted computer in a locked office at 1110 Pine Avenue West (Montréal) for a minimum of seven years per McGill University's policy. The data will subsequently be destroyed with a deletion program (i.e., electronic data) as per McGill IRB standard procedures The research study results may be published, but your identity and any identifying information will not be revealed in any scientific publication or internal report. The results of the study will be used for scholarly purposes only. The ethics committee of McGill University may review the records containing your personal information to ensure proper management.

Contact
This project has been approved by the McGill Institutional Review Board. (Study #A01-E04-22A) If you have any questions about your rights as a research participant, please contact Ilde Lepore, Senior Ethics Administrator of the Institutional Review Board at 514-398-8302. If you have any questions about the research itself or to report any adverse event, you may contact:

Marco Zaccagnini, PhD (c).MSc. RRT-CCAA. FCSRT
School of Physical and Occupational Therapy, McGill University
Tel: 514-969-7204
Email: marco.zaccagnini@mail.mcgill.ca

Aliki Thomas, PhD, OT (c), erg.
School of Physical and Occupational Therapy, McGill University
Email: Aliki.thomas@mcgill.ca

CONSENT STATEMENT

Participant:

Please sign below if you have read the above information and consent to participate in this study. Agreeing to participate in this study does not waive any of your rights or release the researchers from their responsibilities. A copy of this consent form will be given to you and the researcher will keep a copy.

Participant's Name: (please print) _____

Participant's Signature: _____ Date: _____

Researcher:

I have discussed this study in detail with the participant. I am committed to honor what has been agreed upon in this consent form.

Researcher's Name: (please print) _____

Researcher's Signature: _____ Date: _____

Appendix 4-Email template for manuscript 3

La version française apparaît ci-dessous

Subject line: Invitation to participate in research: Practice and scholarly profiles of Canadian RRT Survey

Dear potential participant,

You are invited to participate in a research project entitled *"Identifying the practice and scholarly profiles of Canadian registered respiratory therapists: a cross-sectional observational study."* The goal of this study is to describe the scholarly and practice profile of credentialled registered respiratory therapists (RRTs) in Canada.

You have been asked to participate in this research because you are a credentialled RRT who have a valid email address and are members of the national RRT association (the Canadian Society of Respiratory Therapists [CSRT]) or your respective Canadian regulatory body.

The study will run from December 2022 to February 2023. Participation is voluntary and you can withdraw from the study at any time without consequence by notifying the principal investigator. There will be one instance of data collection. Specifically, you will be asked to complete an online survey that will take approximately 10-12 minutes to complete.

To participate, please click on the following link:
[survey link]

Your name and location will be kept confidential throughout the project and onward. Any identifiable information will not appear on any documents.

The results are expected to be informative for establishing a portrait of the Canadian RRT scholarly and practice profile, which can provide information to stakeholders to evaluate the broad range of health services provided by RRTs, help better plan and improve service delivery, and foster emerging practice areas in the respiratory therapy profession.

Project reports detailing the findings of the study will be generated for peer-reviewed journal publications, conference presentations, and online webinar presentations

This research project has been approved by the McGill University Institutional Review Board.

If you have any questions about this survey, or difficulty in accessing the site or completing the survey, please contact the primary investigator Marco Zaccagnini. Email: marco.zaccagnini@mail.mcgill.ca

If you decide to not participate, please also let us know, and we will not contact you in the future.

If we have not heard from you in 7 business days, a research team member will get in touch with you again.

Thank you in advance for your consideration in participating in this study.

Marco Zaccagnini, PhD (c). MSc. RRT-CCAA
marco.zaccagnini@mail.mcgill.ca

Aliki Thomas, PhD, OT (c), erg
aliki.thomas@mcgill.ca

André Bussières, DC. PhD.
Andre.bussieres@mcgill.ca

Ligne d'objet : Invitation à participer à une recherche : Sondage sur les profils de pratique et d'études des inhalothérapeutes canadiens

Cher participant potentiel,

Vous êtes invité(e) à participer à un projet de recherche intitulé *"Identification des profils de pratique et de formation des inhalothérapeutes agréés canadiens : un sondage*". L'objectif de cette étude est de décrire le profil académique et de pratique des inhalothérapeutes agréés au Canada.

On vous a demandé de participer à cette étude parce que vous êtes un inhalothérapeute agréé, que vous avez une adresse électronique valide et que vous êtes membre de l'association nationale des thérapeutes respiratoires (la Société canadienne des thérapeutes respiratoires [SCTR]) ou de votre ordre professionnel provincial.

L'étude se déroulera de décembre 2022 à février 2023. La participation est volontaire et vous pouvez vous retirer de l'étude à tout moment sans conséquence en informant le chercheur principal. Il y aura une collecte de données. Plus précisément, il vous sera demandé de répondre à une enquête en ligne qui prendra environ 10 à 12 minutes.

Pour participer, veuillez cliquer sur le lien suivant :
[lien pour le sondage]

Votre nom et votre lieu de travail resteront confidentiels tout au long du projet et par la suite. Aucune information identifiable n'apparaîtra sur les documents.

On s'attend à ce que les résultats soient utiles pour établir un portrait du profil académique et de la pratique des inhalothérapeutes canadiens, ce qui peut fournir des informations aux intervenants pour évaluer le large éventail de services de santé fournis par les inhalothérapeutes,

pour aider à mieux planifier et améliorer la prestation des services, et pour favoriser les domaines de pratique émergents dans la profession d'inhalothérapie.

Des rapports de projet détaillant les résultats de l'étude seront générés pour des publications dans des revues à comité de lecture, des présentations lors de conférences et des présentations de webinaires en ligne.

Ce projet de recherche a été approuvé par le comité d'éthique de la recherche de l'Université McGill.

Si vous avez des questions sur ce sondage ou si vous avez des difficultés à accéder au site ou à compléter le sondage, veuillez contacter le chercheur principal Marco Zaccagnini. Courriel : marco.zaccagnini@mail.mcgill.ca

Si vous décidez de ne pas participer à l'enquête, veuillez également nous le faire savoir et nous ne vous contacterons pas à l'avenir.

Si nous n'avons pas de nouvelles de vous dans les 7 jours ouvrables, un membre de l'équipe de recherche vous contactera à nouveau.

Nous vous remercions à l'avance d'avoir envisagé de participer à cette étude.

Marco Zaccagnini, PhD (c). MSc. RRT-CCAA
marco.zaccagnini@mail.mcgill.ca

Aliki Thomas, PhD, OT (c), erg
aliki.thomas@mcgill.ca

André Bussières, DC. PhD.
Andre.bussieres@mcgill.ca

Appendix 5- Flyer for members of regulatory bodies and professional associations
La version française apparaît ci-dessous

Join our study on scholarly practice in respiratory therapists

Study title: Identifying the practice and scholarly profiles of Canadian registered respiratory therapists: a cross-sectional observational study

Principal Investigators:

Marco Zaccagnini PhD (c). RRT.

Aliki Thomas. PhD. OT

André Bussières. DC. PhD

Interested? To ask questions contact:

Marco Zaccagnini. Doctoral Student

514-969-7204

marco.zaccagnini@mail.mcgill.ca

Version: 2 (04-01-2022)

What is the study about?

The purpose of this study is to describe Canadian RRTs demographic characteristics, roles in clinical, teaching and management activities and involvement in research..

Who can participate?

Any fully credentialled RRTs.

What's involved?

One online survey of 10-12 minutes

Are there benefits to participating?

Participants who **fully complete the survey** will be included in a raffle for gift certificates and will obtain one (1) hour of CSRT CE/CPD credit hours

QR code to consent form

McGill UNIVERSITY

Participez à notre étude sur la practique érudit chez les inhalothérapeutes

Titre de l'ètude:
Identification des profils de pratique et d'études des inhalothérapeutes: une étude observationnelle.

Chercheurs principaux:

Marco Zaccagnini PhD (c). RRT.

Aliki Thomas.

PhD. OT

André Bussières.

DC. PhD

Vous êtes intéressé? contactez:

Marco Zaccagnini. Étudiant en doctorat

514-969-7204

marco.zaccagnini@mail.mcgill.ca

Version: 2 (07-01-2022)

Quel est l'objet de l'étude?

L'objectif de le cette étude est de décrire les caractéristiques démographiques des inhalothérapeutes canadiens. Leur rôles dans les activities cliniques et leur participation à la recherche.

Qui peut participer?

Nous recherchons des members de la profession d'inhalothérapeutes.

Qu'est-ce que cela implique?

Une sondage en ligne de 10 à 12 minutes

Y a-t-il des avantages à participer?

Les participants que rempliront entièrement le sondage participeront à un tirage pour gagner des cartes-cadeaux et obtiendront une (1) heure de credit de formation continue

QR code to consent form

McGill UNIVERSITY

Appendix 6-Consent form for manuscript 3

CONSENT FORM

Identifying the practice and scholarly profiles of Canadian registered respiratory therapists: a cross-sectional observational study

Principal Investigators:

Marco Zaccagnini, PhD (c), MSc. RRT. FCSRT
School of Physical and Occupational Therapy,
Faculty of Medicine and Health Sciences, McGill University
3654 Promenade Sir-William-Osler
Montréal, Québec, H3G-1Y5
marco.zaccagnini@mail.mcgill.ca

Aliki Thomas, PhD, OT (c), erg.
School of Physical and Occupational Therapy,
Faculty of Medicine and Health Sciences,
McGill University
3654 Promenade Sir-William-Osler
Montréal, Québec, H3G-1Y5
aliki.thomas@mcgill.ca

André Bussières, DC, FCCS (C), PhD
Département chiropratique
Université du Québec à Trois-Rivières,
Trois-Rivières, Québec, Canada
andre.bussieres@uqtr.ca

Collaborators:

Peter Nugus, MA(Hons), PhD
McGill University
Peter.nugus@mcgill.ca

Andrew West, EdD. FCSRT
Canadian Society of Respiratory Therapists
awest@csrt.com

Introduction

Dear respiratory therapist,

You are invited to participate in our survey. Over 12,000 registered respiratory therapists (RRTs) are caring for patients in Canada. Despite their commonplace in the Canadian health care system, robust descriptive data (e.g., describing research and practice activities) does not exist about the Canadian RRT profession. Without knowledge of the Canadian RRT practice context, policymakers, decision-makers, scholars, employers, patients, and any other stakeholder in the Canadian healthcare system may not clearly understand the roles and contributions of RRTs. **This study aims to comprehensively describe the practice and scholarly profile of the Canadian RRT profession.**

Project reports detailing the findings of the study will be generated for peer-reviewed journal publications, conference presentations, and online webinar presentations.

Consent Form
Thank you for completing this survey. You must first review this Consent Page and agree to participate (at the bottom), before getting to the actual survey. If you agree to participate in this study, you will be taken to the survey questions in the next page.

This informed consent page outlines the online survey. It also explains your rights as a research participant. At the end of this section, you will be asked to acknowledge that you have read this information and agree to participate in this online survey. If ever you do not want to continue, you can simply leave this website. You are also free to withdraw your participation at any time without penalty.

Introduction and Goal of the Survey

We invite you to participate in this survey led by Marco Zaccagnini (doctoral student) and Dr. André Bussières and Dr. Aliki Thomas. The main goal of this study is to describe the scholarly and practice profile of licensed RRTs in Canada.

Study Procedures

This research project is conducted in the form of an online survey with multiple-choice questions and should require approximately **10-13 minutes** to complete. There will be one instance of data collection.

The survey is anonymous, and all the information you provide will remain confidential. Only members of the research team will have access to the survey responses. Participation is voluntary and will not result in any negative impact whatsoever. Participants may decline to participate without penalty at any time. The results are expected to provide information to stakeholders to evaluate the broad range of health services provided by RRTs, help better plan and improve service delivery, and foster emerging practice areas in the respiratory therapy profession.

The research procedures will include:

1. *Questionnaire*: All licensed RRTs in Canada who have a valid email address and are members of the national RRT association (the Canadian Society of Respiratory Therapists [CSRT]) or their respective Canadian regulatory body can participate in this study. The survey will be sent by a secure link by email through REDCap.

Potential Benefits

You will not benefit directly from participation in this study. Potential benefits might include evidence to support RRT service delivery and foster emerging practice areas in the respiratory therapy profession.

Potential Risks

There is no known risk for applicants who participate in the research study. This research project has been approved by the McGill University's Institutional Review Board (Study number: A01-E04-22A).

Subject Rights and Withdrawal from Study

Your participation in this research is voluntary. You have the right to ask questions regarding the project at any time. You may refuse to participate or may discontinue your participation at any time without explanation, and without penalty or loss of benefits to which you are otherwise entitled. If you decide not to participate, or if you discontinue your participation, there will be no consequences on you, or your work at your respective locations of practice. If you withdraw from the study, information collected to this point will be used to preserve the integrity and quality of the project.

Cost and compensation

As a token of our appreciation, your name will be included in a lottery drawing once you have **fully completed the survey.** The lottery prizes include 44 Amazon gift cards (valued at $50 each) and 8 full registrations to the 2024 CSRT Annual Conference (valued at $650 each). Each participant may only win one (1) prize.

In recognition of your participation, you will also be given a certificate of participation that include one (1) hour of volunteer hours, and 1.0 Canadian Society of Respiratory Therapists (CSRT) Continuing Education/Continuing Professional Development (CE/CPD) credits.

Finally, your participation in this survey will not create any additional costs for you.

Confidentiality

Any personal information obtained during this project will be kept strictly confidential. In order to protect your identity, your name will be given a unique identification code, and all data and documentation will be located in the REDCap program servers located within McGill University's secure data center. Only authorized members of the research team will have access to the documents containing your personal information. The research study results may be published, but your identity and any identifying information will not be revealed in any scientific publication or internal report. The results of the study will be used for scholarly purposes only. The survey system will not record your e-mail address or internet protocol (IP) address. ***The personal information you provided in the last section of the questionnaire (e.g., education level, Province) will only be used to describe the entire sample of participants and will not be linked to any of the survey responses.*** The ethics committee of McGill University may review the records containing your personal information to ensure proper management. After the study is completed, all information will be kept in the secure center for a minimum of 7 years per

McGill University's policy. The data will subsequently be destroyed with a deletion program (i.e., electronic data) as per McGill IRB standard procedures.

Contact

This project has been approved by the McGill Institutional Review Board. If you have any questions about your rights as a research participant, please contact Ilde Lepore, Senior Ethics Administrator of the Institutional Review Board at 514-398-8302. If you have any questions about the research itself or to report any adverse event, you may contact Marco Zaccagnini at marco.zaccagnini@mail.mcgill.ca

Consent

If you do not want to continue, you can simply leave this website. By clicking the button below and beginning the survey, you acknowledge that you have read this information and agree to voluntarily participate in this research.

- My participation in this project is voluntary. I am free to withdraw my consent and to discontinue my participation in the project at any time without explanation.
- My decision regarding whether to participate will have no effect on my status as a professional or employee. Refusal to participate would involve no penalty or loss of benefits.
- The results of this research will be used in research publications.
- Confidentiality of any written answers or feedback I provide will be respected as all information gathered will be coded, and my name will not appear in any published documents.
- I have had the opportunity to ask questions, and all my questions have been answered to my satisfaction.
- I have been given sufficient time to consider the information and seek advice should I choose to do so.

By clicking "*I have read the consent form and consent to participating in this study*", I will be forwarded the survey, I accept the above terms and I do not relinquish any of my legal rights.