Relationships among Interactional and Organizational Factors with Healthcare Provider Outcomes Post-Implementation of an Interprofessional Model of Patient Care

Wendy L. Ellis, The University of Western Ontario

Supervisor: Kerr, Michael S., The University of Western Ontario

A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Nursing

© Wendy L. Ellis 2021

Follow this and additional works at: https://ir.lib.uwo.ca/etd

Recommended Citation
https://ir.lib.uwo.ca/etd/8234

This Dissertation/Thesis is brought to you for free and open access by Scholarship@Western. It has been accepted for inclusion in Electronic Thesis and Dissertation Repository by an authorized administrator of Scholarship@Western. For more information, please contact wlswadmin@uwo.ca.
Abstract

Interprofessional practice (IPP) has been a focus of attention over the last several decades as a key strategy to support the provision of safe quality care. Research suggests that interactional and organizational factors can either promote or hinder IPP. However, little empirical research is available about the relationships between these factors and healthcare provider outcomes. This study examines these relationships in the context of the introduction of an interprofessional model of patient care in a tertiary level hospital. Kanter’s Theory of Organizational Power, the Framework for Interprofessional Education for Collaborative Patient-Centred Practice, and the Analytical Framework of Interprofessional Collaboration were used to frame the study. This study investigates how interactional (i.e., levels of interprofessional collaboration; conflict; respect) and organizational (i.e., empowerment; patient safety climate) factors are related to IPP and healthcare provider outcomes (i.e., job satisfaction; satisfaction with quality of care). A hypothesized theoretical model was developed and tested to examine the relationships among global empowerment, interprofessional collaboration, conflict, respect, and patient safety climate linking to job satisfaction and satisfaction with the quality of care provision.

A non-experimental design and structural equation modeling techniques were used to conduct a secondary analysis of cross-sectional data post-intervention of an interprofessional model of care introduced in a tertiary care hospital setting. Participants were healthcare providers (n=1707). Confirmatory factor analysis supported the use of the revised 17-item Intensity of Interprofessional Collaboration Tool. The hypothesized study model had an acceptable fit: $\chi^2(927) = 4013.18, p < .000; \text{RMSEA} = .043 [.041, .046]; \text{CFI} = .93; \text{TLI} = .94; \text{SRMR} = .043$. Empowerment was positively related to
interprofessional collaboration, respect, job satisfaction, and patient safety climate. Interprofessional collaboration was positively related to job satisfaction, patient safety climate, and satisfaction with the quality of care and mediated the relationship between empowerment to job satisfaction, patient safety climate, and satisfaction with the quality of care delivered. Conflict was negatively related to interprofessional collaboration, and respect was positively related to job satisfaction. Job satisfaction was positively related to satisfaction with the quality of care. Patient safety climate was positively related to job satisfaction and satisfaction with the quality of care delivered. In this study, empowering organizational structures in support of IPP were linked to interprofessional collaboration, respect, patient safety climate, and in turn, these factors were positively associated with job satisfaction, and satisfaction with the quality of care delivered. To our knowledge, this is the first study to examine these relationships. The study offers organizational leaders, researchers, and academics valuable information related to the introduction of interprofessional models of care.

Key words: interprofessional practice, interprofessional collaboration, conflict, respect, job satisfaction, patient safety, quality of care, empowerment, healthcare providers, models of care, tertiary care, structural equation modeling (SEM)
Summary for Lay Audience

Interprofessional practice (IPP) is an approach to health care delivery in hospital settings designed to improve the quality of patient care, improve healthcare provider relationships and job satisfaction, and reduce health care costs. It requires healthcare providers to work collaboratively together to organize patient care, and the decisions made in relation to care must include the patient and family. However, we still do not have enough information about the many factors that can influence an IPP approach to health care delivery. This study investigates how healthcare providers rate their interactions with one another (i.e., levels of interprofessional collaboration, conflict, respect), and how they view organizational support, patient safety, the quality of care they provided, and their job satisfaction after an interprofessional model of patient care was introduced in a large Canadian acute care hospital. Findings suggest that organizational support promotes interprofessional collaboration and respect among healthcare providers which in turn links to patient safety, job satisfaction, and satisfaction with the quality of care delivered.
Co-Authorship Statement

I, Wendy Ellis completed the work under the direct supervision of Dr. Michael S. Kerr, and I acknowledge that I am the primary author for the dissertation consisting of five chapters. As the primary author, I was responsible for the conceptualization of the study design, methods, analysis, and written work contributing to the three manuscripts in addition to the introductory and summary chapters. Dr. Michael Kerr and advisory committee members Dr. Christina Hurlock-Chorostecki, Dr. Carol Wong, and the late Dr. Heather Laschinger provided substantial intellectual contributions.

Dr. Kerr, Dr. Wong, and Dr. Hurlock-Chorostecki will be co-authors on the publications resulting from this dissertation. All authors will provide final approval prior to submission for publication. The contribution and nature of the work from each author will be explicitly stated.
Acknowledgements

Thank you to my Supervisor, Dr. Michael S. Kerr. Mickey, your guidance, knowledge, and patience are truly appreciated. It was a long journey, and I wish to express my deepest gratitude for your encouragement and commitment to my success. Completing this milestone would not have been possible without your support.

I wish to express my sincere appreciation to my Advisory Committee Members, Dr. Carol Wong and Dr. Christina Hurlock-Chorostecki. Carol, your insight and feedback was invaluable. Tina, your expertise and knowledge advanced my work, and you challenged me to critically explore the discourse in the field of interprofessional practice. I am grateful for the opportunity to learn from you both.

I would like to thank the Arthur Labatt Family School of Nursing, the School of Graduate and Postdoctoral Studies, and The University of Western Ontario. Thank you to the Examination Committee for your thoughtful comments for discussion. A special thank you to Dr. Ginette Lemire Rodger (conceptualization, development, and implementation of the IPMPC©), and the staff at the Ottawa Hospital.

I am indebted to my colleagues and friends for their unwavering support and belief in me. A heartfelt thanks to Diane and Paula for generously sharing your valuable time to mentor, listen, and laugh. Michael, I sincerely thank you for everything.

To my loving family, thank you. Words cannot express the gratitude that I have for your continuous support and encouragement.
Dedication

I wish to dedicate this thesis to my family. Sandra, you continue to inspire me each day, and you are my hero. David, may you rest in peace. You are truly missed, and your words still resonate with me. To Jamie and Patrick Avery, I believe that you would be very proud. Samantha and Abbey, continue to reach for your dreams, and keep going. Everything is possible.
## Table of Contents

Abstract ............................................................................................................................................ ii
Summary for Lay Audience ........................................................................................................ iv
Co-Authorship Statement ............................................................................................................... v
Acknowledgements ....................................................................................................................... vi
Dedication ......................................................................................................................................... vii
Table of Contents .......................................................................................................................... viii
List of Tables .................................................................................................................................... xiii
List of Figures .................................................................................................................................... xiv
List of Appendices .......................................................................................................................... xv
Definitions ......................................................................................................................................... xvi
Chapter One ...................................................................................................................................... 1
An Introduction to the Dissertation ................................................................................................. 1
Overview ........................................................................................................................................... 1
Introduction ...................................................................................................................................... 2
   Interprofessional Practice Terms ................................................................................................. 4
   Defining IPP for this Present Study ......................................................................................... 6
   Interactional Factors impacting IPP ......................................................................................... 7
   Organizational Factors impacting IPP ..................................................................................... 10
The Present Study ........................................................................................................................... 11
Purpose ............................................................................................................................................. 11
Conceptual Frameworks and Theoretical Perspectives ................................................................. 12
   Interprofessional Education for Collaborative Patient-Centred Practice ......................... 12
   (IECP CP) .................................................................................................................................. 12
   Analytical Framework of Interdisciplinary [Interprofessional] Collaboration .... 15
   Kanter’s Theory of Organizational Power (Empowerment) ................................................. 16
Overview of Chapters ................................................................................................................ 18
Chapter Two .................................................................................................................................... 28
Interprofessional Practice and Healthcare Provider Outcomes in ............................................. 28
Tertiary Care Hospitals: A Scoping Review ............................................................................... 28
Methods .......................................................................................................................................... 29
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage One: Identifying the Research Question</td>
<td>30</td>
</tr>
<tr>
<td>Stage Two: Identifying Relevant Literature</td>
<td>30</td>
</tr>
<tr>
<td>Stage Three: Selecting the Literature</td>
<td>32</td>
</tr>
<tr>
<td>Stage Four: Charting the Data</td>
<td>34</td>
</tr>
<tr>
<td>Results</td>
<td>39</td>
</tr>
<tr>
<td>Stage Five: Collating, Summarizing, and Reporting the Literature</td>
<td>39</td>
</tr>
<tr>
<td>Discussion</td>
<td>44</td>
</tr>
<tr>
<td>Limitations</td>
<td>46</td>
</tr>
<tr>
<td>Conclusion</td>
<td>47</td>
</tr>
<tr>
<td>References for Chapter Two</td>
<td>48</td>
</tr>
<tr>
<td>Chapter Three</td>
<td>52</td>
</tr>
<tr>
<td>Measuring Interprofessional Collaboration: A Confirmatory Factor Analysis</td>
<td>52</td>
</tr>
<tr>
<td>Background of the Intensity of Interprofessional Collaboration Tool</td>
<td>53</td>
</tr>
<tr>
<td>Purpose</td>
<td>56</td>
</tr>
<tr>
<td>Methods</td>
<td>56</td>
</tr>
<tr>
<td>Setting, Sample, and Procedure</td>
<td>56</td>
</tr>
<tr>
<td>Measurement Tool for the Present Study</td>
<td>57</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>61</td>
</tr>
<tr>
<td>Model Fit Criteria</td>
<td>61</td>
</tr>
<tr>
<td>Meaning of Fit Indices</td>
<td>62</td>
</tr>
<tr>
<td>Measurement Tool Reliability Analysis</td>
<td>62</td>
</tr>
<tr>
<td>Data Management and Missing Values</td>
<td>63</td>
</tr>
<tr>
<td>Results</td>
<td>64</td>
</tr>
<tr>
<td>Descriptive Results</td>
<td>64</td>
</tr>
<tr>
<td>Confirmatory Factor Analysis (CFA)</td>
<td>65</td>
</tr>
<tr>
<td>Discussion</td>
<td>68</td>
</tr>
<tr>
<td>Limitations and Future Research</td>
<td>69</td>
</tr>
<tr>
<td>Conclusion</td>
<td>70</td>
</tr>
<tr>
<td>References for Chapter Three</td>
<td>71</td>
</tr>
<tr>
<td>Chapter Four</td>
<td>75</td>
</tr>
<tr>
<td>Relationships Among Interactional and Organizational Factors with</td>
<td>75</td>
</tr>
<tr>
<td>Topic</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Respect</td>
<td>100</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>101</td>
</tr>
<tr>
<td>Patient Safety Climate</td>
<td>102</td>
</tr>
<tr>
<td>Provider Satisfaction with the Quality of Care Delivered</td>
<td>103</td>
</tr>
<tr>
<td>Data Management and Analysis</td>
<td>104</td>
</tr>
<tr>
<td>Data Integrity and Missing Values</td>
<td>104</td>
</tr>
<tr>
<td>Analysis using Structural Equation Modeling</td>
<td>107</td>
</tr>
<tr>
<td>Measurement Model</td>
<td>108</td>
</tr>
<tr>
<td>Structural Model</td>
<td>109</td>
</tr>
<tr>
<td>Model Fit Criteria</td>
<td>111</td>
</tr>
<tr>
<td>Meaning of Fit Indices</td>
<td>111</td>
</tr>
<tr>
<td>Measurement Tool Reliability Analysis and Construct Validity</td>
<td>112</td>
</tr>
<tr>
<td>Results</td>
<td>113</td>
</tr>
<tr>
<td>Descriptive Results</td>
<td>113</td>
</tr>
<tr>
<td>Measurement Model</td>
<td>116</td>
</tr>
<tr>
<td>Factor Loadings</td>
<td>117</td>
</tr>
<tr>
<td>Results of Testing the Fully Latent Structural Equation Model</td>
<td>119</td>
</tr>
<tr>
<td>Discussion</td>
<td>123</td>
</tr>
<tr>
<td>Limitations</td>
<td>129</td>
</tr>
<tr>
<td>Conclusion</td>
<td>132</td>
</tr>
<tr>
<td>References for Chapter 4</td>
<td>133</td>
</tr>
<tr>
<td>Chapter 5</td>
<td>144</td>
</tr>
<tr>
<td>Contributions, Implications, and Conclusions</td>
<td>144</td>
</tr>
<tr>
<td>Summary of the Study Purpose</td>
<td>144</td>
</tr>
<tr>
<td>Overview of Findings and Contributions by Chapter</td>
<td>144</td>
</tr>
<tr>
<td>Chapter One – Introduction to the Dissertation</td>
<td>145</td>
</tr>
<tr>
<td>Chapter Two – Interprofessional Practice and Healthcare Provider Outcomes in Tertiary Care Hospitals: A Scoping Review</td>
<td>146</td>
</tr>
<tr>
<td>Chapter Three – Measuring the Intensity of Interprofessional Collaboration: A Confirmatory Factor Analysis</td>
<td>148</td>
</tr>
</tbody>
</table>
List of Tables

Table 2.1: Charting the Data: Healthcare Provider Outcomes and IPP ..........................35
Table 2.2: Mapping Healthcare Provider Outcomes and Elements of IPP ......................38
Table 3.1: Means, Standard Deviations, Skewness and Kurtosis Values ......................60
Table 3.2: Descriptive Statistics for the Intensity of Interprofessional Collaboration Tool .................................................................................................................................65
Table 3.3: Fit Indices for the Confirmatory Factor Analysis (CFA) Model .................66
Table 3.4: Standardized Factor Loadings: Intensity of Interprofessional Collaboration Tool .................................................................................................................................67
Table 4.1: Participant Characteristics .............................................................................114
Table 4.2: Means, Standard Deviations, Reliability Coefficients, and Correlation Matrix .................................................................................................................................115
Table 4.3: Full Restricted Measurement Model .........................................................117
Table 4.4: Standardized Factor Loadings: Intensity of Interprofessional Collaboration Tool .................................................................................................................................118
Table 4.5: Standardized Factor Loadings for All Measures ........................................119
Table 4.6: Total Direct, Indirect and Specific Effects ....................................................122
List of Figures

Figure 1.1: Interprofessional Education for Collaborative Patient-Centred Practice ........13

Figure 1.2: The Analytical Framework of Interdisciplinary [Interprofessional] Collaboration ..................................................16

Figure 2.1: PRISMA Flow Diagram - Selection Process .................................................33

Figure 3.1: Proposed Two-Factor Model (Sicotte et al, 2002) ..................................59

Figure 4.1: Hypothesized Model ............................................................................95

Figure 4.2: Hypothesized Model with Latent Constructs and Observed Indicators ......106

Figure 4.3: Final Fully Latent Structural Equation Model ........................................110

Figure 4.4: Final Fully Latent Structural Equation Model: Indirect Effects ...............121
List of Appendices

Appendix A: PRISMA-ScR Checklist ................................................................. 180
Appendix B: Research Ethics Approval ............................................................. 184
Appendix C: IPMPC© Survey ........................................................................ 188
Appendix D: IPMPC© Guiding Principles .......................................................... 195
Appendix E: Permissions ................................................................................. 197
Definitions

The following definitions used in this dissertation are provided for clarity with the terms used:

**Healthcare providers** are those professionals involved with patient and/or client care in a hospital setting (Registered Nurses; Nurse Practitioners; Physicians; Dieticians; Social Workers; Pharmacists; Occupational Therapists; Physical Therapists; Respiratory Therapists).

**Scope of practice** refers to the roles, functions, and accountabilities that healthcare providers are legislated, educated, and authorized to perform (Baranek, 2005; CNA, 2015; Nelson et al., 2014).

**Practice** is the active participation within a professional role or group, and the act of service to a community (Thistlethwaite et al., 2013).

**Tertiary care hospital setting** refers to those hospitals providing specialized health care typically for hospital inpatients and is based on referral from a primary or secondary care provider. Tertiary care is provided by an academic teaching facility or large community care facility with access to specialists and specialized equipment. The services provided by a tertiary care hospital can include cancer management, neurosurgery, cardiac surgery, burn treatment, specialized neonatology services, and other complex medical and surgical interventions.

**Interprofessional Care (IPC)** is a process and “is the provision of comprehensive health services to patients by multiple health caregivers, who work collaboratively to deliver quality care within and across settings” (Health Force Ontario, 2007, p 7).
**Interprofessional Practice (IPP)** IPP is the cohesive and interdependent approach taken by healthcare providers for care provision while keeping the patient central (D’Amour & Oandasan, 2005).

**Interprofessional collaboration** is collective action and is considered a process to create a partnership between a team of health providers and a client in a participatory, collaborative, and coordinated approach to shared decision-making around health and social issues (Orchard et al., 2005, as cited in Canadian Interprofessional Health Collaborative [CIHC], 2010, p.24).

**Interprofessional Education (IPE)** is a strategy to bring different professions together to learn how to optimize the positive effects of IPP (D’Amour & Oandasan, 2005; WHO, 2010).

**Interprofessional Learning (IPL)** is the knowledge acquisition that takes place either formally through IPE initiatives or in the practice setting from interactions with other healthcare providers (Freeth et al., 2005).

**Interactional factors** in relation to IPP refer to the individual relationships and/or interactions between healthcare providers as they work together to integrate services at the point of delivery to optimize care provision.

**Organizational factors** in relation to IPP refer to organizational structure, processes, and practices along with regard to the underlying culture that drives the provision of safe quality care.
Chapter One

An Introduction to the Dissertation

Overview

The dissertation is written using the Integrated-Article format regulated by the School of Graduate and Postdoctoral Studies at the University of Western Ontario, Canada. The dissertation is organized into five chapters. Chapter One introduces the study and outlines the organization of the dissertation. Chapters Two, Three, and Four are separate manuscripts that build upon one another to provide an integrated perspective of interprofessional practice (IPP) in tertiary care hospital settings. Chapter Two is a scoping review of the IPP literature in relation to healthcare provider outcomes. In Chapter Three, the construct validity of the measure of interprofessional collaboration used in the study was evaluated and discussed. In Chapter Four, a hypothesized structural equation model was tested to examine relationships among interactional and organizational factors that promote or hinder IPP in relation to healthcare provider outcomes. Implications for theory, practice, education, policy, and research are discussed in Chapter Five in relation to the study’s key findings.

The following section provides the introduction to the dissertation. Interprofessional practice is defined, and related terms are discussed with an overview of interactional and organizational factors. In the second section of Chapter One, the research purpose is presented with the third section addressing the conceptual and theoretical underpinnings of the study, while the fourth section provides a brief overview of the ensuing chapters.
**Introduction**

A global patient safety priority is to provide seamless quality health care (World Health Organization [WHO], 2010; 2018). The risk for adverse events leading to poor patient, healthcare provider, and organizational outcomes increases when health care delivery systems lack integration and coordination (Canadian Patient Safety Institute [CPSI], 2019; 2020; Institute of Medicine [IOM], 2015; WHO, 2010; 2018). Over a decade ago, health care systems were tasked with undertaking a number of strategies to address patient safety concerns including workforce restructuring and optimization of resources to improve the quality of care, reduce cost spending, and promote effective collaboration and communication among healthcare providers (WHO, 2010; IOM, 2015).

In response to global, national, and federal mandates, an IPP approach to health care delivery was recommended for implementation in practice settings to improve the quality of patient care outcomes, improve healthcare provider relationships and job satisfaction, reduce inefficiencies and health care costs, and foster an organizational climate of patient safety (Canadian Interprofessional Health Collaborative [CIHC], 2010; Council of the Federation Secretariat, 2013; Curran, 2004; Health Canada, 2004; 2015; IOM, 2015; WHO, 2010).

For over 10 years, initiatives have highlighted the need for health system reform along with regulatory demands mandating professional and interprofessional practice standards (Canadian Nurses Association [CNA], 2020; CIHC, 2010; College of Nurses of Ontario [CNO], 2008; College of Physicians and Surgeons of Ontario, 2009; 2020; Government of Canada, 2006; Health Force Ontario, 2010; IOM, 2015; WHO, 2010). Interprofessional practice addresses the siloed approach to care where healthcare providers work within their specific professional scope, develop standards of care,
priorities, and competencies without fully knowing other professional practice scopes (CIHC, 2010). Since competent and safe IPP is contingent upon healthcare providers’ understanding of scopes of practice, a lack of understanding of other healthcare provider roles may lead to conflict due to role ambiguity and differing values. This lack of understanding can also limit the ability for some professionals to work within their full scopes of practice (CIHC, 2010; Hurlock-Chorostecki et al., 2013; Orchard, 2016; WHO, 2010; 2020).

Interprofessional competency development focused on interprofessional education (IPE), interprofessional learning (IPL), and IPP has garnered much attention over the last decade across professions (Abu-Rish et al., 2012; Bainbridge et al., 2010; CIHC, 2010; Brandt et al, 2014; Cox & Naylor, 2013; Cox et al., 2016; IOM, 2015; Interprofessional Education Collaborative [IPEC], 2016; Orchard et al., 2010; Reeves et al., 2017). The goal of IPE and IPL is to promote the theoretical understanding of IPP competencies in order to improve IPP (D’Amour & Oandasan, 2005; Orchard et al., 2010; WHO, 2010). For example, IPE purports to build the capacity in learners to collaborate and navigate conflict with an understanding of how their interdependencies can help provide safe quality care (CIHC, 2010; Reeves et al., 2017). Interprofessional practice frameworks help to define interprofessional competency by establishing standards of practice (CIHC, 2010; IPEC, 2016). These frameworks have been adopted in both primary and tertiary care to some extent (Goldman et al., 2018; Hepp et al, 2015; McNaughton et al., 2021). However, little focus has been given to how well these IPP framework competencies are reached in tertiary care hospital settings (Goldman et al., 2018; Reeves et al., 2017).

Today, the integration of IPP remains a challenge even though there has been increasing attention paid to it over the last several decades (CIHC, 2010; WHO, 2010;
Reeves et al., 2017). Despite the known benefits of IPP, such as reduced hospital readmissions (Shah et al., 2018) and improved quality of care (Reeves et al., 2017), empirical evidence in relation to patient, healthcare provider (i.e., job satisfaction) and organizational (i.e., safety climate) outcomes remains less clear (Reeves et al., 2017). Furthermore, the outcomes of IPP within established interprofessional models of patient care in tertiary care hospital settings remain understudied (Reeves et al., 2017). Therefore, more research is needed to further our knowledge of how well IPP has been integrated (i.e., implemented) and how to measure its presence in practice settings.

**Interprofessional Practice Terms**

IPP is discussed extensively in the literature yet the theoretical underpinning informing our knowledge remains limited despite the advancement in the field over the last several decades (D’Amour & Oandasan, 2005; Dow et al., 2017; Petri, 2010; Reeves et al., 2017; Reeves et al., 2010; Xyrichis et al., 2017). Furthermore, inconsistencies with terms and definitions (D’Amour & Oandasan, 2005; Dow et al., 2017; Hurlock-Chorostecki et al., 2015; Reeves et al., 2010; Xyrichis et al., 2017) such as “interdisciplinary”, “multidisciplinary”, and “multiprofessional” create confusion and continue to hinder further advancement of the field (Paradis & Reeves, 2013). Therefore, some clarity in relation to IPP terminology is provided below.

To begin, there is a distinct difference between the terms “interprofessional” and “interdisciplinary” as it relates to practice (Reeves et al., 2010). The term “interprofessional” is often used to describe the relationships that exist between healthcare providers. The meaning of interprofessional is in two parts: “inter”, which means involving two or more, among distinct yet interdependent groups, and “professional”, which in the health care context, describes those groups with a specific
body of knowledge, skills or competencies such as, registered nurses, physiotherapists, pharmacists and physicians (CIHC, 2010). In contrast, “interdisciplinary” describes individuals from different academic disciplines such as psychology, anthropology, or sociology with “multidisciplinary” describing two or more of these disciplines who may interact. For example, several disciplines may occasionally work in parallel with one another to solve problems, and then work separately the rest of the time (D'Amour & Oandasan, 2005; Reeves et al., 2010).

Another important distinction is the term “multiprofessional”. Although the term “multiprofessional” also describes more than two healthcare professionals, it is limited in its meaning because it does not suggest a connection or interdependency between the different professionals when compared to the term “interprofessional” (Reeves et al., 2010). Therefore, based on these meanings, the term “interprofessional” is an appropriate term to use when describing healthcare providers who collaboratively work or “practice” together. Thistlethwaite, Jackson and Moran (2013) critically reviewed the meaning of “practice” (among other terms) and suggest that practice includes the active participation within a professional role or group, and the act of service to a community. Although there is discourse in the literature as to what constitutes practice, its meaning as described above is to be understood in relation to IPP for this present study.

The complexity of IPP has also been described in terms of “interprofessional work” in the form of IP “teamwork”, “collaboration”, “coordination”, and “networking”. According to Reeves et al (2010), IPP refers to the integrated efforts undertaken by healthcare providers, and the level of integration depends on the circumstances surrounding care provision (Reeves et al., 2010; Xyrichis et al., 2017). For example, in tertiary care settings, a high level of integration of professional services is required in
order to meet the urgent and often complex needs of patients in an unpredictable environment. According to Reeves, this level of integration or IP “teamwork” is considered the highest form of IPP (Reeves et al., 2010). Depending on the acuity of the situation, the level of integration of services may lessen (i.e., IP “collaboration”) due to the clinical care (i.e., tasks) that may be required. In contrast, IP “coordination” is described by Reeves et al (2010) as a consistent and stable approach to clinical care similar to case management in community mental health organizations. Comparatively, IP “networking” is when a broader base of healthcare providers shares information and resources related to their fields of study but this form of IPP is not as structured or integrated as IP “teamwork” (Reeves et al., 2010; Xyrichis et al., 2017). In the current literature, attention has been given to IP teamwork and collaboration, yet less is known about the other forms of IPP, specifically, coordination and networking (Reeves et al., 2018; Xyrichis et al., 2017).

**Defining IPP for this Present Study**

Given the many terms that are used interchangeably to describe IPP, it is important to define IPP for the purpose of this study. Interprofessional practice is described as a cohesive, interdependent and patient-centred approach taken by healthcare providers for care provision (D’Amour & Oandasan, 2005). By adopting the language from this seminal literature, the notion that IPP requires the integration of key elements is supported. Key elements of IPP include respectful relationships, collaboration, shared power with decision-making for clinical care, shared goals, interdependency, and the knowledge of others’ professional scopes of practice to provide safe, quality care (D’Amour & Oandasan, 2005). When these elements are present, it allows for healthcare providers to work effectively together in a cohesive manner to deliver interprofessional
care (D’Amour & Oandasan, 2005). For the purpose of this study, D’Amour and Oandasan’s (2005) description of IPP is drawn upon to argue that IPP extends beyond collaborative activity. Therefore, the term “interprofessional collaboration” is also defined for this present study.

Drawing upon conceptualizations of interprofessional collaboration, the following definition is used in relation to IPP: “Interprofessional collaboration is a process for creating a partnership between a team of healthcare providers and a client [patient] in a participatory, collaborative, and coordinated approach to shared decision-making around health and social issues” (Orchard et al., 2005; as cited in CIHC, 2010, p.24). This definition was chosen because it clearly defines interprofessional collaboration as an interactional process (within IPP) that healthcare providers undertake in partnership with clients [patients] and families to make evidence-informed decisions for safe, quality care.

Furthermore, there are interactional and organizational factors that can either promote or hinder IPP (D’Amour & Oandasan, 2005). Interactional factors (i.e., levels of interprofessional collaboration; conflict; respect) refer to the individual relationships and/or interactions between healthcare providers as they work together to deliver care (D’Amour & Oandasan, 2005). Organizational factors (i.e., global empowerment; safety climate) refer to organizational structure, processes, and practices along with the underlying culture that promotes safe, quality care (D’Amour & Oandasan, 2005).

**Interactional Factors impacting IPP**

The degree (i.e., high to low) to which healthcare providers collaborate can either promote or impede IPP (CIHC, 2010; D’Amour & Oandasan, 2005; Sicotte et al., 2002; WHO, 2010; IOM, 2015). The sharing of information and the coordination of clinical activities are considered aspects of interprofessional collaboration and in turn, support
positive working relationships (CIHC, 2010; D’Amour & Oandasan, 2005; Hurlock-Chorostecki et al., 2015; Orchard et al., 2005). Measuring interprofessional collaboration remains limited in the IPP literature despite the frequent use of the term (Bookey-Bassett et al., 2016; Orchard et al, 2018; Walters et al., 2016). Several reviews have been undertaken to further our understanding of what tools are available to measure collaboration in health care; however, the reviews are narrowly focused (Bookey-Bassett et al., 2016; Walters et al., 2016). Although there are several measurement tools or instruments referenced in the literature that purport to measure interprofessional collaboration, the tools available that have been reported as valid and reliable are limited (Hurlock-Chorostecki et al., 2015; Orchard et al, 2018; Parker-Oliver et al., 2007). For example, interprofessional collaboration has been measured more prominently in primary health care although it has also been examined in other settings (i.e., hospital, long-term care) related to self-report of team performance, assessment of collaborative relationships, and IPP activities (Hurlock-Chorostecki et al., 2015; Orchard et al., 2018). However, despite knowing that collaboration among healthcare providers is essential to the success of IPP, the degree or intensity to which interprofessional collaboration is present and measured in tertiary care hospital settings is less known (Manojlovich et al., 2014; San Martin-Rodriguez et al., 2008). More research is needed to understand if the level of intensity of interprofessional collaboration relates to healthcare provider outcomes (i.e., job satisfaction; satisfaction with the quality of care delivered).

Other interactions can also occur among healthcare providers (D’Amour & Oandasan, 2005; CIHC, 2010; IPEC, 2016). Healthcare providers may experience conflict when working together. While typically viewed as a negative influence, conflict can also be viewed as a positive influence for initiating changes in practice (Almost et al.,
Conflict is described as a complex process occurring between healthcare providers experiencing challenges with goal attainment or disagreements with work tasks and processes associated with care provision (Almost et al., 2016; Barki & Hartwick, 2004). Conflict can impede IPP due to perceived power dynamics (D’Amour et al., 2005; McNeil et al., 2013; Orchard et al., 2010) which can impact patient safety (D’Amour & Oandasan, 2005; Manojlovich et al., 2014). Moreover, conflict leads to poor communication, tension among healthcare providers, and work dissatisfaction (Hart, 2015; McNeil et al., 2013; Orchard et al., 2005; Sexton & Orchard, 2016) all of which affect care provision. Resolving conflict is a key IPP competency that must be met in order to effectively deliver interprofessional care (CIHC, 2010; IPEC, 2016). However, the role of conflict in relation to interventions aimed to improve IPP is less known (Almost et al., 2016).

Maintaining positive relationships among healthcare providers requires shared power with decision-making and a level of respect for each professions’ contributions (D’Amour et al. 2005; Faulkner & Laschinger, 2008; Laschinger & Finegan, 2005; Manojlovich et al., 2014; Petri, 2010; Orchard et al., 2010; Reeves et al., 2010). Respect is viewed as an appreciation for what each profession contributes with acknowledgement of the interdependence between healthcare providers (D’Amour et al., 2008; Manser, 2009; Petri, 2010). Respect is considered a core value in relation to a healthy work environment. A healthy work environment is critical for establishing an organizational culture of quality, safety, and trust (Registered Nurses’ Association of Ontario [RNAO], 2013). However, research focused on respect in relation to IPP remains limited (DeCicco et al., 2006; Faulkner & Laschinger, 2008; Laschinger & Finegan, 2005; Manojlovich et al., 2014).
Organizational Factors impacting IPP

In healthcare organizations, the culture reflects the values, beliefs, attitudes and behaviours of healthcare providers who work in these settings. In this context, safety climate refers to the measurable perceptions of safety culture whereas safety culture refers to the underlying beliefs, assumptions, and values of the healthcare organization as they relate to patient safety (CPSI, 2020). A culture of safety and quality is achieved by setting common goals, establishing guiding principles, enacting policies, and demonstrating IPP competencies (CIHC, 2009; CPSI, 2019; 2020; IOM, 2015). Quality of care is defined as “the degree of excellence; the extent to which an organization meets clients’ needs and exceeds their expectations” (Accreditation Canada, 2020). The attributes of high-quality care provision include safety, timeliness, effectiveness, and efficiency and is grounded within a patient-centred approach (IOM, 2015). Interprofessional practice is linked to improved quality of care (CIHC, 2010; IOM, 2015). With this understanding, it is important to note that organizational leadership and shared governance are considered foundational for IPP and in turn, influence quality of care (CIHC, 2010). However, because hierarchical power structures in health care settings still exist, IPP can be impacted (Hurlock-Chorostecki et al., 2016; Orchard et al, 2010). Leadership and its relationship to patient outcomes has been studied and there is evidence to suggest that authentic leadership improves patient satisfaction with the delivery of care, and may reduce adverse events and complications (Boamah et al., 2018; IOM, 2015; Wong & Cummings, 2007; Wong et al., 2013). Therefore, it is imperative for organizations to provide the supportive structures to fully implement IPP in order to achieve optimal patient, healthcare provider, and organizational outcomes (CPSI, 2020; IOM, 2015; Orchard et al., 2005; Regan et al., 2016).
Interprofessional practice has been linked to improved patient outcomes and improved quality of care (Reeves et al., 2017; Shah et al., 2018; Zwarenstein et al., 2009). There is agreement that there are essential elements associated with IPP and there are interactional and organizational factors can either promote or hinder its success. However, gaps are identified in the literature (Reeves et al., 2017). Specifically, the measurement of interprofessional collaboration requires further study due to the limited number of reliable and valid tools for assessing it in tertiary care hospital settings. Furthermore, how well IPP has been implemented in tertiary care hospitals is unclear. Little empirical research is available that examines the relationships of interactional and organizational factors with healthcare provider outcomes associated with introducing interprofessional models of patient care in tertiary care hospitals (CIHC, 2009; WHO, 2010). Based on these gaps, more research is needed to further advance our knowledge of IPP.

**The Present Study**

**Purpose**

The purpose of this study was to investigate how healthcare providers’ perceptions of interactional (i.e., levels of interprofessional collaboration; conflict; respect) and organizational (i.e., global empowerment; safety climate) factors are linked to healthcare provider outcomes after the introduction of a new model of IPP. A hypothesized theoretical model was developed and tested to examine the relationships among global empowerment, interprofessional collaboration, conflict, respect, and patient safety climate linking to job satisfaction and satisfaction with the quality of care delivered.
Conceptual Frameworks and Theoretical Perspectives

Several conceptual frameworks exist that attempt to describe IPP, albeit with only limited empirical evidence to support their use (Sicotte et al., 2002; D’Amour & Oandasan, 2005; Reeves et al., 2010). For this reason, the Framework for Interprofessional Education for Collaborative Patient-Centred Practice (D’Amour & Oandasan, 2005), and the Analytical Framework of Interdisciplinary [Interprofessional] Collaboration (Sicotte et al., 2002) were used to frame this study. Furthermore, Kanter’s Theory of Organizational Power (Structural Empowerment) provided an additional theoretical foundation focused on the structures and processes within organizations (Kanter, 1977; 1993).

Interprofessional Education for Collaborative Patient-Centred Practice (IECPCP)

The Interprofessional Education for Collaborative Patient-Centred Practice (IECPCP) conceptual framework is comprised of two major components and highlights the interdependency of IPE and IPP (Figure 1.1). The framework describes the micro, meso, and macro level factors that can promote or impede IPE and IPP with related outcomes for each component. The overarching macro systemic structures include the educational and professional systems, government policies (federal/provincial/regional) and social-cultural values. The arrows in the framework describe the iterative feedback loop across the micro, meso, and macro levels. For this study, the second component of the framework titled “collaborative practice” (i.e., IPP) was used.
In the collaborative practice component of the IECPCP framework, the patient is at the center. Patient care is determined by how well healthcare providers work together to address the complexity of the clinical tasks in the context of understanding differing
scopes of practice or professional roles (D’Amour & Oandasan, 2005). The framework describes the interactional (micro), organizational (meso), and systemic (macro) factors that can promote or impede IPP and impact patient, provider, organizational, and systems outcomes. At the micro level, interactional factors refer to shared goals and vision, mutual respect, willingness to collaborate, and trusting relationships that lead to a sense of belonging (D’Amour & Oandasan, 2005). At the meso level, the framework suggests governance (i.e., influence of organizational leadership) and the structuring of clinical care are organizational factors contributing to IPP. Organizational structures that are non-hierarchical and support IPP as reflected in the organization’s mission, vision, and core values can influence clinical outcomes, satisfaction with care provision, staff well-being, and organizational efficiency (D’Amour & Oandasan, 2005). The framework proposes that IPP can support and improve healthcare delivery systems through collaboration (D’Amour & Oandasan, 2005).

The IPE component of the model includes the beliefs and attitudes in IPE at both the educator and learner levels along with teaching/learning resources for competency development (D’Amour & Oandasan, 2005). For example, the type of learning (i.e., experiential, problem-based learning, etc.), the expertise of the educator, and the opportunities for learners across professions to learn with and from each other influence the behaviours and skills needed for IPP (D’Amour & Oandasan, 2005). IPE is flourishing in the literature; therefore, furthering IPE knowledge was not the intent of this present study.

This framework is suited for this present study because it considers the interactional and organizational factors known to be linked to IPP (D’Amour &
Oandasan, 2005). The framework provides theoretical support to conduct research to test the relationships of these factors to healthcare provider outcomes.

**Analytical Framework of Interdisciplinary [Interprofessional] Collaboration**

The Analytical Framework of Interdisciplinary [Interprofessional] Collaboration (Sicotte et al., 2002) is grounded in a conceptual understanding of shared clinical care activities (Golin & Ducanis, 1981) and is based on organizational theory in relation to group work coordination (Georgopoulos & Mann, 1962). The framework is designed as an input-process-output model (Figure 1.2) and incorporates the contextual variables (input), intragroup processes, and considers the intensity of interprofessional collaboration (output) mediated by the nature of a care task. The intragroup processes include beliefs in the levels (i.e., high or low degree) of interprofessional collaboration and conflict (associated with collaboration), social integration within groups, agreement with disciplinary (i.e., professional) and interdisciplinary (i.e., interprofessional) logic, and group work design characteristics (Sicotte et al., 2002). In other words, believing in the benefits of interprofessional collaboration, and the ability of healthcare providers to address conflict related to the division of clinical work is related to group cohesion. Group cohesion comes with an understanding of others’ scopes of practice when participating in clinical care decisions (i.e., interprofessional logic). Opportunities to discuss clinical cases through the use of tools that support interprofessional collaboration is an example of group work design (Sicotte et al., 2002).

This framework is used to help explain the intensity of interprofessional collaboration. Organizational characteristics that reflect the principles of IPP support healthcare providers’ level of commitment to collaborate and mitigate conflict resulting in improved outcomes (i.e., outputs). The level of intensity of interprofessional
collaboration (i.e., the degree of sharing and coordinating care activities undertaken) is determined by the nature of the clinical task.

**Figure 1.2**

*The Analytical Framework of Interdisciplinary Collaboration.*


**Kanter’s Theory of Organizational Power (Empowerment)**

Kanter’s Theory of Organizational Power (1977; 1993) provides an additional theoretical foundation to guide this study. Empowered employees are motivated and find meaning in their work which influences positive behaviours and attitudes towards
achieving organizational goals (Kanter, 1993). Within organizations, power exists either formally or informally (Kanter, 1977). Formal power is achieved by title, visibility of role, and responsibilities associated with their work (Kanter, 1977). Informal power comes from building relationships with colleagues and is associated with having high influence in the workplace (Kanter, 1977). Organizations must have structures in place in order to empower their employees (Kanter, 1977). For example, empowerment structures include access to opportunity, information, resources, and support (Kanter, 1993). Kanter defines opportunity as the ability of an employee to grow and advance in their role or position (Kanter, 1993). According to Kanter, this access to opportunity influences motivation and engagement in their work. Information is defined as the necessary knowledge and communication of relevant information that is deemed essential to the work. Resources include access to funding, staff, equipment, and supplies. Support is the feedback and coaching that one receives from management, peers, and others. Together, these empowerment structures contribute to the employee’s success in achieving organizational goals (Kanter, 1993).

Kanter (1993) proposes that opportunity and power positively influence employees’ sense of empowerment. As a result, employees are more committed to the organization and feel a sense of value and autonomy. Employees who feel powerless may experience a sense of frustration in their work which in turn leads to negative attitudes and behaviors. A perceived lack of empowerment in the workplace is directly correlated to poor commitment to achieve organizational goals, and dissatisfaction with work which leads to poor retention of staff (Körner et al., 2015; Laschinger, Finegan, & Wilk, 2009). In summary, the two conceptual frameworks presented here and Kanter’s theory guided the development of the theory-based hypotheses that were tested to address the gaps in
the literature. Furthermore, these frameworks and theoretical underpinnings are used to help interpret and discuss the study’s findings.

**Overview of Chapters**

An overview of each of the remaining chapters is provided below.

Chapter Two, which is titled “Interprofessional Practice and Healthcare Provider Outcomes in Tertiary Care Hospitals: A Scoping Review” is the first of three manuscripts. A scoping review was undertaken using a structured framework (Arksey & O’Malley, 2005). The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist was used to guide the reporting of this study to ensure rigor and quality (Tricco et al., 2018). The objective was to explore the breadth of knowledge related to this topic rather than its depth, and findings were mapped to report the current state of the literature regarding healthcare provider outcomes related to IPP in hospital settings. This scoping review focused on recent literature building on prior reviews completed (Brandt et al., 2014; Kaiser et al., 2018; Reeves et al., 2017).

Chapter Three, the second manuscript, is titled “Measuring the Intensity of Interprofessional Collaboration: A Confirmatory Factor Analysis”. This study examined the factor structure and psychometric properties of the Intensity of Interprofessional Collaboration tool that was revised for use in tertiary care hospital settings (Sicotte et al., 2002). Confirmatory factor analysis (CFA) was conducted using a baseline dataset from a large intervention study in a sample of healthcare providers (n =2064). The findings support the use of the revised 17-item Intensity of Interprofessional Collaboration as a tool with good reliability and validity in tertiary care interprofessional practice settings.
Chapter Four is the third manuscript, titled “Relationships among Interactional and Organizational Factors with Healthcare Provider Outcomes Post-Implementation of an Interprofessional Model of Patient Care”. The purpose of this study was to investigate healthcare providers’ (n=1707) perceptions of interactional (i.e., levels of interprofessional collaboration; conflict; respect) and organizational (i.e., empowerment; culture) factors related to IPP. A hypothesized model was tested to examine the relationships among global empowerment, interprofessional collaboration, conflict, respect, and patient safety climate linking to job satisfaction and satisfaction with the quality of care delivered. A non-experimental design and structural equation modeling techniques were used to conduct a secondary analysis of cross-sectional data post-intervention of an interprofessional model of care that was previously introduced at a tertiary care hospital setting. The findings provide evidence to support the hypothesized relationships presented in the study model.

Chapter Five, titled “Contributions, Implications, and Conclusions” is the final chapter. It provides discussion points from this dissertation, including presentations of its contributions to the IPP and healthcare services bodies of literature. In this final chapter, the implications derived from the study for theory, practice, education, policy, and research are also discussed.
References for Chapter One


Chapter Two
Interprofessional Practice and Healthcare Provider Outcomes in Tertiary Care Hospitals: A Scoping Review

Introduction

Despite known benefits, the integration of interprofessional practice (IPP) in health care remains a challenge even with increasing attention paid towards it over the last several decades (Brandt et al., 2014; Institute of Medicine [IOM], 2015; Orchard et al., 2018; Reeves et al., 2017; World Health Organization [WHO], 2018). Benefits of IPP include improved patient outcomes (Reeves et al., 2017), reduced hospital readmissions (Shah et al., 2018), and improved quality of care (Zwarenstein et al., 2009). Interprofessional practice is a collaborative, interdependent, and patient-centred approach to care provision (D’Amour & Oandasan, 2005; Orchard, 2016). An IPP approach to health care delivery continues to be recommended for implementation in practice settings to improve healthcare provider relationships and job satisfaction, and to foster an organizational culture of patient safety for high quality care (Canadian Interprofessional Health Collaborative [CIHC], 2010; IOM, 2015; WHO, 2010; 2020).

It is known that IPP requires the integration of its essential elements including collaboration, mutual respect and trust, shared decision-making, and the knowledge of others’ professional scopes of practice to provide safe, quality care (D’Amour & Oandasan, 2005; Hurlock-Chorostecki, et al., 2015; Orchard et al., 2018; Reeves et al, 2017; Regan et al., 2016). Although several systematic and scoping reviews have explored elements of IPP in relation to patient outcomes and education (Brandt et al., 2014; Kaiser et al., 2018; Reeves et al, 2017), knowledge and evidence of healthcare
provider outcomes associated with IPP remains limited (Kaiser et al. 2018; Reeves et al., 2017). Moreover, how well IPP has been integrated in tertiary care hospitals is less known (Reeves et al., 2017). Therefore, a need exists to understand what healthcare provider outcomes have been recently studied and reported in response to the integration of IPP in tertiary care hospital settings.

**Methods**

A scoping review aims to examine the extent, range, and nature of research activity on a specific topic, and is used to identify gaps in knowledge while mapping key concepts to the available evidence (Arksey & O’Malley, 2005). The scoping review framework proposed by Arksey and O’Malley (2005) is used to establish the existing knowledge related to healthcare provider outcomes associated with IPP in hospital settings with additional methods guidance provided by the Joanna Briggs Institute (Peters et al, 2020). The objective is to explore the breadth of knowledge related to this topic rather than its depth, and findings are mapped to report the current state of the literature. Arksey and O’Malley’s (2005) framework outlines a six-stage approach with the final stage being optional. These are: (i) identifying the research question; (ii) identifying relevant literature; (iii) selecting the literature; (iv) charting the data; (v) collating, summarizing, and reporting results; and (vi) consultation. Stage six is optional and was not used in this review. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA-ScR) extension for Scoping Reviews checklist (Tricco et al., 2018) was used to ensure the essential items of a scoping review are reported for methodological rigor and quality (Appendix A). The protocol for this review is unpublished.
Stage One: Identifying the Research Question

The first stage of the framework serves as the basis for the subsequent stages of the review. Therefore, specific terminology was addressed before the identification of a research question. The topic of interest includes two key concepts: healthcare provider outcomes and IPP. Inconsistencies with terms and definitions used to describe and conceptualize IPP creates confusion and continues to hinder advancement of the field (Reeves et al., 2017; Xyrichtis et al., 2017). For the purpose of this review, interprofessional practice is defined as a cohesive and interdependent approach taken by healthcare providers for care provision while keeping the patient central (D’Amour & Oandasan, 2005). Elements of IPP consistently referenced in the literature are used to provide context for this review and include the following: collaboration, coordination, communication, teamwork, leadership, shared decision-making, interdependency, conflict resolution, partnerships, respectful relationships, and common goals (Bainbridge et al., 2010; D’Amour et al., 2005; Hurlock-Chorostecki et al., 2015; Orchard et al., 2018; Reeves et al., 2017; Regan et al., 2016). From this understanding, a broad research question was posed: What is the nature of the evidence regarding healthcare provider outcomes associated with IPP in hospital settings?

Stage Two: Identifying Relevant Literature

The strategy for the article search focused on identifying literature related to healthcare provider outcomes associated with IPP in hospital settings published in the last five and a half years. The rationale for limiting the year of publication is because three reviews were already completed using literature prior to this period (Brandt et al, 2014 [United States]; Kaiser et al., 2018 [Norway]; Reeves et al, 2017 [Canada]). Two of the reviews were limited in scope and focused more on patient and system outcomes related
to interprofessional education (IPE) and collaborative practice (Brandt et al., 2014; Reeves et al., 2017). Brandt et al (2014) contrasted IPP through the lens of the Triple Aim which consists of improving the patient experience, and the general health of the population, while limiting the costs related to the delivery of health care. The results from the review suggest that there is little evidence related to the Triple Aim outcomes associated with IPE and IPP (Brandt et al., 2014). Reeves et al (2017) systematically reviewed practice-based interventions designed to improve interprofessional collaboration, and their impact to patient outcomes. A secondary aim of their review was to learn of documented collaborative behaviours among healthcare providers in relation to these interventions. The results from the review were inconclusive although the authors did note that collaborative activities may contribute to improved patient functional status (Reeves et al., 2017). The third review conducted a meta-analysis of studies linking interprofessional work to employee well-being and engagement in their work (Kaiser et al., 2018). The authors reviewed studies published before 2015, and only included those studies with specific outcome variables related to employee well-being that could be evaluated with this type of statistical analysis. Thus, a review of studies published after 2015 is warranted. Therefore, the year of publication was limited from 2016 to July 2021 to locate the most current and relevant literature.

The following electronic databases were searched as of July 27, 2021: MEDLINE, CINAHL, Embase, Scopus, and Scholars Portal. An iterative process was used for searching the literature which is in keeping with the scoping review framework (Arskey & O’Malley, 2005). The search terms used were modified until the final terms to locate relevant literature were identified. For example, specific healthcare provider outcomes were not identified at first to allow for a robust search. However, the term
“outcomes” was too broad in nature, and the decision was made to include specific healthcare provider outcomes as keywords to yield relevant results. The key search terms used in combination for the literature search include: (a) outcomes OR job satisfaction OR work satisfaction OR retention OR burnout; (b) interprofessional in combination with practice OR collaborative practice OR collaboration OR shared decision-making OR communication OR coordination OR teamwork; (c) healthcare professionals OR healthcare providers OR healthcare teams; and (d) hospital setting. See Appendix A (PRISMA-ScR Checklist) for a complete search strategy for one of the electronic databases searched.

Stage Three: Selecting the Literature

One thousand and ninety-two sources of evidence were identified from the initial search. After removing the duplicates \( n = 567 \), five hundred and twenty-five titles and abstracts were screened for relevance to determine eligibility for a full text review. A full text review of one hundred and fifty-five articles was based on the identification of an explicit focus on healthcare provider outcomes and elements of IPP. To be included in the scoping review, certain study criteria had to be met: (a) primary research inclusive of all study design published in nationally and internationally peer reviewed journals; (b) secondary research including secondary data analyses published in nationally and internationally peer reviewed journals; (c) content focused on healthcare provider outcomes and elements of IPP; (d) research participants were healthcare providers who work in hospitals; (e) published work between 2016 and 2021; and (f) only articles written in the English language. Literature focused solely on the study of healthcare students, patient outcomes, and education were excluded because it was not the objective of this review. One hundred and forty-seven articles were excluded because they did not
meet the inclusion criteria. Eight articles plus one additional article located by reviewing the reference lists of included articles met the inclusion criteria. In total, nine articles are included in this review to address the research question. The flow diagram for the selection process is presented in Figure 2.1.

**Figure 2.1**

*PRISMA Flow Diagram – Selection Process (Mohar et al., 2009)*
Stage Four: Charting the Data

The process of extracting specific and relevant information from the sources of evidence is referred to as charting the data (Arskey & O’Malley, 2005). A database was set-up in a reference library, and a data charting form was created to organize the information. This process was carried out by one primary reviewer (WE), and the data reported in this review were subsequently reviewed by the additional co-authors (CHC; CW; MK). To chart the data, the characteristics of included articles are described by author, date of publication, study approach and aim, country of origin, sample, setting, and findings (Table 2.1). Healthcare provider outcomes identified in the literature include the following: job satisfaction, team satisfaction, burnout, moral distress, turnover or intention to leave their jobs. These healthcare provider outcomes and key IPP elements are mapped in Table 2.2.
### Table 2.1

**Charting the Data: Healthcare Provider Outcomes and Interprofessional Practice Literature**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Study Approach and Aim</th>
<th>Country</th>
<th>Sample and Setting</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boamah et al., 2018</td>
<td>Non-experimental cross-sectional survey design. Aim: Investigate the effects of transformational leadership behaviours on healthcare provider job satisfaction and patient safety outcomes.</td>
<td>Canada</td>
<td>Random sample of acute care nurses working in hospitals (n=378). Response rate 38%</td>
<td>Transformational leadership had a positive influence on workplace empowerment, job satisfaction, and job satisfaction was related to lower adverse events.</td>
</tr>
<tr>
<td>Dellafiore et al, 2019</td>
<td>Non-experimental cross-sectional survey design. Aim: Assess IP collaboration and individual-level determinants among healthcare providers and job satisfaction.</td>
<td>Italy</td>
<td>Convenience sample of healthcare professionals (i.e., physicians, nurses, other) from two research hospitals (n=347).</td>
<td>Physicians were less inclined to support the notion of partnership, but more inclined to share mutual goals compared to other healthcare professionals. There were significant associations between collaboration and job satisfaction.</td>
</tr>
<tr>
<td>Espinoza et al, 2018</td>
<td>Mixed methods design; sequential/explanatory (Fielding, 2012). Aim: Assess satisfaction of interprofessional teams; to explore interpersonal relationships, leadership, and team climate.</td>
<td>Chile, South America</td>
<td>Sample of healthcare providers; 53 teams at a university hospital Phase 1 correlation study (n=409). Phase II qualitative approach (Guba, 1985) with a sample of providers (n=15).</td>
<td>Team member satisfaction requires participation, communication, common goals, and commitment for patient-centered care with clear roles and objectives to support collaborative work.</td>
</tr>
<tr>
<td>Authors</td>
<td>Study Approach and Aim</td>
<td>Country</td>
<td>Sample and Setting</td>
<td>Findings</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>---------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Havens et al, 2018</td>
<td>Non-experimental cross-sectional design. Aim: Examine relational coordination, known to enhance quality, efficiency and healthcare provider outcomes.</td>
<td>United States</td>
<td>Sample of registered nurses from 5 acute care hospitals (n=384). Response rate 64%</td>
<td>Relational coordination (RC) was significantly related to increased job satisfaction, increased work engagement, and reduced burnout. RC (Gittell, 2002) is defined as communicating and relating for the purpose of task integration (i.e., coordination).</td>
</tr>
<tr>
<td>Johnson-Coyle et al., 2016</td>
<td>Non-experimental cross-sectional survey design. Aim: Compare the prevalence and contributing factors to moral distress, job satisfaction, and burnout among ICU healthcare providers.</td>
<td>Canada</td>
<td>Sample of healthcare providers working in a large quaternary hospital (n=169). Response rate 88%</td>
<td>Job satisfaction was highest for physicians. Moral distress and burnout were positively correlated, and both were negatively correlated with job satisfaction. Moral distress scores were highest among RN/NP and RRT compared to allied health/physicians related to poor team communication care decisions.</td>
</tr>
<tr>
<td>Nowrouzi-Kia &amp; Fox, 2019</td>
<td>Non-experimental cross-sectional design Aim: Examine the relationship between work environment factors and intent to leave.</td>
<td>Canada</td>
<td>Random sample of registered nurses (n=1,427) in acute care hospital. Response rate 55%</td>
<td>Job satisfaction, interprofessional collaborative relationships, and access to resources were significantly associated with intent to leave. Those who reported greater job satisfaction, flexible relationships, and resource availability were less likely to leave their job.</td>
</tr>
<tr>
<td>Authors</td>
<td>Study Approach and Aim</td>
<td>Country</td>
<td>Sample and Setting</td>
<td>Findings</td>
</tr>
<tr>
<td>-------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
<td>------------</td>
<td>------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Stühlinger et al., 2019 | Non-experimental cross-sectional survey design  
Aim: Examined relational coordination to quality of care and job satisfaction. Evaluate a shared language in the context of interprofessional collaboration. | Switzerland| Healthcare workers from three hospitals. (Nurses, physicians, physiotherapy, occupational therapy, social work) (n=197). Response rate 67% | Evidence supports the notion that a shared or common language influences quality of care and job satisfaction. Relational coordination (RC) and psychological safety as mediators. RC is defined as the quality of communication and relationships among healthcare providers (Gittell, 2006). |
| Yasin et al, 2021       | Non-experimental cross-sectional survey design  
Aims: Identify the differences and similarities in the factors that influence job satisfaction; determine the impact of job satisfaction on turnover intention | Canada     | Sample of registered nurses working in urban and rural hospitals (n=349). Response rate 36% | Peer support (i.e., relationships), work conditions, quality of supervision, achievement, and responsibility were significant predictors of job satisfaction. Job satisfaction is reported to have a significant impact on turnover intention. |
| Zhang et al., 2016      | Prospective cross-sectional design.  
Aim: Explore the impact of physician–nurse collaboration on nurse job satisfaction and turnover. | China      | Convenience sample of nurses from one major hospital (n=572)  
Response rate 96% | Physician–nurse collaboration was positively correlated with job satisfaction and negatively correlated with intention to leave. |
Table 2.2

Mapping Healthcare Provider Outcomes and Interprofessional Practice Elements

<table>
<thead>
<tr>
<th>Author</th>
<th>Elements of IPP</th>
<th>Purpose</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boamah et al., 2018</td>
<td>Leadership</td>
<td>Authors defined and measured transformational leadership</td>
<td>Job satisfaction</td>
</tr>
<tr>
<td>Dellafiore et al, 2019</td>
<td>Partnership</td>
<td>Authors defined and measured collaboration and partnerships</td>
<td>Job satisfaction</td>
</tr>
<tr>
<td></td>
<td>Coordination</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collaboration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Espinoza et al, 2018</td>
<td>Leadership</td>
<td>Authors defined and measured authentic leadership, and team cohesion</td>
<td>Team satisfaction; team relationships</td>
</tr>
<tr>
<td></td>
<td>Collaboration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Havens et al, 2018</td>
<td>Communication</td>
<td>Authors defined and measured aspects of relational coordination</td>
<td>Job satisfaction, burnout, work engagement</td>
</tr>
<tr>
<td></td>
<td>Respectful relationships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnson-Coyle et al., 2016</td>
<td>Team Communication</td>
<td>Authors defined and measured aspects of team communication and team relationships</td>
<td>Job satisfaction, burnout, and moral distress</td>
</tr>
<tr>
<td>Nowrouzi-Kia &amp; Fox, 2019</td>
<td>Collaboration</td>
<td>Authors defined and measured collaboration</td>
<td>Job satisfaction: intention to leave</td>
</tr>
<tr>
<td>Stühlinger et al., 2019</td>
<td>Respectful relationships</td>
<td>Authors defined and measured aspects of relational coordination</td>
<td>Job satisfaction; professional relationships</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yasin et al., 2021</td>
<td>Respectful relationships</td>
<td>Authors defined and measured factors such as peer support/relationships with co-workers</td>
<td>Job satisfaction; intention to leave</td>
</tr>
<tr>
<td>Zhang et al., 2016</td>
<td>Communication</td>
<td>Authors defined and measured collaboration</td>
<td>Job satisfaction: intention to leave</td>
</tr>
<tr>
<td></td>
<td>Collaboration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Results

Stage Five: Collating, Summarizing, and Reporting the Literature

The final stage of the framework requires that the data be collated to include a descriptive narrative account of the literature in relation to the research question and objective (Arskey & O’Malley, 2005). An analytical approach was used to organize the narrative summary with themed headings to present the nature of the healthcare provider outcomes literature related to elements of IPP (Arskey & O’Malley, 2005).

Characteristics of the Literature

Geography, Sample and Design

In total, nine articles are included in this scoping review from six different countries: Canada (n=4); United States (n=1); Chile (n=1); China (n=1); Italy (n=1); and Switzerland (n=1) published between 2016 and 2021. Participants in these studies were representative of healthcare providers in hospital settings. Five of the studies (56%) sampled nurses (Boamah et al., 2018; Havens et al, 2018; Nowrouzi-Kia & Fox, 2019; Yasin et al., 2021; Zhang et al., 2016) with the remaining four studies (44%) sampling a combination of the following providers: nurses, physicians, dieticians, psychologists, physiologists, and pharmacists (Dellafiore et al, 2019; Espinoza et al, 2018; Johnson-Coyle et al., 2016; Stühlinger et al., 2019). All studies were quantitative and non-experimental in nature. Eight studies were cross-sectional in design (90%), and one study (10%) was reported to be mixed methods in design (Espinoza et al., 2018).

Key Healthcare Provider Outcomes

Outcomes associated with healthcare providers in hospitals varied across all nine studies (Boamah et al., 2018; Dellafiore et al, 2019; Espinoza et al, 2018; Havens et al, 2018; Johnson-Coyle et al., 2016; Nowrouzi-Kia & Fox, 2019; Stühlinger et al., 2019;
Yasin et al., 2021; Zhang et al., 2016). The outcomes discussed either alone or in combination include job satisfaction \( (n=8) \), team satisfaction \( (1) \), professional relationships \( (n=3) \), moral distress \( (n=1) \), job demands \( (n=1) \), burnout \( (n=2) \), and turnover or intention to leave their jobs \( (n=3) \).

The most common outcome reported was job satisfaction. Job satisfaction was defined and measured (Table 2.1) in eight of the articles using a variety of tools (Boamah et al., 2018; Dellafiore et al, 2019; Havens et al, 2018; Johnson-Coyle et al., 2016; Nowrouzi-Kia & Fox, 2019; Stühlinger et al., 2019; Yasin et al., 2021; Zhang et al., 2016). Job satisfaction was inconsistently defined across the studies but in essence, the definitions were similar, and to some degree reflected a theoretical understanding of the factors that influence job satisfaction leading to burnout and the intention to leave (Boamah et al., 2018; Dellafiore et al, 2019; Havens et al, 2018; Johnson-Coyle et al., 2016; Nowrouzi-Kia & Fox, 2019; Stühlinger et al., 2019; Yasin et al., 2021; Zhang et al., 2016). For example, one study explicitly identified job satisfaction as a complex subjective concept with intrinsic (i.e., recognition, growth, advancement) and extrinsic (i.e., job demands, work environment) factors that influence how job satisfaction is experienced (Yasin et al., 2020).

Eight of the nine studies reported the use of well-established measures of job satisfaction (Boamah et al., 2018; Dellafiore et al, 2019; Havens et al, 2018; Johnson-Coyle et al., 2016; Nowrouzi-Kia & Fox, 2019; Stühlinger et al., 2019; Zhang et al., 2016). Only one study developed a new tool to measure job satisfaction specifically for use in their sample of acute care nurses, and the tool was reported to be reliable and valid (Yasin et al., 2020).
Job satisfaction was influenced by the quality of the work environment and the quality of relationships (Boamah et al., 2018; Dellaﬁore et al., 2019; Espinoza et al., 2018; Havens et al., 2018; Nowrouzi-Kia & Fox, 2019; Stühlinger et al., 2019; Yasin et al., 2020; Zhang et al., 2016). Peer support at work and work recognition were significant predictors of job satisfaction (Yasin et al., 2020). Job satisfaction was also associated with higher scores of physician to nurse collaboration in a sample of nurses \((n=572)\), and collaboration was negatively associated with the intent to leave their jobs (Zhang et al., 2016). Findings from a multicentre cross-sectional study found significant associations between job satisfaction and collaborative activity which were also linked to positive partnerships among healthcare providers (Dellaﬁore et al., 2019). In a cross-sectional study of 1,427 nurses working in acute care, those who reported greater job satisfaction also reported stronger interprofessional relationships (Nowrouzi-Kia & Fox, 2019). It was noted that job satisfaction was linked to having access to resources needed to carry out work, and healthcare providers were less likely to express an intent to leave their workplace with higher ratings of job satisfaction (Nowrouzi-Kia & Fox, 2019).

Team satisfaction was measured in one study in relation to the quality of work produced, and the quality of interactions among team members in a work setting (Espinoza et al., 2018). Shared decision- making promoted team satisfaction and in turn, influenced engagement in work activities. Positive interpersonal relationships were developed when contributions to patient care were recognized, and when healthcare providers were clear about their role within the team (Espinoza et al., 2018). Healthcare providers acknowledged that their jobs were considered highly interdependent, and these relationships promoted trust and respectful interactions (Espinoza et al., 2018).
Burnout was explored in two of the studies (Havens et al, 2018; Johnson-Coyle et al., 2016). Burnout was characterized by emotional exhaustion, depersonalization (i.e., detachment from work and colleagues), and low personal accomplishment related to one’s own work effectiveness or contributions (Havens et al, 2018; Johnson-Coyle et al., 2016). Both studies reported to use reliable and valid tools to measure these dimensions of burnout. Ineffective communication was also identified as a source of moral distress (Havens et al, 2018; Johnson-Coyle et al., 2016) and burnout among healthcare providers which impacted the quality of working relationships (Havens et al., 2018).

Intention to leave was measured in three of the studies with varied definitions and theoretical support (Nowrouzi-Kia & Fox, 2019; Yasin et al., 2021; Zhang et al., 2016). All studies reported the use of valid and reliable tools to assess healthcare providers’ intentions to leave their current jobs. Intention to leave was negatively associated with job satisfaction, working conditions (i.e., job demands), and collaboration (Nowrouzi-Kia & Fox, 2019; Yasin et al., 2021; Zhang et al., 2016).

**Key Elements of IPP Related to Healthcare Provider Outcomes**

Several elements of IPP were discussed in relation to healthcare provider outcomes (Table 2.2). Key elements discussed include coordination (Dellafiore et al, 2019), collaboration (Dellafiore et al, 2019; Espinoza et al., 2018; Nowrouzi-Kia & Fox, 2019), communication (Havens et al, 2018; Johnson-Coyle et al., 2016; Stühlinger et al., 2019; Zhang et al., 2016), partnerships (Havens et al, 2018; Stühlinger et al., 2019; Zhang et al., 2016) and leadership (Boamah et al., 2018; Espinoza et al., 2018). Five of the studies linked interpersonal relationships and maintaining partnerships to outcomes of job satisfaction, team satisfaction, and the intention to leave (Dellafiore et al, 2019; Espinoza
et al, 2018; Havens et al, 2018; Nowrouzi-Kia & Fox, 2019; Stühlinger et al., 2019; Yasin et al., 2021).

Communication and respectful relationships are dimensions of relational coordination, and these dimensions were evaluated in two studies (Havens et al, 2018; Stühlinger et al., 2019). Relational coordination theory is a framework for assessing team interactions, and it focuses on the quality of the communication, and the quality of the relationships among healthcare providers (Havens et al, 2018; Stühlinger et al., 2019). For example, the quality of communication refers to timely interactions that are solution-based whereas the quality of relationships involves the sharing of knowledge to achieve common goals, and mutual respect (Havens et al, 2018; Stühlinger et al., 2019). Aspects of relational coordination are similar to essential elements of IPP, and effective communication and positive working relationships were linked to overall job satisfaction (Havens et al, 2018; Stühlinger et al., 2019), and quality of care ratings (Stühlinger et al., 2019). Relational coordination was also found to be a predictor of burnout and work engagement (Havens et al, 2018).

Studies also explored quality of care ratings and leadership style. Only one study included a quality of care measure. The indicators for high quality of care were measured by the procedural or technical aspects of care provided (i.e., evidence-based), and the demonstration of respect towards the patient (Stühlinger et al., 2019). The results suggest that effective communication (i.e., use of consistent terminology), and positive interactions among healthcare providers leads to increased job satisfaction and improved quality of care ratings (Stühlinger et al., 2019). Two studies explored leadership style in relation to job satisfaction (Boamah et al., 2018; Espinoza et al, 2018). The findings suggest that leadership plays an important role in promoting a positive work environment
leading to positive provider outcomes (Boamah et al., 2018; Espinoza et al, 2018).

Boamah et al (2018) extended their evaluation a step further to link leadership style and organizational support (i.e., structural empowerment) to improved nurse-assessed patient outcomes in hospital settings (Boamah et al., 2018).

**Discussion**

This review highlights several IPP elements (Table 2.2) linked to healthcare provider outcomes; mainly, job satisfaction (Boamah et al., 2018; Dellafiore et al, 2019; Espinoza et al, 2018; Nowrouzi-Kia & Fox, 2019; Stühlinger et al., 2019; Yasin et al., 2021; Zhang et al., 2016). There is consensus in the literature that key elements of IPP include collaboration, coordination, shared power with decision-making, interdependency, leadership, conflict resolution, and the knowledge of others’ professional scopes of practice to provide safe, quality care (Bainbridge et al., 2010; D’Amour et al., 2005; Hepp et al., 2015; Hurlock-Chorostecki et al., 2015; Orchard et al., 2018; 2020; Reeves et al., 2010; 2018; Regan et al., 2016). When these elements are present, it allows for healthcare providers to work effectively together to deliver interprofessional care (D’Amour & Oandasan, 2005). Based on the findings from this review, a clear link of IPP to healthcare provider outcomes is not established.

The delivery of healthcare is increasingly complex, and the demands associated with care delivery are rising (World Health Organization [WHO], 2020). A supportive and safe work environment that promotes the well-being of its workforce is critical to ensure the workforce remains stable. By enabling and facilitating positive relationships, healthcare providers are more likely to be satisfied with their jobs, and this leads to stronger commitment to the organization (Dellafiore et al, 2019; Espinoza et al, 2018; Havens et al, 2018; Nowrouzi-Kia & Fox, 2019; Stühlinger et al., 2019; Yasin et al.,
Organizational leadership must commit to creating a positive IPP environment to improve the work experience for providers that may lead to positive patient and organizational outcomes (Boamah et al., 2018; Hepp et al., 2015; Hurlock-Chorostecki et al., 2015; Orchard et al., 2018; Reeves et al., 2018; Regan et al., 2016).

The literature suggests interactional and organizational factors associated with IPP may impact healthcare provider outcomes (D’Amour & Oandasan, 2005). Specifically, collaborative activity among healthcare providers is a focus of current research (Hurlock-Chorostecki et al., 2015; Orchard et al., 2018; 2020; Reeves et al., 2018; Regan et al., 2016), and this type of interaction is needed to support the delivery of safe quality care. This review highlights the association of collaboration to job satisfaction, team satisfaction, and the intention to leave (Dellafiore et al, 2019; Espinoza et al, 2018; Nowrouzi-Kia & Fox, 2019). However, other interactional and organizational factors associated with IPP were not found in the current literature. Given that safe quality care is a key organizational performance indicator, a greater understanding of the relationships among these factors is needed to advance our understanding of IPP.

Addressing this knowledge gap will guide organizations looking to introduce IPP models. Research focused on testing models of IPP, and the relationships of these factors is therefore needed to effectively implement evidence-based interventions to improve IPP.

Although not the focus of this review, the terms used in the current literature to describe healthcare provider outcomes were inconsistent. In order to advance the field, it would be of benefit to researchers, administrators, and policy-makers to have consistent definitions and standardized measures given the variability of tools used in the current literature (Boamah et al., 2018; Dellafiore et al, 2019; Espinoza et al, 2018; Havens et al, 2018; Johnson-Coyle et al., 2016; Nowrouzi-Kia & Fox, 2019; Stühlinger et al., 2019;
Yasin et al., 2021; Zhang et al., 2016). Furthermore, future empirical research should be further grounded in theoretical foundations to better understand how theory relates to healthcare provider outcomes in the context of IPP.

**Limitations**

Despite the use of a systematic framework to guide the review, it is possible that literature went undetected due to the choice of databases, and the search terms used. More specifically, the various terms used to describe IPP, and its elements in the current evidence-base presented a challenge. To address the issue, only the most commonly referenced IPP terms were used for the search. Healthcare provider outcomes are also inconsistently referenced in the literature. The initial search was extended beyond the broad search term of “outcomes” to include specific outcomes known in the literature to assist with locating relevant sources of evidence. In turn, these challenges with terminology may have impacted the ability to locate additional research for this review. However, it is believed that this review is an accurate representation of the current state of the literature on the topic.

Restricting the search to English language may have eliminated literature for review. Due to the lack of resources that would have been required for translation, it was not feasible to include publications in other languages. Additionally, the initial literature searches, data charting, and analysis were undertaken by one primary reviewer, and this may be seen as a limitation as it is a risk for bias. Therefore, the interpretation of the findings may be limited. However, the use of a structured framework to guide the review (Arksey & O’Malley, 2005) with additional methods guidance by the Joanna Briggs Institute (Peters et al., 2020) provides methodological support for these findings.
Furthermore, the use of the PRISMA-ScR checklist (Tricco et al., 2018) ensures there was rigour and quality with regard to the reporting of the review (Appendix A).

**Conclusion**

In summary, interprofessional practice remains a critical field of study. Despite the new literature, it is evident our knowledge of healthcare provider outcomes associated with IPP remains limited. Essential elements need to be present in order for IPP to be successful (Hurlock-Chorostecki et al., 2015). Interactional and organizational factors that may impact the way in which healthcare providers work together need to be taken into consideration. More research is needed to better understand healthcare provider outcomes in relation to introducing an IPP approach to care delivery to advance the practice, education, policy, and research agendas.
References for Chapter Two


Chapter Three

Measuring Interprofessional Collaboration: A Confirmatory Factor Analysis

Introduction

Improving interprofessional collaboration is a global health care priority (Canadian Interprofessional Health Collaborative [CIHC], 2010; Institute of Medicine [IOM], 2015; Curran, 2004; Orchard et al., 2018; Reeves et al., 2017; World Health Organization [WHO], 2010). Interprofessional collaboration is described as an interactional process to create a partnership between a team of healthcare providers to coordinate and share care activities (Orchard et al., 2005; Sicotte et al., 2002). Interprofessional practice (IPP) is the cohesive and interdependent approach taken by healthcare providers for care provision while keeping the patient central (D’Amour & Oandasan, 2005). Essential elements of IPP include interprofessional collaboration, mutual respect and trust, shared decision-making, and the knowledge of others’ professional scopes of practice to provide safe, quality care (D’Amour & Oandasan, 2005; Hurlock-Chorostecki, et al., 2015; Orchard et al., 2018; Reeves et al, 2017; Regan et al., 2016). The interprofessional education (IPE) and IPP literature suggest that a high degree of interprofessional collaboration can result in improved patient, healthcare provider, and organizational outcomes (Reeves et al., 2017; Zwarenstein et al., 2009).

Although collaboration is well-described in the literature as an essential element of IPP (Hurlock-Chorostecki et al., 2015), the degree to which interprofessional collaboration occurs within a group of healthcare providers remains underexplored (Reeves et al., 2017). The call for action to improve interprofessional collaboration demands that it be measured in order to develop, refine, and target interventions to
support its integration in practice settings. However, it is less clear how to effectively measure it.

Several valid and reliable tools purport to measure the presence of interprofessional collaboration in primary and tertiary healthcare sectors (Hurlock-Chorostecki et al., 2015; Orchard et al., 2018; Parker-Oliver et al., 2007). These tools measure the self-report of engaging in IPP activities, general team performance and effectiveness, and are used to assess the presence of existing collaborative relationships that extend to the patient’s role (Hurlock-Chorostecki et al., 2015; Orchard et al., 2018). However, these tools do not measure the intensity or degree to which healthcare providers collaborate while working with each other to deliver care in IPP environments. Interprofessional collaboration undertaken by healthcare providers is based on the level of intensity (i.e., high versus low degree) of sharing and coordinating care activities (Sicotte et al., 2002). Therefore, it is critical to measure the intensity of interprofessional collaboration among healthcare providers rather than only its presence to inform whether targeted interventions aimed to improve it are needed or if the desired outcomes related to these interventions are achieved (Reeves et al., 2017).

**Background of the Intensity of Interprofessional Collaboration Tool**

The Intensity of Interprofessional Collaboration tool (Sicotte et al., 2002) purports to measure the level of intensity of interprofessional collaboration across different healthcare providers. Sicotte, D’Amour, and Moreault (2002) studied interprofessional collaboration among various groups of professionals (n=343) working in primary healthcare centers (n=157) in Quebec, Canada. The aim of the study was to measure the intensity of interprofessional collaboration within a collaborative model of client-centred health care delivery. An 18-item tool was developed specifically for their study based on
a theoretical understanding of two concepts of interprofessional collaboration. The first concept reflects clinical care activities shared among different groups of professionals (Golin & Ducanis, 1981). Grounded in organizational theory, the second concept reflects the coordination of work between various groups of professionals (Georgopoulos & Mann, 1962). Each concept was measured on a five-point Likert scale. Using common factor analysis (i.e., principal axis analysis with oblimin rotations), two factors were extracted (i.e., Care Sharing Activities [11 items]; and Coordination [7 items]. It was reported that the two factors accounted for 43.6% of the total variance. The coefficient alpha for the care sharing activities and coordination subscales were reported as .87 and .82, respectively.

In 2007, the tool was translated into Spanish and its psychometric properties were evaluated in a sample of nurses ($n=123$) in a Spanish University Hospital (San-Martin-Rodriguez et al., 2007). The tool was revised to include 16 items for the construct of collaboration with the identification of four factors that explained 61.47% of the variance. Like the original tool, items that reflected care sharing activities and the coordination of activities were included (Sicotte et al., 2002). The remaining items of the tool dealt with obtaining an opinion about the patient’s perception of collaboration, and a global appreciation for collaboration (San-Martin-Rodriguez et al., 2007). The tool demonstrated good internal consistency ($\alpha = .90$).

The Spanish version of the tool was then used to evaluate the intensity of interprofessional collaboration during the care of hospitalized cancer patients in a Spanish University hospital setting (San Martin-Rodriquez et al., 2008). The cross-sectional study included responses from physicians and nurses ($n=34$) and patients ($n=312$) to determine the intensity of interprofessional collaboration (low vs high) with
regard to patient satisfaction, level of uncertainty, pain management, and length of stay
(San Martin-Rodriquez et al., 2008). The reported overall coefficient alpha indicated
good internal consistency ($\alpha = .82$).

The 16-item Spanish version was also used in a sample of nurses ($n=63$) working
in an intensive care unit within a tertiary care hospital located in Southern Spain
(Serrano-Gemes & Rich-Ruiz, 2016). The tool reflected the four dimensions or factors
from the original Spanish version (San Martin-Rodriquez et al., 2008). The factors
included shared clinical activities [6 items]; coordination [5 items]; global appreciation of
collaboration [3 items]; and the team member’s opinion of the patients’ perceived the
level of collaboration [2 items]. The authors reported the known properties of the tool
based on prior research (San Martin-Rodriquez et al., 2007) but did not investigate the
factor structure of the tool.

One study was located that measured the intensity of interprofessional
collaboration following an intervention aimed at improving collaboration in a Canadian
tertiary hospital setting using a large sample of thirteen different types of healthcare
providers. The authors also measured the relationships of conflict, respect, and patient
safety climate to collaboration (Manojlovich et al., 2014). However, the psychometric
properties of the Intensity of Interprofessional Collaboration tool (Sicotte et al., 2002)
were not explored although the authors did report good overall internal consistency ($\alpha = .94$).

Based on this background, little is known about the tool related to its
psychometric properties and use in the literature. The Intensity of Interprofessional
Collaboration tool has been used in two studies in tertiary and primary healthcare sectors
in Canada (Manojlovich et al., 2014; Sicotte et al., 2002). Three studies were located that
were conducted in Spain (San Martin-Rodriguez et al., 2007; San Martin-Rodriguez et al., 2008; Serrano-Gemes & Rich-Ruiz, 2016). Although prior research was located related to the Spanish version of this tool, it consists of additional items specific to the patient’s perception of collaboration, and a global appreciation of collaboration. One study did explore the factor structure using common principal axis factor analysis for the English version (Sicotte et al., 2002) for use in primary care settings. However, further investigation is warranted to confirm the factor structure, and this could provide useful guidance for its use in future studies.

**Purpose**

The purpose of this study was to examine the psychometric properties of a revised Intensity of Interprofessional Collaboration tool (Figure 3.1) in a sample of healthcare providers working in tertiary care hospital setting in Ontario, Canada.

**Methods**

**Setting, Sample, and Procedure**

The population of interest was healthcare providers who worked in a large urban tertiary hospital system in Ontario, Canada. Healthcare providers employed (full-time; part-time) were invited to participate in a larger quasi-experimental intervention study aimed to evaluate the Interprofessional Model of Patient Care (IPMPC©). The IPMPC© was implemented in 2014 to improve the delivery of patient care among healthcare providers (IOM, 2015; WHO, 2010). For the larger study, healthcare providers (n=5787; 48% response rate) completed an anonymous survey at baseline and post-implementation (6 & 12 months). The sample for this present study was from the baseline data (n=2268) collected in early 2013 prior to the full implementation of the IPMPC© intervention. The
revised Intensity of Interprofessional Collaboration tool was part of the larger IPMPC© survey which included collecting participant demographics.

Using the cross-sectional baseline data, confirmatory factor analysis (CFA) was conducted to evaluate the revised Intensity of Interprofessional Collaboration tool (Sicotte et al., 2002). Research ethics approval was granted by the Ottawa Hospital Research Institute, the University of Western Ontario, and the University of Ottawa for the larger intervention study (Appendix B). Ethics approval is in accordance with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (2020) and the data were anonymized, and password protected.

**Measurement Tool for the Present Study**

The Intensity of Interprofessional Collaboration tool measures the intensity of collaboration across different professional groups (Sicotte et al., 2002). The Intensity of Interprofessional Collaboration tool consists of two subscales (Sicotte et al., 2002). The first of these is a 10-item subscale that measures care activities shared among healthcare providers (Golin & Ducanis, 1981). The second is a 7-item subscale that measures work process that facilitates coordination between healthcare providers (Georgoupoulos & Mann, 1962).

The first subscale, Care Sharing Activities (Items 1-10) reflects the sharing of clinical decision-making among healthcare providers. For example, the exchanging of information, creating common care plans, and consideration of data collected by other providers. The second subscale, Coordination (Items 11-17) reflects the structure for care to be provided. For example, daily collaborative behaviours are integrated in day-to-day functioning, and providers do their care without being a nuisance to one another, and with effort to prevent conflict with shared responsibilities (Sicotte et al., 2002).
One item from the original tool was not included in the revision due to a poor factor loading (0.32) reported by Sicotte et al (2002). The item removed was worded as follows: “A high frequency of informal consultation occurred among healthcare providers”. A new item derived from theoretical knowledge of the interprofessional collaboration literature to reflect the sharing of clinical care activities was added to replace the item removed from the original tool (Table 3.1; Item 9). The new item was worded to determine whether “clinical decision-making is shared among healthcare providers”, a focus which was missing from the original tool developed by Sicotte et al (2002). One additional item from the Care Sharing Activities subscale was not included in this revised version given its similarity to other items in the tool. The item was worded as follows: “Sharing of common tasks”. Therefore, 17 items comprised the revised Intensity of Interprofessional Collaboration tool for this present study.

Each of the 17 items was assessed by respondents on a 5-point Likert Scale ranging from one (strongly disagree) to five (strongly agree). The directions to complete the tool reads as follows: “Interprofessional collaboration – please indicate to what extent you personally agree or disagree with each of the following statements”. The score for the intensity of interprofessional collaboration is determined by taking the mean score of each subscale, and averaging the two scores to obtain the total scale score. The intensity score is interpreted with lower scores (min =1) reflecting the ‘least collaboration’ and higher scores (max =5) being the ‘most intense’. Based on previous research and theoretical knowledge, the factor structure of the tool for this present study was hypothesized to consist of two correlated factors (Figure 3.1) each defined by items for the construct of interprofessional collaboration (Sicotte et al., 2002).
Figure 3.1

Proposed Two-Factor Model (Sicotte et al., 2002)
Table 3.1

Means, Standard Deviations, Skewness, and Kurtosis Values for the Revised Intensity of Interprofessional Collaboration Tool

<table>
<thead>
<tr>
<th>Item Number and Descriptor</th>
<th>Mean (SD)</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 The entire patients’ needs (physical, psychological and social) are taken into account by the different professionals.</td>
<td>3.81 (.93)</td>
<td>-0.84</td>
<td>0.08</td>
</tr>
<tr>
<td>2 The different groups of professionals take into account the data collected by other professionals.</td>
<td>3.66 (.98)</td>
<td>-0.73</td>
<td>-0.04</td>
</tr>
<tr>
<td>3 Professionals have a high tolerance of grey area (overlapping of jurisdictions between professionals groups) in the sharing of responsibilities.</td>
<td>3.38 (.97)</td>
<td>-0.35</td>
<td>-0.54</td>
</tr>
<tr>
<td>4 Professionals collaborate to elaborate a common care plan.</td>
<td>3.78 (.91)</td>
<td>-0.82</td>
<td>0.37</td>
</tr>
<tr>
<td>5 Professionals’ support is sought for from other disciplinary groups as necessary.</td>
<td>4.06 (.77)</td>
<td>-0.91</td>
<td>0.88</td>
</tr>
<tr>
<td>6 Professionals from different disciplinary groups exchange information about common clients.</td>
<td>3.99 (.83)</td>
<td>-0.88</td>
<td>0.98</td>
</tr>
<tr>
<td>7 There is collaboration among different professional groups to assure patient follow-up.</td>
<td>3.68 (.92)</td>
<td>-0.55</td>
<td>-0.21</td>
</tr>
<tr>
<td>8 The level of collaboration among professionals is high.</td>
<td>3.61 (.96)</td>
<td>-0.46</td>
<td>-0.32</td>
</tr>
<tr>
<td>9 Professionals from different disciplinary groups share clinical decision making.*</td>
<td>3.33 (.95)</td>
<td>-0.26</td>
<td>-0.46</td>
</tr>
<tr>
<td>10 Working relations among the professional groups are egalitarian.</td>
<td>3.18 (.94)</td>
<td>-0.16</td>
<td>-0.59</td>
</tr>
<tr>
<td>11 The sharing of clinical responsibilities is well established among different groups of professionals.</td>
<td>3.41 (.98)</td>
<td>-0.34</td>
<td>-0.66</td>
</tr>
<tr>
<td>12 Professionals do their care without nuisance to each other.</td>
<td>3.68 (.91)</td>
<td>-0.54</td>
<td>-0.22</td>
</tr>
<tr>
<td>13 Team-based routines between the different groups of professionals are well defined.</td>
<td>3.40 (.95)</td>
<td>-0.26</td>
<td>-0.53</td>
</tr>
<tr>
<td>14 Efforts are done to prevent conflicts concerning the sharing of tasks and responsibilities.</td>
<td>3.47 (.90)</td>
<td>-0.39</td>
<td>-0.24</td>
</tr>
<tr>
<td>15 Daily collaborative behaviours are largely integrated in day-to-day functioning.</td>
<td>3.56 (.91)</td>
<td>-0.46</td>
<td>-0.24</td>
</tr>
<tr>
<td>16 Several activities assumed by different professional groups concerning a particular patient are well co-ordinated.</td>
<td>3.41 (.92)</td>
<td>-0.35</td>
<td>-0.51</td>
</tr>
<tr>
<td>17 From the patient’s perspective, professional collaboration is harmonious.</td>
<td>3.44 (.97)</td>
<td>-0.38</td>
<td>-0.31</td>
</tr>
</tbody>
</table>

*Note. Care Sharing Activities subscale includes Items 1-10; Coordination subscale includes Items 11-17. Asterisk (*) reflects the new Item 9 derived from the theoretical literature that is included in the revised tool.
Data Analysis

Statistical analysis of the data was conducted using the IBM Statistical Package for Social Sciences (IBM SPSS Statistics) version 23.0 (IBM, 2015) and MPlus (Muthén & Muthén, 2012). SPSS was used for descriptive statistics including demographic characteristics. MPlus was used for Confirmatory Factor Analysis (CFA).

Confirmatory factor analysis (CFA) is a statistical structural equation modeling technique used to examine the relationship between observed indicators or items that are hypothesized to measure a theoretical construct (Kline, 2016). For this study, CFA was used to validate the construct validity of the revised Intensity of Interprofessional Collaboration Tool. The hypothesized underlying dimensions (i.e., factors) of the tool can be validated by evaluating the item to factor relationships in the measurement model (Kline, 2016; Tabachnick & Fiddell, 2013). In other words, factor loadings measure how items contribute to a factor, and the strength of the factor loadings depend on the theoretical relationship between the items and the factor (Bandalos & Finney, 2010). Loadings ranging from 0.71 to 0.63 are considered excellent to very good, and loadings ranging from 0.55 to 0.45 are considered good to fair, respectively (Tabachnick & Fiddell, 2013). Factor loadings less than 0.32 are considered poor (Tabachnick & Fiddell, 2013). The cut-off value used for item retention in this present study was 0.45.

Model Fit Criteria

As a guideline for the assessment of model fit, the cutoff criteria proposed by Hu and Bentler (1999) and MacCallum, Browne, and Sugawara (1996) were used. The following goodness-of-fit indices were used to identify a good fit between the data and the model: (a) standardized root mean square residual (SRMR) values of .08 or below; (b) root mean square error of approximation (RMSEA) values of less than .08.
(MacCallum et al., 1996) with 90% confidence interval reported; (c) comparative fit index (CFI) values of .95 or greater; (d) Tucker–Lewis Index (TLI) values close to .95 or greater (Hu & Bentler, 1999), and (e) Chi-Square ($\chi^2$) test.

**Meaning of Fit Indices**

The standardized root mean square residual (SRMR) is an absolute measure of fit and is the square root of the difference between the residuals of the sample covariance matrix and the hypothesized model with values of .08 or below indicating acceptable fit (Hu & Bentler, 1999). The root mean square error of approximation (RMSEA) measures the lack of fit between the data and the model, and values less than .08 indicate a good fitting model (MacCallum et al., 1996). The comparative fit index (CFI) and Tucker–Lewis’ index (TLI) indicate a relative fit between the observed and hypothesized models. The index ranges between 0 and 1, with higher values indicating better fit (Hu & Bentler, 1999). A perfect fit means that there is no discrepancy between the hypothesized model and the observed model. A small non-significant Chi-square test indicates a good fit to the data. However, Chi-square results should be interpreted with caution because as the sample size increases, the likelihood of a significant Chi-square result also increases (Kline, 2016). Hence it is important to use several fit indices to assess model fit.

**Measurement Tool Reliability Analysis**

Internal consistency as a concept to measure reliability requires only a single administration of an instrument to respondents (Cronbach, 1951; Kline, 2016). A common means of assessing internal consistency is coefficient alpha (Cronbach, 1951; Tavakol & Dennick, 2011). Cronbach’s alpha determines the extent to which scale items go together to jointly measure the construct of interest (Cronbach, 1951). Given that coefficient alpha is most commonly used in the literature to estimate internal consistency,
it was used for this study’s reporting of reliability (Cronbach, 1951; Tavakol & Dennick, 2011). For this present, Cronbach’s alpha values greater than .70 were used as the cutoff to indicate good internal consistency (Cronbach, 1951).

Data Management and Missing Values

To ensure data integrity and accuracy, the baseline data (n=2268) from the larger dataset were first screened using a procedure proposed by Tabachnick and Fidell (2013) to manage the data (i.e., cleaning the data). Frequency tables and codebook analyses were conducted in SPSS to assess the presence of incorrect data entry or if data were incorrectly coded. Duplicate participants (n=190) who were incorrectly entered into the dataset were excluded (Tabachnick & Fiddell, 2013). The remaining data were used as the total sample (n=2064) which is an adequate sample size (>200) with enough power for this type of analysis (Kline, 2016).

The data were screened for data quality by assessing for missing values using frequency tables in SPSS for each variable to determine how much data were missing completely at random or if there was a pattern of missing data (Little, 1988). Missing data can present a challenge because if handled incorrectly, inaccurate inferences about the data could be made (Kline, 2016; Little & Rubin, 2002). There are several ways missing data can be categorized (Little & Rubin, 2002). Data can either be missing completely at random (MCAR), missing at random (MAR), and missing not at random (MNAR). If data are missing at random or completely at random, this is considered ignorable, and it is assumed the missing data would not bias the outcomes (Little, 2013). Little’s MCAR test (Little, 1988) was conducted, and the result was not significant (Chi-square = 313.55, \(p=.118\)) indicating the data were missing completely at random. In this study, values that were missing completely at random (<5%) were addressed using a Full
Information Maximum Likelihood Estimator (FIML) in Mplus (Kline, 2016; Muthén & Muthén, 2012). Full Information Maximum Likelihood Estimator is an advanced method to address missing data and Mplus allows for the inclusion of statements which specifies that the variable (i.e., -99) will be used for the missing data. Full Information Maximum Likelihood Estimator has been shown to calculate unbiased parameter estimates and their standard errors without deletion of missing data compared to the other classical methods (Little & Rubin, 2002; Muthén & Muthén, 2012). Normality of the data was established (Kline, 2016) by assessing skewness and kurtosis indexes in SPSS (Table 3.1). Skewness and kurtosis values should be less than ± 1.0 to be considered normal (Kline, 2016; Polit & Yang, 2016). The mean scores with standard deviations were calculated for each item of the tool (Table 3.1). The mean scores with standard deviations for each subscale (Care Sharing Activities; Coordination), and the total mean intensity score with standard deviation for the tool were also calculated (Table 3.1).

**Results**

**Descriptive Results**

The sample was comprised mainly of those healthcare providers (n=2064) who identified as female (81.8%) with an average age of 43.5 years (SD = 10.1) and mean work experience of 17 years (SD =9.3). The employment status varied (full-time: 69%, part-time: 23%, and casual: 8%). The largest group of healthcare providers were Registered Nurses (65.9%) and Physicians (17%) with the remaining healthcare professions (23%) represented by Pharmacy, Occupational, Physical, Speech and Respiratory Therapy; Dietician; Social Work and X-ray Technicians.

The coefficient alpha for each subscale, and the total scale (Share Care Activities $\alpha = .87$; Coordination $\alpha = .89$; Total Interprofessional Collaboration $\alpha = .93$) suggests good
internal consistency (Table 3.2). In Mplus, the two subscales or factors were treated as exogenous variables and correlation was examined by default among the included items (Muthén & Muthén, 2012). The Care Sharing Activities subscale was strongly correlated to the Coordination subscale ($r = .87$) and the high correlation indicated that each factor likely measures components of a similar construct (Kline, 2016).

Table 3.2

*Descriptive Statistics for the Revised Intensity of Interprofessional Collaboration Tool*

<table>
<thead>
<tr>
<th>Subscale/Total Scale</th>
<th>Items</th>
<th>Mean (SD)</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Coefficient Alpha ($\alpha$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care Sharing Activities</td>
<td>10</td>
<td>3.68 (.64)</td>
<td>-0.27</td>
<td>0.13</td>
<td>.86</td>
</tr>
<tr>
<td>Coordination</td>
<td>7</td>
<td>3.48 (.72)</td>
<td>-0.11</td>
<td>-0.27</td>
<td>.89</td>
</tr>
<tr>
<td>Interprofessional Collaboration</td>
<td>17</td>
<td>3.60 (.63)</td>
<td>-0.14</td>
<td>-0.03</td>
<td>.93</td>
</tr>
</tbody>
</table>

*Note.* $SD =$ Standard Deviation. Care Sharing Activities subscale includes Items 1-10; Coordination subscale includes Items 11-17.

**Confirmatory Factor Analysis (CFA)**

A confirmatory factor analysis (CFA) was conducted to test the factor structure of the revised Intensity of Interprofessional Collaboration tool (Figure 3.1). First, the one-factor model was tested with a poor fit to the observed data (Table 3.3). According to Hu and Bentler (1999), the goodness-of-fit indices did not meet the minimum requirements ($\chi^2 (119) = 2054.14$, $p < .001$; RMSEA = .09 [0.085,0.092]; CFI = .88; TLI = .87; SRMR = .05). Overall, the goodness-of-fit indices do not support the one-factor model. Next, the two-factor model was tested as hypothesized *a priori* (Table 3.3). The goodness-of fit
indices (Hu & Bentler, 1999) met the minimum requirements ($\chi^2 (118) = 1430.39, p < .001$; RMSEA = .07 [ .070, .077]; CFI = .92; TLI = .91; SRMR = .04). These results are within range to establish an adequate fit to the observed data. There were no modifications made to the model as there was no theoretical support for modifications. The goodness-of-fit indices in this study support the proposed two-factor model of the revised tool (Sicotte et al., 2002). The standardized factor loadings for the two-factor model (Table 3.4) ranged from 0.46 to 0.82 which is consistent with what is reported in the literature concerning acceptable factor loadings (Tabachnick & Fiddell, 2013).

### Table 3.3

*Fit Indices for the Confirmatory Factor Analysis (CFA) Model*

<table>
<thead>
<tr>
<th>Model</th>
<th>Chi-Square/df/P-Value</th>
<th>RMSEA (90% CI)</th>
<th>CFI</th>
<th>TLI</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-Factor Model</td>
<td>2054.14/119/p&lt;.001</td>
<td>.09 (.085, .092)</td>
<td>.88</td>
<td>.87</td>
<td>.05</td>
</tr>
<tr>
<td>Two-Factor Model</td>
<td>1430.39/118/p&lt;.001</td>
<td>.07 (.070, .077)</td>
<td>.92</td>
<td>.91</td>
<td>.04</td>
</tr>
</tbody>
</table>

*Note. Df = Degree of freedom, RMSEA = Root mean square error of approximation, CI = Confidence Interval, CFI = Comparative fit index, TLI = Tucker -Lewis Index, SRMR = Standardized root mean square residual.*
### Table 3.4

**Standardized Factor Loadings for the Revised Intensity of Interprofessional Collaboration Tool**

<table>
<thead>
<tr>
<th>Item Number and Descriptor</th>
<th>Subscales</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standardized Factor Loadings</td>
<td>Care Share</td>
</tr>
<tr>
<td>1 The entire patients’ needs (physical, psychological and social) are taken into account by the different professionals.</td>
<td>0.584</td>
<td></td>
</tr>
<tr>
<td>2 The different groups of professionals take into account the data collected by other professionals.</td>
<td>0.633</td>
<td></td>
</tr>
<tr>
<td>3 Professionals have a high tolerance of grey area (overlapping of jurisdictions between professionals groups) in the sharing of responsibilities.</td>
<td>0.458</td>
<td></td>
</tr>
<tr>
<td>4 Professionals collaborate to elaborate a common care plan</td>
<td>0.702</td>
<td></td>
</tr>
<tr>
<td>5 Professionals’ support is sought for from other disciplinary groups as necessary.</td>
<td>0.643</td>
<td></td>
</tr>
<tr>
<td>6 Professionals from different disciplinary groups exchange information about common clients.</td>
<td>0.686</td>
<td></td>
</tr>
<tr>
<td>7 There is collaboration among different professional groups to assure patient follow-up.</td>
<td>0.728</td>
<td></td>
</tr>
<tr>
<td>8 The level of collaboration among professionals is high.</td>
<td>0.816</td>
<td></td>
</tr>
<tr>
<td>9 Professionals from different disciplinary groups share clinical decision making.*</td>
<td>0.700</td>
<td></td>
</tr>
<tr>
<td>10 Working relations among the professional groups are egalitarian.</td>
<td>0.675</td>
<td></td>
</tr>
<tr>
<td>11 The sharing of clinical responsibilities is well established among different groups of professionals.</td>
<td>0.747</td>
<td></td>
</tr>
<tr>
<td>12 Professionals do their care without nuisance to each other.</td>
<td>0.654</td>
<td></td>
</tr>
<tr>
<td>13 Team-based routines between the different groups of professionals are well defined.</td>
<td>0.740</td>
<td></td>
</tr>
<tr>
<td>14 Efforts are done to prevent conflicts concerning the sharing of tasks and responsibilities.</td>
<td>0.728</td>
<td></td>
</tr>
<tr>
<td>15 Daily collaborative behaviours are largely integrated in day-to-day functioning.</td>
<td>0.766</td>
<td></td>
</tr>
<tr>
<td>16 Several activities assumed by different professional groups concerning a particular patient are well co-ordinated.</td>
<td>0.607</td>
<td></td>
</tr>
<tr>
<td>17 From the patient’s perspective, professional collaboration is harmonious.</td>
<td>0.650</td>
<td></td>
</tr>
</tbody>
</table>

*Note. Asterisk (*) Represents the new Item 9. All values significant at the $p<.001$ level.*
Discussion

The Intensity of Interprofessional Collaboration tool (Sicotte et al., 2002) is suitable for use in studies to measure a high or low degree of interprofessional collaboration among healthcare providers in tertiary care settings. Although the tool has been used in previous studies (Manojlovich et al., 2014; San Martin-Rodriquez et al., 2007; 2008; Serrano-Gemes & Rich-Ruiz, 2016; Sicotte et al., 2002), the psychometric properties of the tool required further evaluation.

Overall, the CFA shows that the factor structure was replicated as reported in the literature (Sicotte et al, 2002). The standardized factor loadings for each of the two factors were acceptable (Tabachnick & Fiddell, 2013). It is possible that an item could be theoretically related to a factor but have a lower factor loading (Kline, 2016). For example, in this study, the loading for Item 3 from the tool, “High tolerance of grey area (overlapping of jurisdictions between professional groups) in the sharing of responsibilities” was less than ideal (0.46) considering all other factor loadings were much higher. The lower factor loading could be attributed to this item’s wording, and the item may have been difficult to interpret by healthcare providers (Chen, 2017). The terms “grey area” and “jurisdictions” are vague and may have caused confusion as to what the item was measuring in relation to the Care Share Activities subscale. The use of the term “responsibilities” versus “jurisdictions” and the use of the term “uncertainty” versus “grey area” for this item may provide further clarity for future studies given the theoretical importance of understanding scope of role and responsibilities for effective interprofessional collaboration (Hurlock-Chorostecki et al., 2015; Reeves et al., 2017).
Regarding the new Item 9, “Professionals from different disciplinary groups share clinical decision-making”, its factor loading was considered very good (0.69) indicating that the item relates to the Care Share Activities subscale. Item 9 was derived based on the aim of the new model of care being introduced where the conceptual and theoretical understanding of sharing of clinical decision-making is a collaborative activity essential to interprofessional collaboration (D’Amour & Oandasan, 2005; Hurlock-Chorostecki et al., 2015; Orchard et al., 2005; Reeves et al., 2017). The tool shows good reliability as evidenced by the reported Cronbach’s alpha (α = .93). However, given that the two factors were highly correlated, it is reasonable to assume that there may be a second-order factor behind the two correlated factors (Muthén & Muthén, 2012).

Limitations and Future Research

Limitations exist given the revised Intensity of Interprofessional Collaboration tool was tested using only one sample of healthcare providers in one urban tertiary hospital setting. The proportion of registered nurses was higher compared to other professional groups in this study’s sample albeit this limitation is reasonably representative of the workforce in tertiary care hospitals in Canada (Canadian Institutes of Health Information [CIHI], 2019).

There is a need for further research given that this is the first time this revised tool has been studied. Research is needed to further establish the validity (i.e., predictive validity; construct validity in varied populations) and reliability (i.e., stability) of this tool along with its responsiveness (i.e., the tool’s ability to detect change over time). Common method variance is defined as systematic error variance due to either rater response styles, item characteristics, and aspects of measurement that can threaten the validity of study findings (Podsakoff et al., 2012). Item revision to eliminate ambiguity in scale
items of the Intensity of Interprofessional Collaboration tool (Item 3) is warranted with respect to wording that may be challenging to understand (Chen, 2017; Podsakoff et al., 2012). Additionally, future research could include conducting a second-order CFA of the Intensity of Interprofessional Collaboration tool. A second-order CFA would allow items to load on their respective factors, and allow those factors to load onto a second-order factor of interprofessional collaboration (Byrne, 2013).

**Conclusion**

When healthcare providers work together to share clinical decision-making, interprofessional collaboration should be effectively measured to understand the degree to which it occurs (IOM, 2015; WHO, 2010). Measuring improvements in interprofessional collaboration is in part contingent on the selection of a reliable and valid tool to measure its intensity (i.e., high versus low) in the context of healthcare delivery. Without measurement, it will continue to be a challenge to adequately develop initiatives and target interventions to improve interprofessional collaboration (Reeves et al., 2017; Zwarenstein et al., 2009). Although not the first study to measure interprofessional collaboration in healthcare providers, this study reports on the reliability and validity of a tool that measures the intensity of interprofessional collaboration in a tertiary care hospital setting. Based on these results, there is evidence to support that the tool has acceptable construct validity with good internal consistency. These findings will offer researchers valuable information related to the measurement of interprofessional collaboration in order to better equip senior management, healthcare leaders, and educators as health care delivery systems evolve toward a model of interprofessional care.
References for Chapter Three


Byrne, B. M. (2013). Structural equation modeling with Mplus: Basic concepts, applications, and programming.


Chapter Four

Relationships Among Interactional and Organizational Factors with Healthcare Provider Outcomes Post-Implementation of An Interprofessional Model of Patient Care

Introduction

Interprofessional practice (IPP) has been a focus of attention over the last several decades as a key strategy to support the provision of safe quality care (World Health Organization [WHO], 2010; 2018). The risk for adverse events leading to poor patient, healthcare provider, and organizational outcomes increases when health care delivery systems lack integration and coordination (Canadian Patient Safety Institute [CPSI], 2019; 2020; Institute of Medicine [IOM], 2015; WHO, 2010; 2018). In response, global, national, and federal mandates recommended that an IPP approach to health care delivery was to be implemented in practice settings to improve the quality of patient care and outcomes, improve healthcare provider relationships and job satisfaction, foster an organizational climate of respect and patient safety, and reduce inefficiencies and health care costs (Canadian Interprofessional Health Collaborative [CIHC], 2010; IOM, 2015; WHO, 2010).

Today, the integration of IPP remains a challenge even though there has been increasing attention for health system reform over the last several decades (CIHC, 2010; Health Force Ontario, 2007; IOM, 2015; Reeves et al., 2017; WHO, 2010). There are regulatory demands for interprofessional practice standards to address siloed care delivery. These demands are due to the concern that healthcare providers may continue to
work within their specific profession to develop standards of care, priorities, and competencies without fully knowing or understanding other professional scopes of practice (Canadian Nurses Association [CNA], 2020; College of Nurses of Ontario [CNO], 2018; College of Physicians and Surgeons of Ontario, 2020). Since competent and safe IPP is contingent upon healthcare providers’ understanding of scopes of practice, a lack of understanding of other healthcare provider roles may lead to conflict due to role ambiguity, differing values and opinions, and may limit respect and recognition for others’ contributions among professional groups (Ansa et al., 2020; CIHC, 2010; D’Amour & Oandasan, 2005; Hurlock-Chorostecki et al., 2013; Orchard, 2016).

Empowering work structures promote respect and collaboration in the context of health care delivery, and empowerment has been linked to patient safety and job satisfaction (Armstrong et al., 2009; Faulkner & Laschinger, 2008; Wong & Laschinger, 2013). Yet, despite the evidence of the benefits of IPP such as reduced hospital readmissions (Shah et al., 2018) and improved patient outcomes (Reeves et al., 2017), empirical evidence in relation to healthcare provider (i.e., job satisfaction) and organizational outcomes (i.e., safety climate; quality of care) is still lacking (Reeves et al., 2017). The outcomes of IPP within established interprofessional models of patient care in tertiary care hospital settings remain unclear. Therefore, more research is needed to further our knowledge of how well IPP has been integrated and how to measure its presence in practice settings.
Background

Conceptual Frameworks and Theoretical Perspectives

Several conceptual frameworks attempt to describe IPP, although with only limited empirical evidence to support their use (Sicotte et al., 2002; D’Amour et al., 1999; D’Amour & Oandasan, 2005). For this reason, the Framework for Interprofessional Education for Collaborative Patient-Centred Practice (D’Amour & Oandasan, 2005) and the Analytical Framework of Interdisciplinary Collaboration (Sicotte et al., 2002) were used to frame the study. Kanter’s Theory of Organizational Power (Structural Empowerment) provided an additional theoretical foundation focused on the structures and processes within the organization (Kanter, 1977; 1993).

Interprofessional Education for Collaborative Patient-Centred Practice (IECPCP)

The Interprofessional Education for Collaborative Patient-Centred Practice conceptual framework is comprised of two components that reflect the interdependency of IPE and IPP. The framework describes the interactional (micro), organizational (meso), and systemic (macro) factors that impact patient, provider, organizational, and systems outcomes. At the micro level, interactional factors refer to shared goals and vision, mutual respect, willingness to collaborate, and trusting positive relationships that lead to a sense of belonging (D’Amour & Oandasan, 2005). At the meso level, governance (i.e., influence of organizational leadership) and the structuring of clinical care are considered organizational factors contributing to IPP.

The framework suggests that organizational structures that are non-hierarchical and support IPP are linked to clinical outcomes, satisfaction with care provision, staff well-being, and organizational efficiency (D’Amour & Oandasan, 2005). The overarching systemic structures include educational and professional systems,
government policies, and socio-cultural values. Each can influence the integration of IPE and IPP, and the framework highlights that research informs the extent to which these interdependent components advance both the learning and practice environments (D’Amour & Oandasan, 2005). The second component of the framework titled Collaborative Practice (i.e., IPP) was used in this study.

In the collaborative practice component of the IECPCP framework, the patient is at the center. Patient care is determined by how well healthcare providers work together to perform clinical tasks while understanding differing scopes of practice and roles (D’Amour & Oandasan, 2005). The framework suggests that IPP can support healthcare delivery systems by reducing costs and improving clinical care through collaboration (D’Amour & Oandasan, 2005).

**The Analytical Framework of Interprofessional Collaboration**

The Analytical Framework of Interdisciplinary [Interprofessional] Collaboration (Sicotte, et al., 2002) is grounded in a conceptual understanding of sharing clinical care activities (Golin & Ducanis, 1981) and is based on organizational theory in relation to group work coordination (Georgopoulos & Mann, 1962). The framework incorporates the contextual variables (input), intragroup processes associated with interprofessional collaboration, and considers the intensity of interprofessional collaboration (output) mediated by the nature of clinical tasks. The intragroup processes include beliefs in the levels (i.e., high or low degree) of interprofessional collaboration and conflict (associated with collaboration), social integration within groups, agreement with professional and interprofessional logic, and group work design and characteristics (Sicotte et al., 2002). Group cohesion is a result of believing in the benefits of interprofessional collaboration, and the ability to address conflict related to the division and nature of clinical care.
activities (Sicotte et al., 2002). Cohesion comes with an understanding of others’ scopes of practice when participating in clinical care decisions (i.e., interprofessional logic). Opportunities to debrief clinical cases together, and the use of tools that support interprofessional collaboration are examples of group work design outlined in the framework (Sicotte et al., 2002).

**Kanter’s Theory of Organizational Power (Empowerment)**

Kanter’s Theory of Organizational Power (1977; 1993) provides a theoretical foundation to understand how empowering work environments can lead to positive outcomes for healthcare providers. Empowered employees are motivated and find meaning in their work which influences positive behaviours and attitudes towards achieving organizational goals (Kanter, 1993). Within organizations, power exists either formally or informally (Kanter, 1977). Formal power is achieved by title, visibility of role, and the responsibilities associated with their work (Kanter, 1977). Informal power comes from building relationships with colleagues, and is associated with having a high degree of influence in the workplace (Kanter, 1977). Organizations must have structures in place in order to empower employees (Kanter, 1977). Empowerment structures include access to opportunity, information, support, and resources (Kanter, 1993). Kanter defines opportunity as the ability of an employee to grow and advance in their role or position (Kanter, 1977). According to Kanter, this opportunity influences employees’ motivation and promotes engagement in their work. Information is defined as the necessary knowledge and communication of information that is deemed essential to the work (Kanter, 1977). Support can be in the form of feedback and coaching that one receives from management, peers, and others with access to resources including funding, staff,
equipment, and supplies. Together, these empowerment structures contribute to the employees’ success in achieving organizational goals (Kanter, 1977; 1993).

Kanter (1993) proposes that opportunity and power positively influence employees’ sense of empowerment. As a result, employees are more committed to the organization. Employees who feel powerless may experience a sense of frustration in their work which in turn leads to negative attitudes and behaviours (Kanter, 1993). A perceived lack of empowerment in the workplace is directly related to poor commitment to achieve organizational goals, and dissatisfaction with work which leads to poor retention (Körner et al., 2015; Laschinger et al., 2009).

**Factors that Influence Interprofessional Practice**

Interprofessional practice (IPP) is described as a cohesive and interdependent approach to care provision undertaken by healthcare providers that extends beyond collaborative activity while keeping the patient central (D’Amour & Oandasan, 2005). There are interactional and organizational factors that can either promote or hinder IPP (D’Amour & Oandasan, 2005). Interactional factors (i.e., levels of interprofessional collaboration; conflict; respect) refer to the individual relationships and interactions between healthcare providers as they work together to integrate care (D’Amour & Oandasan, 2005). Organizational factors (i.e., global empowerment; safety climate) refer to organizational structure, processes, and practices with an appreciation of the underlying culture of an organization that can influence healthcare provider outcomes (i.e., job satisfaction), and the provision of safe quality care (D’Amour & Oandasan, 2005).
**Interactional Factors that Influence IPP**

*Level of Interprofessional Collaboration*

Interprofessional practice is dependent on the extent to which healthcare providers collaborate (Ansar et al., 2020; CIHC, 2010; WHO, 2010; IOM, 2015). Interprofessional collaboration is a process for creating a partnership between a team of healthcare providers and a client [patient] in a coordinated approach to shared decision-making (Orchard et al., 2005; as cited in CIHC, 2010, p.24). The sharing of information and the structuring of clinical activities are considered important aspects of collaboration and in turn, support positive, respectful relationships (CIHC, 2010; D’Amour & Oandasan, 2005; Espinoza et al., 2018; Zhang et al., 2016). In a recent meta-analysis, interprofessional practice was characterized by teamwork and collaboration (Kaiser et al., 2018). Lack of collaboration among healthcare providers was associated with job stress, burnout, and turnover intention was positively associated with autonomy, work engagement, job satisfaction, and quality of care ratings (Kaiser et al., 2018).

Measurement of interprofessional collaboration remains limited in the IPP literature despite the consistent use of the term (Bookey-Bassett et al., 2016; Orchard et al., 2018; Walters et al., 2016). Several reviews have been undertaken to further our understanding of what tools are available to measure collaboration in health care; however, the reviews have been specific to the primary care sector (Bookey-Bassett et al., 2016) or focused on those tools related to team or group performance (Walters et al., 2016). Several tools were located that measure self-report of team performance, the presence of collaborative relationships, and activities related to interprofessional practice (Hurlock-Chorostecki et al., 2015; Orchard et al., 2018). However, less is known about the level of intensity of interprofessional collaboration among healthcare providers that
exists in practice settings. Specifically, more research is needed to learn what factors influence a high or low degree of interprofessional collaboration among healthcare providers in tertiary care hospital settings, and how to effectively measure it (Manojlovich et al., 2014; Reeves et al., 2017).

Conflicting professional values and beliefs may limit interprofessional collaboration (Sicotte, et al., 2002). If providers feel disrespected, threatened or conflicted, the response is to limit collaboration (McNeil et al., 2013; Mitchell et al., 2011; Sicotte et al., 2002). Interventions aimed to improve interprofessional collaboration must be evaluated to know if the desired outcomes related to interventions aimed to improve it are achieved (Reeves et al., 2017). With this understanding, further research is needed to test these possible relationships in tertiary care settings.

*Managing Conflict*

Conflict can be positive for initiating changes in practice (Almost et al., 2016). Conversely, conflict is also described as a dynamic and complex process that occurs between healthcare providers experiencing misalignment of goals or disagreements with clinical tasks and processes associated with care provision (Almost et al., 2016; Barki & Hartwick, 2004). Conflict may also be a result of perceived power dynamics among individuals and between healthcare provider groups (Almost et al., 2016; McNeil et al., 2013) which can impact patient safety (Manojlovich et al., 2014). Unresolved conflict can impede IPP due to overlapping roles and differing professional values leading to a lack of respect for one another’s’ contributions (Almost et al., 2016; Hepp et al., 2014).

Resolving conflict is one of the key IPP competencies that must be met in order to effectively deliver interprofessional care (CIHC, 2010; IPEC, 2016). One cross-sectional study investigated the impact of problem-solving ability, communication competence,
and conflict resolution education and training on healthcare providers’ (n=182) ability to resolve conflicts (Sexton & Orchard, 2016). Conflict resolution education and communication competence were found to be significant predictors of healthcare providers’ ability to resolve conflict within and among interprofessional teams (Sexton & Orchard, 2016). Healthcare providers reported mid-level ratings of confidence in their ability to resolve conflict, and mid-level ratings of competency regarding communication highlighting the need for conflict resolution education and training to support this important IPP competency (Sexton & Orchard, 2016). However, the role of conflict in relation to interventions aimed to improve IPP in tertiary care settings remains limited (Almost et al., 2016).

**Mutual Respect in the Work Environment**

The importance of respect and recognition in the workplace has been studied (DeCicco et al., 2006; Kluska et al., 2004; Faulkner & Laschinger, 2008; Laschinger & Finegan, 2005; Leape et al., 2012; Manojlovich et al., 2014; Siegrist et al., 2014). Respect is defined as a moral principle that gives rise to the understanding that each individual brings value (Brown, 1993). Respect is also considered a core organizational value that can influence and promote a healthy work environment. A healthy work environment that supports IPP is critical in order to establish an organizational culture of quality, safety, and trust reflected in collaborative behaviours, and respectful relationships among healthcare providers (Registered Nurses’ Association of Ontario [RNAO], 2013).

According to Siegrist (1996), efforts spent at work are to be balanced with rewards received because rewards are critical success factors that promote a healthy work environment (Siegrist, 1996; Siegrist et al., 2014). Meaning, healthcare providers who experience an imbalance between their work efforts and the rewards (i.e., respect and
recognition) received for the work completed may experience less job satisfaction, and more conflict while carrying out their jobs (Siegrist, 1996). Studies have shown that respect facilitates collaboration (Bridges et al., 2011; D’Amour et al., 2008; DeCicco et al., 2006; Manojlovich et al., 2014; Manser, 2009). Maintaining positive relationships requires shared power with decision-making, and a level of respect for each professions’ contributions (D’Amour et al. 2005; DeCicco et al., 2006; Faulkner & Laschinger, 2010; Manojlovich et al., 2014).

Described in more detail in the Organizational Factors section below, empowerment has been shown to be a significant predictor of respect in the practice setting (Laschinger, 2004; Faulkner & Laschinger, 2008). These empowerment structures are believed to help provide the necessary conditions for healthcare providers to find meaning in their work (Kanter, 1977; 1993). DeCicco et al (2006) also tested a model to determine if empowering work structures positively relate to feelings of respect in a sample of nurses (n=154). The findings suggest that access to empowering work structures allows nurses to feel that their contributions are recognized and rewarded (DeCicco et al., 2006). An interesting finding was the difference in levels of respect among different types of nurses (i.e., registered practical nurses & registered nurses). This difference could be attributed to the levels of accountability between the two scopes of role with an unintended hierarchy in their work environment. Registered nurses reported a higher level of respect compared to registered practical nurses. Registered nurses were viewed as leaders who had increased opportunity to interact with other types of healthcare providers within that work environment, and this access to opportunity may have influenced the way they reported feeling respected in the workplace (DeCicco et al., 2006). These results are similar to earlier research that suggests empowerment structures
have a direct relationship to respect and in turn, influence job satisfaction (Laschinger & Finegan, 2005). However, there remains a gap in our knowledge as to whether interprofessional collaboration, and other known interactional or organizational factors, influence the degree to which healthcare providers rate levels of respect for one another in response to interventions aimed to improve IPP.

**Organizational Factors that Influence IPP**

A supportive environment that empowers healthcare providers to participate in collaborative activities allows for the sharing of information and decision-making power, coordination of care delivery, and is linked to respectful relationships (Manojlovich et al., 2014; Regan et al., 2016; Stutsky & Laschinger, 2014). Studies have explored collaborative activities within healthcare teams, and these studies highlight the importance of the work environment or practice setting to positively promote interprofessional collaboration (Hurlock-Chorostecki et al., 2015; Regan et al., 2016) and patient safety climate (Manojlovich et al., 2014; McGhan et al., 2020). However, because of hierarchical power structures in health care that still exist, IPP can be impacted (Hurlock-Chorostecki et al., 2016; Orchard et al, 2010). Therefore, it is imperative for organizations to provide the supportive structures to fully implement IPP; specifically, empowering structures to improve interprofessional collaboration (Orchard et al., 2005; Regan et al., 2016; Stutsky & Laschinger, 2014) and patient safety climate (Manojlovich et al., 2014).

**Empowerment Structures**

Empowerment is described as having access to information, support, resources, and the opportunity for growth (Kanter, 1977; 1997). A perceived lack of empowerment in the workplace is directly correlated to poor commitment to achieve organizational
goals and dissatisfaction with work which leads to poor retention of staff (Körner et al., 2015; Laschinger et al., 2009). Job satisfaction among healthcare providers increases when access to opportunity, information, support, and resources is improved (Körner et al., 2015; Wong & Laschinger, 2013). For example, one study tested a model linking leadership with healthcare providers’ (n=600 registered nurses) perceptions of empowerment, performance, and job satisfaction in acute care hospitals (Wong & Laschinger, 2013). The results demonstrate that leadership is significantly related to job satisfaction through empowerment; and if healthcare providers have access to workplace empowerment structures, they are more likely to be satisfied with their jobs and report higher ratings of their performance (Wong & Laschinger, 2013). Empowering and respectful environments enable healthcare providers to be effective with their work, participate in decision making, and experience less conflict and job dissatisfaction (Laschinger et al., 2004; Wong & Laschinger, 2013). Empowerment leads to higher levels of job satisfaction and commitment to the organization with reported higher quality of care ratings (Laschinger et al., 2016; Purdy et al., 2010; Yang et al., 2013).

Others have studied empowerment, authentic leadership, and the presence of a supportive practice environment on perceived interprofessional collaboration. Results of one study suggest that higher ratings of empowerment and leadership in a sample of healthcare providers (n=220), and the presence of positive working relationships in a supportive environment, enhance interprofessional collaboration (Regan et al., 2016). These findings are important to consider when introducing mechanisms to promote IPP in healthcare organizations and warrants more examination.
**Patient Safety Climate**

Patient safety climate is benchmarked in organizations to gain a better understanding of an organization’s culture (Phipps et al., 2012). In other words, safety climate refers to the measurable perceptions of safety culture whereas safety culture refers to the underlying beliefs, assumptions, and values of the healthcare organization as they relate to patient safety (CPSI, 2019; 2020). Patient safety culture is considered part of the overall organizational culture in relation to ongoing patient safety performance in organizations (Morello et al., 2013).

Patient safety climate and relationships among healthcare providers \((n=1896)\) were studied after the implementation of an intervention aimed to improve interprofessional collaboration in a large acute care center (Manojlovich et al., 2014). Collaboration, respect, and conflict were predictors of patient safety climate (Manojlovich et al., 2014). Conflict was not found to moderate the relationship between collaboration and patient safety climate. These findings suggest that organizations need to target efforts to nurture positive collaborative working relationships among healthcare providers to promote patient safety even in the presence of conflict (Manojlovich et al., 2014).

More recently, a cross-sectional study (McGhan et al., 2020) examined safety climate perceptions in hospital teams. Safety climate was significantly related to healthcare providers’ reported stress, job satisfaction, and turnover intent (McGhan et al., 2020). Perceptions of safety climate differed between types of healthcare providers. Allied health professionals reported the highest safety and job satisfaction ratings. Registered nurses reported the highest level of stress, lowest safety and job satisfaction ratings (McGhan et al., 2020). Although research is being conducted to understand
predictors of patient safety climate, there remains a gap with understanding how other interactional and organizational factors relate to patient safety climate in response to efforts aimed to enhance IPP (Reeves et al., 2017).

**Healthcare Provider Outcomes**

*Job Satisfaction*

Job satisfaction is described as the perception towards work, and the experiences that come with work (Best & Thurston, 2004). Job satisfaction is influenced by the quality of the work environment, and the quality of relationships (Dellafiore et al, 2019; Espinoza et al, 2018; Zhang et al., 2016). Factors that affect job satisfaction were examined in a sample of healthcare providers (i.e., nurses) in acute care settings (Yasin et al, 2020). Predictors of job satisfaction included peer support (i.e., interactions between the interprofessional team members), managerial support (i.e., leadership), and work responsibility (i.e., sense of accomplishment/achievement). Working conditions such as extended hours, high workload, and limited human resources were negatively associated with job satisfaction (Yasin et al, 2020).

In a recent cross-sectional study of registered nurses working in acute care, those who reported greater job satisfaction, positive interprofessional relationships, and access to resources to do their work were less likely to express an intent to leave their workplace (Nowrouzi-Kia & Fox, 2019). Furthermore, physician to nurse collaboration was a predictor of job satisfaction, and lower ratings were related to healthcare providers’ intention to leave their current positions (Zhang et al., 2016).

Job satisfaction was linked to quality of care ratings in hospital settings (Purdy et al., 2010; Tyssen et al., 2013; Nowrouzi-Kia & Fox, 2019). In one cross-national study, healthcare providers’ perceptions of quality of care influenced overall job satisfaction.
Higher ratings of quality of care indicators (i.e., time spent with patients) were positively associated with higher ratings of job satisfaction (Tyssen et al., 2013). Healthcare providers from Canada reported lower professional autonomy (i.e., clinical freedom; independence) but higher scores with job satisfaction and quality of care compared to those from the United States and Norway (Tyssen et al., 2013). It was suggested that Canadian healthcare providers’ response to measures of professional autonomy reflects the value of interdependence in relation to providing quality care (Tyssen et al., 2013). Based on these findings, job satisfaction is an important healthcare provider outcome, yet less is known about how the introduction of IPP models of care in hospital settings influence its relationship to interactional and organizational factors associated with IPP.

**Quality of Care Ratings**

Quality of care is defined as “the degree of excellence; the extent to which an organization meets clients’ needs and exceeds their expectations” (Accreditation Canada, 2020; CPSI, 2019; 2020). The attributes of high quality care include safety, timeliness, effectiveness, and efficiency (Health Force Ontario, 2010; IOM, 2015). It is suggested that organizational leadership is foundational for IPP and in turn, improved quality of care (CIHC, 2010). Leadership and its relationship to patient outcomes has been studied, and there is evidence to suggest that leadership improves patient satisfaction with the delivery of care, and may reduce adverse events and complications (Boamah et al., 2018; Wong et al., 2013). Furthermore, job satisfaction and the intention to leave employment are directly linked to quality of care ratings (Laschinger, 2014; Laschinger et al., 2016). However, it is less clear how healthcare providers rate the quality of care delivered in the presence of IPP models in tertiary care settings.
Although healthcare provider outcomes have been linked to several elements of IPP (Ellis et al., 2021), the link of IPP to healthcare provider outcomes is not established. Therefore, research is needed to understand the potential relationships among interactional and organizational factors associated with IPP models of care in relation to healthcare provider outcomes.

In summary, there are gaps in the literature to be addressed in order to advance our understanding of the relationships between factors associated with IPP. The IECPCP framework is suited for this study because it considers the interactional and organizational factors known to be linked with the elements of IPP (D’Amour & Oandasan, 2005). The framework provides theoretical support to conduct research to test the relationships of these factors with healthcare provider outcomes. The Analytical Framework of Interdisciplinary [Interprofessional] Collaboration (Sicotte et al., 2002) framework also helps to explain the intensity of interprofessional collaboration, a key interactional factor that needs to be further studied. Organizational characteristics that promote an environment of respect, collaboration, and conflict management may result in improved healthcare provider outcomes, and warrants more research. Therefore, Kanter’s Theory of Organizational Power provides an additional theoretical foundation for this study focused on the structures and processes within the organization that can support IPP (Kanter, 1977; 1993).

**Study Purpose**

The purpose of this study is to investigate interactional (i.e., levels of interprofessional collaboration; conflict; respect) and organizational (i.e., empowerment; patient safety climate) factors related to IPP and healthcare provider outcomes (i.e., job satisfaction; satisfaction with quality of care). The hypothesized model examines
relationships among global empowerment, interprofessional collaboration, conflict, respect, job satisfaction, patient safety climate, and satisfaction with the quality of care provision.

**Research Hypotheses and Rationale**

Based on the conceptual and theoretical literature, it was hypothesized that empowering work structures that support IPP are linked to higher levels of interprofessional collaboration leading to higher levels of respect and job satisfaction; there in turn, relating to a positive patient safety climate and higher levels of provider satisfaction with the quality of patient care (San Martin-Rodriguez et al., 2005). Kanter’s Theory (1993) in the context of IPP may help to explain the potential relationships that exist within the hypothesized model. It is argued that organizations who provide access to resources and support, empower and promote healthcare providers to work effectively with one another (Kanter, 1993).

Interprofessional practice requires positive working relationships to facilitate healthcare providers’ ability to deliver safe, competent care (CIHC, 2010). Mutual respect and appreciation for differing professional expertise, and the willingness to collaborate and resolve conflict, will facilitate successful coordination of collaborative activities (D’Amour et al., 2008; Hurlock-Chorostecki et al., 2015; San Martin-Rodriguez et al., 2005). Conflict due to power imbalances among healthcare providers is reported in the literature (Almost et al., 2016) and conflicting professional values and beliefs limit interprofessional collaboration (Almost et al., 2016; Sicotte et al., 2002). It is hypothesized that conflict has negative relationships with both interprofessional collaboration and respect, and interprofessional collaboration is positively related to
respect, job satisfaction, provider satisfaction with the quality of care delivered, and patient safety climate.

Organizational structures influence attitudes and behaviours which directly affect work performance, and level of respect among healthcare providers (Laschinger & Finegan, 2005). Empowering work environments enable healthcare providers to be effective in their work, and perceive less job dissatisfaction (Wong & Laschinger, 2013). There is a link between organizational structures (global empowerment) and collaboration (Regan et al., 2016). Based on this evidence, it is hypothesized that healthcare providers who report higher levels of interprofessional collaboration and lower levels of conflict will also report greater levels of respect and job satisfaction. It is hypothesized that these factors will lead to a positive patient safety climate, and higher ratings of satisfaction with the care delivered by healthcare providers working in a tertiary care hospital setting. In total, seven hypotheses were generated for this study (Figure 4.1).

**Hypotheses**

**Hypothesis 1:** Global Empowerment is positively related to interprofessional collaboration, respect, job satisfaction, and patient safety climate.

**Hypothesis 2:** Interprofessional collaboration is positively related to respect, job satisfaction, patient safety climate, and provider satisfaction with the quality of care delivered.

**Hypothesis 3:** Interprofessional collaboration has an indirect effect on the relationships between global empowerment and job satisfaction, patient safety climate, and satisfaction with quality of care.

**Hypothesis 4:** Conflict is negatively related to interprofessional collaboration and respect.
**Hypothesis 5:** Respect is positively related to job satisfaction and patient safety climate.

**Hypothesis 6:** Job satisfaction is positively related to satisfaction with the quality of care.

**Hypothesis 7:** Patient safety climate is positively related to job satisfaction and provider satisfaction with the quality of care delivered.

**Methods**

**Design**

This study used a secondary analysis of cross-sectional data from a hospital-based intervention study to test the hypothesized IPP model. The prior intervention study used a quasi-experimental pre–post survey longitudinal study design and healthcare providers completed a survey at baseline and post-implementation of a new interprofessional model of patient care. Invitation letters and surveys were placed in employee mailboxes (Dillman, 1978) and participation was voluntary and anonymous (Polit & Beck, 2018). The post-implementation data collected 6-8 months after the model was introduced were used in the model testing analyses.

**Context – the Prior Intervention Study**

An Interprofessional Model of Patient Care (IPMPC©) was implemented in 2014 as an intervention aimed to improve interprofessional collaboration within the Ottawa Hospital (TOH). Professional practice leaders representing healthcare provider groups at TOH developed a set of twenty-two (22) guiding principles to provide organizational structures and processes for IPP with a focus on improving collaboration, and the quality of patient care delivery (Appendix D). The guiding principles were divided into two areas of focus: 1) the care environment and community linkages (example, “Patient/family will receive safe and competent care from the most appropriate health care providers’); and 2) interprofessional teamwork (example, “The health care providers will collaborate and
provide support to foster team spirit and teamwork”.

As part of the intervention, Implementation Teams consisting of healthcare providers were created across the hospital sites, and the teams were required to report on the progress of meeting the twenty-two guiding principles. The teams were responsible to determine whether each principle was met, partially met, or unmet. Once determined, the team subsequently developed action plans to address and measure the success of the implementation based on the guiding principles. The action items or deliverables were developed through team consensus, and then rolled out or implemented. Deliverables included the implementation and evaluation of structured educational workshops, and completion of online learning modules focused on raising awareness of IPP. To evaluate the effectiveness of the intervention, healthcare providers were asked to complete to an anonymous self-report survey that measured a number of variables, including interprofessional collaboration, satisfaction with the quality of care provision, patient safety climate, and other key interactional and organizational factors associated with IPP.
Figure 4.1

Hypothesized Model

*Note.* ‘+’ relates to a positive relationship; ‘-’ relates to a negative relationship; hypotheses made a priori
Setting

The Ottawa Hospital (TOH) is one of the largest research intensive academic teaching hospitals systems in Canada. The Ottawa Hospital has three main campuses with over 1200 beds and approximately 12,000 employees and is affiliated with the University of Ottawa, Children's Hospital of Eastern Ontario, and the University of Ottawa Heart Institute. It includes quaternary, tertiary, secondary and primary care, with several programs servicing the local community, and offers regional programming. The Ottawa Hospital is also one of two trauma centers in Eastern Ontario and southern Quebec.

Sample

The population of interest was healthcare providers who worked across all sites of the Ottawa Hospital. Healthcare providers employed (full time; part time; contract) were invited to participate in a larger quasi-experimental intervention study aimed to evaluate the Interprofessional Model of Patient Care (IPMPC©). In this present analysis, the study sample consisted of participants who responded to a survey at 6 months post-implementation of the new interprofessional model of care (n =1707; 47% response rate).

Research Ethics

Research ethics approval was granted in 2012 and was renewed annually thereafter by the Ottawa Hospital Research Institute, the University of Western Ontario, and the University of Ottawa (Appendix B). Ethics approval was in accordance with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (2020). The data were anonymized for the purpose of maintaining confidentiality with no identifiers. The data were stored electronically, and were password protected.
Measures

In total, seven measures included in the IPMPC© survey were used in this study. The tools measured interactional (i.e., levels of interprofessional collaboration, conflict, respect) and organizational (global empowerment, patient safety climate) factors along with healthcare providers’ job satisfaction, and satisfaction with the quality of care delivered.

Intensity of Interprofessional Collaboration

The Intensity of Interprofessional Collaboration tool measures the intensity of collaboration across different professional groups (Sicotte et al., 2002). Interprofessional collaboration is a process for creating a partnership between healthcare providers and a client [patient] in a collaborative and coordinated approach to shared decision-making to provide interprofessional care (CIHC, 2010; Orchard et al., 2005). The 17-item tool consists of two subscales. The Care Sharing Activities subscale measures care activities shared among different groups of professionals (Golin & Ducanis, 1981). Care Sharing Activities (Items 1-10) reflects the sharing of clinical decision-making among healthcare providers. For example, the exchanging of information, creating common care plans, and considering data collected by other professionals. The Coordination subscale measures the work process that facilitates coordination between various groups of professionals (Georgopoulous & Mann, 1962). Coordination (Items 11-17) reflects the structure for care to be provided. For example, daily collaborative behaviours are integrated in day-to-day functioning, and professionals do their care without being a nuisance to one another and with effort to prevent conflict with shared responsibilities.

For this study, the Intensity of Interprofessional Collaboration Tool was slightly revised (Appendix C). The original tool developed by Sicotte et al (2002) had 18 items.
One item from the original tool was not included in the revision due to a poor factor loading (0.32) reported by Sicotte et al (2002). The item that was removed from the Care Sharing Activities subscale assessed whether “A high frequency of informal consultation occurred among healthcare providers”. One additional item from the original tool from the Care Sharing Activities subscale was also not included in this revised version because the wording for this item, “Sharing of common tasks” was similar to other items in the tool. A new item was added for the IPMPC© survey purposes; derived from theoretical knowledge of the interprofessional collaboration literature (Item 9, Appendix B). The new item assessed if “clinical decision-making is shared among healthcare providers”, an area which was missing from the original tool developed by Sicotte et al (2002).

In total, 17 items comprised the revised Intensity of Interprofessional Collaboration tool used in this study. The directions to complete the tool reads as follows: “Interprofessional collaboration – please indicate to what extent you personally agree or disagree with each of the following statements.” (Appendix C). Each of the 17 items was assessed on a 5-point Likert Scale ranging from one (strongly disagree) to five (strongly agree) by respondents. For example, the following is an item from the Coordination subscale: “The sharing of clinical responsibilities is well established among the different groups of professionals”. The overall score for the intensity of collaboration was determined by taking the mean score of each subscale, and averaging the two scores to obtain the total scale score. The total score is interpreted with lower scores (min =1) reflecting the ‘least collaboration’ and higher scores (max =5) being the ‘most intense’. To assess the descriptive statistics of the tool, the mean scores were calculated for each item, each subscale (Care Sharing Activities; Coordination), and the total mean score for the tool. The tool has shown good internal consistency with reported Cronbach’s alpha of
0.87 to 0.90 (Manojlovich et al., 2014; San-Martin-Rodriguez et al., 2008; Sicotte et al., 2002).

For this study, the alpha coefficient for each subscale and the total scale (Share Care Activities $\alpha$ = .87; Coordination $\alpha$ = .89; Total $\alpha$ = .93) suggests good internal consistency. Confirmatory factor analysis was conducted prior to undertaking this study using the baseline dataset ($n$=2064) from the IPMPC© study (Ellis et al., 2021). The CFA supported a two-factor model ($\chi^2$ (118) = 1430.39, $p$ <.0000; RMSEA =.07 [.070, .077]; CFI = .92; TLI =.91; SRMR = .04) as indicated by the goodness-of-fit indices (Hu & Bentler, 1999; MacCallum et al., 1996).

**Conflict**

The Levels of Conflict associated with Interprofessional Collaboration 7-item subscale is part of a five-dimension tool that measures intragroup processes (Sicotte et al., 2002). Conflict is operationalized as the level of disagreements associated with interprofessional collaboration by Sicotte and D’Amour (2002). Cronbach’s alpha reliability has been reported as 0.84 (Manojlovich et al., 2014), and common factor analysis (principal axis factoring with orthogonal rotations) was conducted for the larger tool (Sicotte et al, 2002). An example of the subscale’s items is: “There are frequent conflicts over the sharing of responsibilities by professionals in different disciplines”. Items are rated on a 5-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’. Higher mean scores indicate higher perceived levels of conflict when collaborating with healthcare providers (Appendix C). For this study, the alpha coefficient ($\alpha$ = .72) suggests good internal consistency. Confirmatory factor analysis was conducted prior to undertaking this study using the baseline dataset ($n$=2064) from the IPMPC© study. Confirmatory factor analysis supported a one-factor model ($\chi^2$ (14)
100

\[145.86, p < .001; \ RMSEA = .07 \ [ .064, .074 ]; \ CFI = .97; \ TLI = .95; \ SRMR = .03\] as indicated by the goodness-of-fit indices (Hu & Bentler, 1999; MacCallum et al., 1996).

**Global Empowerment**

Empowerment is described as a construct that reflects a positive attitude towards work. For example, access to opportunities, resources, information and support (Laschinger et al., 2004). Perceptions of global empowerment in the work environment was measured by the 2-item Global Empowerment (GE) items from the Conditions for Work Effectiveness Questionnaire II (CWEQ-II) by Laschinger et al (2001). The CWEQ-II is a well-established measure of structural empowerment (Laschinger et al., 2001) with good internal consistency (\(\alpha = .93\)). The GE items were originally included in the CWEQ-II to assess construct validity of the CWEQ-II tool, and has a reported high Pearson correlation coefficient with the total CWEQ-II score (\(r = .56\)). The two items measure the extent to which healthcare providers feel they are empowered to work effectively in their current work setting. Items are rated on a 5-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’ (Appendix C). An example is: “Overall, I consider my workplace to be an empowering environment”. The two items are averaged to obtain the overall score with higher scores representing stronger perceptions of working in an empowered work environment. For this study, the alpha coefficient (\(\alpha = .87\)) suggests good internal consistency.

**Respect**

The 3-item Respect tool, derived from Siegrist’s Effort-Reward Imbalance (ERI) Esteem subscale was used to measure perceptions of respect in the work environment (Siegrist, 1996). Respect is viewed as an appreciation for the efforts and contributions an individual brings to their role or job and the recognition for that effort (Siegrist, 2012).
An example of the tool’s items is: “Considering all my efforts and achievements, I receive the respect and prestige I deserve at work”. Items are rated on a 5-point Likert scale (Appendix C). The three items measure respect (i.e., an aspect of reward) using the five options to answer each item, with the first assessing the relevance of the item statement, and the other 4 options ranging from ‘Disagree, but I am not at all distressed’ to ‘Disagree, and I am very distressed’ (Appendix C). For this study, the items were reversed coded to reflect the direction of the level of agreement (Kline, 2016). A higher score represents a higher level of agreement with the statement (i.e., more respect). This tool has been shown to predict positive healthcare provider outcomes (Laschinger et al, 2005) including satisfaction with work environment. The respect subscale has construct validity with internal consistency (Manojlovich et al., 2014; Siegrist & Montano, 2014). For this study, the alpha coefficient ($\alpha = .83$) suggests good internal consistency. The tool was assessed prior to undertaking this study using the baseline dataset ($n=2064$) from the IPMPC© study. Confirmatory factor analysis indicated a just-identified model ($\chi^2 (0) = 0, p <.001; \text{RMSEA} =0; \text{CFI} = 1.000; \text{TLI} =1.000; \text{SRMR} = 0$). The tool has only three indicators, and the degrees of freedom equaled zero: therefore, there is no test of fit (Kenny, 2011; Muthén & Muthén, 2012). By definition, a just-identified model is when there is an equal amount of known and unknown information as a minimum condition for model just-identification (Kenny, 2011; Kline, 2016).

**Job Satisfaction**

Job Satisfaction was measured using 4 items from the Global Job Satisfaction questionnaire adapted from the Job Diagnostic Survey (JDS) developed by Hackman and Oldham in 1976 (Appendix C). Job satisfaction is described generally as an individual’s reaction (i.e., feelings, attitudes) towards their work or job (Fields, 2002). An example
from the measure is: “I feel that the health care facility provides a supportive work environment in which to work”. The items include aspects of the job that are related to overall satisfaction with the current job, and with co-workers. The items are rated on a 5-point Likert scale of ‘strongly disagree’ (=1) to ‘strongly agree’ (=5). The average for the four items is calculated for an overall job satisfaction score. Alpha reliability has been reported as .79 (Laschinger et al, 2014), and the tool has demonstrated construct validity through confirmatory factor analysis (Laschinger et al., 2011). For this study, the alpha coefficient ($\alpha = .85$) suggests good internal consistency. Confirmatory factor analysis was conducted prior to undertaking this study using the baseline dataset ($n=2064$) from the IPMPC© study. Confirmatory factor analysis supported a one-factor model ($\chi^2 (2) =75.98, p <.001; \text{RMSEA} = .147 [ .120, .177]; \text{CFI} = .975; \text{TLI} = .925; \text{SRMR} = .023$) as indicated by the goodness-of-fit indices (Hu & Bentler, 1999; MacCallum et al., 1996).

**Patient Safety Climate**

Patient safety climate was measured using an 8-item, 5-point Likert-type subscale which is part of the Safety Attitudes Questionnaire (Sexton et al., 2006). Patient safety climate is considered part of the overall organizational culture and includes the shared beliefs, attitudes, values, and norms in relation to their organization’s ongoing patient safety performance (Morello et al., 2013). The safety climate subscale assesses the degree to which individuals perceive that their organization has made a commitment to safety with higher averaged ratings reflecting higher perceptions of a patient safety climate (Appendix C). An example of the tool’s items is: “The culture in this clinical area makes it easy to learn from the errors of others”. Items are rated on a 5-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’. For this study, Item 8 was recoded to match the direction of the other items with level of agreement (Kline, 2016). The
wording for Item 8 is as follows: “Personnel frequently disregard rules or guidelines (e.g., hand-washing, treatment protocols/clinical pathways, sterile field, etc.) that are established for this clinical area”. Therefore, by reverse coding the item, higher scores represent strong disagreement with this statement indicating a positive safety climate to higher scores for the remaining items. This scale has been tested prior for construct validity, and the Cronbach’s alpha is reported as ranging from .79 to .90 (Manojlovich et al., 2014; Sexton et al., 2006). For this study, the alpha coefficient (α = .75) suggests good internal consistency. Confirmatory factor analysis was conducted prior to undertaking this study using the baseline dataset (n=2064) from the IPMPC© study. Confirmatory factor analysis supported a one-factor model ($\chi^2 (20) = 283.34, p < .001; \text{RMSEA} = .08 [.079, .097]; \text{CFI} = .91; \text{TLI} = .87; \text{SRMR} = .042$) as indicated by the goodness-of fit indices (Hu & Bentler, 1999; MacCallum et al., 1996).

**Provider Satisfaction with the Quality of Care Delivered**

Provider satisfaction with the quality of care delivered was measured using a scale (Nursing Satisfaction with Quality of Care [NSQC]) developed for the National Survey of the Work and Health of Nurses (NSWHN) in Canada (Statistics Canada, 2005). This scale consists of five items rated on a five-point Likert-type scale ranging from 1 (very dissatisfied) to 5 (very satisfied). Laschinger and Kerr (2006) developed and tested the scale based on The Nursing Sector Study recommendations in its Phase II final report (The Nursing Sector Study Corporation, 2006), and the tool has been recently evaluated for use in a sample of nurses working in hospitals in Saudi Arabia (Alilyyani et al., 2021). An example of the tool’s items is: “How satisfied are you with the overall quality of care patients receive in this clinical area?” This scale is intended to measure provider satisfaction with the quality of care delivered (Appendix C). Higher averaged ratings
indicate higher perceptions of the overall satisfaction with the quality of care delivered within their specialized clinical area. For this study, the alpha coefficient (α = .85) suggests good internal consistency. Confirmatory factor analysis was conducted prior to undertaking this study using the baseline dataset of healthcare providers (n = 2064) from the IPMPC© study. Confirmatory factor analysis supported a one-factor model (χ² (5) = 231.92, p < .001; RMSEA = .16 [.146, .182]; CFI = .97; TLI = .95; SRMR = .037) as indicated by the goodness-of-fit indices (Hu & Bentler, 1999; MacCallum et al., 1996).

Data Management and Analysis

Statistical analyses of the data were conducted using the IBM Statistical Package for Social Sciences (IBM SPSS) version 23 (2015) and MPlus 7.1 (Muthén & Muthén, 2013). SPSS was used for obtaining descriptive statistics including demographic characteristics. In this study, MPlus was used for the purpose of testing a fully latent structural equation model (SEM) to examine the relationships in the hypothesized model (Figure 4.2).

Data Integrity and Missing Values

To ensure data integrity and accuracy, the post-implementation data collected six months after the implementation of the IPMPC© (n=1707) were first screened using a procedure proposed by Tabachnick and Fiddell (2013) to manage the data (i.e., cleaning the data). Frequency tables and codebook analyses were run in SPSS to assess the presence of incorrect data entry or if data were incorrectly coded. The total sample (n=1707) is an adequate sample size (>200) with enough power for this type of analysis (Kline, 2016).

The data were screened for data quality by assessing for missing values using frequency tables for each variable to determine how much data were missing completely.
at random or if there was a pattern of missing data (Little, 1988). Missing data can present a challenge because if handled incorrectly, inaccurate inferences about the data could be made (Kline, 2016). There are several ways missing data can be categorized (Little & Rubin, 2002). The categories are either missing completely at random (MCAR), missing at random (MAR), and missing not at random (MNAR).

If data are missing at random or completely at random, this is considered inconsequential as it can be assumed that the missing data would not bias the outcomes of interest (Little, 2013). Little’s MCAR test (Little, 1988) was significant (Chi-square = 4500.74, p = .013) indicating the data were not missing completely at random. In this study, values that were missing at random (<5%) were addressed using a Full Information Maximum Likelihood Estimator (FIML) in Mplus (Kline, 2016; Muthén & Muthén, 2012).
Figure 4.2

_Hypothesized Model with Latent Constructs and Observed Indicators_

*Note.* Interprofessional Collaboration Tool has two subscales: Share Caring Activities, Coordination.

Confirmatory factor analysis was conducted to assess construct validity.
Full Information Maximum Likelihood is an advanced method to address missing data and allows for the inclusion of statements which specifies that the variable (i.e., -99) will be used for the missing data. Full Information Maximum Likelihood has been shown to calculate unbiased parameter estimates and their standard errors without deletion of missing data compared to other classical methods (Kline, 2016; Muthén & Muthén, 2012). Normality of the data was confirmed by skewness and kurtosis indexes. Skewness and kurtosis values should be less than ± 1.0 to be considered normal (Kline, 2016; Polit & Yang, 2016). Structural equation modeling techniques in Mplus assume normality of the data (Kline, 2016; Muthén & Muthén, 2012).

**Analysis using Structural Equation Modeling**

Structural equation modeling (SEM) is a multivariate technique used to test theoretically derived hypothesized models that simultaneously estimates relationships between independent variables and dependent variables (Kline, 2016). Modeling theoretical constructs as latent variables allows measurement error to be accounted for and controlled for during the analysis (Baron & Kenny, 1986; Kline, 2016). As a result, SEM can provide more precise parameter estimates with increased statistical power (Kline, 2016).

Structural equation modeling tests hypotheses regarding relationships among observed (i.e., observed and measured items) and latent variables (i.e., theoretical constructs) using a set of regression equations simultaneously in one model (Kline, 2016). Latent variables are the qualities, characteristics, constructs or factors determined through responses to items in measures (Kline, 2016).
**Measurement Model**

With SEM, there are several steps to be undertaken. First, the development of a measurement model (Figure 4.2) is required to specify the relationships among unobserved latent variables or constructs including the description of the measurement properties of the variables (Kline, 2016; Tabachink, & Fidell, 2013). It is important to first assess whether measures are valid before testing relationships among the constructs (Kline, 2016). For this study, the measurement model included all measures of the latent variables and was assessed simultaneously using confirmatory factor analysis (CFA). Confirmatory factor analysis (CFA) is a statistical structural equation modeling technique used to examine the relationship between observed indicators or items that are hypothesized to measure a theoretical construct (Kline, 2016). Factor loadings measure how observed indicators or items contribute to factors, and the strength of the factor loadings depends on the theoretical relationships between the items and the factors (Bandalos & Finney, 2010; Kline, 2016). Loadings ranging from 0.71 to 0.63 are considered excellent to very good, and loadings ranging from 0.55 to 0.45 are considered good to fair, respectively (Tabachnick & Fiddell, 2013). Factor loadings less than 0.32 are considered poor (Tabachnick & Fiddell, 2013) and this value was used as the cutoff for this study.

The constructs for this study were modeled as first-order latent variables (Byrne, 2012) with the exception of one, interprofessional collaboration. Interprofessional collaboration was modeled as a second-order latent variable based results from a prior CFA (Ellis et al., 2021). The measurement model was assessed using goodness-of-fit indices (Kline, 2016).
Structural Model

Next, a fully latent structural equation model (Figure 4.3) was developed to test the relationships among the latent variables once the measurement model was deemed acceptable (Kline, 2016). The model was specified, then identified with parameter estimates, and assessed with goodness-of-fit indices (Kline, 2016; MacCallum et al., 1996). The paths for observed variables or structural equations for latent variables are estimated. Path coefficients are regression beta (β) weights that reflect the structure of the model (Kline, 2016). A higher value indicates the strength of the relationship between two variables whereas the direction of the relationship is represented with either a positive or negative sign (Kline, 2016). Standardized and unstandardized parameters or path coefficients were estimated to compute the direct, indirect, and total effects of latent variables in Mplus (Kline, 2016; Muthén & Muthén, 2012). An indirect effect occurs when the effect of one variable (either observed or latent) on a second variable is mediated by one or more other intervening variables (Brown, 1997; Kline, 2016). Indirect effects were evaluated (i.e., estimated) using bootstrapping techniques in Mplus (Kline, 2016; Muthén & Muthén, 2012). Bootstrapping is a method based on resampling with replacement which is carried out many times (i.e., 2000 times) and an empirical sampling distribution is then created (Bollen & Stine, 1990; Kline, 2016). An indirect effect is computed, and a confidence interval is determined (Bollen & Stine, 1990; Kline, 2016). This method is used correct for bias of the true value by producing a confidence interval for the calculated indirect effects. This method helps to address the potential for Type 1 error rates (Bollen & Stine, 1990; Kline, 2016).
Figure 4.3

Final Fully Latent Structural Equation Model

Note. Model Fit: $\chi^2(927) = 4013.18$, $p < .001$; RMSEA = .043 [.041, .046]; CFI = .93; TLI = .94; SRMR = .043.

*Significant $p < .001$; Red lines = Non-significant path. Black lines = Statistically significant path.
Although indirect effects are part of mediation, the term mediation refers to a causal prediction that one variable will cause changes to an outcome variable through an intervening variable (Kline, 2016; Little, 2013). For mediation to be conducted, there needs to be evidence of changes, and if estimates are measured simultaneously, then it is more difficult to estimate changes in variables for the indirect pathway in studies that are non-experimental in design (Kline, 2016). Therefore, a true mediation analysis was not conducted given this study used cross-sectional data with no time precedence in its design (Kline, 2016). However, indirect effects were evaluated and estimated in relation to Hypothesis 3: Interprofessional collaboration has an indirect effect on the relationships between global empowerment and job satisfaction, patient safety climate, and satisfaction with quality of care.

**Model Fit Criteria**

As a guideline for the assessment of model fit, the cutoff criteria proposed by Hu and Bentler (1999) and MacCallum, Browne, and Sugawara (1996) were used. The following goodness-of-fit indices were used to identify a good fit between the data and the model: (a) standardized root mean square residual (SRMR) values of .08 or below; (b) root mean square error of approximation (RMSEA) values of .08 or less (MacCallum et al., 1996) with 90% confidence interval reported; (c) comparative fit index (CFI) values of .95 or greater; (d) Tucker–Lewis Index (TLI) values close to .95 or greater (Hu & Bentler, 1999); and (e) a Chi-Square ($\chi^2$) test.

**Meaning of Fit Indices**

The standardized root mean square residual (SRMR) is an absolute measure of fit and is the square root of the difference between the residuals of the sample covariance matrix and the hypothesized model with values of .08 or below indicating fit (Hu & Bentler, 1999). The root mean square error of approximation (RMSEA) measures the
lack of fit between the data and the model, and values less than .08 indicate a good fitting model (MacCallum et al., 1996). The comparative fit index (CFI) and Tucker-Lewis index (TLI) indicate a relative fit between the observed and hypothesized models. The index ranges between 0 and 1, with higher values indicating better fit (Hu & Bentler, 1999). A perfect fit means that there is no discrepancy between the hypothesized model and the observed model. A small non-significant Chi-square test indicates a good fit to the data (Kline, 2016). However, Chi-square results should be interpreted with caution because as the sample size increases, the likelihood of a significant Chi-square result (Kline, 2016). Hence why it is important to use other fit indices to assess model fit.

**Measurement Tool Reliability Analysis and Construct Validity**

Internal consistency as a concept to measure reliability requires only a single administration of an instrument to respondents (Cronbach, 1951; Kline, 2016). A common means of assessing internal consistency is coefficient alpha (Cronbach, 1951; Tavakol & Dennick, 2011). Cronbach’s alpha determines the extent to which the items of a measure or scale go together and jointly measure the construct of interest (Cronbach, 1951). Given that coefficient alpha is most commonly used in the literature to estimate internal consistency, it was used for this study’s reporting of reliability (Cronbach, 1951; Tavakol & Dennick, 2011). Cronbach’s alpha values greater than .70 indicate good internal consistency and was the cut-off value for this study (Cronbach, 1951).

Construct validity was addressed by confirmatory factor analyses using a different dataset (i.e., the IPMPC© baseline dataset) for six of the seven measures prior to use in this study to test the hypothesized model (Kline, 2016). The six measures that were assessed by CFA include: Intensity of Interprofessional Collaboration, Conflict, Respect, Job Satisfaction, Patient Safety Climate, and Satisfaction with Quality of Care. The Global Empowerment measure was not included as it has only two items. However, it
has been shown to be highly correlated to the full CWEQ-II which is a reliable and valid tool used extensively in the nursing literature in varying samples (Laschinger et al., 2001).

**Results**

Participants were mainly female (81.1%), averaging 44.7 years ($SD = 11.05$ years) of age, and 18.14 years of working experience ($SD= 11.32$ years). Most had a university degree (undergraduate 28.9%; graduate 32.2%) or a college diploma (38.2 %) and worked full-time (70.1%) or part-time (22.4%). The largest group of healthcare providers were nurses (67.8%) (Registered Nurses; 62.4%; Registered Practical Nurses; 5.4%) and physicians (17.3%) with the remaining being other key healthcare members (Table 4.1). The sample is reasonably representative of the population of interest (i.e., healthcare providers) working within tertiary care hospital settings.

**Descriptive Results**

Descriptive results for the main study variables are presented in Table 4.2. All measurement tools demonstrated acceptable reliability ($\alpha = .72$ to .94). On average, healthcare providers rated their interprofessional collaboration as moderate, $M = 3.66$ of 5 ($SD = .667$) as well as global empowerment as $M = 3.53$ of 5 ($SD = 1.02$). Levels of respect was rated somewhat higher as $M = 4.4$ of 5 ($SD = .794$), and job satisfaction was also moderate $M =3.49$ out of 5 ($SD =.948$). Patient safety climate was rated high, $M = 4.15$ out of 5 ($SD = .737$) and satisfaction with the quality of care delivered was moderate at $M =3.59$ out of 5 ($SD = .787$). Healthcare providers rated conflict as being low, $M =2.69$ out of 5 ($SD = .613$). Correlations among all main variables were significant (Table 4.2).
Table 4.1

Participant Characteristics

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Mean</th>
<th>SD</th>
<th>Professional Designation</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>44.7</td>
<td>11.05</td>
<td>Audiologist</td>
<td>6</td>
<td>0.4</td>
</tr>
<tr>
<td>Years of working experience</td>
<td>18.14</td>
<td>11.32</td>
<td>Pharmacist</td>
<td>15</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Occupational Therapist</td>
<td>39</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clinical RPN</td>
<td>91</td>
<td>5.3</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>Physiotherapist</td>
<td>48</td>
<td>2.8</td>
</tr>
<tr>
<td>Female</td>
<td>1385</td>
<td>81.1</td>
<td>Respiratory Therapist</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>Male</td>
<td>297</td>
<td>17.4</td>
<td>Clinical RN</td>
<td>1057</td>
<td>62.4</td>
</tr>
<tr>
<td>Missing</td>
<td>25</td>
<td></td>
<td>Resident Physician</td>
<td>5</td>
<td>0.3</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td>Staff/Attending Physician</td>
<td>288</td>
<td>17</td>
</tr>
<tr>
<td>College diploma</td>
<td>640</td>
<td>38.2</td>
<td>Dietician</td>
<td>33</td>
<td>1.9</td>
</tr>
<tr>
<td>Undergraduate degree</td>
<td>484</td>
<td>28.9</td>
<td>Social Worker</td>
<td>61</td>
<td>3.6</td>
</tr>
<tr>
<td>University graduate degree</td>
<td>540</td>
<td>32.2</td>
<td>Speech Therapist</td>
<td>8</td>
<td>0.5</td>
</tr>
<tr>
<td>Other (i.e., high school)</td>
<td>11</td>
<td>0.7</td>
<td>Psychologist</td>
<td>19</td>
<td>1.1</td>
</tr>
<tr>
<td>Missing</td>
<td>32</td>
<td></td>
<td>X-Ray Technician</td>
<td>7</td>
<td>0.4</td>
</tr>
<tr>
<td>Employment Status</td>
<td></td>
<td></td>
<td>Missing</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>1190</td>
<td>70.1</td>
<td>Total</td>
<td>n=1707</td>
<td></td>
</tr>
<tr>
<td>Part-time</td>
<td>381</td>
<td>22.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Share</td>
<td>57</td>
<td>3.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casual</td>
<td>20</td>
<td>1.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>0.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>53</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Response rate = 47%
Table 4.2

*Means, Standard Deviations, Reliability Coefficients, and Correlation Matrix (n=1707)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>α</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interprofessional Collaboration</td>
<td>3.66</td>
<td>0.67</td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Conflict</td>
<td>2.69</td>
<td>0.61</td>
<td>0.72</td>
<td>-66</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Empowerment</td>
<td>3.53</td>
<td>1.02</td>
<td>0.87</td>
<td>.51</td>
<td>.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Respect</td>
<td>4.40</td>
<td>0.79</td>
<td>0.83</td>
<td>.28</td>
<td>-.25</td>
<td>.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Job Satisfaction</td>
<td>3.49</td>
<td>0.95</td>
<td>0.85</td>
<td>.46</td>
<td>-.33</td>
<td>.68</td>
<td>.42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Satisfaction with Care</td>
<td>3.59</td>
<td>0.79</td>
<td>0.85</td>
<td>.46</td>
<td>-.32</td>
<td>.61</td>
<td>.32</td>
<td>.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Patient Safety Climate</td>
<td>4.15</td>
<td>0.73</td>
<td>0.75</td>
<td>.55</td>
<td>-.38</td>
<td>.48</td>
<td>.39</td>
<td>.58</td>
<td>.51</td>
<td></td>
</tr>
</tbody>
</table>

*Note. SD = Standard Deviation; α = Cronbach’s alpha; all correlations were statistically significant at p<.001*

Total mean score with standard deviation and Cronbach’s alpha for interprofessional collaboration is reported.
Measurement Model

For this study, the restricted measurement model included all measures for each latent variable and was assessed simultaneously using confirmatory factor analysis (CFA). The goodness-of-fit indices for the initial model (Hu & Bentler, 1999; MacCallum et al., 1996) met the requirements ($\chi^2 (961) = 4106.25, p < .001$; RMSEA = .044 [.064, .084]; CFI = .92; TLI = .91; SRMR = .043). These results demonstrated an adequate fit to the observed data (Table 4.3). The Chi-square result was observed to be significant. However, the initial measurement model results revealed a low factor loading for one of the measures. The factor loadings for Patient Safety Climate ranged from 0.22 to 0.70. Item 8 from the patient safety tool, “Personnel frequently disregard rules or guidelines (e.g., hand-washing, treatment protocols/clinical pathways, sterile field, etc.) that are established for this clinical area” had a poor factor loading (0.22) considering the other factor loadings were higher (Tabachnick & Fiddell, 2013). Therefore, this item was dropped (i.e., modification) and the measurement model was re-assessed using CFA (Kline, 2016; Tabachnick & Fiddell, 2013). The goodness-of fit indices (Hu & Bentler, 1999; MacCallum et al., 1996) for the model with the one modification met the requirements ($\chi^2 (927) = 4013.18, p < .001$; RMSEA = .043 [.041, .046]; CFI = .93; TLI = .94; SRMR = .042). These results demonstrate a slight improvement in the model with an adequate fit to the observed data. The Chi-square result was observed to be significant. Therefore, no other modifications were made as there was no theoretical support for further modifications (Kline, 2016).
Table 4.3

Full Restricted Measurement Model

<table>
<thead>
<tr>
<th>Measurement Model</th>
<th>Chi Square</th>
<th>Df</th>
<th>RMSEA</th>
<th>RMSEA 90% CI</th>
<th>CFI</th>
<th>TLI</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Model *</td>
<td>4106.26</td>
<td>961</td>
<td>.044</td>
<td>.064, .084</td>
<td>.92</td>
<td>.91</td>
<td>.043</td>
</tr>
<tr>
<td>Final Model**</td>
<td>4013.18</td>
<td>927</td>
<td>.043</td>
<td>.042, .046</td>
<td>.93</td>
<td>.94</td>
<td>.042</td>
</tr>
</tbody>
</table>

Note. Df = Degree of freedom, RMSEA = Root mean square error of approximation, CI= Confidence Interval, CFI = Comparative fit index, TLI = Tucker -Lewis Index, SRMR = Standardized root mean square residual. *All constructs; ** Modification: Removed Item 8 Patient Safety Climate.

Factor Loadings

Interprofessional collaboration was modeled as a second-order latent construct measured by its two subscales. The factor loadings for each subscale loaded onto the second-order construct and were considered excellent (0.91 - 0.97). The factor loadings for the Care Sharing subscale ranging from 0.50 to 0.80, and the factor loadings for the Coordination subscale ranged from 0.70 to 0.81 (Table 4.4) and were considered acceptable (Tabachnick & Fidell, 2013). Global empowerment, respect, job satisfaction, satisfaction with quality of care and conflict were modeled as first-order latent constructs.
Table 4.4

Standardized Factor Loadings for the Intensity of Interprofessional Collaboration Tool

<table>
<thead>
<tr>
<th>Construct</th>
<th>Subscale/Item</th>
<th>Standardized</th>
<th>SE</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interprofessional Collaboration</td>
<td>Care Sharing</td>
<td>.911</td>
<td>.010</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Coordination</td>
<td>.967</td>
<td>.009</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Subscale</td>
<td>Item</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care Sharing Activities</td>
<td>CS1</td>
<td>.630</td>
<td>.016</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CS2</td>
<td>.654</td>
<td>.015</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CS3</td>
<td>.506</td>
<td>.019</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CS4</td>
<td>.789</td>
<td>.010</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CS5</td>
<td>.698</td>
<td>.013</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CS6</td>
<td>.751</td>
<td>.012</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CS7</td>
<td>.767</td>
<td>.011</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CS8</td>
<td>.843</td>
<td>.008</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CS9</td>
<td>.689</td>
<td>.014</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CS10</td>
<td>.678</td>
<td>.014</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Coordination</td>
<td>CoOrd1</td>
<td>.769</td>
<td>.011</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CoOrd2</td>
<td>.705</td>
<td>.013</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CoOrd3</td>
<td>.782</td>
<td>.011</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CoOrd4</td>
<td>.764</td>
<td>.011</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CoOrd5</td>
<td>.805</td>
<td>.010</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CoOrd6</td>
<td>.796</td>
<td>.010</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>CoOrd7</td>
<td>.682</td>
<td>.014</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

According to Tabachnick and Fiddell (2013), the factor loadings for global empowerment were considered excellent (0.86 - 0.91), and the factor loadings for respect (0.67 - 0.94), job satisfaction (0.70-0.84), satisfaction with care (0.67 - 0.78) and patient safety (0.52 - 0.70) were considered acceptable (Table 4.5). However, the factor loadings for conflict ranged from (-0.48 - 0.78). Item 3 from the tool, “Generally speaking, conflicts over the sharing of responsibilities by professionals in different disciplines are easily resolved” had a negative factor loading (-0.48). The sign in front of the loading signifies the direction or the way the item is related to the factor. If the item’s meaning is in opposition to the construct or the factor, a response in disagreement with what the item represents will indicate a higher level of the measured construct (Chen, 2017; Podsakoff et al., 2012). For example, Item 3 was asking respondents to agree or disagree with a
statement worded to indicate that conflict is easily resolved. If a respondent is in disagreement with the item statement, lower scores for this item (i.e., strongly disagree) indicate conflict, which is in opposition to what the item is measuring (i.e., presence of conflict resolution). The other items in comparison attempt to indicate the presence of conflict. The item was retained because it met the threshold of the cut-off value of 0.45 used in this study (Tabachnick & Fiddell, 2013) and because of its theoretical relevance to conflict (Sicotte et al., 2002). No other modifications were made.

Table 4.5

*Standardized Factor Loadings for All Measures*

<table>
<thead>
<tr>
<th>Construct</th>
<th>Subscale/Item</th>
<th>Standardized</th>
<th>SE</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Empowerment</td>
<td>Em1</td>
<td>.861</td>
<td>.010</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Em2</td>
<td>.905</td>
<td>.010</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Interprofessional</td>
<td>Care Sharing</td>
<td>.911</td>
<td>.010</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Collaboration</td>
<td>Coordination</td>
<td>.967</td>
<td>.009</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Respect</td>
<td>R1</td>
<td>.768</td>
<td>.014</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>R2</td>
<td>.668</td>
<td>.015</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>R3</td>
<td>.941</td>
<td>.011</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Conflict</td>
<td>C1</td>
<td>.566</td>
<td>.019</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>C2</td>
<td>.717</td>
<td>.014</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>C2</td>
<td>-.475</td>
<td>.021</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>C3</td>
<td>.694</td>
<td>.015</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>C4</td>
<td>.579</td>
<td>.018</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>C5</td>
<td>.718</td>
<td>.014</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>C7</td>
<td>.776</td>
<td>.012</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>JS1</td>
<td>.839</td>
<td>.010</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>JS2</td>
<td>.696</td>
<td>.014</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>JS3</td>
<td>.757</td>
<td>.013</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>JS4</td>
<td>.782</td>
<td>.012</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Patient Safety Climate</td>
<td>P1</td>
<td>.564</td>
<td>.020</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>P2</td>
<td>.561</td>
<td>.020</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>P3</td>
<td>.693</td>
<td>.016</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>P4</td>
<td>.660</td>
<td>.017</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>P5</td>
<td>.569</td>
<td>.019</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>P6</td>
<td>.522</td>
<td>.020</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>P7</td>
<td>.580</td>
<td>.019</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Satisfaction with Quality of Care</td>
<td>Q1</td>
<td>.783</td>
<td>.012</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
The fit indices (Hu & Bentler, 1999) show that the model was an adequate fit to the data \( \chi^2 (927) = 4013.18, p < .000; \) RMSEA = .043 \([.041, .046]\); CFI = .93; TLI = .94; SRMR = .043. Results of model standardized path coefficients are reported for each hypothesis (Figure 4.3). **Hypothesis 1:** Empowerment had a direct positive relationship with interprofessional collaboration \((\beta = .565, p < .001)\), respect \((\beta = .332, p < .001)\), job satisfaction \((\beta = .614, p < .001)\) and patient safety climate \((\beta = .465, p < .001)\). Thus, hypothesis 1 was supported. **Hypothesis 2:** Interprofessional collaboration was positively related to job satisfaction \((\beta = .241, p < .001)\), patient safety climate \((\beta = .257, p < .001)\) and satisfaction with quality of care \((\beta = .101, p = .008)\) but not respect \((\beta = .049, p = .214)\). Thus, hypothesis 2 was partially supported. **Hypothesis 3:** Interprofessional collaboration had an indirect effect on the relationship between empowerment and job satisfaction \((\beta = .072, p < .001)\), patient safety climate \((\beta = .165, p < .001)\) and satisfaction with quality of care \((\beta = .087, p < .001)\). Thus, hypothesis 3 was supported (Figure 4.4). **Hypothesis 4:** Conflict was negatively related to interprofessional collaboration \((\beta = -.731, p < .001)\) but not respect \((\beta = -.092, p = .095)\). Thus, hypothesis 4 was partially supported. **Hypothesis 5:** Respect was positively related to job satisfaction \((\beta = .234, p < .001)\) but not patient safety climate \((\beta = .066, p = .143)\). Thus, hypothesis 5 is partially supported. **Hypothesis 6:** Job satisfaction was positively related to satisfaction with quality of care \((\beta = .240, p < .001)\). Thus, hypothesis 6 was supported. **Hypothesis 7:** Patient safety climate was positively related to job satisfaction \((\beta = .342, p < .001)\) and satisfaction with quality of care \((\beta = .136, p = .001)\). Thus, hypothesis 7 was supported. Direct and indirect effects are presented in Table 4.6.
Figure 4.4

Final Fully Latent Structural Equation Model: Indirect Effects

Note. Model Fit: $\chi^2(927) = 4013.18$, $p < .001$; RMSEA = .043 [.041, .046]; CFI = .93; TLI = .94; SRMR = .043.

*Significant $p < .001$; Red lines = Non-significant. Black lines = Significant. Bold Black lines = Indirect effects through Interprofessional Collaboration. Indirect effects are reported with 95% Confidence Intervals.
Table 4.6

Total Direct, Indirect and Specific Effects

<table>
<thead>
<tr>
<th>Direct Effects</th>
<th>Unstandardized B</th>
<th>Standardized $\beta$</th>
<th>SE</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empow $\rightarrow$ IP Collab</td>
<td>.329</td>
<td>.565</td>
<td>.045</td>
<td>.001</td>
</tr>
<tr>
<td>Empow $\rightarrow$ JobSat</td>
<td>.466</td>
<td>.614</td>
<td>.082</td>
<td>.001</td>
</tr>
<tr>
<td>Empow $\rightarrow$ Respect</td>
<td>.269</td>
<td>.332</td>
<td>.037</td>
<td>.001</td>
</tr>
<tr>
<td>Empow $\rightarrow$ PtSafe</td>
<td>.286</td>
<td>.465</td>
<td>.070</td>
<td>.001</td>
</tr>
<tr>
<td>IP Collab $\rightarrow$ JobSat</td>
<td>.151</td>
<td>.241</td>
<td>.057</td>
<td>.001</td>
</tr>
<tr>
<td>IP Collab $\rightarrow$ Respect</td>
<td>.069</td>
<td>.049</td>
<td>.040</td>
<td>.214</td>
</tr>
<tr>
<td>IP Collab $\rightarrow$ PtSafe</td>
<td>.320</td>
<td>.257</td>
<td>.036</td>
<td>.001</td>
</tr>
<tr>
<td>IP Collab $\rightarrow$ QoCare</td>
<td>.115</td>
<td>.101</td>
<td>.043</td>
<td>.008</td>
</tr>
<tr>
<td>Conflict $\rightarrow$ Respect</td>
<td>-.14</td>
<td>-.092</td>
<td>.040</td>
<td>.095</td>
</tr>
<tr>
<td>Conflict $\rightarrow$ IP Collab</td>
<td>-.667</td>
<td>-.731</td>
<td>.047</td>
<td>.001</td>
</tr>
<tr>
<td>Respect $\rightarrow$ PtSafe</td>
<td>.138</td>
<td>.066</td>
<td>.033</td>
<td>.143</td>
</tr>
<tr>
<td>Respect $\rightarrow$ JobSat</td>
<td>.191</td>
<td>.234</td>
<td>.039</td>
<td>.001</td>
</tr>
<tr>
<td>JobSat $\rightarrow$ QoCare</td>
<td>.196</td>
<td>.240</td>
<td>.092</td>
<td>.001</td>
</tr>
<tr>
<td>PtSafe $\rightarrow$ JobSat</td>
<td>.142</td>
<td>.342</td>
<td>.045</td>
<td>.001</td>
</tr>
</tbody>
</table>

Indirect Effects

Specific Indirect Effects

| Empow $\rightarrow$ IP Collab $\rightarrow$ JobSat | .071 | .072 (95% CI: .047, .096) | .013 | .001 |
| Empow $\rightarrow$ IP Collab $\rightarrow$ PtSafe | .124 | .165 (95% CI: .128, .201) | .019 | .001 |
| Empow $\rightarrow$ IP Collab $\rightarrow$ QoCare | .066 | .087 (95% CI: .050, .097) | .014 | .001 |

Note. Empow = Empowerment; IP Collab = Interprofessional Collaboration; Job Sat = Job Satisfaction; Pt Safe = Patient Safety Climate; QoC = Satisfaction with Quality of Care. Values are significant at the $p<.001$ level. For Indirect effects, calculated 95% CI = Confidence level (lower 5%; upper 5%).
Discussion

The aim of this study was to investigate the relationships among interactional and organizational factors known to either impede or promote IPP with healthcare provider outcomes post-implementation of an interprofessional model of patient care. Global empowerment had a direct positive relationship with interprofessional collaboration, respect, job satisfaction, and patient safety climate. These results suggest that empowering organizational structures that support IPP influence the way healthcare providers’ feel about their interactions, rate their satisfaction with work and the quality of care delivered, and perceive a climate of patient safety. Interprofessional collaboration, a key interactional factor mediated (i.e., indirect effect) the relationships between empowerment and job satisfaction, patient safety climate, and satisfaction with quality of care. These key findings are reported and discussed in the following paragraphs.

Global Empowerment, Respect, and Job Satisfaction

To begin, healthcare providers reported being satisfied with their job when feeling empowered and respected in the workplace. Healthcare providers reported a moderate to high level of global empowerment, and this could be the result of the introduction of the interprofessional model of patient care supported at the organizational level, and adopted by its providers. Global empowerment had a direct positive relationship with both respect and job satisfaction. In the context of IPP, these findings are similar to seminal research that supports the notion that respect promotes a positive work environment, and is directly linked to empowerment structures (i.e., access to information, resources, support, and opportunity) embedded within an organization leading to job satisfaction (Laschinger, 2004; Faulkner & Laschinger, 2008).
Healthcare providers reported high ratings of respect, and this finding suggests that healthcare providers feel that they receive the necessary recognition for their efforts at work from both their colleagues and administration (Siegrist, 1996; 2012). Respect is viewed as an appreciation for others’ professional contributions, and is shown by acknowledging and recognizing efforts (DeCicco et al., 2006; Faulkner & Laschinger, 2008; Laschinger et al., 2004). In this study, feeling respected had a direct positive relationship to job satisfaction, which is consistent with prior research (Laschinger et al., 2008). Respect did not have a direct relationship with patient safety climate, which is a new finding in contrast to what is reported elsewhere (Manojlovich et al., 2014). However, in this study, the indirect effect of empowerment to patient safety climate through the level of interprofessional collaboration may have dampened the link between respect and patient safety climate given the high ratings of respect.

Earlier research has shown that respect facilitates collaboration (Faulkner & Laschinger, 2008; San Martin-Rodriguez et al., 2005). It is important to note that in this study, there was not a significant direct relationship between interprofessional collaboration and respect as hypothesized. Respect was rated as high in this study, and based on this finding, it is evident that healthcare providers are effectively collaborating post-implementation of an IPP model of care. Empowering work structures are needed to support interprofessional collaboration and respect; however, the notion that improved interprofessional collaboration on its own is directly related to healthcare providers’ sense of feeling recognized and appreciated for their contributions in the workplace is not supported. Therefore, organizations may want to focus their efforts on ensuring the necessary structures are in place to support IPP before introducing interventions focused on improving interprofessional collaboration. In addition, theory-driven strategic
initiatives to improve the mechanisms for healthcare providers (and other staff) to provide formal and informal feedback to one another in the form of appreciation and recognition (i.e., respect) are important to consider. Efforts focused on reinforcing respect as a core organizational value in the context of IPP, and efforts focused on enhancing interprofessional collaboration will in turn improve job satisfaction.

Job satisfaction was positively related to satisfaction with quality of care delivered, similar to other reported findings. The way in which healthcare providers feel about their work impacts their intent to stay in their career, and has been linked to quality of care ratings (Laschinger, 2012; Laschinger & Fida, 2015; Purdy et al., 2010). Patient safety climate was positively related to job satisfaction, and satisfaction with the quality of care delivered, and these relationships are similar to other reported findings. For example, safety perceptions have been found to be related to job satisfaction among other outcomes like job stress, and intention to leave (McGhan et al., 2020). Job satisfaction has been linked to the quality of the work environment, and the quality of healthcare provider relationships (Dellafiore et al., 2019; Espinoza et al., 2018; Zhang et al., 2016).

**Empowerment and Interprofessional Collaboration**

Empowerment had a direct relationship with interprofessional collaboration, and this finding is similar to earlier research which suggests higher ratings of empowerment (and leadership), and the presence of positive working relationships in a supportive environment improve interprofessional collaboration (Armstrong et al., 2009; Regan et al., 2016). Healthcare providers in this study reported a moderate level of interprofessional collaboration indicating they were successfully sharing information, and were able to organize clinical activities. Similar to what is found in the IPP literature, these findings suggest that healthcare providers maintained positive relationships by
working effectively together to coordinate and share care activities which requires shared power with decision-making (D’Amour et al. 2005; Dellaﬁore et al. 2019; Hurlock-Chorostecki et al., 2013; Manojlovich et al., 2014; Orchard et al., 2009).

The Mediating Role of Interprofessional Collaboration

Interprofessional collaboration mediated (i.e., indirect effects) the relationships between empowerment and job satisfaction, patient safety climate, and satisfaction with quality of care delivered. Although there was a direct relationship between empowerment and job satisfaction, interprofessional collaboration also mediated the relationship between empowerment and job satisfaction which is an important finding to consider when introducing mechanisms to promote IPP in healthcare organizations. This finding supports the notion that an IPP model of care provides the structure for healthcare providers to be empowered to work collaboratively, and these collaborative relationships positively influence job satisfaction. The link between empowering work environments and increased job satisfaction is well established in the literature (Laschinger et al, 2008). It is also known that empowerment structures and supportive practice environments enhance interprofessional collaboration (Regan et al., 2016).

In this study, empowerment had a direct positive relationship to patient safety climate. These results are consistent with prior research that supports the link between empowerment and patient safety (Armstrong et al., 2009; Wong et al., 2013). However, interprofessional collaboration had an indirect effect on the relationship between empowerment and patient safety and as far as is known, this finding has not been previously reported in relation to healthcare providers in tertiary care hospital settings. Furthermore, the relationship between empowerment and satisfaction with the quality of care delivered was mediated through interprofessional collaboration. This finding also
suggests that supportive structures that enable healthcare providers to practice interprofessionally are indirectly linked to how healthcare providers feel about the care they deliver. To our knowledge, the indirect effect of interprofessional collaboration on the relationship between empowerment and satisfaction with the quality of care delivered has not been reported in relation to tertiary care hospital settings. However, it is known that empowerment is linked to job satisfaction and higher quality of care ratings (Laschinger et al., 2008; Laschinger et al., 2016; Wong & Laschinger, 2013), and it is also known that empowerment, leadership, and supportive environments are linked to interprofessional collaboration (Regan et al., 2016).

Based on these findings, it is vital for organizations implementing IPP models of care to provide the necessary structures, processes, and resources for healthcare providers to feel empowered and satisfied with their work. For example, organizations must demonstrate they are committed to creating a supportive work environment, and work towards integrating the essential elements of IPP into the culture of the organization (D’Amour et al., 2005; Orchard et al., 2005; Regan et al., 2016). However, it is equally important for organizations to integrate initiatives to enhance the intensity of interprofessional collaboration in combination with these efforts in order to fully integrate IPP, and promote a climate of patient safety.

**Conflict and Interprofessional Collaboration**

In this study, conflict had a direct negative relationship with interprofessional collaboration, and this finding suggests that conflict has a negative influence on the level of interprofessional collaboration among healthcare providers. However, healthcare providers reported a low level of conflict, and this could be a result of the higher intensity of interprofessional collaboration undertaken by healthcare providers in this study.
Conflict was measured as the level of disagreement associated with interprofessional collaboration (i.e., conflict related to task sharing and the coordination of care activities). It stands to reason that if healthcare providers are reporting a high degree of interprofessional collaboration, it would be expected that the level of conflict associated with it would be lower, indicating support for the interprofessional model of patient care.

However, conflict did not have a direct negative relationship with respect among healthcare providers as hypothesized (Almost et al., 2010; CIHC, 2010). The low level of conflict reported by healthcare providers in this study may contribute as to why there was no significant relationship between conflict and respect. Conflict was reported as low, and this may “hide” the relationship because the power of that analysis is weak. In other words, there could have been a threshold effect (Lewis-Beck et al., 2004). When the relationship between two variables changes because of the need for a minimum or maximum value to be attained with either one or both variables, a threshold effect takes place (Lewis-Beck et al., 2004).

Overall, the relationships tested in this model indicate positive findings to support the notion that interprofessional models of care can influence how healthcare providers interact, and in turn positively influence healthcare provider outcomes (i.e., job satisfaction; satisfaction with quality of care delivered) and organizational outcomes (i.e., patient safety climate). The findings from this study provide empirical evidence in support of the theoretical perspectives that framed this study. The two conceptual frameworks presented here and Kanter’s theory guided the development of the theory-based hypotheses that were tested to address the gaps in the literature. Future empirical work is needed to test these frameworks further to generate more detailed knowledge.
related to their conceptualizations to guide and inform evidence-based practice, curricular programming, research, and policy development.

**Limitations**

Secondary data analysis is well supported in the literature as being cost effective and provides access to larger datasets allowing for new insights to be generated (Smith et al., 2011; Trinh, 2018). More specifically, access to secondary datasets provides researchers the opportunity to answer relevant research questions effectively and efficiently. However, with secondary data analysis, the lack of control over the study’s design, selected measures, and the data collection procedures presents a challenge despite its benefits (Smith et al., 2011; Trinh, 2018).

The cross-sectional nature of this study’s design limits inference of causality in that behaviours (i.e., interactions among healthcare providers) over time cannot be measured (Kline, 2011; Polit & Beck, 2018). The interpretation of causality to the theoretical associations and relationships among the study variables is limited (Polit & Beck, 2018). Although a strength of this study was the theoretical underpinnings and use of structural equation modeling techniques, longitudinal designs examining interactional and organizational factors to healthcare provider outcomes over time should be considered for future research. Also, it is important to note that other important variables (i.e., authentic leadership; patient outcomes; intention to leave; burnout) could be added to the model in further research to provide a more comprehensive understanding of the impact of IPP.

Another limitation of this study was the use of pre-selected self-report measures. The measures required further psychometric evaluation before being considered for this study. Despite good psychometric properties, self-report data from cross-sectional study
designs are to be interpreted with caution. However, a strength of current study is that CFA was conducted for six of the seven measures using a different dataset to validate their use prior to undertaking the SEM analysis for the main study (Kline, 2016).

Although using validated measures in this study is a strength, using only one source for data collection could be considered a limitation due to common method variance. (Polit & Beck, 2018). Common method variance is defined as systematic error due to either rater response styles, item characteristics, and aspects of measurement that can threaten the validity of study findings (Podsakoff et al., 2012). Self-report measures have the potential for response bias (Polit & Beck, 2018). The self-administered surveys were mailed (Dillman et al., 2014) for the participants to complete confidentially on their own time, and this may have lessened the risk for response bias given the data collection procedures explained that the data would remain anonymized and kept confidential. The response rate (47%) was acceptable, and the sample size was appropriate for this type of SEM analysis (Kline, 2016). However, the response rate could have been higher.

For future use, item revision to eliminate ambiguity in a scale item of the Intensity of Interprofessional Collaboration tool (i.e., Item 3) is warranted despite an acceptable factor loading in this study (0.51). Prior evaluation of the tool (Ellis et al., 2021) also identified a concern with the wording for Item 3: “High tolerance of grey area (overlapping of jurisdictions between professional groups) in the sharing of responsibilities” and the author recommended a revision be made to improve the tool. The lower factor loading could be attributed to this item’s wording, and the item may have been difficult to interpret by healthcare providers (Chen, 2017; Podsakoff et al., 2012). The terms “grey area” and “jurisdictions” are vague and may have caused confusion as to what the item was measuring in relation to the Care Share Activities
The use of the term “responsibilities” versus “jurisdictions” and the use of the term “uncertainty” versus “grey area” for this item may provide further clarity for future studies given the theoretical importance of understanding scope of role and responsibilities for effective interprofessional collaboration (Hurlock-Chorostecki et al., 2015; Reeves et al., 2017).

Consideration for item revision for the Conflict tool (i.e., Item 3) may also be considered for future studies. The original tool (Sicotte et al., 2002) worded the item as follows: “Conflicts concerning the sharing of responsibilities are resolved with difficulty” versus this study’s wording to reflect that conflicts are “resolved easily”. Although is not uncommon for reliable and valid tools to have both positive and negative factor loadings to measure a construct, similar to observing positive and negative regression coefficients (Muthén, 2018), there could also be more than one dimension in the tool to measure a higher-level construct (Chen, 2017). Therefore, further examination of the factor structure for the Conflict tool used in this study is warranted. Additionally, using other data sources such as patient related data could add to this study’s findings to address concerns related to common method variance.

Research is needed to further establish the validity (i.e., construct validity in varied populations) and reliability (i.e., stability) of this study’s measures; specifically, the Intensity of Interprofessional Collaboration, Conflict and Satisfaction with Quality of Care tools. Additionally, the model was tested using only one sample of healthcare providers in one urban tertiary hospital setting. Thus, these results may not be generalizable. The proportion of registered nurses was higher compared to other professional groups in this study’s sample albeit the sample used is reasonably representative of the workforce in tertiary care hospitals in Canada (Canadian Institutes
of Health Information [CIHI, 2019). Replication of the current study is needed in samples of healthcare provider groups in hospitals located across Canada, and extending into international settings. Future studies should aim to specifically identify and include Nurse Practitioners (NP) given their expanded scope of role, and NPs continue to be identified as a critical role to support safe healthcare delivery in tertiary care hospitals (Registered Nurses’ Association of Ontario [RNAO] Nurse Practitioner Task Force, 2021). Furthermore, the inclusion of the patient and family perspective as key members of the interprofessional team (Orchard et al., 2005) are also needed in the context of replicating this study.

**Conclusion**

The findings provide empirical evidence regarding the importance of integrating interprofessional practice in tertiary care hospital settings to improve healthcare provider and organizational outcomes. Health care delivery systems continue to evolve toward an interprofessional model of care in response to the changing needs and complexity of patient’s conditions and this study is a significant contribution to inform stakeholders about what can be achieved when interprofessional models of care are introduced, yet the work needs to continue. To our knowledge, this is the first study to examine these relationships and offers organizational leaders, researchers, and academics valuable information related to interprofessional models of care.
References for Chapter 4


Accreditation Canada (2020). Required organizational practices handbook.

Accreditation Canada.


Orchard, C., Pederson, L. L., Read, E., Mahler, C., & Laschinger, H. (2018). Assessment of Interprofessional Team Collaboration Scale (AITCS): Further testing and


Siegrist, J., Li, J., & Montano, D. (2014). *Psychometric properties of the Effort-Reward Imbalance questionnaire*. Department of Medical Sociology, Faculty of Medicine, Dusseldorf University, Germany.


Chapter 5
Contributions, Implications, and Conclusions

This dissertation was written using an integrative article format. A summary of the study purpose is provided, and the findings and contributions are discussed in relation to each preceding chapter of the dissertation. The strengths and limitations are described, and this is followed by the implications for theory, practice, education, policy, and future research. Overall conclusions from this study are also presented.

Summary of the Study Purpose

In this study, an integrated perspective of interprofessional practice (IPP) guided by conceptual frameworks and theoretical foundations was explored (D’Amour & Oandasan, 2005: Kanter, 1977; 1993; Sicotte et al., 2002). First, results of the scoping review provided a synthesis of knowledge focused on healthcare provider outcomes related to IPP in tertiary care hospital settings. Next, a measure of the intensity of interprofessional collaboration, a key factor that is associated with IPP was evaluated and validated for use in a sample of healthcare providers working in tertiary care hospitals. With this foundation, this study’s main empirical purpose was to investigate the relationships among interactional and organizational factors known to be related to IPP with healthcare provider outcomes. A hypothesized theoretical model was developed and tested to examine the relationships among global empowerment, interprofessional collaboration, conflict, respect, and patient safety climate linking to job satisfaction, and satisfaction with the quality of care delivered. As far as is known, this is the first study to test a model examining these relationships. It offers new contributions to advance our knowledge related to interprofessional practice and models of care.
Overview of Findings and Contributions by Chapter

Chapter One – Introduction to the Dissertation

To begin, in Chapter One the concept of IPP is introduced, its related terms are described, and the interactional and organizational factors that can either hinder or promote IPP success in practice settings are outlined. Before the dissertation’s research could be undertaken, the concept of IPP was explored and defined to provide clarity as to how this concept is operationalized. Inconsistencies with terms and definitions used interchangeably to describe IPP create confusion and continue to challenge the advancement of evidence in the area (D’Amour & Oandasan, 2005; Dow et al., 2017; Hurlock-Chorostecki et al., 2015; Paradis & Reeves, 2013; Reeves et al., 2010; Xyrichis et al., 2017). Therefore, a clear definition with rationale is provided after critically reviewing the existing IPP literature. Interprofessional practice is described as a cohesive, interdependent, and patient-centred approach taken by healthcare providers for care provision (D’Amour & Oandasan, 2005). It is argued that IPP extends beyond collaborative activity, and requires the integration of key elements including shared power and decision-making, respectful relationships, and the knowledge of others’ professional scopes of practice to provide safe, quality care (D’Amour & Oandasan, 2005).

Several conceptual frameworks exist that attempt to describe IPP, albeit with only limited empirical evidence to support their use (Sicotte et al. 2002; D’Amour & Oandasan, 2005; Reeves et al., 2010). For this reason, the Framework for Interprofessional Education for Collaborative Patient-Centred Practice (D’Amour & Oandasan, 2005) and the Analytical Framework of Interdisciplinary [Interprofessional] Collaboration (Sicotte et al., 2002) were used to frame the study. Furthermore,
Kanter’s Theory of Organizational Power (Structural Empowerment) provided an additional theoretical foundation focused on the structures and processes within the organization (Kanter, 1977; 1993). Our knowledge of IPP was advanced in three ways: 1) further clarity was provided about the terms used to describe IPP; 2) further clarity was provided about its elements, and the interactional and organizational factors that influence its success; and 3) theoretical context was provided to study IPP, specifically in relation to healthcare provider outcomes in tertiary care hospital settings.

**Chapter Two – Interprofessional Practice and Healthcare Provider Outcomes in Tertiary Care Hospitals: A Scoping Review**

In Chapter Two, a scoping review of the current literature regarding healthcare provider outcomes related to IPP in hospital settings was conducted. This scoping review builds on evidence from prior reviews completed; however, these earlier reviews were focused on IPP in relation to patient outcomes and education rather than healthcare provider outcomes (Brandt et al., 2014; Kaiser et al., 2018; Reeves et al., 2017). Based on the findings, the link of IPP to healthcare provider outcomes in the acute care hospital setting remains uncertain.

In total, nine studies published between 2016 and July 2021 focused on healthcare provider outcomes related to elements of IPP were reviewed (Boamah et al., 2018; Dellafiore et al, 2019; Espinoza et al, 2018; Johnson-Coyle et al., 2016; Nowrouzi-Kia & Fox, 2019; Stühlinger et al., 2019; Yasin et al., 2021; Zhang et al., 2016). The benefits of IPP include improved patient outcomes, reduced hospital readmissions (Cox et al., 2018; Shah et al., 2018), and improved quality of care (Hepp et al., 2015. Collaboration, mutual respect and trust, shared decision-making, and the knowledge of others’ professional scopes of practice (D’Amour & Oandasan, 2005; Hurlock-Chorostecki, et al., 2014;
Orchard et al., 2018; Reeves et al., 2017; Regan et al., 2016; Zwarenstein et al., 2009) are key essential elements that need to be present in order for IPP to be successful.

Although a clear link of IPP to healthcare provider outcomes was not established, several IPP elements were linked to healthcare provider outcomes, especially job satisfaction (Boamah et al., 2018; Dellafiore et al., 2019; Espinoza et al., 2018; Nowrouzi-Kia & Fox, 2019; Stühlinger et al., 2019; Yasin et al., 2021; Zhang et al., 2016). For example, collaborative activity is needed to support the delivery of safe quality care (Hurlock-Chorostecki et al., 2015; Orchard et al., 2018; Reeves et al., 2018; Regan et al., 2016). The results from the review suggest that collaboration is linked to job satisfaction, team satisfaction, and the intention to leave (Dellafiore et al., 2019; Espinoza et al., 2018; Nowrouzi-Kia & Fox, 2019). Intention to leave was negatively associated with job satisfaction, working conditions (i.e., job demands), and collaboration (Nowrouzi-Kia & Fox, 2019; Yasin et al., 2021; Zhang et al., 2016).

Findings of this scoping review contribute to our IPP knowledge in two ways: 1) it provides a knowledge synthesis of the current evidence available about healthcare provider outcomes related to IPP in hospital settings; and 2) it identified the need for further research given the limited study of this topic. More specifically, no literature was located that explicitly studied the relationships between IPP factors and healthcare provider outcomes related to the implementation of interprofessional models of care in tertiary care hospital settings. Therefore, based on this review, further research was warranted to address this gap to further advance our IPP knowledge.
Chapter Three – Measuring the Intensity of Interprofessional Collaboration: A Confirmatory Factor Analysis

In Chapter Three, a study that examined the factor structure and psychometric properties of a revised Intensity of Interprofessional Collaboration tool was presented (Sicotte et al., 2002). Confirmatory factor analysis (CFA) was conducted using the cross-sectional baseline data from a larger quasi-experimental intervention study aimed to evaluate the Interprofessional Model of Patient Care (IPMPC©), and the sample was representative of healthcare providers (n = 2064). Interprofessional collaboration is an interactional process (within IPP) that healthcare providers undertake in partnership with clients [patients] and families to make evidence-informed decisions for the provision of safe, quality care (Orchard et al., 2005). Interprofessional collaboration is based on the level of intensity (i.e., high versus low) of sharing and coordinating care activities (Sicotte et al., 2002), and the degree to which interprofessional collaboration occurs within a group of healthcare providers remains underexplored (Reeves et al., 2017).

Several tools purport to measure interprofessional collaboration in primary and tertiary healthcare sectors (Hurlock-Chorostecki et al., 2015; Orchard et al, 2018; Parker-Oliver et al., 2007). These tools measure general team performance and effectiveness, engagement in IPP activities, and the presence of collaborative relationships that extend to the patient’s role (Hurlock-Chorostecki et al., 2015; Orchard et al, 2018; Parker-Oliver et al., 2007). However, these tools do not measure the intensity or degree to which healthcare providers collaborate to deliver care in IPP environments.

Without rigorous measurement, it will continue to be a challenge to adequately develop initiatives and target interventions informed by evidence to improve interprofessional collaboration (Reeves et al., 2017; Zwarenstein et al., 2009). Although
not the first study to measure interprofessional collaboration in healthcare providers, results of this study reported on the reliability and validity of a tool that measures the intensity of interprofessional collaboration in a tertiary care hospital setting. Based on these results, there was evidence to support that the tool has acceptable construct validity with good internal consistency. These findings offer researchers valuable information related to the measurement of interprofessional collaboration in order to better equip senior management, healthcare leaders, and educators as health care delivery systems evolve toward a model of interprofessional care.

**Chapter Four – Relationships among Interactional and Organizational Factors with Healthcare Provider Outcomes Post-Implementation of an Interprofessional Model of Patient Care**

In Chapter Four, a study in which the relationships among interactional (i.e., levels of interprofessional collaboration; conflict; respect) and organizational (i.e., empowerment; patient safety climate) factors associated with IPP were described in relation to healthcare provider outcomes (i.e., job satisfaction; satisfaction with quality of care) was described. Building on the previous chapters, a hypothesized theoretical model was developed and tested to examine the relationships among global empowerment, interprofessional collaboration, conflict, respect and patient safety climate linking to job satisfaction and satisfaction with the quality of care delivered.

A non-experimental design and structural equation modelling techniques were used to conduct a secondary analysis of cross-sectional data post-intervention of an interprofessional model of care introduced in a tertiary care hospital setting. The key findings of the relationships examined are presented below:
Empowerment had a direct positive relationship with interprofessional collaboration, respect, job satisfaction, and patient safety climate. Healthcare providers reported a high level of global empowerment, and this could be the result of the introduction of the interprofessional model of patient care supported at the organizational level. These findings are similar to what is reported in the literature. Access to information, supports, opportunity, and resources allow healthcare providers to be effective in their collaborative work, participate in decision-making, and feel satisfaction with their jobs (Laschinger, 2008; Regan et al., 2016). Prior research supports the link between empowerment and patient safety (Armstrong et al., 2009). Further, empowerment leads to higher levels of job satisfaction, and commitment to the organization with reported higher quality of care ratings (Laschinger, 2008; Yang et al, 2013).

Interprofessional collaboration was positively related to job satisfaction, patient safety climate, and satisfaction with quality of care delivered. Healthcare providers reported being satisfied with their job and the quality of care they provide when feeling empowered in the workplace enabling a higher level of collaborative behaviours to practice interprofessionally. It is also known that empowerment, leadership, and supportive environments are linked to interprofessional collaboration (Regan et al., 2016), job satisfaction, and higher quality of care ratings (Laschinger, 2004; Yang et al, 2013). However, the indirect relationships between empowerment and patient safety, and satisfaction with the quality of care delivered through interprofessional collaboration suggest that supportive structures that enable healthcare providers to practice interprofessionally are indirectly linked to how healthcare providers feel about the
care they deliver, and the way they view patient safety. To our knowledge, these findings have not been reported in relation to IPP in tertiary care hospital settings. These relationships are important to consider when introducing mechanisms to promote IPP in healthcare organizations.

- Respect was rated as high in this study, and it is evident that healthcare providers are effectively collaborating with the introduction of an IPP model of care. The notion that improved interprofessional collaboration on its own is directly related to healthcare providers’ sense of feeling recognized and appreciated for their contributions in the workplace was not supported. Respect did not have a direct relationship with patient safety climate, which is a new finding in contrast to what is reported elsewhere (Manojlovich et al., 2014). However, in this study, the indirect effect of empowerment to patient safety climate through the level of interprofessional collaboration may have dampened the link between respect and patient safety climate given the high ratings of respect. It is important to also note that this study did not find a significant direct relationship between interprofessional collaboration and respect as hypothesized.

- Conflict was negatively related to interprofessional collaboration. In this study, conflict had a direct negative relationship with interprofessional collaboration, and this result suggests that conflict plays a negative role on the level of collaboration among healthcare providers. Conflict is a complex process that occurs between healthcare providers experiencing disagreements with clinical tasks or misalignment of goals associated with the provision of care (Almost et al., 2016). Conflict was measured as the level of disagreement associated with interprofessional collaboration (i.e., conflict related to task sharing and the
coordination of care activities). If healthcare providers are reporting a high degree of interprofessional collaboration, it would be expected that the level of conflict associated with it would be lower, indicating support for the interprofessional model of patient care.

- Job satisfaction was positively related to satisfaction with the quality of care delivered, similar to other reported findings. The way healthcare providers feel about their work impacts their intent to stay in their career, and has been linked to quality of care ratings (Laschinger & Fida, 2015; Purdy et al., 2010; Wong & Laschinger, 2013). Job satisfaction has been linked by the quality of the work environment, and the quality of healthcare provider relationships (Dellafiore et al., 2019; Espinoza et al, 2018; Nowrouzi-Kia & Fox, 2019; Stühlinger et al., 2019; Yasin et al., 2020; Zhang et al., 2016).

- Patient safety climate was positively related to job satisfaction, and satisfaction with the quality of care delivered, and this finding is similar to other reported findings. Safety perceptions have been found to be significantly related to job satisfaction among other outcomes like job stress and intention to leave (McGhan et al., 2020).

Notably, these findings advance our knowledge and contribute to the IPP evidence-base given that these relationships have not been studied in one model before. The findings indicated that empowering organizational structures that support IPP influence the way healthcare providers rate their job, rate their satisfaction with the quality of care delivered, and perceive patient safety climate through interprofessional collaboration. Furthermore, empirical evidence now supports the theoretical perspectives that framed this study. The importance of the findings of this study is discussed from a
variety of perspectives in more detail in the Implications section that follows a discussion of its limitations found below.

Summary of Contributions to IPP Literature

For many decades, it has been suggested that the introduction of IPP will improve patient, provider, and organizational outcomes (Canadian Interprofessional Health Collaborative [CIHC], 2010; IOM, 2015; WHO, 2010). This dissertation has now made several important contributions to advance the field of IPP. First, new knowledge of healthcare provider outcomes (i.e., job satisfaction; burnout; moral distress; intention to leave) advances our understanding of how several elements of IPP have been introduced in hospital settings. However, it is evident from this review that there is not yet a clear link of IPP to healthcare providers outcomes given that all essential elements of IPP need to be present for IPP to be successful (Hurlock-Chorostecki et al., 2013). Second, new evidence includes the use of the Intensity of Interprofessional Collaboration Tool (Sicotte et al., 2002) as a reliable and valid tool for the measurement of interprofessional collaboration in tertiary acute care hospital settings. And third, evidence includes support of the relationships between interactional and organizational factors with healthcare provider outcomes in the context of IPP. These original contributions to the literature will offer organizational leaders, researchers, academics, and policy makers valuable information for introducing interprofessional models of care.

Limitations

As with any study, there are limitations that could impact the interpretation of the results. Future research is needed to overcome these limitations, and to validate the findings and conclusions reached. Therefore, the results of this study must be interpreted within the context of the limitations, as described below.
Chapter Two – Scoping Review Limitations

- Literature may have gone undetected due to the choice of databases, and the search terms used. The various terms used to describe IPP, and its elements in the current evidence-base presents a challenge. To address the issue, only the most commonly referenced terms related to IPP were used for the search. Furthermore, IPP was clearly defined for the purpose of the review.

- Terminology may have impacted the ability to locate literature related to healthcare provider outcomes. Healthcare provider outcomes are also inconsistently referenced in the literature. To address, the initial search was extended beyond the broad search term of “outcomes” to include specific outcomes known in the literature (i.e., job satisfaction) to assist with locating relevant sources of evidence.

- Restricting the search to English language only may have eliminated literature for review. Due to the lack of resources that would have been required for translation, it was not feasible to include publications in other languages.

- The literature searches, data charting, and analysis was undertaken by one primary reviewer (WE), and this may be seen as a limitation as it is a risk for bias. Consultation with a librarian was not completed given the primary reviewer (WE) undertook this work as part of the doctoral educational requirement. It would have strengthened this study to have multiple reviewers involved to build consensus for the inclusion and analysis of the literature. To address, a structured framework was used to guide the review (Arksey & O’Malley, 2005) and the use of the PRISMA-ScR checklist (Tricco et al., 2018) ensured rigour with the reporting of the findings.
Chapter Three – Confirmatory Factor Analysis Limitations

- For this study, only one sample of healthcare providers in one urban tertiary hospital setting was used. The proportion of registered nurses was higher compared to other professional groups in this study’s sample albeit this limitation is balanced by the fact that the sample could be considered to be reasonably representative of the workforce in tertiary care hospitals in Canada (Canadian Institutes of Health Information [CIHI], 2019).

- Common method variance (CMV) is defined as systematic error variance due to either rater response styles, item characteristics, and aspects of measurement that can threaten the validity of study findings (Podsakoff et al., 2012; Polit & Beck, 2018). To address CMV, validated measures were used in this study.

Chapter Four – Testing a Hypothesized Model

- The cross-sectional nature of this study’s design is limiting in that it cannot infer causality nor measure behaviours (i.e., interactions among healthcare providers) over time (Kline, 2016; Polit & Beck, 2018).

- The model was tested using only one sample of healthcare providers in one urban tertiary hospital setting; therefore, these results may not be generalizable.

- The use of pre-selected self-report measures may be limiting. To address, psychometric evaluation of the measures was undertaken before being considered for this study with the baseline IPMPC© dataset versus the dataset used for testing the model (post-implementation IPMPC© dataset).

- The use of only one source for data collection which could be considered a limitation due to common method variance (CMV).
• The use of self-report data from cross-sectional study designs need to be interpreted with caution. However, a strength of the current study is that CFA was conducted for six of the seven measures using a different dataset to validate their use prior to undertaking this empirical study to support methodological rigour (Kline, 2016).

• Self-report measures have the potential for response bias (Polit & Beck, 2018). The self-administered surveys were mailed (Dillman et al., 2014) and allowed the participants to complete confidentially on their own time, and this may have lessened the risk for response bias given the data collection procedures explained that the data would remain anonymized and kept confidential.

• The response rate (47%) was acceptable; however, the response rate could have been higher.

Despite these limitations, this study has presented findings and contributions to further our knowledge of IPP. The findings may be of interest to health care leaders, administrators, educators, and policy makers who are interested in promoting positive IPP work environments.

Implications

This section is organized to address the implications of the study findings for theory, interprofessional practice, education, policy, and future research. Dissertation-based information is offered to organizational leaders, researchers, academics, and policy makers.

Implications for Theory

The findings from this study provide empirical evidence to support the theoretical perspectives that framed this study. First, the Interprofessional Education for
Collaborative Patient-Centred Practice (IECPCP) conceptual framework is comprised of two major components that reflect the interdependency of interprofessional education (IPE) and IPP. For this study, the second component of the framework titled “collaborative practice” (i.e., IPP) was used. The framework outlines the need for organizational structures that are non-hierarchical and support IPP to influence clinical outcomes, satisfaction with care provision, staff well-being, and organizational efficiency (D’Amour & Oandasan, 2005). In this present study, key aspects of this framework were tested by investigating interactional and organizational factors known to be linked to IPP with healthcare provider outcomes (D’Amour & Oandasan, 2005). The findings reinforce the importance of supporting collaborative behaviours at the organizational level by adopting care models that reflect this theoretical framework of IPP. In turn, this may lead to improved patient safety climate, job satisfaction, and satisfaction with the quality of care delivered as this study’s findings suggest.

The framework highlights the importance of measuring healthcare provider outcomes using rigorous methodologies of which this present study utilized. The dissemination of results is a key aspect of this framework to inform practice as part of the feedback loop to drive theory, practice, and education which may also help to inform regulatory requirements and government policy (D’Amour & Oandasan, 2005). Implications for future research would be to replicate this study’s model and to include patient outcomes as depicted in the framework given the definition of IPP used in this study has the patient as the central focus (D’Amour & Oandasan, 2005). Furthermore, interprofessional collaboration is what grounds this framework in the context of collaborative practice, and by definition, interprofessional collaboration, an interactional process within IPP, requires that the patient be included (Orchard et al., 2005). In this
study, interprofessional collaboration had a direct relationship to satisfaction with the quality of care delivered, job satisfaction, and patient safety climate. It would be of benefit to measure patient outcomes (i.e., length of stay; re-admission rates; satisfaction with the care received) in relation to these findings to learn what patient outcomes may be influenced. For example, if healthcare providers are satisfied with the quality of care they provide, what aspects of care are they satisfied with, and how do patients view the care they receive (i.e., satisfaction with interprofessional collaboration, communication; satisfaction with care delivered).

A logical (and needed) next step is to examine the impact of IPE interventions in relation to practice changes to enhance IPP, inform policy development, and revise regulatory competencies in the context of care delivery in hospital settings. Although not studied here, the IPE component of the model includes the beliefs and attitudes in IPE at the educator and learner levels and considers the teaching/learning resources needed for competency development (D’Amour & Oandasan, 2005). For example, by studying the type of learning (i.e., experiential, problem-based learning, etc.) in relation to outcomes for both educators and learners across professions who are learning together, it may help to better understand the interactional behaviours and skills needed for IPP (D’Amour & Oandasan, 2005). As part of the feedback loop depicted in the framework, future research targeting IPE initiatives can then inform practice, and through implementation and evaluation of this framework, it will continue to inform IPE and IPP in relation to outcomes at the individual, organizational, and systemic levels.

Next, the Analytical Framework of Interdisciplinary [Interprofessional] Collaboration (Sicotte et al., 2002) is grounded in a conceptual understanding of shared clinical care activities (Golin & Ducanis, 1981) and is based on organizational theory in
relation to group work coordination (Georgopoulos & Mann, 1962). This framework helps to explain the intensity of interprofessional collaboration, an interactional factor found to be directly related to healthcare provider outcomes, namely job satisfaction and satisfaction with the quality of care delivered. Interprofessional collaboration mediated the relationships of global empowerment to patient safety climate, job satisfaction, and satisfaction of the quality of care delivered.

Believing in the benefits of interprofessional collaboration, and the ability of healthcare providers to address conflict related to sharing and coordinating clinical work is related to group cohesion (Sicotte et al., 2002). Understanding others’ scopes of practice when participating in clinical care decisions (i.e., interprofessional logic) is considered group cohesion. The findings suggest that healthcare providers maintained positive relationships by coordinating and sharing care activities which requires shared power with decision-making, and these findings are similar to what is reported in the literature (Hurlock-Chorostecki et al., 2013; Manojlovich et al., 2014; Orchard et al., 2005). Therefore, when organizations introduce IPP, it is necessary to ensure healthcare providers are provided with the necessary structures and opportunity to undertake interprofessional collaboration. For example, mechanisms to organize and coordinate shared clinical tasks in the form of interprofessional rounds, evidence-based communication tools, guidelines, and standardized checklists are to be considered and implemented for use in the practice setting. It would be important for organizations to communicate the outcomes associated with interprofessional collaboration as a way to integrate this theoretical framework into the practice setting. Acknowledging the outcomes associated with the degree to which healthcare providers collaborate may help to enhance the belief in its purpose and intent as indicated by the framework. Given that
interprofessional collaboration is directly linked to a climate of patient safety, it is important to integrate theory related to interprofessional collaboration into practice, and evaluate its progress in relation patient, provider and organizational outcomes.

Kanter’s Theory of Organizational Power (1977; 1993) was supported by this study’s findings. It is vital for organizations to provide the necessary structures, support, processes, and resources for healthcare providers to feel empowered and satisfied with their work. Access to timely information, relevant communication processes, performance feedback, mentoring, and coaching are examples of supportive work structures (Kanter, 1993). Organizations would be benefit from demonstrating they are committed to creating a supportive work environment by providing access to funding for developing IPP, and ensuring IPP is reflected in the vision, values, and strategic directions of the organization. An empowering work environment that is supportive of IPP leads to positive outcomes for healthcare providers (i.e., job satisfaction; satisfaction with quality of care delivered) as evidenced by this study’s findings. Therefore, organizations may want to focus their efforts on ensuring the necessary structures are in place to support IPP before introducing interventions to promote interprofessional collaboration or other targeted IPP initiatives.

Although not measured in this study, organizational leadership would benefit from addressing power dynamics and hierarchies that continue to exist in health care (Cohen Konrad et al., 2019; Orchard et al., 2005). Implementing models of IPP requires the maintenance of positive relationships, shared power with decision-making, and a level of respect for each professions’ contributions (D’Amour et al. 2005; Manojlovich et al., 2014; Virani, 2012). Therefore, organizations need to be transparent about these existing dynamics, and be open to theory-driven strategic initiatives to improve the
mechanisms by which healthcare providers (and other staff) communicate with one another, and provide opportunities to learn about each other’s roles and scopes of practice. Communication, mutual trust, and respect along with shared decision-making and shared power are essential to IPP (D’Amour & Oandasan, 2005; Hurlock-Chorostecki et al., 2016; Orchard et al., 2005).

In summary, the two conceptual frameworks presented here and Kanter’s theory guided the development of the theory-based hypotheses that were tested to address the gaps in the literature. Theoretically-based evidence is consistently recommended in order to advance the field of IPP, and this dissertation includes evidence to advance our knowledge and understanding of the factors that impede and promote IPP. Future empirical work is needed to test these frameworks further to generate more detailed IPP knowledge related to their conceptualizations to guide and inform evidence-based practice, curricular programming, policy development, and research.

Implications for Interprofessional Practice

It would be prudent of organizations to measure the intensity to which their workforce is collaborating to target initiatives aimed to improve IPP. Establishing IPP as a priority with visible leadership support provides the organizational structure and philosophical underpinning to support IPP and drive patient safety. Educating both current and prospective healthcare providers about the principles of IPP sets the stage for successful collaboration (Abu-Rish et al., 2012; Cox et al., 2016; Orchard et al., 2005; Reeves et al., 2017; Virani, 2012). As a corporate strategy, organizations may consider introducing interprofessional development initiatives focused on enhancing IPP competencies. Given that this study also reports the link between empowerment and job satisfaction through interprofessional collaboration, promoting interprofessional
collaboration through change management mechanisms (i.e., theory to practice) could be viewed as a retention strategy for organizations.

Recruitment and retention metrics are priorities for organizations, and qualified healthcare providers are needed to stabilize the delivery of quality health care (WHO, 2020). The depletion of health care human resources coupled with an aging population is of concern (WHO, 2020). However, increasing capacity in the total number of net new healthcare providers to address workforce staffing issues is not enough to improve health care delivery. Organizations need to lead by assessing their gaps with health human resource planning to determine what resources are needed to adequately meet the needs of the population they serve, and to effectively support IPP (Suter et al., 2011). More importantly, organizations need to continually assess if their current complement of healthcare providers are being optimized, and if they are practicing to their full scope versus being underutilized (Health Force Ontario, 2010). Organizations need to invest in the necessary structures, processes, and relevant resources to empower their new and current workforce to work interprofessionally as evidenced by this study’s findings. The literature reviewed in this dissertation highlighted that the intention to leave is associated with collaboration, job satisfaction, and working conditions (Nowrouzi-Kia & Fox, 2019; Yasin et al., 2021; Zhang et al., 2016). Therefore, it is recommended that organizations support IPP to retain their workforce.

Integrating theoretical knowledge to fully implement IPP in hospital settings is needed. Effective communication, teamwork, mutual trust, and respect along with shared decision-making and shared power are essential to IPP (D’Amour & Oandasan, 2005; Hurlock-Chorostecki et al., 2016; Orchard et al., 2005). Therefore, targeted training and development programs embedding the principles of IPP within organizations are needed.
to enhance and maintain its skilled workforce. Initiatives aimed to improve the way healthcare providers interact with each other are to be considered and evaluated. For example, introducing enhanced technology solutions like structured team communication tools or platforms may facilitate the coordination of care activities, and improve communication among healthcare providers. It is imperative for organizations to provide the supportive structures to fully implement IPP in order to achieve optimal patient, healthcare provider, and organizational outcomes (CIHC, 2010; IOM, 2015).

Professional development opportunities designed to meet the individualized needs of healthcare providers could be offered to engage and empower employees. For example, increased opportunities for leadership development, coaching, and mentorship could be offered to healthcare providers to support IPP, and to promote a positive work environment. Given that nurses make up the largest proportion of the healthcare workforce, capacity building in the form of professional development and continuing education targeting key competencies of IPP could be offered aligned to the patient safety agenda. Organizations may consider introducing education and training initiatives focused on conflict resolution, negotiation and power dynamics, debriefing, and interprofessional communication to support nurses as they navigate complex interprofessional working relationships. Although not measured in this study, the notion that nurses could also benefit from initiatives targeting general well-being was identified in the literature given this workforce is at risk for burnout (Johnson-Coyle et al., 2016) and at a higher risk to leave their profession (Espinoza et al., 2018).

A deeper understanding of interprofessional collaboration is also needed given its importance as evidenced by this study’s findings. For example, it is possible that a proportion of healthcare providers may not be clear as to what interprofessional
collaboration is, and how it is to be undertaken (Orchard et al., 2012). Therefore, structured evidence-informed workshops and certificate programming offered through typical academic pathways or through continuing education are needed to fully benefit from the outcomes of interprofessional collaboration identified in this study, and the existing IPP literature.

**Implications for Education**

The findings from this study have implications for education in the context of IPP outside of the practice setting implications described above. With respect to undergraduate and post-graduate programming, enhancements to core curricula grounded in IPP theory and principles may provide learners across professions with additional opportunities (i.e., simulation and clinical practice experiences) to demonstrate competencies related to addressing the interactional factors associated with IPP. For example, deeper learning about interprofessional collaboration and its application can occur with simulation (i.e., experiential learning activities) that allows for facilitated debriefing with diverse groups of learners. It has been shown that effective debriefing with simulated experiences facilitates the development of knowledge, skills, and attitudes needed to promote the delivery of safe, quality care (Kolbe et al., 2015). Academic institutions need to do better with integrating learners from different professions to learn with and from each other instead of being siloed within their programming (WHO, 2010). Structured and purposeful opportunities for learning may help healthcare providers-in-training to better understand how their interactions link to the bigger picture of patient safety and quality of care (Reeves et al., 2016).

Interprofessional practice competencies, core values, and requisite skills are to be mapped within the undergraduate and post-graduate curricula (Orchard & Bainbridge,
For example, in Canada, nursing program approval processes established by the regulatory bodies require that core competencies are evidenced throughout each year of programming. Accreditation standards outline the criteria to be met to achieve recognition and status of quality nursing education programming. Regulatory and accrediting bodies highlight the importance of collaborative relationships in relation to patient safety (e.g., College of Nurses of Ontario [CNO]; Canadian Association of Schools of Nursing [CASN]). Navigating interprofessional relationships and power dynamics requires effective communication skills, conflict management and negotiation, and an understanding of the differing scopes of practice. Managing relationships and conflict are critical success factors to support learners to practice interprofessionally (D’Amour & Oandasan, 2005) prior to entry to practice, and post-graduation. Conflict resolution education and communication competence are predictors of healthcare providers’ ability to resolve conflict within and among interprofessional teams (Sexton & Orchard, 2016). Although some work has been undertaken for IPE accreditation standards in Canada, it remains a priority (Accreditation of Interprofessional Health Education [AIPHE], 2011). Therefore, it is a continued recommendation for higher learning institutions to work closely with another to co-create a shared IPP curricula grounded in theory that meets or exceeds accreditation and regulatory requirements to ensure healthcare providers are prepared to work interprofessionally.

Additionally, strategic clinical partnerships with those organizations who support learners in practice settings are needed to ensure the clinical experiences match the requisite skills and competencies required for IPP. Clinical education delivery models are continually evolving with innovation in response to the external environment (i.e., global pandemic). The integration of virtual and in-situ experiential learning opportunities
requires flexible yet structured clinical partnerships. Affiliation agreements between higher learning institutions and healthcare organizations could aim to better reflect a commitment to IPP. In turn, through collaboration, expanded clinical partnerships will allow for the integration of IPE and IPP theoretical principles to be supported while learners are in placement. For example, affiliation agreements may specifically outline the opportunities and resources for IPE activities that will allow learners to shadow or be mentored by diverse healthcare providers outside of their direct supervisor, clinical instructor, or program faculty advisor. These agreements may help to address the siloed approach to care whereby healthcare providers work within their specific professional scope, standards of care, priorities, and competencies without fully knowing or understanding other professional practice scopes (CIHC, 2010; Orchard & Bainbridge, 2016). Competent and safe IPP is contingent upon healthcare providers’ understanding of scopes of practice, and a lack of understanding of other healthcare provider roles may lead to conflict due to role ambiguity, differing values and opinions, and limits the ability for some professionals to work within their full scopes of practice (CIHC, 2010; Hurlock-Chorostecki et al., 2013; Orchard, 2016; WHO, 2010; 2020).

**Implications for Policy**

Increased policy work is needed to advance initiatives calling for health system reform given the regulatory demands mandating interprofessional practice standards (College of Nurses of Ontario, 2018; College of Physicians and Surgeons of Ontario, 2020; Regan et al., 2015). Patient safety is a key driver for government and health policy initiatives aimed to improve how healthcare providers work together to prevent poor outcomes (CIHC, 2010; WHO, 2010). Targeted government and ministry initiatives to increase workforce capacity along with adequate funding is needed in both the health
care and higher learning sectors. Recruitment and retention remain at the forefront, and the challenge to keep healthcare providers engaged in their profession is ongoing (Canadian Institute for Health Information [CIHI], 2019). Policy reform and legislation are required to ensure organizations have the funding to support the structures needed to fully implement IPP given its link to job satisfaction, patient safety, and quality of care ratings.

**Implications for Research**

The hypothesized model should be further tested to determine if the relationships among IPP factors change over time (i.e., pre and post-implementation of interventions aimed to improve IPP). Analyses of data using longitudinal designs are needed to replicate and validate the current findings given the cross-sectional nature of this study’s design is limiting in that it cannot infer causality nor measure behaviours over time (Kline, 2016). Samples of healthcare providers working in hospital settings (and perhaps other sectors) from varied geographical regions should be included to ensure generalizability of any findings. Since there are other unknown and unmeasured variables that may influence IPP, future research should include other key constructs such as leadership, burnout, intention to leave, and nurse assessed patient outcomes to further our understanding, and advance the IPP field. This study provides support for Kanter’s theory (1977; 1993). Empowering work environments lead to positive outcomes for healthcare providers in the context of IPP. However, models designed to test and explore the relationships among empowerment, leadership, interprofessional collaboration, and conflict with healthcare provider outcomes would be an example of an expanded hypothesized model building on this study’s findings. Healthcare provider outcomes in
relation to these variables could include the following: job satisfaction, job strain, role clarity, burnout, patient safety climate, and satisfaction with quality of care.

As discussed in the implications for theory section, the IECPCP framework promotes the measurement of patient outcomes (D’Amour & Oandasan, 2005), and further empirical testing that includes patient outcomes would add to the existing evidence in support of this framework. Implications for future research would be to replicate this study’s model to test the relationships among interactional and organizational factors with both healthcare provider and patient outcomes like satisfaction with quality of care, re-admission rates, and length of stay. Furthermore, interprofessional collaboration starts with the patient and extends to the family (Orchard et al., 2005). Studies with qualitative designs are still needed to learn directly from patients and families as to how they experience the care they receive in response to the introduction of IPP models of care in hospital settings. For example, conducting focus groups with healthcare providers, patients, and families to explore the level of interprofessional collaboration (and other factors) could potentially derive a grounded theory (Charmaz, 2006) of interprofessional collaboration. This type of research could be used to further update and inform current IPP competency development or policy recommendations.

In addition, IPE intervention research with longitudinal design is needed to study the impact of IPE on IPP over time from the patient, healthcare provider, and organizational perspective (Reeves et al., 2017). These interventions could be introduced in both higher education and practice settings with pre-licensure and post-graduate samples to be studied as learners transition. Interventions aimed to address the beliefs and attitudes in IPE and IPP (D’Amour et al., 2005) could inform competency development,
curricular revisions, and initiatives aimed to improve IPP. For example, research focused on understanding the factors that may either impede or promote role clarity could inform how to structure IPE and IPP curricula. More specifically, conducting practice and intervention research with varied research design (i.e., quantitative quasi-experimental; qualitative; mixed-methods) to address the issues related to unresolved conflict due to overlapping roles, differing professional values, and varying professional practice competencies (Almost et al., 2010; McNeil et al., 2013).

**Conclusion**

In this dissertation, an integrated, theoretically grounded perspective of IPP was provided (D’Amour & Oandasan, 2005; Kanter, 1977; 1993; Sicotte et al., 2002). Findings included evidence of the relationships between interactional and organizational factors related to IPP with provider outcomes, and supported that these factors could be impacted by integrating new IPP-based models of patient care in tertiary care hospital settings. The introduction of IPP and its impact on healthcare provider outcomes continues to be understudied, and it is evident more research is needed. Empowering work structures (Kanter, 1993) influence interprofessional collaboration, patient safety climate, respect, and job satisfaction. The intensity of interprofessional collaboration (Sicotte et al., 2002) must be measured effectively in tertiary care hospital settings given its relationship with improved job satisfaction, and satisfaction with the quality of care delivered by healthcare providers. Interprofessional collaboration was found to be related to a climate of patient safety, a critical aspect of safe, quality healthcare delivery.

The provision of health care within tertiary care hospital settings across Canada have become increasingly complex and the call for health system reform is not waning. The way care is coordinated and delivered by healthcare providers needs to change in
order to improve patient, provider, and organizational outcomes. As far as is known, this is the first study to examine these relationships, and it offers new contributions to advance our knowledge related to interprofessional practice and models of care.
References for Chapter 5


Appendices
Appendix A

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

<table>
<thead>
<tr>
<th>SECTION</th>
<th>ITEM</th>
<th>PRISMA-ScR CHECKLIST ITEM</th>
<th>REPORTED ON PAGE #</th>
</tr>
</thead>
<tbody>
<tr>
<td>TITLE</td>
<td>Title</td>
<td>Identify the report as a scoping review.</td>
<td>Page 28: Manuscript title: Interprofessional Practice and Healthcare Provider Outcomes in Tertiary Care Hospitals: A Scoping Review</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>Structured summary</td>
<td>Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.</td>
<td>Background: Despite known benefits, the integration of interprofessional practice (IPP) in health care remains a challenge even with increasing attention paid towards it over the last several decades. An IPP approach to health care delivery continues to be recommended for implementation in practice settings to improve healthcare provider relationships and job satisfaction, and to foster an organizational culture of patient safety for high quality care. However, our knowledge of healthcare provider outcomes in relation to IPP is still lacking. Objective: The objective is to explore the breadth of knowledge related to this topic rather than its depth, and findings are mapped to report the current state of the healthcare provider outcomes literature in relation to IPP in hospital settings. Methods: The scoping review framework proposed by Arksey and O’Malley (2005) is used to establish the existing knowledge related to healthcare provider outcomes in hospital settings. The PRISMA-ScR checklist is used for the reporting of this review. Eligibility Criteria, Data Charting, and Results: In total, eleven articles with an explicit focus on healthcare provider outcomes in hospital settings met the inclusion</td>
</tr>
</tbody>
</table>
criteria, and elements of IPP are mapped within this existing body of literature. The results are summarized in a Data Charting Table. **Conclusions**: Globally, an IPP approach to health care delivery is being implemented in practice settings to improve healthcare provider relationships and job satisfaction, foster an organizational climate of patient safety, and retain a healthcare workforce. However, the evidence remains limited, and more research is needed to support the delivery of health care. **Key words**: Healthcare providers, interprofessional practice, job satisfaction, outcomes.

### INTRODUCTION

<table>
<thead>
<tr>
<th>Rationale</th>
<th>3</th>
<th>Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.</th>
<th>Page 29</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectives</td>
<td>4</td>
<td>Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.</td>
<td>Page 29</td>
</tr>
</tbody>
</table>

### METHODS

<p>| Protocol and registration | 5 | Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number. | Page 29: Unpublished protocol. |
| Eligibility criteria | 6 | Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale. | Page 32 |
| Information sources* | 7 | Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional | Pages 31-32 |</p>
<table>
<thead>
<tr>
<th>SECTION</th>
<th>ITEM</th>
<th>PRISMA-ScR CHECKLIST ITEM</th>
<th>REPORTED ON PAGE #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>sources), as well as the date the most recent search was executed.</td>
<td></td>
</tr>
<tr>
<td>Search</td>
<td>8</td>
<td>Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.</td>
<td>Page 31. Supplemental Search strategy is provided below for one database. Database: SCOPUS. TITLE-ABS-KEY ( interprofessional AND practice) AND TITLE-ABS-KEY ( job AND satisfaction) AND TITLE-ABS-KEY (healthcare AND team) AND TITLE-ABS-KEY (hospital) AND PUBYEAR &gt;2015</td>
</tr>
<tr>
<td>Selection of sources of evidence†</td>
<td>9</td>
<td>State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.</td>
<td>Pages 31-33</td>
</tr>
<tr>
<td>Data charting process‡</td>
<td>10</td>
<td>Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.</td>
<td>Page 34</td>
</tr>
<tr>
<td>Data items</td>
<td>11</td>
<td>List and define all variables for which data were sought and any assumptions and simplifications made.</td>
<td>Pages 34-35</td>
</tr>
<tr>
<td>Critical appraisal of individual sources of evidence</td>
<td>12</td>
<td>If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).</td>
<td>As per the framework, not required (Arskey &amp; O’Malley, 2005). Therefore, critical appraisal of the literature is not reported.</td>
</tr>
<tr>
<td>Synthesis of results</td>
<td>13</td>
<td>Describe the methods of handling and summarizing the data that were charted.</td>
<td>Page 34-35</td>
</tr>
</tbody>
</table>

RESULTS

<p>| Selection of sources of evidence | 14   | Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram. | Pages 33-35 |
| Characteristics of sources of evidence | 15   | For each source of evidence, present characteristics for which data were charted and provide the citations. | Pages 35-36 (Table 2.1 &amp; 2.2) |</p>
<table>
<thead>
<tr>
<th>SECTION</th>
<th>ITEM</th>
<th>PRISMA-ScR CHECKLIST ITEM</th>
<th>REPORTED ON PAGE #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical appraisal within sources of evidence</td>
<td>16</td>
<td>If done, present data on critical appraisal of included sources of evidence (see item 12).</td>
<td>As per the framework, not required (Arskey &amp; O’Malley, 2005). Therefore, critical appraisal of the literature is not reported.</td>
</tr>
<tr>
<td>Results of individual sources of evidence</td>
<td>17</td>
<td>For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.</td>
<td>Pages 39-40</td>
</tr>
<tr>
<td>Synthesis of results</td>
<td>18</td>
<td>Summarize and/or present the charting results as they relate to the review questions and objectives.</td>
<td>Pages 39-44</td>
</tr>
</tbody>
</table>

**DISCUSSION**

| Summary of evidence               | 19   | Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups. | Pages 39-44                             |
| Limitations                       | 20   | Discuss the limitations of the scoping review process.                                                                                                                                                                        | Pages 46-47                             |
| Conclusions                       | 21   | Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.                                                                      | Page 47                                 |

**FUNDING**

| Funding                          | 22   | Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review. | Unfunded doctoral research.             |

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where sources of evidence (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.
† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with information sources (see first footnote).
‡ The frameworks by Arksey and O’Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.
§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

Appendix B

Research Ethics

Evaluation of the Implementation of an Inter-Professional Model of Patient Care at The Ottawa Hospital (TRC 08-07; OHREB #2007911-01H)

Renewal Expiry Date - May 15, 2016

Thank you for the letter of May 11, 2016. I am pleased to inform you that your Annual Renewal Request was reviewed by the Ottawa Health Science Network Research Ethics Board (OHSN-REB) and is approved. No changes, amendments or addenda may be made in the Protocol or the consent form without the OHSN-REB’s review and approval.

Renewal is valid for a period of one year. Approximately one month prior to that time, a single Renewal form should be sent to the REB office.

OHSN-REB complies with the membership requirements and operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans; the International Conference on Harmonization - Good Clinical Practice; Consolidated Guideline, and the provisions of the Personal Health Information Protection Act 2004.

Chairperson
Ottawa Health Science Network Research Ethics Board

Ann
April 03, 2013

Dr. Ginette Rodger

Dear Dr. Rodger:

Evaluation of the Implementation of an Inter-Professional Model of Patient Care at The Ottawa Hospital (TRC 08-07; OHREB #2007911-01H)

Renewal Expiry Date - March 22, 2014

I am pleased to inform you that your Annual Renewal Request was reviewed by the Ottawa Hospital Research Ethics Board (OHREB) and is approved. No changes, amendments or addenda may be made in the protocol or the consent form without the OHREB’s review and approval.

We acknowledge that Dr. Worthington is no longer involved in the study as a Co-Investigator. The file has been updated accordingly.

Renewal is valid for a period of one year. The validation date should be indicated on the bottom of all consent forms and information sheets (see attached copy). Approximately one month prior to that time, a single renewal form should be sent to the OHREB office.

The Tri-Council Policy Statement requires a greater involvement of the OHREB in studies over the course of their execution. As well, you must inform the Board of adverse events encountered during the study, here or elsewhere, or of significant new information which becomes available after the Board review, either of which may impinge on the ethics of continuing the study. The OHREB will review the new information to determine if the protocol should be modified, discontinued, or should continue as originally approved.

Yours sincerely,

Chairman
Ottawa Hospital Research Ethics Board

Encl.

Ann
Office of Research Ethics
The University of Western Ontario

Western

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. M.S. Kerr

Review Date: April 17, 2009
Revision Number:
Review Level: Expedited

Protocol Title: Evaluation of the Implementation of an Interprofessional Model of Patient Care at the Ottawa Hospital

Department and institution: Nursing, University of Western Ontario
Sponsor:

Ethics Approval Date: April 17, 2009
Expiry Date: July 31, 2010

Documents Reviewed and Approved: Revised Study End Date
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Health Sciences Research Involving Human Subjects (HSREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans and the Health Canada/ICH Good Clinical Practice Practices; Consolidated Guidelines; and the applicable laws and regulations of Ontario has reviewed and granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above. The membership of this REB also complies with the membership requirements for REB’s as defined in Division 5 of the Food and Drug Regulations.

The ethics approval for this study shall remain valid until the expiry date noted above assuming timely and acceptable responses to the HSREB’s periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the HSREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the HSREB:

a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
b) all adverse and unexpected experiences or events that are both serious and unexpected;
c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertising, the newly revised information/consent documentation, and/or advertising, must be submitted to this office for approval.

Members of the HSREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the HSREB.
March 12, 2008

Ginette Lemire-Rodger
Danielle d’Amour
Faculté des sciences infirmières

Kathryn A. S. Hiruchi
Michael Kerr
School of Nursing

Barbara Davies
School of Nursing

Dear Dr. Lemire-Rodger, Dr. Hiruchi and colleagues,

This is to certify that the University of Ottawa Health Sciences and Science Research Ethics Board (REB) has examined the application for ethical approval for the research project entitled Evaluation of the Implementation of an Inter-Professional Model of Patient Care at the Ottawa Hospital submitted by Dr. Ginette Lemire-Rodger of the Ottawa Hospital, Dr. Kathryn A. S. Hiruchi of the School of Nursing at the University of Ottawa and their colleagues.

The REB found that this research project met appropriate ethical standards as outlined in the Tri-Council Policy Statement and in the Procedures of the University of Ottawa Research Ethics Boards and accordingly gave it a conditional approval. The approval is conditional upon the researchers providing the REB with French translation of the consent form and a copy of the ethical approval of the Ottawa Hospital REB.

The REB will grant final clearance (IA approval) once the abovementioned documents are submitted and approved. The researchers cannot begin the research with human subjects until final clearance is obtained.

Please note that changes to the protocol of forms cannot be initiated without prior written approval from the REB.

Sincerely yours,

Protocol Officer for Ethics in Research
For Dr. Daniel Lagarec, Chair of the Health Sciences and Sciences REB
Appendix C

IPMPC© Survey

(CADAPTED VERSION FROM INTERVENTION STUDY)

THE OTTAWA HOSPITAL INTER-PROFESSIONAL MODEL OF PATIENT CARE STAFF SURVEY

Please Place Your Completed Questionnaire Into The Study Envelope And Place In The Drop-Box Provided For The Study On Your Unit.

THANK YOU VERY MUCH FOR PARTICIPATING!!
Section A - Demographics: We would like to begin by asking a few questions about yourself.

(Please place a check mark in the appropriate box where indicated.)

A1. Please indicate your gender. 1□ Female 2□ Male

A2. What is your date of birth? __/__/19

A3. What is your current marital status?
   1□ widow or widower  2□ separated or divorced
   3□ married or living common law  4□ single (never married)

A4. What is the highest degree or diploma you have obtained?
   1□ high school diploma  2□ college diploma
   3□ university degree  4□ graduate degree

Section B - Job Characteristics: In this section we would like to gain some general information about your employment at the Ottawa Hospital. Please check the appropriate box or where indicated, fill in the blanks.

B1. What is your professional designation at the Ottawa Hospital?
   Clinical RN □  Clinical RPN □  Audiologist □
   Staff/Attending Physician □  Resident Physician □  Pharmacist □
   Respiratory Therapist □  Physiotherapist □  Occupational Therapist □
   Dietician □  Social Worker □  Speech Therapist □
   Other ____________________

B2. What site do you currently work at (please use primary affiliation)?
   Civic Campus □  General Campus □  Riverside Campus □  Ottawa University Heart Institute □
   The Rehabilitation Centre □  Work across all sites equally □

B3. What is your current employment status?
   Full-time □  Part-time □  Job Share □  Casual □  Other □
B4. What clinical program do you normally work in? (Please check box where you usually work the MOST hours when at the Ottawa Hospital.)

- Medicine □
- Surgery □
- Perioperative □
- Critical Care □
- Mental Health □
- Psychiatry □
- Cancer □
- Obstetrics/Gynecology □
- Rehabilitation □

Other (please specify) ________________________________

B5. How long have you worked in this clinical program? _______ years.

B6. On average, how many hours do you usually work per week in this program (clinical area)? _______ Hrs/wk.

B7. How many years in total have you worked in your current profession? _______ years.

B8. How many years in total have you worked at the Ottawa Hospital? _______ years.

---

Section C – Your views on the new inter-professional model being implemented at the Ottawa Hospital. Please check the appropriate box where indicated. (From MSK)

C1. Prior to participating in this study, were you aware of the implementation of a new inter-professional model of patient care at the Ottawa Hospital?

Yes □ No □  → IF NO, PLEASE GO TO QUESTION #C4

C2. In your opinion, how likely is it that this new model will improve patient care?

Very unlikely □ Unlikely □ Neutral □ Likely □ Very likely □

C3. In your opinion, how likely is it that this new model will improve collaboration amongst the different health care professionals at the Ottawa Hospital?

Very unlikely □ Unlikely □ Neutral □ Likely □ Very likely □
### Section D – Inter-professional collaboration at the Ottawa Hospital

Please indicate to what extent you personally agree or disagree with each of the following statements. (Sicotte)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1. The entire patients' needs (physical, psychological and social) are taken into account by the different groups of professionals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D2. The different groups of professionals take into account the data collected by other professionals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D3. Professionals have a high tolerance of grey area (overlapping of jurisdictions between professionals groups) in the sharing of responsibilities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D4. Professionals collaborate to elaborate a common care plan.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D5. Professionals’ support is sought for from other disciplinary groups as necessary.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D6. Professionals from different disciplinary groups exchange information about common clients.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D7. There is collaboration among different professional groups to assure patient follow-up.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D8. The level of collaboration among professionals is high.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D9. Professionals from different disciplinary groups share clinical decision making.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D10. Working relations among the professional groups are egalitarian.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D11. The sharing of clinical responsibilities is well established among the different groups of professionals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D12. Professionals do their care without nuisance to each other.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D13. Team-based routines between the different groups of professionals are well defined.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D14. Efforts are done to prevent conflicts concerning the sharing of tasks and responsibilities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D15. Daily collaborative behaviours are largely integrated in day-to-day functioning.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D16. Several activities assumed by different professional groups concerning a particular patient are well co-ordinated.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D17. From the patient’s perspective, professional collaboration is harmonious.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Section E – Inter-professional conflict at the Ottawa Hospital. Please indicate to what extent you personally agree or disagree with each of the following statements. (Sicotte)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1. Disciplinary objectives are in conflict with program’s objectives.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E2. There are frequent conflicts over the sharing of responsibilities by professionals in different disciplines.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E3. Generally speaking, conflicts over the sharing of responsibilities by professionals in different disciplines are easily resolved.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E4. Interprofessional relationships are often perceived as necessarily having winners and losers (if one group wins, another loses).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E5. There is always some individual dissatisfaction with regard to group decisions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E6. There is a high level of competition among professional groups.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E7. There is incompatibility of objectives between different professional groups.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Section F – Empowerment: This section asks for your views about various conditions that can influence your ability to be effective at work. Answer the questions by circling the appropriate number. If you are unsure about how to answer a question, please give the best answer you can. (From Laschinger)

Global empowerment

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>F13. Overall, my current work environment empowers me to accomplish my work in an effective manner.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>F14. Overall, I consider my workplace to be an empowering environment.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Section G – Respect: This section refers to your current job. Please indicate to what extent you personally agree or disagree with each of the following statements. (From Siegrist)

<table>
<thead>
<tr>
<th>Question</th>
<th>Agree</th>
<th>Disagree, but I am not at all distressed</th>
<th>Disagree, and I am somewhat distressed</th>
<th>Disagree, and I am distressed</th>
<th>Disagree, and I am very distressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1. I receive the respect I deserve from my superiors.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>G2. I receive the respect I deserve from my colleagues.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
G3. Considering all my efforts and achievements, I receive the respect and prestige I deserve at work.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**Section II - Global Job Satisfaction:** Please indicate how much you agree with the following statements as they relate to your experience working at the Ottawa Hospital. Please circle the number that corresponds to your answer. (From JDS)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1. I feel very satisfied with my job.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>H2. I feel that my co-workers are satisfied with their jobs.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>H3. I feel I would be happy to work here until I retire.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>H4. I feel that the health care facility provides a supportive work environment in which to work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Section I - Satisfactory with Care / Service:** Please indicate how much you agree with the following statements as they relate to your work at the Ottawa Hospital. Please circle the number that corresponds to your answer. (From MSK)

<table>
<thead>
<tr>
<th>How satisfied are you with …</th>
<th>Very Dissatisfied</th>
<th>Dissatisfied</th>
<th>Neutral</th>
<th>Satisfied</th>
<th>Very Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1. the type of care you can provide to patients in this clinical area.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I2. the amount of time you can spend with patients in this clinical area.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I3. the level of staffing that is available for patient care in this clinical area.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I4. the availability of other resources needed for patient care in this clinical area.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I5. the overall quality of care patients receive in this clinical area.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Section J - Patient Safety:** Please indicate how much you agree with the following statements as they relate to your experience working at the Ottawa Hospital. Please circle the number that corresponds to your answer. (From Sexton)

<table>
<thead>
<tr>
<th></th>
<th>Disagree Strongly</th>
<th>Disagree Slightly</th>
<th>Neutral</th>
<th>Agree Slightly</th>
<th>Agree Strongly</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1. The culture in this clinical area makes it easy to learn from the errors of others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>J2. Medical errors are handled appropriately here.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>J3. My suggestions about safety would be acted upon if I expressed them to management.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Item</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>J4. I am encouraged by my colleagues to report any patient safety concerns I may have.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J5. I know the proper channels to direct questions regarding patient safety in this clinical area.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J6. I receive appropriate feedback about my performance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J7. I would feel safe being treated here as a patient.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J8. Personnel frequently disregard rules or guidelines (e.g. hand-washing, treatment protocols/clinical pathways, sterile field, etc.) that are established for this clinical area.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix D

IPMPC® Guiding Principles

1.3.1 TOH IPMPC® GUIDING PRINCIPLES

<table>
<thead>
<tr>
<th>GUIDING PRINCIPLES RELATED TO CARE ENVIRONMENT AND COMMUNITY LINKAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The patient/family will receive seamless care/services across settings including transition to and from the community, through coordination of care by the appropriate provider and through processes that meet the clinical pathway of the patient/family.</td>
</tr>
<tr>
<td>2. Patient/family will receive safe and competent care from the most appropriate health care providers.</td>
</tr>
<tr>
<td>3. The patient/family will receive continuity of care by interacting as much as possible with the same health care provider in their respective areas of expertise.</td>
</tr>
<tr>
<td>4. Care provision will occur in a supportive environment that facilitates compassionate care.</td>
</tr>
<tr>
<td>5. The plan of care will include the comprehensive assessment of patient and family needs (from referral to discharge,) implementation of plan &amp; evaluation of outcome.</td>
</tr>
<tr>
<td>6. The patient will receive required care within an acceptable timeframe determined by evidence regarding their specific diagnosis or care needs.</td>
</tr>
<tr>
<td>7. Patient and family clinical information will be available to all health care providers, guided by the privacy act, across settings to ensure seamless and timely care delivery.</td>
</tr>
<tr>
<td>8. Caregiver needs will be identified and included in the plan of care.</td>
</tr>
<tr>
<td>9. The patient/family will receive care in either of the two official languages and resources will be sought to facilitate communication in other languages.</td>
</tr>
<tr>
<td>10. Patient and family will have their individual beliefs and values recognized and respected by all health care providers.</td>
</tr>
</tbody>
</table>
GUIDING PRINCIPLES RELATED TO INTER-PROFESSIONAL TEAM WORK

11. Each health care provider will be accountable for the care provided.

12. Patient/family will have access to information to assist in decision making, treatment management options, support, and self-care.

13. Patient/family will be active participants, in the decision-making process about their plan of care. The degree of involvement will be defined by the patient.

14. Ongoing two-way communication between the health care providers and with the patient and family will guide the development, understanding and implementation of the multidisciplinary plan of care.

15. The patient/family will have the opportunity to develop therapeutic relationships with health care providers.

16. Health care providers will be knowledgeable of the resources available in the community and will communicate these to the patient and family.

17. Primary care providers will have access to resources (e.g. guidelines) required to provide appropriate ongoing care and will ensure that the patient and family are aware of follow-up guidelines.

18. Health care provider will have access to appropriate information technology to ensure optimal management of care.

19. The health care providers will collaborate and provide support to foster team spirit and teamwork.

20. The health care providers will ensure, to the best of their abilities, that the patient/family’s expectations of care are aligned with the capacity of the healthcare team to provide services within recognized standards.

21. The health care provider will have access to continuing professional development that facilitates the acquisition of knowledge and the maintenance of competence.

22. Education and research are values held by TOH as being essential to the maintenance and development of the most appropriate and effective models of patient care.
Appendix E

Permissions

Interprofessional Education for Collaborative Patient-Centred Practice Framework (D’Amour & Oandasan, 2005).

From: [Name]
To: Wendy Ellis
Subject: Re: Request to use Framework - Doctoral Candidate

Dear Wendy,

Thank you for your email.

You may use the framework in your doctoral dissertation (provided you cite the original work).

Good luck with your studies.

Kind regards,

[Name]
Editor-in-Chief, Journal of Interprofessional Care

Dear Editor -In- Chief,

I hope this message finds you well. I am writing to request permission to use the framework found in the publication listed below. The framework would be referenced in my doctoral dissertation.

Interprofessional Education for Collaborative Patient-Centred Practice Framework (D’Amour & Oandasan, 2005).


Thank you for your consideration. Kind regards,

Wendy

Wendy Ellis, RN
PhD Candidate
University of Western Ontario (UWO)
London, Ontario, Canada
The Analytical Framework of Interdisciplinary Collaboration (Sicotte, D’Amour & Moreault, 2002).
## Curriculum Vitae

<table>
<thead>
<tr>
<th><strong>Name:</strong></th>
<th>Wendy L. Ellis</th>
</tr>
</thead>
</table>
| **Post-secondary Education and Degrees:** | The University of Western Ontario  
London, Ontario, Canada  
Doctor of Philosophy – Nursing |
|  | McMaster University  
Hamilton, Ontario, Canada  
Master of Science - Nursing (Thesis stream) |
|  | McMaster University  
Hamilton, Ontario, Canada  
Bachelor of Science in Nursing |
|  | George Brown College  
Toronto, Ontario, Canada  
RN Diploma |
| **Honours and Awards:** | Entrance Scholarship (PhD Program - Nursing)  
The University of Western Ontario  
Graduate Funding Award (Master of Science - Nursing)  
Valedictorian, Post RN to BScN, McMaster University  
Kathy Parker Award for Academic and Clinical Excellence |
| **Related Work Experience:** | Academic Chair, School of Nursing  
George Brown College  
Faculty (PT), School of Nursing, McMaster University  
Teaching Assistant, University of Western Ontario  
Research Coordinator, University Health Network  
(Health Canada, CIHR, CFI grants)  
Research Coordinator, McGill University  
(CIHR grants) |
Manager/Director roles, Clinical Programs; Nursing
Registered Nurse, Critical Care; Cardiology
Collaborator – various grants (ECampus, etc.)

Publications:


