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The Effect of Interprofessional Conflict Resolution on Interprofessional Collaborative Practice among Health Care Provider Teams in Hospitals

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Abstract

Client needs and their complexities have increased, challenging multiple professionals to work together within health systems to reach better patient outcomes. Addressing this challenge requires interprofessional collaboration, which, while essential, may also breed conflict given that individuals from various health care disciplines each bring their unique perspectives into teamwork. While some degree of disagreement is expected, team members must be able to resolve conflicts to ensure effective patient care. However, limited information was available that described and clearly defined interprofessional conflict resolution as a concept.

The aim of this study was threefold. This study began with a concept analysis of interprofessional conflict resolution (IPCR) as a means to identify its attributes to generate instrument items. This study then carried out development and testing of the psychometric properties of an instrument designed to measure IPCR among health care teams, followed by development and evaluation of the effect of an interventional education program to resolve interprofessional conflicts in teams. Finally, the testing of a theoretically derived model linking the relationship between health care providers' personal factors (general self-efficacy and team psychological safety) and interpersonal communication competence on interprofessional collaborative practice, and explored if these relationships were moderated by interprofessional conflict resolution. The Interprofessional Conflict Resolution Scale was found to be valid and reliable. The findings indicated that participants' perceived learning effectiveness based on their learning outcome ratings represented 93.3% learning effectiveness from the training program. This study identified five emerging themes from participants' reflections and open- ended

answers from the feedback form supporting the transfer of learning into the practice. The theoretically derived model tested in this research study was supported by the data collected, with the exception of one hypothesis (H4).

Keywords: Interprofessional conflict resolution scale, general self-efficacy, team psychological safety, interpersonal communication competence, interprofessional collaborative practice, healthcare providers, structural equation modeling

Summary for Lay Audience

Client needs and their complexity has increased, challenging multiple professionals to work together within health systems to reach better patient outcomes. Addressing this challenge requires interprofessional collaboration, which, while essential, may also breed conflict given that individuals from various health care disciplines each bring their unique and varying perspectives into teamwork. While some degree of disagreement in teams is expected, team members must be able to resolve conflicts to ensure effective care for their patients. However, limited information is available that described and clearly defined interprofessional conflict resolution as both a concept and an outcome.

The aim of this study was threefold. First, this study validated an instrument designed to measure interprofessional (IP) conflict resolution among IP health care teams. Secondly, the study developed and evaluated the impact of an interventional education program that facilitates learning a process to resolve IP conflicts. Thirdly, the study tested a model that examined the relationships between health care providers' general self-efficacy and team psychological safety and their interpersonal communication competence that leads to IP collaborative practice, and explored how these relationships were moderated by IP conflict resolution. The Interprofessional Conflict Resolution Scale was found to be valid and reliable. Qualitative results supported transfer of learning into practice six weeks after the training and the impact of the IPCR training program on assisting health care providers (HCPs) to resolve team conflict. Furthermore, the model was tested using a convenience sample of 266 HCPs who provided client care from three district hospitals. The results revealed a significant relationship between general self- efficacy and interpersonal communication competence, also on interprofessional collaborative practice. There was also a significant relationship between team psychological safety and interpersonal

communication. However, the relationship between team psychological safety and interprofessional collaborative practice was not significant. Interprofessional conflict resolution moderated the relationship between interpersonal communication competence and IPCP. The results have implications for nursing, healthcare practice, continuing health care education, as well as for post-secondary and undergraduate health professions education. As well, the findings have relevance to guide future research in IPCR and interprofessional collaborative practice.

Co-Authorship Statement

I, Sibylle Ugirase, acknowledge that this thesis includes six integrated manuscripts in addition to an introduction and conclusion chapter. These were produced as a result of collaboration with my PhD supervisors: Dr. Carole Orchard, and Dr. Panagiota Tryphonopoulos, and committee members: Dr. Gillian King, Dr. Tracey Adams and Dr. Manasse Nzayirambaho.

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Chapter One: Interprofessional Conflict Resolution among Health Care Providers Teams in Hospital

Introduction

Health care clients' needs and the complexity of those needs have increased, challenging multiple professionals to work together within health systems to achieve better patient outcomes (Morley & Cashell, 2017; Orchard & Bainbridge, 2016; Sunguya et al., 2014). Addressing this challenge requires interprofessional collaborative practice, which, while essential may also breed conflict given that individuals each bring their unique perspectives from their respective health care disciplines into their teamwork in practice (McKay & Narasimhan, 2012; Nelson et al., 2008; Hall, 2005). While some degree of disagreement can be expected, team members must be able to resolve conflicts to ensure effective care for their patients. Working effectively in collaborative teams is challenged due to health professionals' traditional profession-specific education and socialization into practice leading to different health care professional backgrounds, training, interests, goals, expectations, styles, and experiences (Kreps, 2016; Orchard & Bainbridge, 2016; Green & Johnson, 2015). These differences can confound communication and generate conflict. Cooperative work and shared decisions may be undermined unless team members address and deal with time conflicts that arise (Bridges et al., 2011).

Background and Significance

The World Health Organization (WHO) in 2010 developed an action framework for interprofessional education and collaborative practice highlighting the importance of and need for education to prepare health professionals for interprofessional collaboration (IPC) (Bosch & Mansell, 2015; World Health Organization, 2010). In the same year, the Canadian

Interprofessional Health Collaborative (CIHC) developed its interprofessional collaborative competency framework comprised of six interconnected domains namely “role clarification, patient/client/family/ community-centered care, team functioning, collaborative leadership, interprofessional communication, and dealing with interprofessional conflict” (Canadian Interprofessional Health Collaborative, 2010 p.05). This competency framework was designed for educators, practitioners, regulators and accreditors to gain insight into what to attend to within interprofessional education and collaborative practice (Orchard & Bainbridge, 2016; Bainbridge et al., 2010).

When used effectively, interprofessional collaborative practice (IPCP) has been reported to improve patient outcomes and satisfaction with their care while decreasing the occurrence of untoward events (Bridges et al., 2011) and reducing rates of staff turnover and conflicts (Patton, 2014). Yet, to overcome disparities between health providers in their knowledge, authority, workloads, and varying views on appropriate patient care needs it is necessary to address several elements including interprofessional conflict resolution (Olajide et al., 2015). IPCP requires professionals to recognize that one profession has information that other professions need, to practice successfully (Bridges et al., 2011). When such recognition occurs, concerned health professionals must then learn to collaborate in teams and overcome their previous competitive perspectives, that are more likely to create unresolved conflicts (Tabak & Orit, 2007).

In developing countries, IPC is an option for addressing major health challenges related to poverty, health illiteracy, shortages of human health resources, limited material resources and limited infrastructures in a health setting (World Health Organization, 2010). However, a systematic review by Sunguya and colleagues (2014) revealed unique challenges and barriers to implementation of interprofessional education (IPE) and IPC in developing countries. These

challenges reflect limited resources, health program students' diversity, absence of accreditation, and overall lack of leadership support (Sunguya et al., 2014). What is common across all countries is the lack of a consistent approach to developing IPE curricula, and having insufficient resources to support IPE learning. In order to achieve IPE, there is an need for IPC policy and ongoing cross disciplinary learning to work collaboratively in teams (Steihaug et al., 2016; Silva et al., 2015). While attention to interprofessional collaborative practice can be a strategy for enhanced healthcare teamwork, few health professionals have the skills to address and resolve team conflicts (Dondorf et al., 2015; Brown et al., 2011).

Conflict has been studied across several domains, including social, military, business and health care. In health settings, conflicts between team members have existed since the advent of formalized health care and have been regarded and presented as a negative problem that an organizations must eliminate at all costs (Stein et al., 1992). However, more recently, an increasing focus has been placed on the importance of timely and appropriate management and resolution of conflicts (Omisore & Abiodun, 2014; Tabak & Orit, 2007).

A study carried out in an Egyptian hospital identified personality differences, varying levels of education, communication issues, and authority (power) differences as causes of conflict (Akel & Elazeem, 2015). Other scholars have also cited communicative differences related to shared goals (Olajide et al., 2015), access to resources, and varying professional training (Omisore & Abiodun, 2014). At a personal level each health professional needs to have stress resistance, effort capacity, and openness to learning about each other (Talmaciu & Maracine, 2010). Furthermore, to minimize conflicts organizations need to address and resolve role ambiguities across professions (Allen, 2020; Weissmann, 2005). Dahshan et al. (2019) found that dysfunctional conflicts often occurred as a result of misunderstandings between nurse-

physician roles, goals and values, which when not resolved could lead to disruptions of patient care (Dahshan et al., 2019).

Moreover, ongoing conflicts within work environments can negatively impact working relationships, if not well managed. Thus, conflicts are polarizing at best, - at worst, conflicts impact patient care and disrupt teamwork (Overton & Lowry, 2013). An average of 0.9 to 3.3 hours was spent on workplace conflicts per week in the study of employees from nine countries. For example, in the United States, the lost time was 2.8 hours per week on average, that amounted to $359 billion based on average hourly earnings accompanied by staff turnover and absenteeism (Overton & Lowry, 2013). It is not surprising as reported by Nelson et al. (2008), that managers spend 30-40% of their workday dealing with conflicts among team members. Conflict in the workplace seems to be a norm which when ignored, can lead to negative outcomes. Thus, while conflicts in the workplace are expected and can be healthy, the problem lies in addressing, managing, and resolving these conflicts (Nelson et al., 2008).

Interprofessional team collaboration is believed to be a means to improve healthcare workplace environments. Health care team collaboration requires a strategy for responding to and effectively dealing with such conflicts (Johnson, 2013). Therefore, failure to help health professionals gain skills in dealing with and resolving conflicts can undermine patient care and cannot be addressed without attention to gaining skills in IP conflict resolution.

Purpose of the Study

The purpose of this study was threefold, first, to examine the factors that may influence HCP teams' capacity to achieve IP collaborative practice. To study these factors a theorized model was used in which relationships between contributing personal factors (general self-efficacy and team psychological safety), interpersonal communication competence (IPCC) and

interprofessional collaborative practice (IPCP) were proposed, with further examination of whether IP conflict resolution moderated the relationship between interpersonal communication competence and IP collaborative practice. Secondly, development of an instrument (the Interprofessional Conflict Resolution Scale [IPCRS]) required a concept analysis of interprofessional conflict resolution to generate instrument items. Lastly, development and evaluation of the effect of an interventional education program for participants on their transfer of learning an IP conflict resolution process into practice was conducted.

Research Questions

The research questions included:

1) What are the relationships between personal factors (general self-efficacy, team psychological safety), interpersonal communication competence, and IP collaborative practice?

2) Does IP conflict resolution moderate the relationship between interpersonal communication and IP collaborative practice?

3) What is the value of an IP conflict resolution educational intervention on developing IP conflict resolution skills among health practitioners?

4) What is the experience of transfer of learning of IPCR skills into practice by HCPs?

This study used a mixed-method design to test the proposed model and psychometric properties of the IPCR scale, with a repeated measures quasi-experiment intervention to test the impact of preparing HCPs to transfer gained conflict resolution knowledge and skills into practice (Ishtiaq, 2019). In this study, participants completed both a survey package at three data collection points in time and a feedback form at the end of the training program as well

as a personal reflection six weeks following the completion of their continuing education intervention.

The findings from the data collected qualitatively (feedback form and personal reflection) were cross-checked through peer checking by presenting the findings to HCPs and the research supervisory committee members (triangulation) to capture a comprehensive understanding of transfer of learning of IPCR in this study. The data analysis used both descriptive and inferential statistical procedures as well as thematic content analysis. In the latter phase to test the model fit, structural equation modeling was employed to determine the best fit for the theorized model.

Overview of Chapters and Integrated Article Format

This work has been prepared using the integrated article format as outlined by the Western University, School of Graduate and Postdoctoral Studies in London, Ontario and consists of seven chapters. The body of the thesis includes the current chapter (Chapter One), which is an introduction to the entire dissertation. Chapters two, three, four, five and six are manuscripts developed in a publication format, each with a distinct focus but with some overlaps. Chapter seven offers a general discussion and an integrated synopsis and conclusions for the whole research study.

Chapter Two is a manuscript entitled Interprofessional Conflict Resolution: A Concept Analysis. Specifically, the concept analysis of interprofessional conflict resolution guided by Walker and Avant's framework is presented. Chapter Three is entitled Development and Testing of the Interprofessional Conflict Resolution Scale (IPRCS) and reports on its development and testing processes. Chapter Four is entitled Methodology, Literature Review and Development of the Interprofessional Conflict Resolution Theoretical Model. The chapter investigates interprofessional conflict resolution among health care providers in district hospitals in Rwanda

and presents the methodology used step by step. This is followed by an extensive literature review of major concepts of the study to guide the overview theoretical framework and proposed data analysis procedures. Chapter Five is entitled Interprofessional Conflict Resolution Training Program: Transfer of Learning into Hospital Settings. In this chapter, the development of and evaluation of an IPCR intervention program with attention to learners' transfer of learning into practice. To report on learning gained a qualitative data descriptive thematic analysis from the participants' submitted feedback followed by their reflections on the application of learning into practice is presented. Chapter Six is entitled Explaining Effects of IP Conflict Resolution on IPCP among Health Care Providers' Teams in Rwandan District Hospitals. This manuscript presents the study results of an exploration, testing and refinement of the theoretical framework using structural equation modeling. Chapter Seven entitled Interprofessional Conflict Resolution Study: Integration of Quantitative and Qualitative Data, Summary of Key Findings, Implications, and Limitations. In this chapter a summary of the integration of all the qualitative and quantitative data provides the overall findings from the study and then discusses implications and limitations of the study.

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Chapter Two: Interprofessional Conflict Resolution: A Concept Analysis

Abstract

Interprofessional conflict resolution is one of the six domains of the Canadian Interprofessional Competency Framework elaborated by the Canadian Interprofessional Health Collaborative in 2010. While the domain of interprofessional conflict resolution (IPCR) is a topic of current interest, the concept has not been clearly defined. This chapter aims to report on the analysis of the concept of IPCR guided by Walker and Avant's (2019) concept analysis approach. The concept analysis resulted in components including four attributes (verbally expressed disagreement, perceived threat to own interest between two professionals, exploration and explanation of differing viewpoints, and acceptable shared agreement). The results of this concept analysis provided more rigorous clarity of a shared meaning to be used in the field of interprofessional education and collaborative practice. This concept analysis was believed to assist in guiding what to focus on in practice to critically determine when, how, and why attending to this domain is key to effective interprofessional collaborative team practice in health care.

In addition, this chapter outlines a set of concepts believed to be antecedents to and consequences of the IPCR attributes being enacted within team-based practice. These concepts have been formulated into a conceptual framework that proposes links between general self–efficacy, team psychological safety, interpersonal communication competence, and interprofessional conflict resolution to interprofessional collaborative practice (IPCP) among healthcare providers in hospitals. Each of the abovementioned concepts are then described and analyzed to support the links between the conceptual variables.

Keywords: conceptual framework, interprofessional conflict resolution, general self-efficacy, team psychological safety, interpersonal communication competence, interprofessional collaborative practice

Introduction

Health care needs of populations have increased in recent years because of the growing number of individuals living with chronic diseases, aging populations and from the more recent pandemic as well as other health and social issues impacting on peoples' mental health. In order for health systems to succeed in today's changing health care environment, interprofessional collaborative teams are essential (Nester, 2016). Interprofessional collaborative teamwork, in which patients and their families are included, is more likely to assist in breaking down barriers related to the current profession-specific educational socialization to transform fragmented care into integrated patient-centered care (Overton & Lowry, 2013, Brown et al., 2011). Interprofessional health care providers are being challenged to gain understanding of the knowledge, skills and expertise that other health care professionals possess. As health care professionals have distinct backgrounds, training, interests, goals, expectations, styles, and experiences, when they work together they can create innovative and shared approaches to addressing patients' health issues. In contrast, siloed care can lead to mis-communication and generate conflicts around approaches to care planning (Kreps, 2016; Orchard & Bainbridge, 2016, Green & Johnson, 2015). While some disagreements can be expected, team members must resolve conflicts to ensure the most effective care for their patients. Hence, interprofessional teams require effective team processes to foster interprofessional conflict resolution (Mohaupt et al., 2012, Bainbridge et al., 2010).

Though interprofessional collaboration is a topic of current interest, interprofessional conflict resolution has not yet been clearly defined. There is a paucity of research about interprofessional conflict resolution within health care providers' teams. The above gaps in

knowledge related to IP conflict resolution among health care providers resulted in the decision to undertake a concept analysis of the term *interprofessional conflict resolution*.

To undertake this concept analysis Walker and Avant's approach was selected. They define a concept as a mental construction that contains attributes or characteristics that distinguish one concept from others, and which permits it to be matched with phenomena (Walker & Avant, 2019). Subsequently, this concept analysis determined those defining attributes distinguishing the IPCR concept from those similar to, but not the same, as IPCR (Walker & Avant, 2019). This chapter presents a report on the concept analysis of IPCR that was carried out using Walker and Avant's (2019) methodology followed by a literature review of antecedents and consequences perceived to be associated with the concept that then resulted in a conceptual framework for a study on IPCR.

Method of Concept Analysis Approach

This concept analysis was guided by Walker and Avant's concept analysis modified version (2019) that uses eight steps, namely: 1) selection of the concept, 2) determining aims or purposes of analysis, 3) identifying all uses and definitions of the concept, 4) determination of attributes, 5) identify a model case, 6) identify borderline, related, contrary, invented and illegitimate cases, 7) identifying of antecedents and consequences, 8) defining empirical referents. While the steps appear to be sequential, Walker and Avant highlighted that the researcher might need to work forward and backward through the steps to obtain a clearer and precise analysis of the concept.

Step 1: Selection of the Concept. The concept interprofessional conflict resolution was analyzed. First, the concept was divided into three terms: *interprofessional*, second, *conflict*, and finally, *resolution*. Initially, each term was analyzed separately, and then all three terms were analyzed together to ascertain the concept's whole meaning.

***Step 2: Determining Analysis Purposes*.** This concept analysis aimed to provide a clear meaning of interprofessional conflict resolution (IPCR) within the IP collaborative practice of health professionals. The IPCR's attributes, antecedents, and consequences, along with its operational definition, provided a means to explore further dimensions of interprofessional conflict resolution within health professionals' interactive practice situations.

***Step 3: Uses and Definitions of Interprofessional conflict resolution*.** This step assessed the origin and use of the three terms of the concept individually and then together. A literature search was carried out using databases, including CINAHL, Medline, PubMed, Google, and Google Scholar, between the years 2009 to 2021. To better understand the history of some main concepts, some older references were included as well. The search used key terms- 'conflict resolution, 'conflict,' 'conflict management,' 'interprofessional,' and 'collaboration,' and yielded 657 articles. The selection of the articles was refined using the terms ' interprofessional',' conflict,' and' resolution' used alone. This step reduced the number of retrieved articles and identified 37 articles that were retained for the literature review. These articles represented a variety of disciplines including health sciences, nursing, psychology, business, education and sociology and were related to either reporting research in dissertations or other published study reports. Articles from health care and non-health care literature mentioned conflict resolution or conflict management

as an important team component. However, none examined IP conflict resolution as a primary research concept focus. Theoretical literature about interprofessional conflict resolution as a main concept was not found; research literature was limited and frequently discussed in terms of political or social conflict issues.

The term **interprofessional** was searched. According to the Merriam Webster Dictionary and its online etymology dictionary, this term is divided into two words "inter-" and "professional." *Inter-,* originated from the Latin term *inter* (prep., adv) "meaning among, between, betwixt, in the midst of." As a prefix inter-is, a word-forming element used freely in English to mean "between, among, during." Thus, inter- can be defined as either a verb or a prefix. As a transitive verb 'inter' means to deposit (a dead body) in the earth or a tomb, it can also relate to being reciprocal to something and when used inter-relationally means it is located between. It can also be carried out or occur between and can be used to limit the boundaries of existing between two aspects.

Professional. According to the Merriam Webster Thesaurus and Dictionary, the word '*professional'* comes from late Latin *professus*, past participle of *profitēri* to profess, confess, and pro- before + *fatēri* to acknowledge. Middle English and Anglo-French dictionaries define 'Professional' as an adjective as having professed one's vows, relating to, or characteristic of a profession. The word can relate to action by engaging in one of the learned professions. 'Professional' as a noun relates to someone who does a job that requires specialized training, education, or skill; or someone who is a member of a profession; or someone who (a) is paid to participate in a sport or activity; or (b) has a lot of experience or skill in a particular job or activity; engages in a pursuit or activity applying the expectations of a specific profession. Thus, 'professional' relates to a

person who has undertaken education to develop practice-based skills and experience in a job or activity that reflects expectations of his/her chosen profession.

Conflict The word *conflict* originates from the Latin verb *confligere*. When separated, *con* means' together' while *fligere* means 'to strike.' Conflict can then be defined as an intransitive verb and uncountable noun (Encyclopaedia, Collins Dictionary, and Merriam Webster Dictionary). As an intransitive verb, 'conflict' means being different, opposed or contradictory to the view of others; it can also mean to avoid an agreement or accord. As a noun, 'conflict' relates to a disagreement or argument about an issue of importance between two people who may also be in a group (Encyclopaedia, Collins Dictionary, and Merriam Webster Dictionary).

The word conflict has been used synonymously in association with wars, fights, battles, and struggle (thesaurus dictionary). However, many scholars have clarified a difference between conflict and war or fight. War refers to an open, declared, and intentionally armed struggles between countries involving the use of arms to destroy the opposed party (Clinton, 2011). War requires mobilization of troops usually over a long duration (Ramiah & Hewstone, 2013, Hewstone et al., 2006). In contrast, conflict is a disagreement between two parties who can be individuals, communities or even countries where parties perceive a threat to their interests and needs that they debate with each other (Griscti et al., 2017, Almost et al., 2016; Clinton, 2011). Thus, 'conflict' when used in the context of this analysis can occur between professionals who perceive a threat to their interests and needs that result in a verbal disagreement with each other.

Resolution According to the encyclopaedia, Collins Dictionary, Merriam Webster Dictionary, the original meaning of concept resolution comes from the Latin word

resolvere, which means to loosen or dissolve again. The concept of 'resolution' has been widely used in different disciplines such as medicine, law, music, sociology film studies, general physics and chemistry. For example, resolution in medicine means to return from a pathological to a normal condition or the subsiding or termination of an abnormal condition, such as a fever or inflammation. In law resolution means a formal statement of a decision or expression of opinion put before or adopted by an assembly such as the congress. In music resolution it means the progression of the dissonant to a consonant tone or chord. In film studies resolution relates to the clarity or finesse of detail in an image often measured as the number or density of discrete units such as pixels or dots that compose it, or the ability of a television or film image to reproduce fine detail. While in general physics and chemistry resolution means the act or process of separating or reducing something into its constituent parts (e.g., the prismatic resolution of sunlight into its spectral colors). In social situations, resolution means that a person acts in solving or explaining a problem or puzzle or concluding a dispute or disagreement. Therefore, for the purpose of this concept analysis a resolution is a firm decision to do something (e.g., make a resolution to get more exercise) or take a course of action determined or decided on (e.g., his resolution is to get up early).

Interprofessional conflict resolution. All the attributes associated with inter- + professional+ conflict+ resolution were then combined, to be considered as a single and definite concept for this study.

Step 4: Determination of Attributes.

Attributes are those characteristics of a concept that repeatedly appear in the literature, and standing alone should immediately call the concept to mind (Walker & Avant, 2019). After

reviewing the literature, and the following discussion with various health care professionals and educators, it was concluded that *interprofessional conflict resolution* is a process that comprises four attributes:

- addresses a verbally expressed issue disagreement,
- exists due to perceived threat to own interests between two or more professionals,
- involves an exploration and explanation of differing viewpoints to each other, and
- is achieved when there is an acceptable shared agreement.

Interprofessional conflict resolution as a concept must be enacted when health professionals from more than one health profession are placed together and experience a disagreement between each other over a perceived threat, often arising from differing perspectives over an issue. When a threat exists, each party to the disagreement must decide whether to address it or not. In interprofessional collaborative practice, two or more conflicting parties need a clear process to help govern their behaviour and adopt a discourse to address their disagreement (Johnson, 2013; McKay & Narasimhan, 2012). It is argued that this process is motivated by behavioural, cognitive, and emotional feelings that enhance productive outcomes of conflict (Overton & Lowry, 2013, Leever et al., 2010). Thus, conflict resolution is a process that involves active engagement and motivation of concerned professionals with the intent of addressing and reaching an acceptable outcome regarding an issue.

However, the ability to deal with such a disagreement is often not part of their professional preparation. In the absence of an agreed-upon process to resolve disagreements, the parties rarely have the capacity to address and come to agreements that are acceptable to the aggrieved parties. Thus, this absence of a process can lead to unresolved conflicts among healthcare team members which may result in various serious problems including errors in care

and even death to patients (Sexton & Orchard, 2016). Therefore a need for interprofessional conflict resolution is required to reach shared agreements, for effective interprofessional collaborative teamwork.

Verbally expressed disagreement Each IP team member needs the ability to express openly the negative and positive emotions around an issue over which they disagree (Schilpzand et al., 2011) and be listened to (Shah, 2017) by allowing all voices to be heard (Dalpé et al., 2019; Nieb & Zacher, 2015). At times assertive communication strategies may be required to help people gain an understanding of the true areas of disagreement (Johnson, 2013). Thus, establishing a foundation of trust is needed to facilitate the surfacing of information about all team members' needs and interests (Jerng et al., 2017). Therefore, once individuals feel that their needs and interests have been heard and understood, there is openness to areas associated with a disagreement, for its processing and resolving.

Perceived threat to own interest between two or more professionals. Conflict occurs in situations in which people perceive a physical, emotional, and/or status threat, to their needs, interests, or concerns. Feelings of threat, in turn, promote prejudices and other negative reactions toward the other person (Everett, 2013; Pettigrew et al., 2011; Stathi & Crisp, 2010). Intergroup Threat Theory provides a potential means to account for this prejudice (Everett, 2013; Pettigrew et al., 2011). Threat theory focuses on how one person tends to respond to a perceived alternative view from another based on some latent prejudice towards the other person's viewpoint on the same issue (Makashvili et al., 2018).

Perceived threats arise from two sources: realistic and symbolic threats. Realistic threats are actual threats that occur between one person or group to another, while symbolic threats are concerned with a group's values, traditions, ideology, or morals (Clifton & Aberson, 2012).

Interprofessional situations involving only symbolic threats may arise due to differing views around care decision-making based on the perspective of one professional about that of another. This variant in viewpoints is likely to create perceptions of threat in a team environment (Stephan et al., 2015). Thus, understanding how professionals react and cope with a threat is crucial to the process of interprofessional conflict resolution.

Exploration and explanation of differing viewpoints together. IP conflict resolution involves a conscious cognitive capacity enabling conflicting team members to 'stand back' from their situation and review it so that they can decide whether a different response might lead to resolution (Eichbaum, 2018). It is argued that team members possessing the ability to question and understand their response to a threat will adapt more easily to new situations, and build upon each other's ideas without taking a defensive position. Considering the other viewpoints allows the parties, to also look for alternative ways to solve a disagreement (Ghazinejad et al., 2018; Juhász, 2010).

The key for each party to a disagreement is to explain the reasoning for their respective positions (Antinori et al., 2017). The sharing of their respective reasoning requires both parties to openly listen to each other and identify what is common to both perspectives and where a continuing variance exists. In a healthy resolution process, a common means is explored to achieve positive aspects of all perspectives and find an acceptable alternative to the original conflict position (Dalpé et al., 2019). This conflict resolution process must be aimed at eliminating everyone’s perceived threat between each other to reach a common perspective.

Achieve acceptable shared agreement. IP conflict resolution aims at reaching an agreement between conflicting parties, where everyone feels they are receiving an acceptable shared approach (Arvanitis et al., 2019; Akel & Elazeem, 2015; Beunza, 2013; Bridges et al.,

2011) often referred to as a ‘win-win’. Both parties to a disagreement must be aware of their interests are and be willing to engage in a ‘give-and-take’ process with each other (Arvanitis et al., 2019). Agreement is facilitated through exchanging differing perspectives among parties to reach an acceptable agreement (Sexton & Orchard, 2016; Sexton, 2014). At times the only means through which healthcare team members can come to a resolution entails moving the focus to what is the best approach to achieving their shared patient’s needs.

In summary, interprofessional conflict resolution is a process employed within an interprofessional healthcare team when there is disagreement around an issue of importance to team members. The resolution process is comprised of four attributes; verbally expressed disagreement, perceived threat to one's interests between two parties, shared exploration and explanation of differing viewpoints together, and an acceptable shared agreement. In the following section, the identified four attributes for interprofessional conflict resolution will be used to portray cases reflecting all, some or none of the above attributes. Hence, a model case will be presented and analyzed, followed by a borderline, a related and a contrary case using the same scenario (Walker & Avant, 2019).

Step 5: Identification of a Model Case. The model case is presented below

Paula (Physician), Chris (RN), and Tony (Dietitian) have been discussing how Mrs. Smith is doing at a meeting two weeks since her hospital admission. It is almost the end of their shift and they need to finalize Mrs. Smith's discharge plan. The team disagreed on her continuing care. Paula argued that the prescribed medicine is the best option for her ongoing treatment. However, Tony shares that Mrs. Smith does not need medicine but needs a supplement and a healthy diet. He also shared that the medicine being proposed is likely to interact with other medicine she has been taking. Chris also shares his concern

about Mrs. Smith's lack of involvement in her care planning. The disagreement continues and at the shift end, no plan has been finalized.

The next morning, Paula, Tony, and Chris avoid each other as the team gets ready for morning round. During the round…

[Team]: How are you feeling today, Mrs. Smith?

[Mrs. Smith]: I am feeling better; I think I am ready to go home.

[Team]: We agree with you; your vital signs and other measurement are stable now.

[Mrs. Smith]: If I go home, how am I supposed to stay well? Is there anything I need to change?

Looking at each other, the team realize that Mrs. Smith's discharge plan was not finished, and they couldn't provide Mrs. Smith with all her needed information.

[Team]: We are still working on your discharge plan. We will give you all the necessary information as soon as we finish the plan.

[Mrs. Smith]: I suppose so, but I have been waiting since yesterday

The team then meets in their conference room.

[Chris]: That wasn't a good sign for our team functioning. Yesterday, we didn't resolve the disagreements around Mrs. Smith's treatment plan. I can't even remember what was at issue. It was like we were talking across each other! Paula, you were talking about medicines while Tony shared her need for supplements and diet, and I discussed where Mrs. Smith's involvement in the plan was.

[Paula and Tony]: Yes, we seemed to be working within our own siloed thinking.

[Paula]: If you understood the importance of that proposed medicine, we would have been done with the plan. It has effective and quick results in her recovery process.

[Tony]: But you are the one who doesn't value the role of supplements and a healthy diet in a patient's recovery process. You always focus on the curative part, and that is a short-term solution, and I think that is one of the reasons Mrs. Smith keeps on being admitted for her heart failure.

[Chris]: If both of you would take a moment and seek Mrs. Smith's thoughts about what she would be willing to do, we might arrive at the best plan.

[Paula]: Wait a minute! I think Chris has a point. What if we explore all these points together and then meet with Mrs. Smith?

[Tony]: That's true; I don't want to go back to Mrs. Smith without the plan.

The team starts examining each idea; everyone expresses their concerns and together proposes the solution…

[Tony]: Now, I understand why Paula was insisting on that medicine. That was an amazing experience.

[Paula]: That's true, but your point makes a difference in term of a sustainable solution for Mrs. Smith's health. She doesn't need to be on the medication all the time. It is worth trying to combine that medicine and a supplement. Which one will work best and not interact with the medicine?

[Chris]: That might work, but we need to talk to Mrs. Smith and check other aspects of her life like health insurance, finances…

After talking to Mrs. Smith, everyone was happy about the plan and committed to doing the follow up as a team

According to Walker and Avant (2019), a model case of the concept is an example exhibiting all the defining attributes. First, the IP team came together to address the issue

of an unfinished discharge plan. Second, each team member shared how he/she was threatened by others. Third, they verbalized their emotions around the disagreement while also listening to each other's viewpoints and explored together with a set of solutions. Finally, the IP team came up with a course of action that involved Mrs. Smith to resolve the issue.

Step 6: Identify the Borderline and Contrary Case. In this concept analysis, while Walker and Avant suggest a wider variety of additional cases, the identification was restricted to only a borderline and a contrary case. The nature of IP conflict resolution as a process is either present or not. Therefore, other additional cases were deemed not relevant in addressing the other various types suggested by the authors.

Borderline Case According to Walker and Avant, a borderline case is one that contains many of the concepts defining attributes, but not all of them.

The next morning, Paula (Physician), Tony (Dietitian), and Chris (RN) avoid each other as the team gets ready for morning rounds. During the rounds, they reach Mrs. Smith's bed…

[Team]: How are you feeling today, Mrs. Smith?

[Mrs. Smith]: I am feeling better; I think I am ready to go home.

[Team]: We concur; your vital signs and other measurement are stable now.

[Mrs. Smith]: If I go home, how am I supposed to stay well? Is there anything I need to change?

Looking at each other, the team realize that Mrs. Smith's discharge plan was not finished and couldn't provide all the necessary information to the client.

[Team]: We are still working on your discharge plan. We will give you all the necessary information as soon as we finish it.

[Mrs. Smith]: I suppose so, but I have been waiting since yesterday

The team meets in their conference room.

[Chris]: That wasn't a good sign for our team functioning. Yesterday, we didn't resolve the disagreement around Mrs. Smith's treatment plan. I can't even remember what was at issue. It was like we were talking across each other! Paula, you were talking about medicines while Tony shared her need for supplements and diet, and I discussed where Mrs. Smith's involvement was in the plan.

[Paula]: We need to finalize this plan as soon as possible; otherwise, we are delaying the discharge process.

[Chris and Tony]: That's right.

[Paula]: What if we explore all these points together and then talk to Mrs. Smith.

[Tony]: That's true. I don't want to go back to Mrs. Smith without the plan.

The team starts examining each idea and proposes solutions….

[Tony]: Now, I understand why Paula was insisting on that medicine.

[Paula]: That's true, but your point makes a difference in term of a sustainable solution for Mrs. Smiths' health. She doesn't need to be on the medication all the time. It is worth trying to combine that medicine and a supplement. Which one will work best and not interact with the medicine?

[Chris]: That might work, but we need to talk to Mrs. Smith and check other aspects of her life like health insurance, finances…

After talking to Mrs. Smith, everyone agreed on the plan and committed to doing the follow up as a team

This case reflected almost all concept attributes. What is missing, in this case, is the expression of a perceived threat to each member's interest; each team member failed to get a chance to explore how he/she was threatened by others. Instead, the team worked on a compromise but did not fully address the concerns shared. However, they did recognize the value of each other's viewpoints in this case.

Contrary Case. A contrary case does not include any of the defining attributes of the concept (Walker & Avant, 2019). The following case is an example of what the concept is not, which is supportive in illustrating a contrast to the concept's attributes.

After an endless dispute, about the discharge plan of Mrs. Smith. Paula (Physician), Chris (RN), and Tony (Dietitian) decided to report the issue to the unit manager. Then after listening to each of the team members, the unit manager took over the case where she examined all options that were proposed by the team members and finalized the discharge plan for Mrs. Smith and presented it to her.

This narrative illustrates that the defining characteristics of IPCR are not present. As in the model case, the disagreement was present within the interprofessional team members. However, none of the steps of the process of resolving the issue were used. Instead of verbally expressing the disagreement, they entered an endless dispute. None of them could express his/her threat/viewpoint and explore different options for a better solution as an alternative. Their solution was avoidance by reporting the issue to the manager who took over the situation without involving the team.

In the next step, the antecedents that need to be in place for the attributes to be present and their consequences will be presented.

Step 7: Antecedents and Consequences of Interprofessional Conflict Resolution.

Antecedents are events that must be in place before the concept's attribute occur, while consequences on the other hand, are outcomes associated with the concept's attribute when it is enacted (Walker & Avant, 2019). IPCR is preceded by various interconnected issues ranging from health care team building to the history of uni-professional education and socialization (Bainbridge et al., 2010; Orchard et al., 2005). IPCR is a multifaceted process that reflects an individual's personality traits, team members' understanding of their roles through clarification, and interpersonal communication, as well as the overall organizational and workplace culture (Bridges et al., 2011).

Several factors can influence how team members are willing to use an IPCR process. Firstly, the existence of conflict resolution training is important as well as, ongoing professional development to a successful team conflict resolution. It is highly recommended that continuing education programs be delivered for the entire team in practice, to promote professional development and an *esprit de corps* (Nester, 2016; Dondorf et al., 2015). Secondly, it has been recognized that no single profession can manage all patient's needs. Therefore professionals should demonstrate capability to share roles among team members according to their knowledge, skills and expertise (Thomas et al., 2012; Brown et al., 2011; White et al., 2008). Thirdly, developments of IP communication guidelines are needed for successful interactions; teams need to regularly meet to review difficult cases and to share their efforts to enhance the quality of their patients care planning. Effective communication with clear guidelines is essential to navigate this process among team members (Dunbar, 2015; Johnson, 2013; McKay & Narasimhan, 2012; Bainbridge et al., 2010). Finally, team-building skills are necessary for

collaborative practice. IP teams must function with reliance on the knowledge, skills and expertise of one another, teaching each other, and practicing in a highly successful collaborative environment.

The consequences of interprofessional conflict resolution can be defined as events that occur as a result of the manifestation of the IPCR attributes in our context (Walker & Avant, 2019). In general, IPCR results in interprofessional collaboration, which in return, produces collaborative teamwork. IPC if used effectively, has been reported to improve patient outcomes, staff satisfaction and prevention of untoward events (Patton, 2014). Moreover, when health care teams embrace conflict resolution positively, it likely improves their overall performance and productivity. Therefore, adoption of IPCR benefits team members, patients and the organization.

There are numerous outcomes considered as consequences of interprofessional collaborative practice, for IP team members. It brings collaborative practice in teams, and job satisfaction for team members (Morley & Cashell, 2017). For patients, there is improved quality of and satisfaction with care (World Health Organization, 2010; Nelson et al., 2008). For health care organization, effective IPCR can produce conducive environments for IP team workforces, cost-effective quality care and increased productivity (Omisore & Abiodun, 2014; Talmaciu & Maracine, 2010). In summary, interprofessional conflict resolution in teams can facilitate positive consequences for clients, team members, and health care and enhance population health (see Table 2.1).

Table 2.1

Table 1. Antecedents, attributes and consequences of IPCR

Antecedents	Attributes	Consequences
Team building skills to engage in collaborative practice	Verbally expressed disagreement	**For IP team member** Job satisfaction
Existence of conflict resolution training	A perceived threat to own interest between two professionals	**For Patient** Improved quality of care and satisfaction with care
Demonstration of professional capability to share roles	Exploration and explanation of differing viewpoints together	**For Health organization** Conducive environment for IP team workforce
The team developed guidelines for IP communication	An acceptable shared agreement	Cost-effective quality care and Increased productivity

Step 8: Empirical Referents. According to Walker and Avant (2019), empirical referents are how defining attributes of the concept are measured and recognized. Hence, measurable properties or categories confirm the existence of the concept. CIHC (2010) has identified conflict resolution as one domain in its National IP Competency Framework; researchers and scholars have identified the need for conflict resolution in many health professions teams (Sexton & Orchard, 2016; Patton, 2014; Brown et al., 2011; Leever et al., 2010).

It has been well established that interprofessional conflict resolution is a necessary component of IP collaborative teamwork (Akel & Elazeem, 2015; Pfaff et al., 2014; Beunza, 2013; Bainbridge et al., 2010) and supported nationally (Canadian Interprofessional Health Collaborative, 2010) and internationally (WHO, 2010). Currently, there is a paucity of research on interprofessional conflict resolution. Notably, only one qualitative research article has been found that partially studied IPCR (Brown et al., 2011), while no quantitative research articles were found that studied the IP conflict resolution process.

Moreover, there is an absence of instruments that comprehensively measure all the defining attributes of interprofessional conflict resolution. However, some instruments measure individual characteristics associated with interprofessional team collaboration. Those instruments include Baggs and Schmidt's Collaboration and Satisfaction About Care Decisions (CSACD) (Baggs, 1994), Heinemann's Attitudes Toward Health Care Teams instrument (Heinemann et al., 1999), the Jefferson Survey of Attitudes Toward Interprofessional Collaboration (Hojat et al., 2015) .The Assessment of Interprofessional Team Collaboration Scale (Orchard et al., 2018) and the Interprofessional Socialization and Valuing Scale (King, et al., 2016). While the above

instruments assess team collaboration most do not include interprofessional conflict resolution as a crucial component that leads to team collaboration with the exception of the latter two instruments. Some have been psychometrically validated. For instance, the CSACD measure was initially developed to measure, physician/nurse collaboration in intensive care units and assess power imbalances between team members. However, the CSACD is limited to physician/nurse collaboration (Hellman et al., 2016). The Team Collaboration Index was reported to only assess individuals rather than teams (Orchard et al., 2012).

Heinemann's Attitudes toward Health Care Teams' instrument is designed to measure health care providers' preference for working in teams. However, it fails to assess actual teamwork. An additional measure of teamwork is the Jefferson Survey of Attitudes toward Interprofessional Collaboration, which is limited in its assessment of collaborative elements among team members. It addresses some components of collaboration with the focus on team meetings within institutional settings, rather than providing broader perspectives of team functioning (Orchard et al., 2012). The Assessment of Interprofessional Team Collaboration Scale (Hellman et al., 2016) has only two items that address IP conflict resolution. Other instruments measure perceived threat (Makashvili et al., 2018) and conflict resolution using win-win methods (Bridges et al., 2011) however the essence of interprofessional team functioning in the healthcare setting was not a focus. In conclusion, none of the existing tools specifically assess IPCR in practice. Subsequently, there is a lack of empirical referents to measure interprofessional conflict resolution. Therefore there is a need for development and testing of a psychometrically sound instrument to measure this concept.

In summary, this concept analysis highlighted the IPCR literature as an important domain in interprofessional collaborative practice, but also provided new information on a set of

antecedents, attributes, and consequences of the concept. The concept analysis of interprofessional conflict resolution in health care teams, its attributes, antecedents, and consequences provided a means to define IPCR as a process that allows a dispute or disagreement between two parties who perceive threats to their interests to fully explore and explain meanings to each party, reaching a decision to an agreement about the dispute, and achieving a satisfactory course of action (Ugirase et al., 2019). In the next chapter, concepts that are believed to be associated with the antecedents, attributes and consequence of IPCR will be explored resulting in the formulation of a conceptual framework for a study to validate the IPCR concept in health care team practice.

Conclusion

The concept analysis revealed several consequences for clients, IP team members, and healthcare organizations. These consequences aligned with several study findings stating that once teams are able to resolve conflict, interprofessional collaborative practice (IPCP) will result, thereby improving patient outcomes and satisfaction with their care while decreasing the occurrence of untoward events and reduce rates of staff turnover and conflicts. The findings of this concept analysis integrate what is known about IPCR to begin to examine its importance in practice critically.

This concept analysis endeavored to systematically integrate what is known about IPCR by gathering its antecedents, attributes, and consequences. Interprofessional conflict resolution as a concept is required to be enacted when health professionals from more than one health profession are placed together and experience a disagreement. Thus, interprofessional conflict resolution is a process that involves verbally expressed disagreement; perceived threat to one's interest between two professionals; exploration and explanation of differing viewpoint together

and coming to an acceptable shared agreement (attributes) within a healthcare team environment for effective interprofessional collaborative teamwork that benefits patient, team members and health care organizations (consequences).

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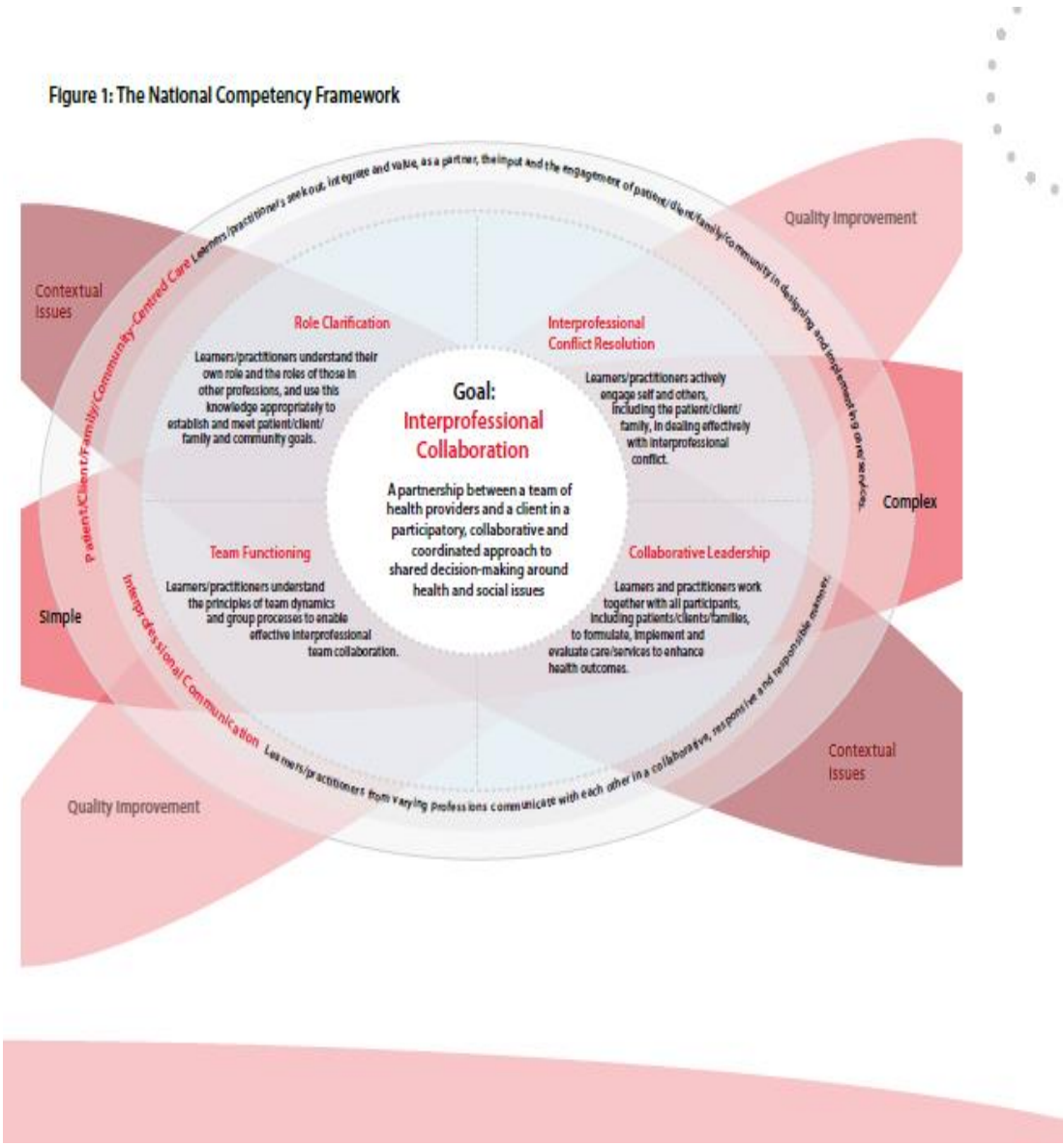
Appendix A

CIHC's National Interprofessional Competency Framework



Chapter Three: Development and Testing of the Interprofessional Conflict Resolution Scale

Abstract

It has been well established that interprofessional conflict resolution is a necessary component of IP collaborative teamwork and supported nationally and internationally. Currently, there is an absence of instruments that comprehensively measure the key attributes of interprofessional conflict resolution in healthcare teams. This chapter describes the development and psychometric testing of an instrument designed to measure interprofessional conflict resolution (IPCR). A concept analysis informed IPCR development defining its associated antecedents, attributes and consequences using Walker and Avant's (2019) method. To establish the content validity of the IPCR (23 statements) it was reviewed by twelve interprofessional (IP) healthcare experts for clarity, comprehensiveness, and content validity (Lynn, 1986). The 23-item IPCR was revised and administered to 270 healthcare providers (HCPs) from three district hospitals in Rwanda. Principal axis factor analysis combined with an examination of eigenvalues exceeding 1 resulted in 11 items loading onto three factors. A confirmatory factor analysis for maximum likelihood of fit using AMOS version 26 followed to determine the fit of the three factors. The final model provided a good model fit for the three factors titled expression of disagreement, exploration and explanation of varying viewpoints and shared agreement [$X^2 53.673(41)$,CFI=.98, TLI= .97, GFI=.96, RMR=.04, RMSEA=.03]. Overall, Cronbach's alpha of IPCRS was .77.

Keywords: Interprofessional conflict resolution scale, healthcare providers, instrument development

Introduction

Researchers and scholars have identified the need for conflict resolution in many of the health professions (Sexton & Orchard, 2016; Brown et al., 2011; Leever et al., 2010). Canadian Interprofessional Health Collaborative (2010) has identified interprofessional conflict resolution as one domain in its National Interprofessional (IP) Competency Framework. It has been well established – both nationally (Canadian Interprofessional Health Collaborative, 2010) and internationally (World Health Organization, 2010) - that interprofessional conflict resolution is a necessary component of IP collaborative teamwork (Akel & Elazeem, 2015; Pfaff et al., 2014; Beunza, 2013; Orchard, 2010; Bainbridge et al., 2010). Currently, there is a paucity of research on interprofessional conflict resolution in health care teams. Notably, only one qualitative research article was found that partially studied IPCR (Brown et al., 2011), while no quantitative research articles were found that studied the IP conflict resolution process.

Existing Measures of Conflict Resolution

No instruments that comprehensively measure the key attributes of conflict resolution were found. The researcher carried out a concept analysis of interprofessional conflict resolution namely, (1)verbally expressed disagreement; (2) exploration of perceived threat together; (3) a perceived threat to own interest between two professionals; (4) reaching an acceptable course of action (Ugirase et al, 2019).Instruments found only measured individual characteristics associated with interprofessional healthcare team collaboration. Those instruments included Baggs and Schmidt's Collaboration and Satisfaction About Care Decisions (Baggs, 1994), Heinemann's Attitudes Toward Health Care Teams instrument (Heinemann, Schmitt, Farrell, & Brallier, 1999), the Jefferson Survey of Attitudes Toward Interprofessional Collaboration (Hojat

et al., 2015) and the Assessment of Interprofessional Team Collaboration Scale (Orchard et al., 2012).

The above instruments assess team collaboration but not specifically interprofessional conflict resolution in teams. All reported limitations, and few had been psychometrically validated. While, there is extensive research on conflict resolution and also team conflict resolution outside of healthcare; however none of the existing tools objectively assessed IPCR in healthcare team practice. To fill this literature gap, this study developed and tested a psychometrically sound instrument to measure interprofessional conflict resolution in healthcare teams.

Methods for Instrument Development

Procedure and Framework Underpinning the IPCR Scale Development

The concept analysis of interprofessional conflict resolution, its attributes, antecedents, and consequences provided a means of defining IPCR as a process that allows a dispute or disagreement between two parties who perceive threats to their interests to fully explore and explain meanings to each party, reach an agreement about the dispute, and achieve a satisfactory course of action (Ugirase et al., 2019). Based the concept analysis of interprofessional conflict resolution the researcher created a self-rated scale. In addition, the CIHC (2010) National IP Competency Framework and WHO (2010) Action Plan guided this process to ensure that the context of healthcare teams was addressed in the statements.

The initial version of the IPCRS contained 23 items reflecting IP conflict resolution attributes. These items were transformed into four proposed dimensions, including verbally expressed disagreement (7 items), exploration and explanation of disagreement (5 items); shared

decision on the agreement (6 items); and reaching a resolution and course of action (5 items) (table 3.2).

Instrument Testing

The generated IPCRS underwent three phases of testing. Initially, a content validity assessment of the IPRCS was carried out using Lynn's (1986) modified Concept Validity Index (CVI) followed by a full instrument concept validity testing with 270 healthcare providers working in Hospitals in Rwanda. Finally, testing for the model fit was carried out to establish the instrument construct's validity.

Content Validity

To establish the IPCRS' content validity, an online copy of the IPCRS with a rating scale to determine the value and content of each item was distributed to 14 interprofessional healthcare experts from Rwanda(7), the USA (1), South Africa (2), and Canada(4) to ensure representation from both Rwanda and beyond. Each expert was requested to complete a Content Validity Index (CVI) for each item using a 4-point Likert-type rating scale with the criteria: not relevant (1), unable to assess relevance without item revision (2), relevant but needs minor attention (3), and very relevant and succinct (4) (Lynn, 1986). Also, two open-ended questions were asked: 1) *is the language clear and appropriate for the target population? (i.e., licensed healthcare providers in hospitals) and* 2) *are any critical components/items regarding interprofessional conflict resolution missing from the scale?* These latter questions were intended to determine the instrument's appropriateness, clarity, organization, and to pinpoint any item omissions (Portney & Watkins, 2000; Lynn, 1986).

Twelve healthcare experts returned the completed questionnaire to the researcher. The CVI for each item was calculated by percentage of item rated out of 3 or 4 by each expert,

divided by the total number of experts (n=12) (Lynn, 1986). All 23 items in the IPCRS achieved CVI scores over 75% and were accepted as content valid (Lynn, 1986). The lowest scores were noted for items four, eight, and nine (scores of 75%). Based on specific experts' written feedback, revision and rewording of some items were made, and no new item was added or deleted from the original instrument. The outcome from the CVI was a revised IPCRS comprised of 23items and thought to fall within four dimensions 'verbally expressed disagreement' (7 items); 'exploration and explanation of disagreement' (5 items); 'shared decision on agreement' (6 items); 'reach a resolution and course of action' (5 items).

Table 3.2

Proposed IPCRS Dimensions with 23 Items

Item#	**Dimension 1: Verbally expressed disagreement**
1	I openly express my concern that there is a disagreement within the IP team
2	I clearly articulate the area of disagreement with the IP team
3	I communicate all perspectives on the issue being presented within the IP team
4	I understand the issue within the IP team
5	I seek to help my fellow team members undertaking a process of finding a reasonable solution to a disagreement
6	I am ready to listen to other IP team members' views around the issue
7	I have a clear workplace policy/guidelines to assist me in working through a team disagreement
	Dimension 2 :Exploration and explanation of disagreement
8	I feel that my professional goals for my clients' care are not well understood within the team
9	I feel that my professional values are less considered during care decision making about my clients among the IP team
10	I feel threatened by differing viewpoints about a specific client
11	I assume that other health professionals in my team might have some bias towards my professional status
12	I am able to determine my own pre-judgment towards other IP team members' competences in their practice
	Dimension 3: Shared decision on the agreement
13	I feel comfortable explaining the reasoning for my respective positions around the issue within the team
14	I listen carefully to other team members' respective reasoning around their client care decisions and consider their viewpoint
15	I consider my own biases that might shift my viewpoint closer to my fellow team members
16	I work with my other team members to gain a full understanding of the issue from all our perspectives
17	I exchange my professional understanding based on known research findings with my team members
18	I integrate my ideas with those of my team to come up with shared decision making
	Dimension 4 : Reaching a resolution & Course of action
19	I use a 'give and take' approach to come to an agreement of what are the best choices for the issue being discussed
20	I work to ensure that all the team members hear each other's viewpoints to reach the best possible solution
21	In our IP team, we examine all suggested approaches to a client situation and choose the best for all
22	I work with my fellow team members to gain a shared agreement to resolve a disagreement
23	I work with my fellow team members to reflect on our conflict resolution process to reach a shared solution

Testing of the IPCRS with Healthcare Providers

Testing of the IPCRS was implemented using a convenience sample of 270 (HCPs) from three district hospitals in Rwanda. The rationale for selecting this population is that healthcare providers in these hospitals are thought to work closely within consistent teams due to smaller numbers of employed staff, limited resources, and task complexity. Thus, these HCPs perspectives on their ability to address and apply IP conflict resolution uniquely informed this research (Gaudet et al., 2014; Newington & Metcalfe, 2014). In addition, ethics approval was obtained from the University of Western Ontario (UWO), University of Rwanda Research Ethics Board, and Ministry of Health and from each of the hospital ethics review committees as required through their hospital policies.

Recruitment

After obtaining ethical approval from relevant human subjects' institutional review boards (the University of Western Ontario, the University of Rwanda and Ministry of Health), the author obtained permission to conduct the study from administrative representatives of the three district hospitals. These representatives in turned delegated assistance with the study to unit managers who are responsible for daily activities in hospitals including informing health care providers about any ongoing study. Due to COVID-19, the researcher worked remotely on a regular basis via Zoom meeting with local research assistants (RA) supervised by Dr Nzayirambaho Manasse (University of Rwanda-based supervisor). RAs visited participating hospitals and their respective participating units to met unit managers to explain the study, answer any questions and seek their assistance for the study. Some participants received an

invitation through unit managers or through the RAs to participate in the morning staff meeting face-to face in order to explain and invite HCPs to participate in study.

The RAs obtained signed consent from participants in all hospitals before beginning data collection. After completing the survey each participant was asked to submit it into a box provided on each unit, RAs from each hospital regularly collected completed surveys.

Respondent Characteristics

A total of 270 HCPs completed the IPCRS. The majority 57.8% (n =156) were female, 42.2% (n = 114) were male. Table 3.2 summarizes the number and frequency of survey respondents who were represented by seven different healthcare professions (nurse, physicians, paramedical and social professionals). Nurses included Registered Nurses (RNs A0), and Advanced Diploma Nurses (A1), who represented the majority of responders.

Table 3.3

Number and Frequency of Healthcare Providers by Discipline (N=270)

Discipline category	*n*	Sample %
Nursing	119	44.1
Paramedical & social Worker	65	44.1
Midwifery	32	11.9
Medicine	29	10.7
Biomedical Laboratory	20	7.4
Dental therapy	3	1.1
Mental Health	2	.7
Totals	270	100

Table 3.4 provides the demographics, ages, years of professional working experience, years of working experience in their current unit, and level of education of respondents. Respondents' mean age was 37.69 years (8.84 SD) with a range between 24 and 63 years of age. Respondents reported a range of between 1.0 and 54.0 years of working experience with a mean of 10.44 years (8.55 SD), whereas the amount of working experience in their current unit ranged from one to 40 years, with a mean of 6.31years (6.25 SD). The largest proportion of respondents were diploma-prepared (n = 127, 47%), followed by respondents who held undergraduate degrees (*n* = 117, 43.3%) health care providers who held graduate master's degrees (*n* = 7, 2.6%) and only one participant held a Ph.D. degree. Some of the respondents identified themselves as a high school diploma holder (*n* = 18, 6.7%). This level of schooling was phased out in 2007as an avenue for entry to practice for registered nurses. These nurses are still being upgraded to an advanced diploma level through e-learning and other government-sponsored programs.

Table 3.4

Demographics Description

Variables	*n*	Sample %	M (SD)	Year Range
Age	270	100	37.69 (8.84)	24.0-63.0
Working experience	270	100	10.44(8.55)	1.0-54.0
Experience in current unit	270	100	6.31 (6.25)	1.0-40.0
Level of education	*n*	Sample %		
Diploma	127	47		
Bachelors	117	43.3		
Masters	7	2.6		
High school level	18	6.7		
PhD level	1	0.4		
Totals	270	100		

Data Collection

Participating HCPs were asked to complete the IPCRS instrument. This analysis used the baseline dataset (time 1) of a larger study reported elsewhere.

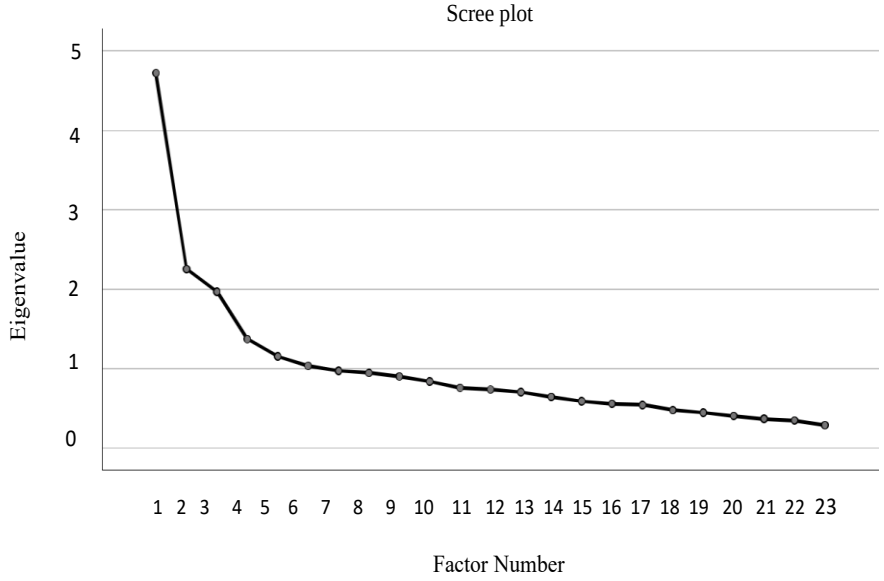
Data Analysis

Data were analyzed using SPSS v. 26 (IBM.com) to assess the validity and internal consistency reliability of the IPCRS. Initially, descriptive statistics (*M*, SD) and reliability were carried out on all IPCR 23 items. It was followed by an exploratory factor analysis (EFA) using principal axis factoring (PAF) and covariance assessment with orthogonal varimax rotation to identify the IPCRS' dimensions among the variables (Tabachnick & Fidell, 2020). Varimax rotation was used to minimize the number of variables that have high loading on each factor (Tabachnick & Fidell, 2020).

Exploratory Factor Analysis

Initially, all the IPCRS items were assessed for sampling adequacy and sphericity. The Kaiser-Meyer-Olkin (KMO) was .79, which is above the recommended value of .6 (Tabachnick & Fidell, 2020) and Bartlett's Test of Sphericity was significant (X^2= 1488.345 df=253 $p<$ 0.001), further supporting the appropriateness of the data for factor analysis. Principal axis factoring using covariance with varimax rotation and Kaiser normalization revealed six factors with eigenvalues exceeding 1.00(Norris & Lecavalier, 2010), explaining 54.3% of the total variance (factor 1 = 20.51%; factor 2 = 9.79%; factor 3 = 8.55%; factor 4 =5.95%; factor 5 = 5.00 %; factor 6 = 4.5%). An inspection of the scree plot noted a clear break on the second and fourth factors (figure 3.1).

Figure 3.1



The initial EFA was reviewed to determine further retention of items. A factor loading cut-off with a minimum difference of 0.3 between loading on one factor and its loading on other factors was considered (Tabachnick & Fidell, 2020). First, ten of the items were excluded because they had cross-loadings on two or more factors of more than .3 (Tabachnick & Fidell, 2020) this resulted in retention of 13 items (IPCRS v.2). Second, IPCRS v.2 was then subjected to a similar EFA resulting in a 4-factor solution based on the scree plot combined with an examination of eigenvalues exceeding 1.00 that explained 62.95% of the variance (factor 1 =22.26%, factor 2 = 19.49%, factor 3 = 12.40%, factor 4 = 8.79%). Lastly, two items did not meet this criteria and were removed, resulting in a three dimension 11-item IPCRS v. 3 (see table 3.4).

Table 3.4

Three Factors for the 11 Items of the IPCRS Version 3 from EFA

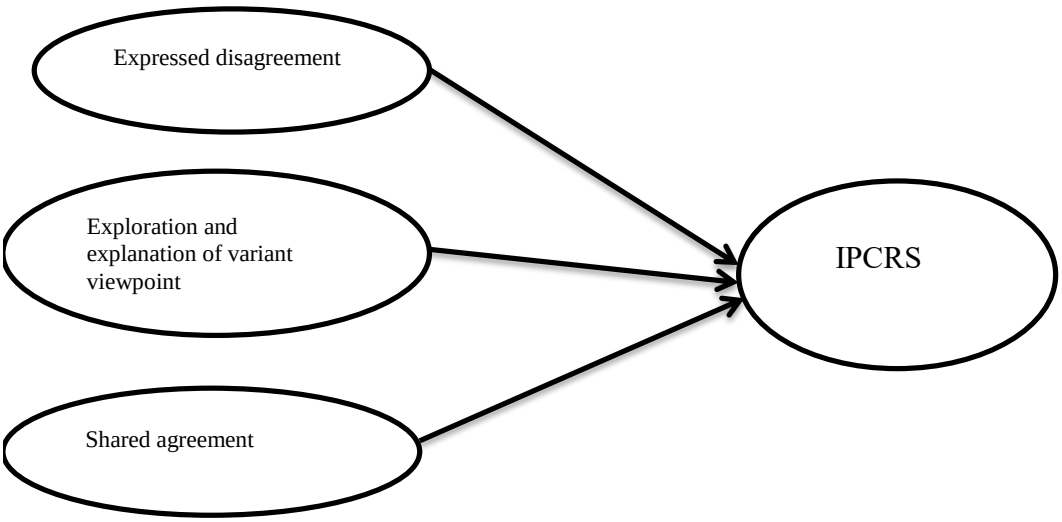
Item #	Item	Factor 1	Factor 2	Factor 3
1	I openly express my concern that there is a disagreement within the IP team		**.619**	
2	I clearly articulate the area of disagreement with the IP team		**.796**	
3	I communicate all perspectives on the issue being presented within the IP team		**.554**	
8	I feel that my professional goals for my clients' care are not well understood within the team			**.555**
9	I feel that my professional values are less considered during care decision making about my clients among the IP team			**.589**
10	I feel threatened by differing viewpoints about a specific client			**.405**
19	I use a 'give and take' approach to come to an agreement of what are the best choices for the issue being discussed	**.334**		
20	I work to ensure that all the team members hear each other's viewpoints to reach the best possible solution	**.534**		
21	In our IP team, we examine all suggested approaches to a client situation and choose the best for all	**.646**		
22	I work with my fellow team members to gain a shared agreement to resolve a disagreement	**.796**		
23	I work with my fellow team members to reflect on our conflict resolution process to reach a shared solution	**.746**		

Factor loadings for the 11 items indicated three subscales in IPCRS version 3. The first titled *expression of disagreement* (3 items) is defined as IP team members' need to express openly their negative and positive views and emotions around an issue on which they disagree and have these listened to by allowing all voices to be heard. The second factor *exploration and explanation of variant viewpoints* (3 items), captures the dimension of IP conflict resolution involving a conscious cognitive capacity enabling conflicting team members to 'stand back' from their situation and review it so that they can decide whether a different response might improve responses. The third factor titled *shared agreement* (5 items) is defined as reaching an agreement

between conflicting parties, where everyone feels they are receiving an acceptable shared approach often referred to as a ‘win-win’. All parties to a disagreement need awareness of what are their interests and they need to be willing to engage in a ‘give-and-take’ process with each other. Together these three dimensions that corresponded to the theorized dimensions (one dimension was dropped) comprise IPCRS (see figure 3.2). Confirmatory factor analysis was then used to determine the construct validity.

Figure 3.2

Theorized Model for CFA of IPCRS Version 3



Methods for Confirmatory Factor Analysis (CFA)

A CFA using AMOS v.26 was carried out on three latent variables of Expressed Disagreement (expression), Exploration and Explanation of Variant Viewpoints (exploration); and Shared Agreements (agreement). The respective items for each latent variable were then entered as observed variables to evaluate and determine the best model fit for the theorized model. This path model was then subjected to a maximum likelihood fit estimation analysis to determine model fit, estimates included Chi-square test (χ^2, goodness-of-fit index (GFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) (Kline, 2015). Both χ^2 and GFI are absolute fit indices, meaning that they assess model fit for the observed data by measuring the proposed model's covariance structure compared to the observed covariance matrix (Fan et al., 2016). The probability level had to be greater than 0.05 when the chi-square value was close to zero (Kline, 2015).

Since χ^2 is sensitive to sample size, it is recommended to report the GFI to support specification (Fan et al., 2016). The GFI ranges from zero to 1.00. SRMR is the square root of the difference between the residuals of the sample covariance matrix and the hypothesized covariance model and solves interpretation issues caused when scales have varying scale points (e.g., 1 to 5) as a measure of absolute fit, zero indicates a perfect model fit, and a value of less than 0.08 is considered to be acceptable, less than .05 is well-fitting (Kline, 2015).

The comparative fit index (CFI) is a general fit index that compares the improvement of the fit of the proposed model to the null model and ranges from 0 to 1.0 with a better fit closer to 1.0. A value greater than .90 is an acceptable model fit, and greater than .95 indicates an

excellent fit (Kline, 2015). The RMSEA examines the extent to which the model fits the population covariance matrix and chooses the model with lesser parameters. A value of less than .05 indicates an excellent fit for the data, while .05 to .07 is acceptable (Fan et al., 2016; Kline, 2015). The first model run provided a good model fit based on the fit criteria previously described (Table 3.5). Therefore, it was deemed the best fitting model (see figure 3.3).

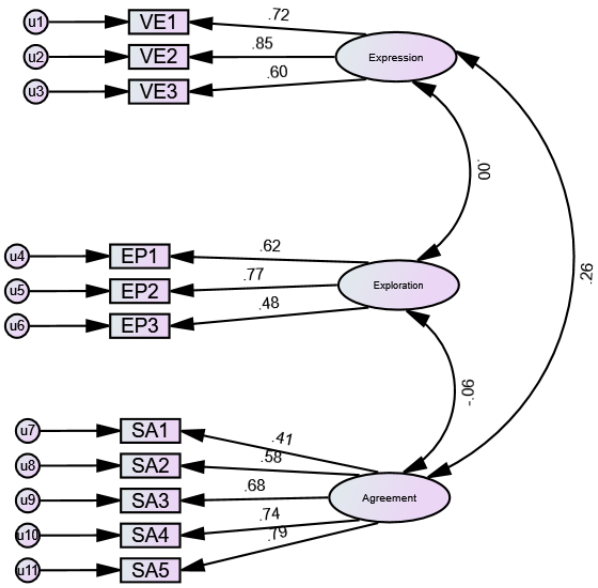
Table 3.5

Fit Indices of Confirmatory Factor Models for IPCRS

Model	$\chi 2$ *(df)*	CFI	TLI	GFI	SRMR	RMSEA
Model 1	*53.673(41)*	.98	.97	.96	.04	.03

Figure 3.3

IPCRS CFA Model Fit



The final IPCRS consists of eleven items (observed variables) within three dimensions (latent variables) including expression of disagreement (3 items), exploration and explanation of variant viewpoints (3 items), and achieving shared agreement (5 items).

Descriptive Summary of the IPCRS and its Dimensions

Each item was rated using a 5 point Likert scale (ranging from 1= Strongly Disagree, to 5 = Strongly Agree. The mean item scores and standard deviations of the IPCRS subscale are shown in Table 3.7. Using Cronbach's α, the overall reliability for the IPRCS was .7, a range of

0.60 - 0.80 are considered moderate, but acceptable (Taber, 2018). The testing of the IPCRS resulted in beginning evidence of a reasonably sound measure of 11 items to determine that supports overall interprofessional conflict resolution in healthcare teams.

Table 3.6

Interprofessional Conflict Resolution Dimensions

Dimension	Number of Items	Total Mean scale	SD	Mean Item scores	Cronbach's α
Verbally expressed disagreement	3	27.62	4.13	9.20	.8
Exploration and explanation of view points	3	14.8	4.2	4.9	.6
Shared agreement	5	20.7	3.2	4.1	.8
Total IPCR	11	88.2	9.3	8.0	.7

Discussion

The aim of this chapter was to report on the IPCRS development and validation process. Overall, in the present study IPCRS indicated beginning evidence of a valid and reliable instrument, on the basis of the findings of EFA and CFA described above.

Each IP team member needs the ability to express openly the negative and positive emotions around an issue in which they disagree (Schilpzand et al., 2011) and have these listened to (Pearson, 1972) by allowing all voices to be heard (Maree & van Wyk, 2016). At times assertive communication strategies may be required to help people understand the true areas of a disagreement (Arvanitis et al., 2019). Therefore, once individuals feel that their needs and

interests have been heard and understood, there is more likely an openness occurring with a disagreement for its processing and resolution (Jerng et al., 2017b).

Openness is suggested as a necessary prerequisite for the exploration of differing viewpoints among team members, which can enable conflicting members to 'stand back' and examine their situation. This in turn allows the team member to decide whether a different explanation might improve response(s) received from other team members (Arvanitis et al., 2019). When this exploration and re-explanation occurs, team members are more able to question their response to a threat and why they reacted to their team member. These processes are reported to then allow each team member to build upon each other's ideas without taking a defensive position to the other to begin solving the disagreement (Ghazinejad et al., 2018; Juhász, 2010).

Finally all the parties gain awareness of what all the interests are from the disagreement and they may show a willingness to engage in a give-and-take process with each other (Arvanitis et al., 2019). Thus this exchanging differing perspectives among parties has a greater potential to reach an acceptable agreement (Sexton & Orchard, 2016). At times the only means through which healthcare team members can come to a resolution may be by moving the focus to what is in the best interests of their involved patient to achieve the best approach to their care actions.

Study Limitations

Some limitations must be acknowledged in this study. First are limitations related to the methods, sampling method and characteristics of the sample. Use of convenience sample obtained from only three district hospitals located in Rwanda, is not representative of all healthcare practitioners and may have limited application nationally and internationally. Since

this study invited all HCPs who provide direct care to the patient, an imbalance of professions represented in this study is a further limitation. Second, it is important for additional studies using IPCRS to provide further confirmation, validation of the instrument, and test-retest reliability in other countries and healthcare settings. As well this study used the same sample for both the EFA and CFA and only reported on the baseline measurement prior to any intervention. Hence, studying a variety of samples from different topographical and continental regions and involving IP teams from specific care settings could help to increase the instrument's dimensional validity and reliability for the overall scale as a whole and its subscales.

Conclusion

This chapter reported on the steps in development and initial testing of a measure to assess interprofessional conflict resolution in healthcare teams. This is the first known instrument that measures IPCR in healthcare teams and includes items that attend to the importance of using a process to address interprofessional conflict resolution among team members. The IPCRS consists of 11 items within three dimensions - expression of disagreement, exploration and explanation of variant viewpoints, and shared agreement - of IPCRS and its brevity indicates that it can be completed in less than five minutes. The results provide beginning evidence of the instrument's content, construct validity and reliability.

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Appendix B

Content Validity Index IP Expert Feedback

*CVI score = number of experts giving an item rating of 3 or 4 divided by total number of experts (N=12).

ITEM #	ITEM AND IP EXPERT FEEDBACK	Not Relevant	Unable to assess relevance without item revision	Relevant but needs minor attention	Very relevant and succinct
	When I feel that a verbally expressed disagreement has occurred within a group of health professionals …				
1	I openly express my concern that there is a disagreement within the IP team.	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2 (I find very important to open windows of communication at the beginning of a conflict, before it is too complicated)				✓
	CVI-3				✓
	CVI-4			✓	
	CVI-5				✓
	CVI-6 (I think it depends on the team)			✓	
	CVI-7				✓
	CVI-8				✓
	CVI-9(This is the best approach to use)				✓
	CVI-10				✓
	CVI-11(i think this really depends on (a) the team and (b) the person's role in the team, and (c) the disagreement nature)		✓		
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 11/12 = .91				
	Revised Item # and Item on Scale *				
2	I clearly articulate the area of disagreement with the IP team.	**1**	**2**	**3**	**4**

	CVI-1 (The use of the word "clearly" could be removed except if this is deliberate to qualify the quality of articulation)			✓	
	CVI-2 (Being precise may help in avoiding misunderstanding)				✓
	CVI-3				✓
	CVI-4			✓	
	CVI-5				✓
	CVI-6 (Not always. Sometimes it is easier to articulate my argument when it's a team I'm part of)			✓	
	CVI-7				✓
	CVI-8				✓
	CVI-9 (Good)				✓
	CVI-10				✓
	CVI-11(if I am the lead on the team I will do this, but if I am not the lead, I might not.)			✓	
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 12/12 = 1				
Revised Item # and Item on Scale *					
3	I communicate the two perspectives on the issue being presented within the IP team	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2 (Considering the both perspectives helps in understanding the root of the problem and finding the most appropriate solution.)				✓
	CVI-3			✓	
	CVI-4			✓	
	CVI-5 (The two perspectives should be clarified)			✓	
	CVI-6 (There could be more than two perspectives)			✓	
	CVI-7 (it would be nicer to make it sound simple and clear...)			✓	
	CVI-8				✓
	CVI-9 (This is good to clarify the issue)				✓
	CVI-10				✓
	CVI-11(again, depends on the role in the team)			✓	
	CVI-12				✓
	Total # of experts per grading				

	CVI score = 12/12 = 1				
	Revised Item # and Item on Scale * I communicate all perspectives on the issue being presented within the IP team				
4	I am aware of the issue within the IP team.	**1**	**2**	**3**	**4**
	CVI-1 (There is a bit of superfluousness in this question. Makes one to read Q4 again, and when put agains*t the main stem, it* appears that the section is refering to an expressed disagreement. Being aware is already implied)			✓	
	CVI-2 (Not necessary, unless the issue has came to my attention.)		✓		
	CVI-3			✓	
	CVI-4			✓	
	CVI-5				✓
	CVI-6 (I don't think that this is always the case)	✓			
	CVI-7				✓
	CVI-8				✓
	CVI-9 (You may not be aware if you you are not informed)			✓	
	CVI-10 (May be you can look at wording. Not clear of what you want to mean)		✓		
	CVI-11				✓
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 9/12 = .75				
	Revised Item # and Item on Scale * I understand the issue within the IP team.				
5	I seek to help my fellow team members undertaking a process to finding a reasonable solution to a disagreement.	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2 (I can't stand working in bad atmosphere)				✓
	CVI-3			✓	
	CVI-4		✓		
	CVI-5				✓
	CVI-6				✓
	CVI-7				✓
	CVI-8				✓
	CVI-9				✓

	CVI-10				✓
	CVI-11(check grammar)			✓	
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 11/12 = .91				
	Revised Item # and Item on Scale *				
6	I am ready to listen to other IP team members concern around the issue.	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2 (Listening to others helps getting more insights into the issue)				✓
	CVI-3				✓
	CVI-4			✓	
	CVI-5 (I would choose to use the full form of HC)			✓	
	CVI-6				✓
	CVI-7				✓
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11(but more important might be if someone expresses that readiness so others know.)				✓
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 12/12 = 1				
	Revised Item # and Item on Scale *				
7	I have clear workplace policies/guidelines to assist me in working through a team disagreement.	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2 (That would be the ideal way to solve problems)				✓
	CVI-3				✓
	CVI-4			✓	
	CVI-5				✓
	CVI-6				✓

	CVI-7 (should they be more than one policy or one guideline? the "plural" of it make it sounds like there will be alot of searching on what reference to use... and makes it a problem by itself if the search is cumbersome)			✓	
	CVI-8				✓
	CVI-9 (No clear policies notified)		✓		
	CVI-10				✓
	CVI-11(probably only one policy----if any.)			✓	
	CVI-12	✓			
	Total # of experts per grading				
	CVI score = 10/12 = .83				
	Revised Item # and Item on Scale * I have clear workplace policy/guidelines to assist me in working through a team disagreement.				
	When I work with others in my workplace …				
8	I feel that my professional goals for my patients' care are not well understood within the team.	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2 (It depends on the goals. It is more likely to happen when it is shared between two professionals without role specifications)		✓		
	CVI-3				✓
	CVI-4				✓
	CVI-5				✓
	CVI-6 (Not always. It could be true sometimes)			✓	
	CVI-7				✓
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11(what if the IP team is doing research, not patient care?)		✓		
	CVI-12	✓			
	Total # of experts per grading				
	CVI score = 9/12 = .75				
	Revised Item # and Item on Scale * I feel that my professional goals for my clients' care are not well understood within the team.				
9	I feel that my professional values are threatened during care decision making about my patients among the IP team.	**1**	**2**	**3**	**4**

	CVI-1				✓
	CVI-2				✓
	CVI-3		✓		
	CVI-4		✓		
	CVI-5				✓
	CVI-6 (Threatens could be replaced by another word)			✓	
	CVI-7 (threatened is a strong word...)			✓	
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11(again consider other IP team situations)				✓
	CVI-12	✓			
	Total # of experts per grading				
	CVI score = 9/12 = .75				
	Revised Item # and Item on Scale * I feel that my professional values are less considered during care decision making about my patients among the IP team.				
10	I feel threatened by differing viewpoints about for a specific patient/client.	**1**	**2**	**3**	**4**
	CVI-1 (remove either "about" or "for". The sentence does not read well with both words following each other)			✓	
	CVI-2				✓
	CVI-3				✓
	CVI-4	✓			
	CVI-5 (I wonder if there could be a way of rewording this item)			✓	
	CVI-6 (Threaded could be replaced by another word)			✓	
	CVI-7				✓
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11				✓
	CVI-12	✓			
	Total # of experts per grading				

	CVI score = 10/12 =.83				
	Revised Item # and Item on Scale * I feel threatened by differing viewpoints for a specific patient/client.				
11	I assume that other health professionals in my team have a bias towards my professional status.	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2				✓
	CVI-3				✓
	CVI-4	✓			
	CVI-5				✓
	CVI-6 ("Bias" can have many interpretations)			✓	
	CVI-7			✓	
	CVI-8				✓
	CVI-9 (You will need to know more about the person)			✓	
	CVI-10				✓
	CVI-11				✓
	CVI-12	✓			
	Total # of experts per grading				
	CVI score = 10/12 =.83				
	Revised Item # and Item on Scale * I assume that other health professionals in my team might have some bias towards my professional status.				
12	I am able to determine my own prejudgement towards other IP team members' competence in their practice	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2 (Yes, when it is related to my expertise)			✓	
	CVI-3				✓
	CVI-4		✓		
	CVI-5				✓
	CVI-6				✓
	CVI-7			✓	
	CVI-8				✓
	CVI-9				✓

	CVI-10				✓
	CVI-11(why only their competence?)			✓	
	CVI-12	✓			
	Total # of experts per grading				
	CVI score = 10/12 = .83				
	Revised Item # and Item on Scale *				
When I experience a disagreement around my viewpoints about patient care					
13	I feel comfortable explaining the reasoning for my respective positions around the issue within the team	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2 (Yes I am always ready to express myself)				✓
	CVI-3			✓	
	CVI-4			✓	
	CVI-5				✓
	CVI-6				✓
	CVI-7				✓
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11				✓
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 12/12 =1				
	Revised Item # and Item on Scale *				
14	I listen carefully to other team members' respective reasoning around their patient care decisions and consider their viewpoint.	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2 (Yes. Listening to others help me understanding them better)				✓
	CVI-3				✓
	CVI-4			✓	
	CVI-5				✓
	CVI-6 (Patient can be replaced by client)			✓	

	CVI-7				✓
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11(listen carefully - and "consider" - are two different things.)			✓	
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 12/12 = 1				
	Revised Item # and Item on Scale * I listen carefully to other team members' respective reasoning around their client care decisions and consider their viewpoint.				
15	I consider my own biases that might shift my viewpoint closer to my fellow team members.	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2 (Yes, I believe that everyone can do mistakes and no one knows everything)				✓
	CVI-3				✓
	CVI-4			✓	
	CVI-5				✓
	CVI-6			✓	
	CVI-7			✓	
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11				✓
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 12/12 =1				
	Revised Item # and Item on Scale *				
16	I try to work with my other team members to gain a full understanding of the issue for all our perspectives.	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2 (when you work in team you need to have same understanding of issues in order to find appropriate solution)				✓
	CVI-3 (I don't have to work with them to gain a full understanding)				✓

	CVI-4			✓	
	CVI-5				✓
	CVI-6				✓
	CVI-7				✓
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11				✓
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 12/12 = 1				
	Revised Item # and Item on Scale *				
17	I exchange my professional understanding based on known research findings with my team members to ensure my voice is considered.	**1**	**2**	**3**	**4**
	CVI-1 (to ensure my voice is heard" is a distraction in this sentence. If the purpose of exchange is only to ensure voice is heard, it may just be too self-centered)			✓	
	CVI-2				✓
	CVI-3			✓	
	CVI-4			✓	
	CVI-5				✓
	CVI-6 (Sometimes experience is as valuable as research)				✓
	CVI-7				✓
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11("to ensure my voice is considered" - exchanging understanding does not lead automatically to this 'ensuring'.)			✓	
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 12/12 = 1				
	Revised Item # and Item on Scale * I exchange my professional understanding based on known research findings and experience with my team members				
18	I try to integrate my ideas with those of my team to	**1**	**2**	**3**	**4**

	come up with a joint decision which can lead to shared decision making				
	CVI-1				✓
	CVI-2				✓
	CVI-3 (not sure who is "leading the process" of shared decision making - although nobody should lead it. Does that make sense?)		✓		
	CVI-4			✓	
	CVI-5				✓
	CVI-6 (Remove try and just say I integrate...)			✓	
	CVI-7				✓
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11(focus this on one thing- on a joint decision (?) or on "shared decision making")		✓		
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 10/12 = .83				
	Revised Item # and Item on Scale * I integrate my ideas with those of my team to come up with shared decision making				
	When I am working with my fellow team members to reach a resolution of a disagreement ….				
19	I use a 'give and take' approach to come to an agreement of what are the best choices for the issue being discussed.	**1**	**2**	**3**	**4**
	CVI-1 (... of what are the best choices... plural form "choices")			✓	
	CVI-2				✓
	CVI-3 (isn't it more like considering pros and cons?)		✓		
	CVI-4			✓	
	CVI-5				✓
	CVI-6				✓
	CVI-7			✓	
	CVI-8				✓
	CVI-9				✓

	CVI-10				✓
	CVI-11(grammar)			✓	
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 11/12 = .91				
	Revised Item # and Item on Scale *				
20	I work to ensure that all the team members hear each other's view points and reach the best possible solution	**1**	**2**	**3**	**4**
	CVI-1 (other's view points...)			✓	
	CVI-2				✓
	CVI-3				✓
	CVI-4			✓	
	CVI-5				✓
	CVI-6 (I am not sure if ensure is the right verb to use)			✓	
	CVI-7				✓
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11(the "and" creates two items here, not one. "hear other viewpoints" - is different from "reach the best solution")			✓	
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 12/12 =1				
	Revised Item # and Item on Scale * I work to ensure that all the team members hear each other's viewpoints to reach the best possible solution				
21	In our IP team we examine all suggested approaches to a patient situation and choose the best for all	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2				✓
	CVI-3			✓	
	CVI-4			✓	
	CVI-5				✓
	CVI-6 (Client can replace patient)			✓	

	CVI-7				✓
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11(again. make it about examining the suggestions, or choosing the best for all but not both.)		✓		
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 11/12 = .91				
	Revised Item # and Item on Scale * In our IP team we examine all suggested approaches to a client situation and choose the best for all				
22	I work with my fellow team members to gain a shared agreement to resolve a disagreement	**1**	**2**	**3**	**4**
	CVI-1				✓
	CVI-2				✓
	CVI-3				✓
	CVI-4			✓	
	CVI-5				✓
	CVI-6				✓
	CVI-7				✓
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11(to gain a shared agreement OR to resolve a disagreement (these are two different things))		✓		
	CVI-12				✓
	Total # of experts per grading				
	CVI score =11 /12 = .91				
	Revised Item # and Item on Scale *				
23	I work with my fellow team members to reflect on the application of our conflict resolution process to reach a shared solution	**1**	**2**	**3**	**4**
	CVI-1 (Will it change the meaning of the sentence if "the application of" is removed?)			✓	
	CVI-2				✓
	CVI-3 (not sure whether the reflection takes place during conflict resolution or after a shared solution has been made		✓		

	and I look back on the process with them afterwards)				
	CVI-4			✓	
	CVI-5				✓
	CVI-6				✓
	CVI-7			✓	
	CVI-8				✓
	CVI-9				✓
	CVI-10				✓
	CVI-11(consider revision to make sure the decision/opinion is about one outcome)			✓	
	CVI-12				✓
	Total # of experts per grading				
	CVI score = 11/12 = .91				
	Revised Item # and Item on Scale ***** I work with my fellow team members to reflect on our conflict resolution process to reach a shared solution				

CVI Questions Proposed to Experts and feedback

1) *Is the language clear and appropriate for the target population? (i.e. licensed health practitioners in hospitals)*

CVI-1: With the suggested modifications, the language should be clear to the target audience

CVI-2: NONE

CVI-3: NONE

CVI-4: NONECVI-5: Once comments made on some items are addressed, I don't see any difficulties with understanding the scale

CVI-6: There are some areas that need some adjustments

CVI-7: It depends, this could be hard for people who speak French as their primary language, for such as sensitive topic whereby you want everyone to clearly understand the question being asked, you might consider the Kinyarwanda version as well.

CVI-8: The used language is clear but also I could suggest having this tool in both French and Kinyarwanda as some health practitioners are more fluent in French and Kinyarwanda than English. But if inclusion criteria will consider the fluency in English, the language is clear

Considering CVI-7 and 8: The scale will be translated in French as well as in Kinyarwanda

CVI-9: It should be clear. No jargons if not agreed upon among them

CVI-10: This is very clear and relevant. Courage

CVI-11: see my previous notes. If for practitioners in hospitals then make that much more explicit and even give a possible case scenario**.** The scenario will be provided during the intervention

CVI-12: It's clear

2) Are any critical components/items regarding interprofessional conflict resolution missing from the scale?

CVI-1: ability to take leadership role in IP conflict resolution may be missing in the scale

CVI-2: NONE

CVI-3: NONE

CVI-4: NONE

CVI-5: As far as I understand, I have not seen an item about recoursing to third-party support once an agreement has not been achieved.

CVI-6: NONE

CVI-7: While resolving conflicts, there is also the role of the supervising party... some hospitals also have strong disciplinary committees

Considering CVI-5, 7 and 9: This scale is focusing on individuals in teams, third-part intervention will be another level and/or study

CVI-8: I think these are enough

CVI-9: You may also ask: -In your ability to maintain team collaboration, what do you do or how do you behave to alleviate misunderstanding among team member?

CVI-10: NONE

CVI-11: NONE

CVI-12: NONE

Q3: Do you have any other comments that you wish to highlight?

CVI -9: Even though this is purely applied to practitioners, I would suggest assessing how professionals report to the authorities in case they fail to resolve a disagreement.

Chapter Four: Methodology, Literature Review and Development of Theoretical Model of Interprofessional Conflict Resolution

Abstract

This chapter describes the process taken to examine the effect of interprofessional conflict resolution (IPCR) on interprofessional collaborative practice (IPCP) among healthcare providers' teams in district hospitals in Rwanda. IPCR has been recognized as an essential part of interprofessional collaborative practice (IPCP) to achieve safe quality healthcare (WHO, 2010). Although claims about the importance of IPCR are evident in the literature, little research about the concept in healthcare settings has been undertaken. The overall research questions included: (1) What are the relationships between personal factors (*general self-efficacy* and *team psychological safety*), *interpersonal communication competence* (IPCC) and *IP collaborative practice*? (2) Does IP conflict resolution moderate the relationship between interpersonal communication and IP collaborative practice? (3) What is the value of an IP conflict resolution educational intervention on the development of IP conflict resolution skills among health practitioners? And (4) What is the experience of transfer of learning of IPCR skills into practice by HCPs? This paper describes a methodology to address the study research questions. In this study mixed methods were employed; quantitative and qualitative data were collected and analyzed using both structural equation modeling and thematic content analyses.

Keywords: Interprofessional conflict resolution, healthcare providers, theoretical model, IPCR intervention program, interprofessional collaborative team practice.

Introduction

Researchers and scholars have identified interprofessional conflict resolution as one of the competencies recognized as essential in many health professions (Sexton & Orchard, 2016; Brown et al., 2011; Leever et al., 2010;CIHC, 2010). It has been well established that interprofessional conflict resolution is a necessary component of IP collaborative teamwork (Akel & Elazeem, 2015; Pfaff et al., 2014; Beunza, 2013; Bainbridge et al., 2010; Orchard, 2010). As of this writing, there is limited research focused on interprofessional conflict resolution within healthcare teams. Notably, only one qualitative research article was found that partially studied IPCR (Brown et al., 2011), while no quantitative research articles were found that studied the IP conflict resolution process.

The purpose of this study was threefold, first, to develop and validate the Interprofessional Conflict Resolution Scale (IPCRS), second, to test a theoretically-derived model, linking factors that may influence HCP teams' capacity to achieve IP collaborative practice, lastly, to develop and evaluate of the effect of an interventional education program on practice among HCPs. This study used a mixed-method design with a quasi-experiment intervention driven by four research questions to test the value of preparing health professionals to transfer gained IP conflict resolution knowledge and skills into practice (Ishtiaq, 2019), and to test a theoretically-derived model, linking predicted personal factors (general self-efficacy and team psychological safety) to interpersonal communication competence and IPCP. Furthermore, to examine if interprofessional conflict resolution moderated the relationship between interpersonal communication competence and IPCP. Finally, all data were brought together to interpret the objective and subjective reporting of participant experiences from the study.

Literature Review

In healthcare settings, when conflicts between health professionals occur, these can negatively impact patient care unless these parties have the capacity to resolve their conflicting viewpoints. Thus, in health professional teams a process for team interprofessional conflict resolution is believed to be an effective means to ensure conflicts arising between healthcare team members can be addressed (Johnson, 2013). It is believed by the researcher that there is a link between predicted personal factors (general self-efficacy and team psychological safety) and interpersonal communication competence and IPCP. It is therefore theorized that interprofessional conflict resolution moderates the relationship between interpersonal communication competence and IPCP.

Individuals and their personal self-efficacy seem to influence when such conflicts are addressed and resolved. Bandura's social cognitive theory defined self-efficacy as people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances (Bandura & Adams, 1977) . Self-efficacy is concerned not with the skills one has but with judgments of what one can do with whatever skills are possessed (Bandura & Adams, 1977). A key aspect of self-efficacy is how individuals' belief in their self-efficacy affects their feelings and thinking about their willingness to take action (Luszczynska, 2005; Bandura & Adams, 1977). Self-efficacy has also been found to promote persistence in workers to pursue their goals despite difficulties or stressful situations encountered (Nørgaard et al., 2013). The perception of one's self-efficacy may then influence how one engages effectively with their colleagues in a team situation. It is theorized that health care team members then need high self-efficacy to be able to communicate effectively with their team members to ensure effective patient care. Therefore, the higher a team member's self-efficacy, the more likely it is to be related to a high level of interpersonal

communication competence and its enactment with their colleagues. To enact self-efficacy it is believed that individuals must have a sense of psychological safety in their team.

Team psychological safety in teams is reported to lead to effective interpersonal communication in those with IPCC (Cauwelier et al., 2016). Luthans and Peterson, 2002 has defined psychological safety as feeling able to show and employ one's self without fear of negative consequences to self-image, status, or career. When present it allows individuals to willingly express themselves without fear of how their viewpoints will be perceived by others (Luthans & Peterson, 2002). While psychological safety within organizations has long been studied, psychological safety for team members is a relatively new concept. Edmondson highlighted that psychological safety describes individual perceptions of the consequences of taking interpersonal risks, between asking a question, seeking feedback, reporting a mistake, or proposing a new idea in their workplace and how others will respond (Edmondson, 2004; Edmondson, 1999). Edmondson defined a group level of psychological safety as a shared belief that within the team it is safe for interpersonal risk-taking (Edmondson, 2004; Edmondson, 1999). When team psychological safety exists, Edmondson reports team members feel comfortable in speaking up more, and are motivated to improve their team because they think less about their personal risk from potential negative consequences than they would otherwise (Edmondson, 1999). Cauwelier et al. (2016) found that team members with higher psychological safety were more likely to ask for help than those with lower team psychological safety. Consequently, the higher a member's perceived team psychological safety, the more likely the member is to express him/herself while interacting with other team members (Cauwelier et al., 2016).

Interpersonal communication competence is a skill needed to convey meaningful exchanges of information between health care team members. Thus, it is theorized that IPCC is essential to convey clear and understandable messages and to facilitate the intent of the

information received by other team members. Therefore, a team member's interpersonal communication competence and perceived team psychological safety are likely to influence how messages are conveyed and received. If IPCC is low in an individual team member then there is potential for their interactions with other team members to have dramatic negative impacts not only on patients' quality of care but also on their health outcomes. The team members' IPCC and team psychological safety may also lead to ambiguous interpretations as to what is said and unsaid due to varying interventions made by receivers in the team (Orchard, 2015).

The value of interprofessional collaborative practice (IPCP) has been reported to include improved patient health status and satisfaction with care (Bell et al., 2014), treatment compliance and reduction in clinical errors (Archer et al., 2011); enhanced staff satisfaction, and increased performance motivation among employees (Craven & Bland, 2013). Moreover, IPCP in health systems has also been associated with reduced staff turnover, and with lower hospital admission rates, shorter lengths of stay and lower costs (Mitchell et al., 2012). Thus, IP collaborative practice is believed to have considerable values for patients, professionals, healthcare organizations and systems (World Health Organization, 2010). Personal characteristics like gender and age have been found by some to impact collaboration (Sarma et al., 2012). Hansson and colleagues (2010), while Bookey-Basset and colleagues (2017) found female physicians collaborated more with nurses, while male physicians collaborated more with specialists. However, all these studies used indirect report variables to assess outcomes from IPCP. Thus, there is a need for research to identify specific variables directly associated with IPCP. Healthcare research suggests that several variables may influence IPCP, most research to date is based on conceptual models, using either qualitative investigations or quantitative descriptive findings with respect to an individual or team-level variables related to IPCP (Mulvale et al., 2016; O'Leary et al., 2012). However, to the best of our knowledge,

no studies focusing on interprofessional conflict and its resolution have been carried out in healthcare with IPCP as an outcome. Furthermore, very few empirical practice-based studies have quantitatively and qualitatively investigated the impact of interprofessional conflict and its resolution on IPCP.

Interprofessional conflict resolution is a key concept of this study because conflicts or disagreements are part of any healthy team. While discussion about the forms and types of conflicts abounds in the literature, health care has more often focused on the prevention of conflict. However, recent literature on conflict focuses on seeing conflicts in the workplace as inevitable rather than on learning how to resolve conflict effectively (Olajide et al., 2015; Omisore & Abiodun, 2014; Talmaciu & Maracine, 2010; Weissmann, 2005). According to the Kilmann Conflict Mode Instrument, there are five major methods of dealing with conflict used by individuals around the world, competition (assumption that one side wins and everyone else loses), accommodation (strategy where one party gives in to the wishes or demands of another), avoidance (when people ignore or withdraw from the conflict) , collaboration (where there is co-creating a shared solution that everyone can support) and compromise (when everyone gives up a little bit of what they want, and no one gets everything they want) (Mossanen et al., 2014). Since conflict arises from interactions between two or more parties, it is associated with communication competence of team members. In health care, when conflicts between health professionals occur, these can have negative impacts on collaborative practice unless these parties have the capacity to resolve their conflicting viewpoints. Thus in health professional teams a process for team interprofessional conflict resolution is believed to be an effective means to ensure conflicts arising between the members can be addressed (Johnson, 2013).

Research Design

This study used a mixed-method design with quasi-experiment intervention to address the following quantitative and qualitative research questions. The theoretical model used in this study was underpinned by intergroup contact theory (Pettigrew et al., 2011); and hypothesizes that personal factors (general self-efficacy and team psychological safety) can lead to IP collaborative practice through interpersonal communication competence. Specifically, this study proposed that relationships exist between healthcare practitioners (HCPs) general self-efficacy, team psychological safety, interpersonal communication competence and IPCP. Furthermore, it proposed that interprofessional conflict resolution moderates the relationship between interpersonal communication competence and IPCP (See Figure 4.4).

Quantitative research questions:

Question1: What are the relationships between HCPs' personal factors (general self-efficacy, team psychological safety), interpersonal communication competence, and IPCP?

The following hypotheses were tested to address research question 1:

H1: HCPs who possess higher levels of *general self-efficacy* will report a high level of *interpersonal communication competence*.

H2: HCPs who possess higher levels of *team psychological safety* will report higher levels of *interpersonal communication competence*.

H3: HCPs with higher levels of *general self-efficacy* will report high levels of *IP team collaborative practice*.

H4: HCPs who possess higher levels of *team psychological safety* will report higher *IP team collaborative practice* levels.

H5: HCPs who possess higher levels of *interpersonal communication competence* will report higher levels of *IP team collaborative practice*.

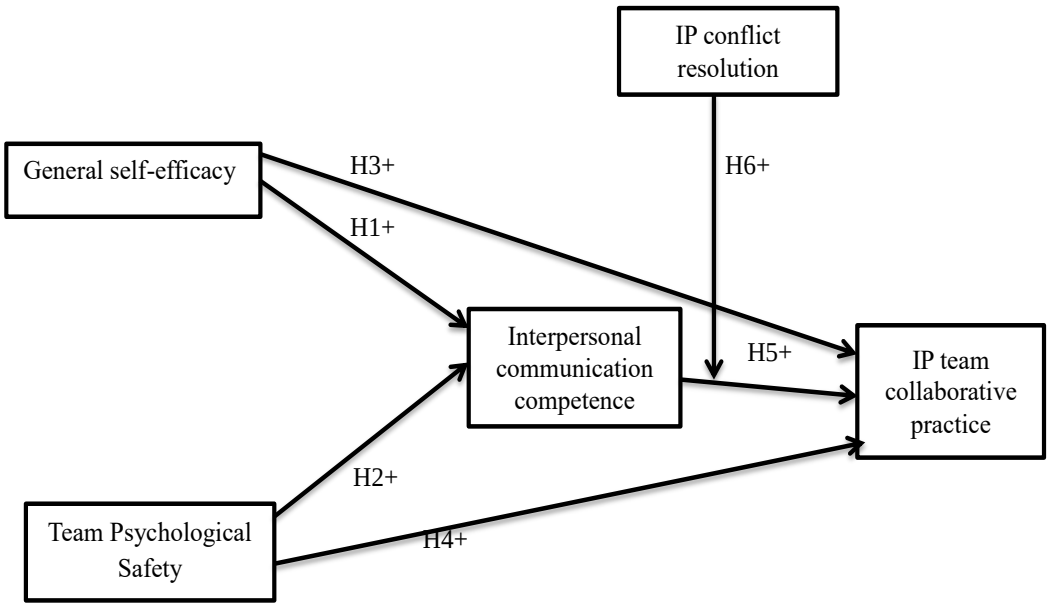
Question 2: Does IP conflict resolution moderate the relationship between interpersonal communication competence and *IP team collaborative practice*?

To study question 2, the following hypothesis was tested.

H6: HCPs' level of *IP conflict resolution* will moderate the relationship between interpersonal communication competence and *IP team collaborative practice*?

Figure 4.4

Hypothesized theorized model



Qualitative research questions:

Question 3: What is the value of an *IP conflict resolution educational intervention* on the development of *IP conflict resolution skills* among health practitioners?

Question 4: What is the experience of *transfer of learning of IPCR skills* into practice by HCPs?

Study Setting

The study was conducted in three selected district hospitals, located in different provinces within Rwanda. Rwanda is located in sub-Saharan Africa, where the health care system still struggles with many health and economic challenges. Rwanda is a landlocked country of 26 338 km^2, with an estimated population of 12.21million in 2017, and it is the most densely populated country in Africa (National Institute of Statistics in Rwanda).

The Rwandan health care system is organized into three levels: (1) the central level, located in Kigali (capital of country), which has referral teaching hospitals as well as the National Ministry of Health as a coordinating entity; (2) the intermediate level consisting of provincial and district hospitals across each of the country regions; and (3) the peripheral level is the community level consisting of community health centers, whose administration is under their respective catchment area district hospital. Each level of health care operates within a defined technical and administrative platform (Ministry of health, 2014). Coordination of all three levels occurs centrally to prevent overlaps and to improve resource and service utilization. The researcher chose three public district hospitals to increase the prospect of participant recruitment of this study.

Sampling Procedure

A non-probability, convenience sampling method was used to select participants. A probability sampling method could not be achieved due to the lack of a complete roster of all health practitioners working in district hospitals in Rwanda. Thus, random sampling was not possible. Because of variations in numbers of healthcare providers representing each profession in these hospitals which may jeopardize respondent anonymity, the use of a cluster sampling approach was not feasible.

The rationale for selecting this population was that health professionals in these hospitals are fewer in number, have limited resources for their work and many of their

patients have needs for complex care. Thus, these health professionals are most likely to work closely with each other. Therefore, these health professionals' perspectives on their ability to address and apply IP conflict resolution could uniquely inform this research (Martínez-Mesa et al., 2016).

Determination of Sample Size

This study tested a theorized model using path analysis to determine relationships between latent variables (GSE, TPS, IPCC, and IPCP) and tested a hypothesized model by using structural equation modeling (SEM). While there is no agreed upon method to calculate sample size for SEM analyses in the literature, researchers have suggested the number of dimensions (14 observed variables in this study) per construct (five constructs in this study) be used to reach the true effect. In anticipation of carrying out SEM for the study's theorized model fit and use of repeated measures, based on Kline's (2015) recommendations not less than 200 respondents was used. While up to 20% of attrition may be experienced when repeated measures are used, it is anticipated that a lower attrition will be experienced based on the earlier discussion with other health researchers in Rwanda. To ensure a sample size that accounted for this higher attrition rate, a projected sample size of 240 participants was needed.

Participant Recruitment

After obtaining ethical approval from relevant human subjects' institutional review boards (the University of Western Ontario, the University of Rwanda, and the Ministry of health), the author obtained permission to conduct the study from administrative representatives of the three district hospitals. Participants' inclusion criteria were: 1) being part of regulated health or social care profession; 2) being involved in direct client care practice; 3) being willing to participate in the study, and 4) being an English reader. Exclusion criteria included health care providers on leave such as annual, sick, education,

emergency, or maternity leave; and those not in direct patient care positions, such as administration.

A notification email was sent to the designated administrator in each hospital, followed by a telephone call requesting them to authorize access to hospital staff for the site research assistant and to facilitate the recruitment process. The unit managers were responsible for daily activities in hospitals, including informing health care providers of any ongoing studies; due to COVID-19, the researcher worked remotely via regular Zoom meetings with local research assistants (RAs) supervised by Dr. Nzayirambaho Manasse (the University of Rwanda-based advisor). Each RA was assigned to support one of the district hospitals involved in the study.

RAs visited their respective participating hospital units to meet unit managers to explain the study, answer any questions and seek their assistance with the study. Hence, some participants received an invitation through unit managers and others from RAs. In addition, in some areas, unit managers provided RAs access during morning staff meeting to explain and invite staff to participate in the study.

Each RA obtained signed consent from participants in their respective hospitals before beginning data collection. Paper-based surveys comprised of demographic questions (What is your age? What is your gender? What is your highest level of education? How long have you been working as a registered professional? How long have you been working in your current unit? What is your current discipline category?), and five instruments were used to measure general self-efficacy, team psychological safety, interpersonal communication competence, IP team collaborative practice, and a newly developed instrument to measure IP conflict resolution (Appendix C). After participants completed their scheduled surveys (described in the next section), they put them into a box provided for this purpose on the unit. Hospital RA's regularly collected completed surveys from these boxes.

Data Collection

Data collection using the survey package varied across the three data collection times; time one (T1) took place after obtaining a signed consent to participate in the study and before an educational intervention in interprofessional conflict resolution training. The dataset from time one served as a baseline to test psychometric properties of Interprofessional Conflict Resolution Scale (IPCRS). Time two (T2) occurred right after the educational intervention. A feedback form (Appendix D) was used to evaluate the effectiveness of the education interventional program. Time three (T3) occurred six weeks following the intervention. The datasets provided were used to evaluate the effect of IPCR and participants' transfer of learning into their practice as well as to test the theoretical model.

Instruments

The data collection survey comprised demographic questions, four existing instruments chosen for strong psychometric properties and rigorous instrument development to measure general self-efficacy, team psychological safety, interpersonal communication competence, and IP collaborative practice, and the newly developed instrument to measure IP conflict resolution for this study (Appendix E).

General self-efficacy was measured using the New General Self-Efficacy Scale (NGSE) (Chen et al., 2001), which is a single dimension eight-item measure using a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Individuals' ratings on the eight items assessing GSE were averaged to determine an overall general self-efficacy score for each participant, with higher scores reflected greater GSE. New general self-efficacy internal consistency was $\alpha = .87$, .88, and .85 three times (Chen et al., 2001).

Team psychological safety was measured using the Team Psychological Safety Scale (TPS) (Edmondson, 2004), which is a single dimension seven-item measure using a five-point scale ranging from 1(strongly disagree) to 5 (strongly agree). Individuals' ratings on

the eight items assessing TPS were averaged to determine an overall team psychological safety score for each participant with higher scores reflected greater TPS. TPS's internal consistency was *a* = .82 (Ming et al, 2015; Edmondson, 2004).

Interpersonal communication competence was measured using the Interpersonal Communication Competence Scale (Rubin & Martin, 1994), which is a single dimension 10-item measure using a five-point scale ranging from almost never (1) to almost always (5). Individuals' ratings on the eight items assessing IPCC were averaged to determine an overall interpersonal communication competence score for each participant, with higher scores reflected greater interpersonal communication competence. IPCC internal consistency was reported as *a* = .86 (Forbat et al, 2019; Rubin & Martin, 1994).

Interprofessional team collaborative practice was measured using the Assessment of Interprofessional Team Collaboration Scale (AITCS-II practitioners) (Orchard et al., 2018). AITCS II (practitioner) was rated using a five-point scale that ranges from never (1) to always (5) and comprised 23 items within three dimensions: partnership (8-items), cooperation (8-items), and coordination (7 items). Means of items on each of the three subscales were summed and averaged to provide each subscale score. These three subscale scores were then summed to create an overall IPCP score, where scores at or above a mean of 4.0 indicated greater perceptions of interprofessional team collaborative practice. The CFA for the AITCS-II (for practitioners) showed a similar good model fit comparable to instrument developers Orchard et al. (2012) model fit (X^2 =749.37, df 225, $p < .000$), RMSEA 0.059, CFI= 94, TLI =0.935 and RMR= 043).

Interprofessional conflict resolution was assessed using a new researcher-developed instrument, the Interprofessional conflict resolution Scale (IPCRS) (Ugirase et al., 2019), is comprised of 11-items distributed across three dimensions, including verbal expression (3-items), exploration of variant view (3-items) and shared agreement (5-items).

Items were rated using a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items on each of the three subscales were summed and averaged to provide each subscale score. These three subscale scores were then summed to create an overall IPCR score, where higher scores indicated greater interprofessional conflict resolution. Development and testing of the instrument are reported in chapter three. IPCRS was validated by Ugirase et al. (2019) with an acceptable model fit (x^2*53.673(41)*, CFI=.98, TLI= .97, GFI=.96, RMR=.04, RMSEA=.03).

T1 and T3 included all the five instruments and demographic data while, T2 only collected data for the IPCRS (because it was considered as an intervening variable). The survey package took approximately 45 minutes for health care providers to complete. Participants also received an equivalent $10 honorarium (the adjusted amount in Rwandan Francs) following completion of the 3rd set of instruments in recognition of the study participation time.

Once the T1 survey set was completed, participants were then invited to attend the education intervention. Table 4.7 provides an overview of the survey composition across the data collection times.

Table 4.7

Instruments and time series for Quantitative Data Collection

Time Series Measures	T 1 (Pre-Test) Before training	T 2 Immediate after training	T 3 (Post-Test) After 6 weeks
Demographic survey	√	√	√
General Self Efficacy Scale	√		√
Interpersonal Communication Competence Scale	√		√
Team Psychological safety	√		√
Interprofessional Conflict Resolution Scale	√	√	√
Assessment of Interprofessional Collaboration Scale II	√		√

Educational Intervention

The study education intervention on interprofessional conflict resolution (IPCR) comprised a four-hour training program held in selected convenient rooms at participating hospitals for study participants within their respective institutions. The overall purpose of the training was for participants to learn about and apply an interprofessional conflict resolution process to selected practice-based case scenarios. The goal of this workshop was to equip participants with IPCR process skills. To achieve this goal, workshops were conducted in small groups (with eight participants in each group) with activities that followed the defined attributes of IPCR as learning objectives a**)** a process that addressed a verbally expressed issue leading to disagreements; b) understanding perceived threats experienced to one's own interests between two or more professionals; c) strategies to explore and explain differing viewpoints, and d) how to determine when the parties reach an acceptable course of action. These objectives were taken and transformed into learning statements (outcomes) by the researcher.

Participants within their small groups were guided in developing a work plan to integrate their learned IPCR process into practice. Each small interprofessional group then presented their work plan (integration of new IPCR process in practice) to the total group. At the end of the workshop, the researcher provided a summary of the workshop and invited each participant to complete the feedback form (see appendix D). The RAs encouraged the participants to participate in the final survey T3 (6 weeks after). Those volunteering to complete their personal reflection were asked to submit it together with the survey package (personal reflection and feedback form served as qualitative data).

Feedback Form

Participants were asked to complete a feedback form right after the training program. Two hundred seventy participants completed the feedback form, which consisted of open-

ended questions: What is the most significant thing you will take away from this workshop? Are there any changes you would recommend for a future offering of this workshop? In addition, close-ended questions focused on the overall value of the training (Appendix D).

The data from the above open ended questions were transcribed, and the researcher read the transcripts to guarantee the accuracy of the transcription. Then, an inductive approach to the thematic content analysis (data-driven thematic analysis) using Braun and Clarke's (2006) approach was utilized to identify, analyze, and report themes within the data set without fitting the data into the pre-existing IPCR process (Braun & Clarke, 2006). Steps taken to ensure qualitative rigor will be discussed in the next chapter.

Personal Reflection

Participants were asked to complete a personal reflection form on their IPCR transfer of learning that occurred six weeks after the educational intervention. The reflection form consisted of three main questions (1) how did you use the IPCR process in a practice situation? Reflect on a situation where you used newly gained interprofessional conflict resolution skills in general, (2) considering the four areas of the interprofessional conflict resolution process; reflect on how you used each process in a real conflict situation, (3) how did the intervention workshop change your practice in dealing with the conflict? (Appendix E) The personal reflections ware utilized to obtain participants' reflection on their IPCR process gained skills from both an individual within the team and on overall teams' application. Fifteen HCPs completed these personal reflections. Thus, personal reflections were used to capture IPCR experiences within their healthcare teams.

Qualitative Component Description

A qualitative descriptive approach (Braun & Clarke, 2006) was used to understand the value of knowledge and skills about IP conflict resolution acquired from the IPCR workshop and to evaluate the transfer of learning into practice by Health Care Providers. When little is

known about a phenomenon, a qualitative descriptive methodology is well suited to achieve a detailed description of individuals' experiences or phenomena (Braun & Clarke, 2006). Furthermore, qualitative description is grounded in the general principles of naturalistic inquiry with the aim of presenting the phenomenon in its natural occurrence (Colorafi & Evans, 2016; Sandelowski, 2010).

The qualitative data were used to answer research question # 3 and 4 – (3) what is the value of an IP conflict resolution educational intervention on developing IP conflict resolution skills among health practitioners? The feedback data from the training were analyzed using a five-point rating scale. The values participants selected for each item were added together. The perceived learning effectiveness of the training was calculated as a percentage out of a possible total (in this study, the total was seven items with a maximum rating of five, for a sum of 35). The learning outcomes were numerically assessed and analyzed using descriptive statistics, while reflections and open-ended questions used thematic content analysis.

(4)- What is the experience of transfer of learning of IPCR skills into practice by HCPs? The reflections on participants' transfer of learning into practice were analyzed using a thematic analysis as Braun and Clarke (2006) detailed.

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Data Analysis

All paper data were entered into SPSS Version 27 to form a data set. Initially, descriptive analyses of collected data were undertaken. Then, AMOS 27 was used to conduct additional inferential analyses related to path models using SEM methods. Finally, thematic content analysis was used to analyze HCPs' feedback form open ended questions and personal reflections related to their experience of IPCR intervention and transfer of learning into practice.

Descriptive Analysis

Descriptive statistics were calculated for demographic and study data as a means to describe the study respondents (Polit & Beck, 2012). Means, standard deviations, medians, sums and the ranges of maximum and minimum values were calculated for frequencies and percentages for categorical demographic and study variables (i.e. instrument measures).

Data Screening

All data were assessed for missing data, outliers, linearity, normality and reliability (Tabachnick & Fidell, 2020; Kline, 2015). The normality of data was further assessed using Mahalanobis and Cook's Distances. Mahalanobis was calculated based on four dependent variables used in this study (General Self-Efficacy, Team Psychological Safety, Interpersonal Communication Competence, and Interprofessional Conflict Resolution). Skewness and kurtosis of data were assessed using Shapiro-Wilk Test of Normality.

IPCR Scale Testing

Interprofessional conflict resolution was the concept of interest in this study and no instrument was found in the published literature to measure this concept. The researcher developed IPCR scale and initially consisted of 23-items rated on a 5-point likert scale. This 23-item IPCR version was assessed for its validity (content) prior to the main study. The final IPCR 11-item version content validity, construct validity and exploratory factor analysis results are reported in chapter three.

Theorized Model Testing

Testing of the theorized model (figure 4.4) used SEM analysis to specify and estimate the study model's relationships among variables and their directional influences (Kline, 2015). Due to the large number of items within some unidimensional instrument set, parceling was carried out for each dimension scale within their respective instruments (general self-efficacy, team psychological safety and interpersonal communication

competence). This technique was used to reduce the number of parameters in the model to be tested by aggregating items as indicators within their related latent constructs (Matsunaga, 2008). Finally, analysis of the moderator, interprofessional conflict resolution was completed. To measure for moderation, the latent variables of interprofessional collaborative practice and interpersonal communication competence were transformed to each of the single observed variables. To do this, scores on the items corresponding to interprofessional collaborative practice and interpersonal communication competence were averaged and saved as standardized scores (Z-score). Interaction terms were created by multiplying the Z-scores of interpersonal communication competence and IPCR for the interaction term.

A four-step approach was used to determine the theorized model fit: model specification, model identification, estimation of model parameters and estimate of model fit (Rappaport et al., 2020). First, general self-efficacy, team psychological safety, interpersonal communication competence, and IP collaborative practice were assigned the value of '1' to allow determination of associated variance coefficients of error terms. Second, AMOS Version 27 was used to identify relationships between all the estimated model parameters (Kline, 2015) were assessed using the variance-covariance matrix and its equality to the number of parameters. The parameters were used to consider the number of degrees of freedom for the model's chi-square (Rappaport et al., 2020; Kline, 2015). Third, estimates of the model parameters and the value of unknown parameters in the model were calculated using Maximum Likelihood (*ML*) (Rappaport et al., 2020; Fan et al., 2016). Next the full structural model was tested by estimating the expected directional associations among the variables (Rappaport et al., 2020). Fourth, the model fit was estimated using SEM to determine the most parsimonious model that is not significantly different from the model fit indices of X^2 /df, GFI, SRMR, CFI and RMSEA, TLI (Fan et al., 2016; Kline, 2015). Chi-square/degrees of freedom (X^2/df) were used to measure the proposed model's covariance

structure (actual) against the observed covariance matrix (predicted), in other matrices (Rappaport et al., 2020). A X^2 /df ratio of 3 or less will be considered as a reasonable indicator of model fit (Kline, 2015). The Goodness of Fit Index (GFI) will provide the proportion of variance to the estimated population covariance if it is greater than or equal to 0.95 it will determines good fit. Standardized Root Mean Square Residual (SRMR) provides an estimate of the difference between the sample covariance matrix and the hypothesized model residuals if less than 0.08, it will reflect a good fit (Kline, 2015). Comparative fit index (CFI) assesses the data fit greater than .90 is considered an excellent fit. The root mean square error of approximation (RMSEA) measures the discrepancy between observed and estimated covariance matrices per degree of freedom. Values of less than 0.05 suggest a good fit, while values up to 0.08 are considered a reasonable fit. The Turker-Lewis Index (TLI) provides ranges between 0 and 1 values greater than 0.90 indicate good fit (Rappaport et al., 2020).

Qualitative Data Analysis

Thematic content analysis was used to guide data analysis for this study. Thematic content analysis is used in qualitative research when there is not enough existing knowledge about the phenomenon of interest (Smith & Noble, 2014; Braun & Clarke, 2006). This process of data analysis was appropriate for this study because little is known about the value and transfer of learning of an educational intervention such as the IPCR workshop into practice. In this study, the analysis had six phases as detailed by Braun and Clarke (2006): (1) gaining familiarity with data; (2) generating initial codes or labels; (3) searching for themes or main ideas; (4) reviewing themes or main ideas; (5) defining and naming themes or main ideas; and (6) producing the report. First, gaining familiarity with your data started with reading all data repeatedly to achieve immersion and obtain a sense of the whole. Second, generating initial codes, the researcher read data word by word to derive codes by first

highlighting the exact words from the text that appear to capture key thoughts or concepts, and codes. Each was assigned to highlight pieces of text from each reflection. Open coding allowed the researcher to circle chunks of text and give each a code. Third, a search for themes or main ideas occurred from the coding guide. Fourth, main ideas with similar codes were sorted into themes and linked where relevant. Fifth, the emergent ideas were grouped into themes. Themes were named and defined to describe HCP's experiences of value and transferring IP conflict resolution knowledge and skills gained from the IPCR workshop into their collaborative practice in hospitals. Lastly, after the analysis, the findings were reported and were triangulated to form a complete whole.

Guba and Lincoln's criteria for establishing trustworthiness and authenticity were applied (Nowell et al., 2017). Trustworthiness strategies in this study included a prolonged engagement with the participants over the six weeks of the study from their admission to the completion of reflection. Authenticity (or accuracy) of data was established through transcription of reflections to ensure content accuracy and through peer checking by presenting the findings to HCPs and research primary advisors.

Protection of Human Rights

Ethical approval was obtained from Research Ethics Boards (Western University, University of Rwanda, and Ministry of Health) and from each of the district hospitals that had agreed to allow this research to be conducted in their facilities. The research team ensured that the rights of participants were protected as part of ethical accountability (Vanclay et al., 2013). Participants signed informed consent and were assured that their participation had no bearing on their jobs and that steps were taken to provide confidentiality of the raw data they had contributed. In addition, participation was voluntary, and the participants had the right to withdraw from the study anytime.

Furthermore, all identifying information was kept confidential to protect privacy. Only computers with firewalls and security (password protection) were used, and access to the research material was limited to the research team, consisting of the researcher and research assistants. All electronic data were partitioned and encrypted in the hard drive of the researcher's and RAs password-protected computers and on a USB drive to be used at Western. In addition, any paper-based data collected was input into the computer along with the electronically collected data. Paper copies of the data were kept in a locked file cabinet (at the University of Rwanda) for up to seven years, at which time it will be permanently destroyed. Participants were informed that any identifying information such as names and phone numbers that they provided to the researcher for logistic purposes were kept separate from the data in a password-protected file.

Risks and Benefits

Participation in this study was voluntary, and participants were made aware that they could withdraw at any point in time during the study. Since some of the health care professions had a much smaller representation, all dissemination of results will ensure that these participants remain anonymous. Otherwise, there were no known risks related to participation. The primary benefit was for participants to gain knowledge about IP conflict resolution through this study's education intervention.

Limitations of the Study

This study had a number of limitations based on different factors. Firstly, convenience sampling is a weaker method of sampling and is vulnerable to selection bias (Elfil & Negida, 2019), which can lead to a heterogeneous sampling that might affect the ability to interpret the findings. Thus, caution needed to be taken in the interpretation of results. Secondly, whereas the inclusion criteria assisted in considering the sample, there was a disproportion of numbers for various HCPs by profession. The numbers of RNs are much higher than all other

registered HCPs, not surprising given the differences in the numbers of each profession practicing in the district hospitals. Thirdly, the potential for common method variance biases due to self-report questionnaires was predicted. Measurement error could be credited to the measurement methods used to gather the data instead of to the constructs of interest (Podsakoff et al., 2012). Some techniques that attended to these possible biases included the use of clear scale labels, and ensuring no reverse items were included. Additionally, efforts were made to limit bias related to social desirability by separating any identifiable information from the survey, the social desirability response bias in the use of leading questions from the reflection were limited through the use of peer checking by presenting the findings to HCPs (Elfil & Negida, 2019). The shortest questionnaire versions were carefully considered to minimize the potential responder's fatigue by ensuring that only concepts directly related to the research were addressed (Podsakoff et al., 2012). To minimize ambiguity of items, the selection of instruments that had reported strong psychometric properties and rigorous instrument development were selected and clear instructions related to each variable being measured was provided.

Summary

IPCR has been promoted as a necessary component of IP collaborative practice, and while literature supports the importance of IP conflict resolution, there is a paucity of research that investigates it. This chapter presented the methodology and methods used to test the value of preparing health professionals to transfer gained IP conflict resolution knowledge and skills into practice, testing a theoretically-derived model, linking predicted personal factors (general self-efficacy and team psychological safety) to interpersonal communication competence and IPCP. Furthermore, it proposed that interprofessional conflict resolution moderates the relationship between interpersonal communication competence and IPCP.

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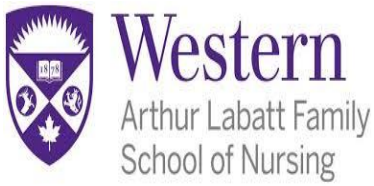
Appendix B



Letter of Information and Consent

Project Title: The Effect of Interprofessional Conflict Resolution on IP collaborative practice among Health care provider teams in Hospitals: A Mixed method Study

Document Title: Letter of Information for Participants

Principal Investigator + Contact: *Sibylle Ugirase, PhD Student, Arthur Labatt School of Nursing, University of Western Ontario*

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Conflict of Interest

There are no conflicts of interest to declare relate to this study.

Letter of Information

1. **Invitation to Participate**

   You are being invited to participate in this study about The Effect of Interprofessional Conflict Resolution on IP collaborative practice among Health care provider teams in Hospitals.

2. **Why is this study being done?**

   The aim of this study is threefold. First, this study will carry out development and testing of the psychometric properties of an instrument designed to measure IP conflict

resolution among IP health care teams. Secondly, develop and evaluate the effect of an interventional education program that facilitates learning a process to resolve IP conflicts. Thirdly, carry out the testing of a theoretically-derived model linking the relationship between health professionals' self-efficacy and their interpersonal communication and team Psychological safety that leads to IP collaborative practice, and explore how this relationship is moderated by IP conflict resolution.

3. **How long will you be in this study?**

   This study will be completed in 2021 to be submitted to the faculty of Arthur Labatt family school of nursing at The University of Western Ontario in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

4. **What are the study procedures?**

   After you read this letter and agree to participate in the study, you will be asked to complete surveys. You will have to complete the survey paper based. Completing the surveys will take approximately 45 minutes, so you can complete them at your work or on your free time. Health care providers who agree to participate in the study have to sign a consent form.

5. **What are the risks and harms of participating in this study?**

   There are no anticipated burdens, risks, or harms for participation in this study.

6. **What are the benefits of participating in this study?**

The primary benefit will be for participants to be trained on the process of IP conflict resolution through this study.

7. **Can participants choose to leave the study?**

   You can withdraw and refuse to participate in the study at any time that you don't have the willing to participate without any harms.

8. **How will participants' information be kept confidential?**

   All provided data will be confidential and accessible to just the research team of the study, and only group data will be reported during the dissemination of the study findings. All questionnaires will be stored in a locked cabinet in a secure room at the University of Rwanda for seven years.

9. **Are participants compensated to be in this study?**

Participants will also receive a $10 honorarium (the adjusted amount in Rwandan Francs) following completion of the 3rd set of instruments in recognition of their participation time taken.

10. **What are the rights of participants?**

    Participation in this study is voluntary, so you can withdraw and refuse to participate in the study at any time that you don't have the willing to participate without any harms. Also, don't mention your name or any contact information when you complete the surveys.

11. **Whom do participants contact for questions?**

    If you need any additional information regarding to the research you may contact the Principal Investigator, Sibylle Ugirase, email: usibylle@uwo.ca and the researcher supervisors, Dr. Carole Orchard, email: corchard@uwo.ca and Dr. Panagiota Tryphonopoulos, email: ptryphon@uwo.ca via their emails. Also, you can contact The Office of Research Ethics at the University of Western Ontario at local contact # (519) 661-3036, email: ethics@uwo.ca if you have any questions about your rights as a participant.

12. **Consent**

    You indicate your voluntary agreement to participate by signing the consent form below. I really appreciate your participation in this study and thank you very much for considering my request.

    Sincerely,

    Sibylle Ugirase, PhD Candidate

    Arthur Labatt School of Nursing

The University of Western Ontario

Consent form

Study Title: The Effect of Interprofessional Conflict Resolution on IP collaborative practice among Health care provider teams in Hospitals

This study has been explained to me and any questions I had have been answered. I know that I may leave the study at any time. I agree to take part in this study.

_____	_____	_____
Study Participant [please print]	Signature	Date (DD-MM-YYYY)

My signature means that I have explained the study to the participant named above. I have answered all questions.

_____	_____	_____
Person Obtaining Consent	Signature	Date (DD-MM-YYY

Appendix C

Case Study for Educational Intervention

Mutoni is a 2 years old girl living with her teen single mother (19 years old). Mutoni has been transferred to the district hospital for under nutrition after several readmissions to the community health center. Mutoni has been hospitalized for 2 months, the first month; the healthcare team was dealing with dehydration associated with Kwashiorkor, and then after Mutoni electrolytes were stable and normal. The focus of the treatment shifted to the nutritional status. Along the second month, she has a great improvement as she can eat and drink but still in red line. Because of pediatric bed occupancy issue, nurses and physicians decided to discharge Mutoni from the hospital for to continue the nutrition treatment at the community health center, and asked the dietitian to communicate with the health center as well as the community health worker for the follow up. However, the dietician does not agree with the decision. The dietitian argue that Mutoni is still in red line which explains her need to stay in the hospital for closer monitoring, moreover, because of the age and other social economic problems that her mom have (not stated here in the case but known by the team), the dietitian believe that these factors will worsen Mutoni health once discharged.

After an endless dispute about Mutoni discharge plan. The physician, the nurse and Dietitian decided to report the issue to the unity manager. Then after listening to each of the team member, the unity manager took over the case where she decided to talk to the social worker.

Appendix D

Work Plan Sheet

Goal: Apply the learned IP conflict resolution process to Mutoni case study

INSTRUCTIONS

A. Read the case study as a group

B. Analyze each statement in the case to determine which of the four-conflict resolution process was followed or ignored

Note: Interprofessional conflict resolution is:

A process that

1. **Addresses a verbally expressed issue disagreement**
2. **fully explore and explain meanings to each party**,
3. **Reaching a decision to an agreement about the dispute,** and
4. **Achieving a satisfactory course of actions**.

C. Try to rewrite the statements that do not follow the above conflict resolution process to clearly or accurately address the issue.

D. Record the new case study scenario at the end of the activity.

Example

Worksheet Interprofessional conflict resolution Process

Steps	Issues in the Case Scenario	Your Perspective on the Issue
Addresses a verbally expressed issue/ disagreement		
Fully explore and explain meanings to each party		
Reaching a decision to an agreement about the dispute		
Achieving a satisfactory course of actions		

Appendix E

Interprofessional conflict resolution Workshop Feedback Form

1. My professional designation is… (*please check in the appropriate box*)

☐ Dietetics

☐ Physician ☐ Physiotherapy

☐ Social Work

☐ Nursing

☐ Other (please specify): _____

2. My personal goals for attending this workshop were:

☐ Fully met ☐ Mostly met ☐ Partly met ☐ Somewhat met

☐ Not met

3. The information provided in this workshop was:

☐ Very helpful ☐ Mostly helpful ☐ Partly helpful

☐ Somewhat helpful ☐ Not helpful

4. ***Please rate the following statements on a scale of 5 = Strongly Agree 4 = Agree 3 = Neutral 2 = Disagree 1 = Strongly Disagree***

		5	4	3	2	1
4.1	I now have a better appreciation of why it is important to verbally express the disagreement in team	☐	☐	☐	☐	☐
4.2	I now understand how to explore together the variant viewpoints	☐	☐	☐	☐	☐
4.3	I now have an understanding how					

to find a common acceptable alternative

of all viewpoints ☐ ☐ ☐ ☐ ☐

4.4 I have gained knowledge how to achieve

a shared course of action to assist

my team during conflicting situations ☐ ☐ ☐ ☐ ☐

5. What surprised you the most from this workshop?

_____

6. What is the most significant thing, to you, that you will take away from this workshop?

_____

7. Overall how would you rate this workshop?

☐ Very valuable ☐ Valuable ☐ Somewhat valuable

☐ Of some value ☐ Of limited value

8. Are there any changes you would recommend for a future offering of this workshop?

_____

9. What further workshops, seminars, support, resources, education etc. would you like to see offered on IPCR?

_____

*Thank you for taking the time to share the value you experienced from this workshop***.**

Appendix F

Personal Reflection Form after Educational Intervention

Instruction: After participating in an educational program on interprofessional conflict resolution. You are asked to reflect on how you transferred the knowledge you gained into your current practice.

1. How did you use the IPCR process in a practice situation? Reflect on a situation where you used new gained interprofessional conflict resolution skills in general

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2. Considering the four areas of interprofessional conflict resolution process BELOW, reflect on how you used each process into real conflicting situation.

- Verbally expressed disagreement

- Explore variant perceived threat

- Find acceptable alternative of all viewpoints

- Achieve a shared course of action

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3. How did the intervention workshop change your practice in dealing with conflicts?

Appendix G

Survey Package

Research Study: The Effect of Interprofessional Conflict Resolution on Interprofessional Collaborative Practice among Health Care Provider Teams in Hospitals and overall purpose

This survey package is comprised of three sections. In the first section you will be asked about yourself and your professional practice. In the second section you will be asked about your work in interprofessional teams. The third section will be asking how you feel about your skills towards your practice. The survey will take approximately 20 to 30 minutes to complete. Please read the instructions to guide you in responding to each item.

Section 1: Demographic Information

Please tell us about yourself and your workplace

Instruction: Circle one answer within each question.

1.	Participant assigned code	---
2.	What is your age?	_____ Years
3.	What is your gender?	1) Male 2) Female 3) Other
4.	What is your highest level of education?	1) Diploma 2) Bachelor's degree 3) Master's degree 4) PhD degree
5.	How long have you been working as a registered profession?	_____Years
6.	How long have you been working in your current unit?	_____Years

7.	What is your current discipline category?	1. Dentist 2. Physician 3. Laboratory Technologist 4. Nursing: Registered Nurse 5. Midwife 6.Mental Health 9) Other*..... ***Please specify**
8.	Which hospital do you work in?	1) Ruhengeri 2) Nemba 3) Rwamagana

Section 2. Interprofessional Teamwork

Instruction: Please rate the EXTENT to which you agree with the following statements about your conflict resolution in team

1 = Strongly Disagree	2 = Disagree	3 = Neither Agree nor Disagree	4 = Agree	5 = Strongly Agree

	When I feel that a verbally expressed disagreement has occurred within a group of health professionals …	
1	I openly express my concern that there is a disagreement within the IP team.	1 2 3 4 5
2	I clearly articulate the area of disagreement with the IP team.	1 2 3 4 5
3.	I communicate all perspectives on the issue being presented within the IP team	1 2 3 4 5
4.	I understand the issue within the IP team.	1 2 3 4 5
5.	I seek to help my fellow team members undertaking a process to finding a reasonable solution to a disagreement.	1 2 3 4 5

6.	I am ready to listen to other IP team members concern around the issue.	1 2 3 4 5
7.	I have clear workplace policy/guideline to assist me in working through a team disagreement.	1 2 3 4 5
	When I work with others in my workplace …	

8.	I feel that my professional goals for my clients' care are not well understood within the team.	1 2 3 4 5
9.	I feel that my professional values are less considered during care decision making about my clients among the IP team.	1 2 3 4 5
10.	I feel threatened by differing viewpoints about a specific client	1 2 3 4 5
11.	I assume that other health professionals in my team might have some bias towards my professional status.	1 2 3 4 5
12.	I am able to determine my own pre-judgment towards other IP team members' competences in their practice	1 2 3 4 5
	When I experience a disagreement around my viewpoints about patient care	
13.	I feel comfortable explaining the reasoning for my respective positions around the issue within the team	1 2 3 4 5
14.	I listen carefully to other team members' respective reasoning around their client care decisions and consider their viewpoint.	1 2 3 4 5
15.	I consider my own biases that might shift my viewpoint closer to my fellow team members	1 2 3 4 5

16.	I work with my other team members to gain a full understanding of the issue for all our perspectives.	1	2	3	4	5
17.	I exchange my professional understanding based on known research findings with my team members	1	2	3	4	5
18.	I integrate my ideas with those of my team to come up with shared decision making	1	2	3	4	5
	When I am working with my fellow team members to reach a resolution of a disagreement					
19.	I use a 'give and take' approach to come to an agreement of what are the best choices for the issue being discussed.	1	2	3	4	5
20.	I work to ensure that all the team members hear each other's viewpoints to reach the best possible solution	1	2	3	4	5
21.	In our IP team we examine all suggested approaches to a client situation and choose the best for all	1	2	3	4	5
22.	I work with my fellow team members to gain a shared agreement to resolve a disagreement	1	2	3	4	5
23.	I work with my fellow team members to reflect on our conflict resolution process to reach a shared solution	1	2	3	4	5

Instructions: Please **circle the value** which best reflects how you currently feel your team and you, as a member of the team, work or act within the team.

1 = Never	2 = Rarely	3 = Occasionally	4 = Most of the time	5 = Always

When we are working as a team[1] all of my team members…..

1	include patients in setting goals for their care	1	2	3	4	5
2	listen to the wishes of their patients when determining the process of care chosen by the team	1	2	3	4	5
3.	meet and discuss patient care on a regular basis	1	2	3	4	5
4.	coordinate health and social services (e.g. financial, occupation, housing, connections with community, spiritual) based upon patient care needs	1	2	3	4	5
5.	use consistent communication within the team to discuss patient care	1	2	3	4	5
6.	are involved in goal setting for each patient	1	2	3	4	5
7.	encourage each other and patients and their families to use the knowledge and skills that each of us can bring in developing plans of care	1	2	3	4	5
8.	work with the patient and his/her relatives in adjusting care plans	1	2	3	4	5

When we are working as a team all of my team members

9.	share power with each other	1	2	3	4	5

[A] team can be defined as any interactions between one or more health professionals on a regular basis for the purposes of providing patient care.

10.	respect and trust each other	1	2	3	4	5
11.	are open and honest with each other	1	2	3	4	5
12.	make changes to their team functioning based on reflective reviews	1	2	3	4	5
13.	strive to achieve mutually satisfying resolution for differences of opinions	1	2	3	4	5
14.	understand the boundaries of what each other can do	1	2	3	4	5
15.	understand that there are shared knowledge and skills between health providers on the team	1	2	3	4	5
16.	establish a sense of trust among the team members	1	2	3	4	5

When we are working as a team all of my team members….

17.	apply a unique definition of Interprofessional collaborative practice to the practice setting	1	2	3	4	5
18.	equally divide agreed upon goals amongst the team	1	2	3	4	5
19.	encourage and support open communication, including the patients and their relatives during team meetings	1	2	3	4	5
20.	use an agreed upon process to resolve conflicts	1	2	3	4	5
21.	support the leader for the team varying depending on the needs of our patients	1	2	3	4	5
22.	together select the leader for our team	1	2	3	4	5
23.	openly support inclusion of the patient in our team meetings	1	2	3	4	5

Section 3: Perception of Skills for Practice

Instructions: This questionnaire is a series of statements about your personal attitudes and traits. Each statement represents a commonly held belief. Read each statement and decide to what extent it describes you. There are no right or wrong answers. You will probably agree with some of the statements and disagree with others. Please indicate your own personal feelings about each statement below by circling the number that best describes your attitude or feeling. Please be very truthful and describe yourself as you really are, not as you would like to be.

1 = Strongly Disagree	2 = Disagree	3 = Neither Agree nor Disagree	4 = Agree	5=Strongly Agree

1	I will be able to achieve most of the goals that I have set for myself.	1	2	3	4	5
2	When facing difficult tasks, I am certain that I will accomplish them	1	2	3	4	5
3.	In general, I think that I can obtain outcomes that are important to me	1	2	3	4	5
4.	I believe I can succeed at most any endeavor to which I set my mind.	1	2	3	4	5
5.	I will be able to successfully overcome many challenges.	1	2	3	4	5
6.	I am confident that I can perform effectively on many different tasks.	1	2	3	4	5
7.	Compared to other people, I can do most tasks very well.	1	2	3	4	5
8.	Even when things are tough, I can perform quite well.	1	2	3	4	5

Instruction: Please rate the extent to which you agree with the following statements about your psychological safety perception.

1 = Strongly Disagree	2 = Disagree	3 = Neither Agree nor Disagree	4 = Agree	5=Strongly Agree

1	People in my team are able to bring up problems and tough issues	1	2	3	4	5
2	I feel safe to take a risk in my team.	1	2	3	4	5
3.	It is difficult to ask other members of my team for help.	1	2	3	4	5
4.	No one in my team would deliberately act in a way that undermines my efforts.	1	2	3	4	5
5.	Working with members of my team, my unique skills and talents are valued and utilized.	1	2	3	4	5
6.	If I make a mistake in my team, it is often held against me.	1	2	3	4	5
7.	People in my team sometimes reject others for being different.	1	2	3	4	5

Instructions: For each statement, cicle the response that best reflects YOUR communication with others. Be honest in your responses and reflect on your communication behavior carefully.

1 = Almost Never	2 = Seldom	3 = Sometimes	4 = Often	5=Almost Always

1	I allow friends to see who I really am	1 2 3 4 5
2.	I can put myself in other's shoes	1 2 3 4 5
3.	I am confortable in social situations	1 2 3 4 5
4.	When I've been wronged, I confront the person who wronged me	1 2 3 4 5
5.	My conversations are pretty one-sided	1 2 3 4 5
6.	My conversation are characterized by smooth shifts from one topic to the next.	1 2 3 4 5

7.	My friends can tell when I am happy or sad	1 2 3 4 5
8.	My communication is always descriptive, not evaluative	1 2 3 4 5
9.	My friends truly believe that I care about them	1 2 3 4 5
10.	I accomplish my communication goals	1 2 3 4 5

Thank you for taking the time to complete this survey!

Appendix H

Western Research

Date: 20 August 2020

To: Dr. Carole Orchard

Project ID: 115634

Study Title: Effect of interprofessional conflict resolution on interprofessional collaborative practice among health care provider teams in hospitals

Application Type: HSREB Initial Application

Review Type: Delegated

Meeting Date / Full Board Reporting Date: 01/Sep/2020

Date Approval Issued: 20/Aug/2020

REB Approval Expiry Date: 20/Aug/2021

Dear Dr. Carole Orchard

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above mentioned study as described in the WREM application form, as of the HSREB Initial Approval Date noted above. This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.

Documents Approved:

Document Name	Document Type	Document Date	Document Version
V1.2 Research protocol JULY 2020 - CLEAN	Protocol		
T1 &T3 SURVEY PACKAGE 2020	Paper Survey	15/Aug/2020	V1.3
T2 SURVEY PACKAGE 2020	Paper Survey	15/Aug/2020	V1.3
feedback form	Other Data Collection Instruments	15/Aug/2020	1.0
Personal reflection form	Other Data Collection Instruments	15/Aug/2020	1.0
V1.1Telephone_Script_JULY 2020	Telephone Script	10/Jul/2020	V1.1
V1.4 LETTER OF INFORMATION clean August 17 2020 -f -	Written Consent/Assent	17/Aug/2020	V1.4

Documents Acknowledged:

Document Name	Document Type
Reference	References
Flowchart	Flow Diagram

No deviations from, or changes to, the protocol or WREM application should be initiated without prior written approval of an appropriate amendment from Western HSREB , except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University HSREB operates in compliance with, and is constituted in accordance with, the requirements of the TriCouncil Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2); the International Conference on Harmonisation Good Clinical Practice Consolidated Guideline (ICH GCP); Part C, Division 5 of the Food and Drug Regulations; Part 4 of the Natural Health Products Regulations; Part 3 of the Medical Devices Regulations and the provisions of the Ontario Personal Health Information Protection Act (PHIPA 2004) and its applicable regulations. The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

Appendix I

UNIVERSITY of RWANDA

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DIRECTORATE OF RESEARCH & INNOVATION

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 14th/July/2020

UGIRASE Sibylle
School of Nursing and Midwifery

Approval Notice: No 238/CMHS IRB/2020

Your Project Title ***"Effect Of Interprofessional Conflict Resolution On Interprofessional Collaborative Practice Among Health Care Providers' Teams In Hospitals, Rwanda*** has been evaluated by CMHS Institutional Review Board.

		Involved in the decision		
			No (Reason)	
Name of Members	**Institute**	Yes	**Absent**	**Withdrawn from the proceeding**
Prof Kato J. Njunwa	UR-CMHS		X	
Prof Jean Bosco Gahutu	UR-CMHS	X		
Dr Brenda Asiimwe-Kateera	UR-CMHS	X		
Prof Ntaganira Joseph	UR-CMHS	X		
Dr Tumusiime K. David	UR-CMHS	X		
Dr Kayonga N. Egide	UR-CMHS	X		
Mr Kanyoni Maurice	UR-CMHS		X	
Prof Munyanshongore Cyprien	UR-CMHS	X		
Mrs Ruzindana Landrine	Kicukiro district		X	
Dr Gishoma Darius	UR-CMHS	X		
Dr Donatilla Mukamana	UR-CMHS	X		
Prof Kyamanywa Patrick	UR-CMHS		X	
Prof Condo Umutesi Jeannine	UR-CMHS		X	
Dr Nyirazinyoye Laetitia	UR-CMHS	X		
Dr Nkeramihigo Emmanuel	UR-CMHS		X	
Sr Maliboli Marie Josee	CHUK	X		
Dr Mudenge Charles	Centre Psycho-Social	X		

After reviewing your protocol during the IRB meeting of where quorum was met and revisions made on the advice of the CMHS IRB submitted on 14thJuly 2020, **Approval has been granted to your study.**
Please note that approval of the protocol and consent form is valid for **12 months**.

Appendix J

Republic of Rwanda

MINISTRY OF HEALTH

National Health Research Committee
Ref: NHRC/2020/PROT/028

To: **Mr. UGIRASE Sibylle**
Principal Investigator

Scientific Review Approval Notice

With reference to your request for approval of the Research Protocol entitled; **"Effect of interprofessional conflict resolution on interprofessional collaborative practice among healthcare providers' teams in hospitals (Nemba, Ruhengeli, and Rwamagana)";**

We are pleased to inform you that, following a thorough review and critical analysis of your proposal (**NHRC/2020/PROT/028**), National Health Research Committee has approved your Research Protocol.

However,

1) Changes amendments on approach and methodology must be submitted to the NHRC for review and approval to validate the changes.
2) Submission to NHRC of final results is mandatory
3) Failure to fulfill the above requirements will result in termination of study

Once again National Health Research Committee appreciates your interest in research.

Your final approval reference number is **NHRC/2020/PROT/027.**

Sincerely,

Dr. Parfait UWALIRAYE
Chairperson of NHRC

Date:.....

Chapter Five: Transfer of Learning from Interprofessional Conflict Resolution Training Program to the Workplace in the Hospital Setting

Abstract

Purpose: This study aimed to develop and implement an interprofessional conflict resolution (IPCR) training program and evaluate learning effectiveness of that program and participants' transfer of program learning in their workplaces.

Background: In the study of the effect of IPCR on interprofessional collaborative practice (IPCP) among healthcare providers in hospital settings, participants' transfer of learning following an in-service training program on team conflict resolution into their health care interprofessional teams was assessed. This program was tailored to bridge health professionals' previous and new knowledge about interprofessional team collaboration by focusing on IPCR within realistic case scenarios to add conflict resolution into their skill set.

Methodology: The learning effectiveness of an IPCR educational program was assessed using a feedback form completed following the training. Participants' transfer of learning was evaluated using individual participant reflections compared with open-ended feedback assessments.

Findings: The total mean learning gained from *n*=270 participants were assessed as a score of 32.67 out of 35, indicating 93.3% learning effectiveness. This result was supported by fifteen participants' reflections from five themes that emerged from their practice. Those themes were: (1) transfer into the practice of learned IPCR skills, (2) new insights to team conflict resolution, (3) openness of practical application of IPCR steps (4) commitment and empowerment leading to workplace change, and (5) continuous professional development programs.

Keywords: transfer of learning, interprofessional conflict resolution, training, workplace

Introduction

Interprofessional collaborative practice (IPCP) is meant to offer a diversity of perspectives for safe and effective care. It is crucial to help alleviate global health system challenges through IPCP (World Health Organization [WHO], 2010). WHO established an interprofessional (IP) framework calling on nations to foster and integrate it into their existing policies, curricula, and on-job training to yield its desired effects (World Health Organization, 2010). In the same year, the Canadian Interprofessional Health Collaborative (CIHC) released its IP Collaboration Competency Framework (Canadian Interprofessional Health Collaborative, 2010) including six domains, one of which was IP conflict resolution (IPCR). Thus, the importance of IPCR as a critical domain of IPCP was put forward. However, limited research has been carried out to study IPCR within health care team practice. Of the studies found researching IPCR within healthcare practitioners (HCPs) identified the need to design and test a tailored training program to address gaps in IPCR knowledge and resolution skills. Furthermore, to evaluate factors that support or inhibit learning transfer into practice.

Background

Transfer of learning is defined as taking the information learned in one situation and applying that to another different situation. It has the potential outcome of learning how well participants in a training program take and apply that learning into their practice. Hence, the transfer of learning can be envisioned as a form of continuous professional development (Renta-Davids et al., 2014). However, while seeing the value of transfer of learning; many researchers identified limitations in its application due to the lack of evaluation instruments to examine the uptake of learning. Furthermore, there is limited papers on IPCR training interventions designed to determine how newly acquired learning can be assessed in participants' work performance

(Burke & Hutchins, 2007; Holton & Baldwin, 2003). Despite the lack of research, it is important to understand the factors that facilitate or hinder the uptake of learning on interprofessional collaboration. Research to understand the connection between previous and new knowledge and its application into varying workplace practices is a good starting point (Leimbach & Maringka, 2012).

Understanding learning strategies and program effectiveness to HCPs' has the potential to help learners consider how they can monitor their transfer of learning into their practice performance (Taylor, 1997). Moreover, evaluating the transfer of learning can provide evidence to learners' organizations about effectiveness gained from training programs (Holton & Baldwin, 2003). While HCPs often identify conflict situations that cause them stress and burnout, limited organizational support for training to overcome such gaps can affect their workplace retention (Patton, 2014). Hence, a key to effective workplace continuing professional education is attention to the design and selection of learning strategies to support employee transfer of learning (Holton & Baldwin, 2003).

Literature Review

This review addresses both the theory of and types of transfer of learning, and strategies to enhance its application into practice.

Transfer of Learning

The study of transfer of learning is a significant, broad, perplexing, and multifaceted field of study. Thus far, there are four theories associated with the transfer of learning, including (1) theory of mental discipline, (2) theory of identical elements, (3) theory of generalization, and (4) configuration theory. This study was based on the theory of identical elements, which suggests that transfer of training depends on how similar training and performance environments are.

Thorndike and Woodworth (1901) introduced the principle of the theory of identical elements that proposed when more elements (i.e., content and context) of a former situation are similar to those in the following situation, transfer of learning will increase and be applied into the next event (Tracey & Morrow, 2012). In this theory, it is proposed that the level of training transfer depends on the similarity between training and performance environments. For example, in this study, IPCR training used hospital work setting case scenarios and activities where participants had to resolve a task conflict in their team. Each scenario was planned to positively influence training skill transfer. These scenarios could be applied into their familiar work environment (Hajian, 2019). This strategy was designed to apply knowledge learned in one context (training program) to a new context (healthcare practice) (Burke & Hutchins, 2007). Transfer of learning occurs when a learner: (a) recognizes common characteristics among learned concepts, skills, or principles; (b) links the information to memory, and (c) sees the value of utilizing what was learned in one situation into another (Taylor, 1997). However, for transfer to happen, "learned behavior must be generalized to the job context and maintained over some time on the job" (Baldwin & Ford, 1988,p.63).

To achieve transfer of learning, attention is needed to the planned training end goals (Hajian, 2019; Renta-Davids et al., 2014). Thus, the effectiveness of training programs should include evaluation of program transfer of learning by participants' application back into their practice. Hence, assessing the value of the training program learning for practice application may encourage learners to apply knowledge within their work performance (Curry et al., 2005).

Burke and Hutchins (2007) undertook a comprehensive analytical review of studies focusing on transfer of learning. Researchers are beginning to use multisource feedback (i.e., supervisor, peer, and trainee reports), as well as goal directive instructional activities that

integrate real-life situations, and provision of meaningful feedback on participants' transfer of the learning (Renta-Davids et al., 2014; Taylor, 1997). At the same time, Burke and Hutchins found a shortage of empirical research to support transfer outcomes. They suggested making the transfer of learning a criterion variable for empirical and theoretical research (Burke & Hutchins, 2007).

Assessment of transfer of learning using performance outcomes should also be applied within a timely period (Leimbach & Maringka, 2012; Bray, 1928). Types of transfer of learned skills or knowledge to another workplace context include near transfer, or low road (Leimbach & Maringka, 2012; Bray, 1928). In contrast, when skills or knowledge learned can be applied to more general roles in work, it is termed far or high road transfer (Bray, 1928; Leimbach & Maringka, 2012). In near transfer, the learning program is directly applicable within the workplace. In far transfer, the learning gained will require reasoning and application using learners' judgment and skills into varying workplace contexts (Hajian, 2019; Bray, 1928).

Hence, transfer of learning is focused on learners knowledge and skill uptake gained in training situations that are then applied into their daily work practice. Leberman et al., (2006) termed such transfer as positive learning. Positive learning can result in either complex or straightforward transfer into performing workplace tasks, while a negative transfer occurs when a learner's control over the application of learning is inhibited, oppressed, or interfered within a context (Leberman et al., 2016). Furthermore, the transfer of learning can be either simple or complex. A simple transfer occurs when a learner makes little or no effort to apply what was learned to a different workplace situation. In contrast, the complex transfer of learning involves more exertion to apply the learned skills into workplace (Leberman et al., 2016). Therefore, when learners fail to feel empowered or prompted by trainers, they may have a diminished view of the importance and value of the learning to their practice. This chapter focuses on far, high

road, complex, positive transfer of learning from an interprofessional training program on conflict resolution within healthcare teams and its application into Rwandan HCPs' hospital settings.

Methodology

Recruitment

After obtaining ethical approval from relevant human subjects' institutional review boards (the University of Western Ontario, the University of Rwanda, and the Ministry of health), the author obtained permission to conduct the study from administrative representatives of the three Rwandan district hospitals. Participants' inclusion criteria were: 1) regulated health or social care professional; 2) involvement in direct client care practice; 3) willingness to participate in the study; and 4) English reader. Exclusion criteria included: 1) health care providers on leave such as annual, sick, education, emergency, or maternity leave; and 2) not in direct patient care positions (i.e., administration).

Following all ethical reviews and approval, a notification email was sent to a designated administrator in each hospital, followed by a telephone call requesting both authorized access to hospital staff and assistance in facilitating participants' recruitment process. Designated administrators delegated to the unit managers responsible for daily activities in hospitals, assisted with recruitment and supported the ongoing study. Due to COVID-19, the researcher identified local research assistants (RAs) who were under the supervision of Dr. Nzayirambaho Manasse (the University of Rwanda-based advisor). Each RA was assigned to a specific participating hospital.

The first author of this paper was restricted from travelling to Rwanda and was required to work remotely on a regular basis via Zoom meeting with these local RAs during the study data

collection times. The RAs visited participating hospitals and their respective units to meet unit managers to explain the study, answer any questions, and seek their assistance for the study's support and recruitment of participants. Therefore, some study participants received study invitations through unit managers and others from RAs. In addition, in some units, the RA was allowed to participate in a morning staff meeting to explain and invite participation in the study.

RAs obtained signed consent from participants in all hospitals before initiating any data collection. Consenting participants then were asked to complete a paper-based survey three times (before the start of the training program, at the end of the training program, and 6-weeks following the training program), a feedback form at the end of the workshop, and personal reflections six weeks following the training program. In this paper, only qualitative data from the feedback form and reflections will be reported. The assigned hospital RAs collected both sets of documents from provided boxes located in participating hospital units during the study. In addition, feedback forms were collected right after the training while completed reflections were collected six weeks following the training.

Study Design

A qualitative descriptive approach (Braun & Clarke, 2006) was used to understand the value of knowledge and skills about IPCR acquired from health care providers' learning from the training program and its transfer of learning into their practice. Two research questions guided this analysis: (#3) What was the value of an IP conflict resolution educational intervention on developing IP conflict resolution skills among health practitioners? And (#4)What was the experience of transfer of learning of IPCR skills into practice by HCPs?

Data Collection

In this study, healthcare providers (*n*=15 out of 266 participants) from three participating Rwandan district hospitals provided their personal reflections on transfer of learning into practice. A total of 270 healthcare providers who attended IPCR training completed the feedback form to evaluate the content and value of the training.

Intervention

The study training intervention in Interprofessional Conflict Resolution (IPCR) comprised a four-hour training program held in selected convenient rooms at each of the participating hospitals for study participants. The overall purpose of the training was for participants to learn about and apply an interprofessional conflict resolution skills process to selected realistic practice- based case scenarios. To attain this goal, the workshop used a small group format (eight participants within each group) with activities that follow the defined attributes of IPCR .The program learning objectives focused on: a) a process that addressed a verbally expressed issue leading to disagreements; b) understanding perceived threats to one's own interests between two or more professionals; c) strategies to explore and explain differing viewpoints, and d) how to determine when an acceptable course of action is reached by the parties. These objectives were taken and transformed into learning statements (outcomes) by the researcher (see table 5.8).

Table 5.8

Summary of the Training Agenda

Agenda	Type of Activity	Focus
Welcome & introduction (15 minutes)	Icebreaker	Getting to know each other
I: Small group activity (30 minutes)	Reflection on past conflicts and way managed	Current strategies and gaps
Process for IP conflict resolution (60 minutes)	PowerPoint presentation Questions and answers	Impact of unresolved conflict on IPCP and quality care
Health break (15 minutes)	Soft Drinks and cookies provided	Break
II: Small group activity (30 minutes)	Refection on strategies to address past conflicts	Ways to dealing with conflicts in practice
III: Small group Activity (30 minutes)	Application of IPCR process	Working through a case scenario
Presentations (60 minutes)	Case study work presentation	To share the application of the IPCR process to a case study

Activity Descriptions. In the first activity an ice breaker, provided a way to get to know other to share one thing they liked and to consider if power was given to them, how they would change the world. In Activity II, each group was provided 10 minutes to review and then choose two volunteers to share within their group a professional conflict experience. The other group members were asked to listen and to then add any relevant personal experiences. Finally, in Activity III, each group was provided access to and worked with a case study discharge disagreement between a nurse, physician, and dietician (see Appendix C).

At the end of the activities, participants within their small groups were guided in developing a practice-based work plan to integrate their learned IPCR process. Each small interprofessional group then presented their work plan to the whole group. At the end of the training, a summary was provided.

Feedback Form. Participants were asked to complete a feedback form right after the training program to assess the learning they had gained. A total of 270 participants completed a feedback form, which comprised the following open-ended questions: What is the most significant thing you will take away from this workshop? Are there any changes you would recommend for a future offering of this workshop? In addition, close-ended questions focused on the overall value of the training (see Appendix E).

Personal Reflection. Participants were asked to complete a personal reflection on their IPCR transfer of learning six weeks after the training program intervention. The reflection form consisted of three main questions (1) How did you use the IPCR process in a practice situation? Guidance for this reflection was to consider a situation where the participant used newly gained interprofessional conflict resolution skills in general. (2) Consider the four steps in the interprofessional conflict resolution process. Each participant was asked to reflect on how the individual used each step in a real conflict situation. (3) How did the intervention workshop change your practice in dealing with conflicts? (see Appendix F). The personal reflection form was utilized to obtain participants' reflection on applying IPCR skills gained from both an individual and overall perspective within their healthcare practice team. Fifteen out of 266 HCPs completed these personal reflections in English. Thus, personal reflections were used to capture IPCR experiences within their healthcare teams.

The above data sets were transcribed, and the transcripts were read by the researcher to guarantee their transcription accuracy. Braun and Clark’s inductive approach (2006) to a thematic content analysis (data-driven thematic analysis) was used to identify, analyze, and report themes within the data set without fitting the data into pre-existing IPCR process steps (Braun & Clarke, 2006).

Data analysis

The qualitative data were used to answer research question # 3- What is the value of an IP conflict resolution educational intervention on developing IP conflict resolution skills among health practitioners? And # 4- what is the experience of transfer of learning of IPCR skills into practice by HCPs?

The thematic analysis encompassed six phases as detailed by Braun and Clarke (2006): The first phase was to gain familiarity with data; the researcher and primary advisors reviewed all the qualitative data several times seeking meanings and patterns within and across the data sources. In the second phase, aimed at generating initial codes or labels, each data set (reflection and feedback form) was viewed first in its entirety without undertaking any coding, but taking notes or marking ideas for coding. A summary of the experience and events was generated and coded. The third phase consisted of searching for themes or central ideas; the different codes with their relevant coded data extracts were sorted into a list of potential themes and sub-themes. The fourth phase aimed at reviewing themes or main ideas; a thematic map of the data was created and themes describing the lived experience of participants were captured. The fifth phase was defining and naming themes or main ideas. In this study, themes were identified from the responses to all the questions asked and finally compiled for reporting as the last step in the analysis.

Throughout data analysis, Guba and Lincoln's criteria for establishing trustworthiness and authenticity were applied (Nowell et al., 2017). Trustworthiness strategies in this study included a prolonged engagement with the participants from their admission to the completion of reflection over the six weeks of the study. Authenticity (or accuracy) of data was established

through transcription of reflections to ensure content accuracy, and through peer checking by presenting the findings to HCPs and the research supervisory committee members.

To understand the learning gained from the training program, one part of the feedback form asked the respondents to rate the learning gained related to each of the program objectives. These were rated using a 5-point rating scale. The ratings were summed together and a construct of the program's perceived learning effectiveness as a percentage out of a possible total (in this study the total was seven items with a maximum rating of five, for a sum of 35) was created. The learning outcomes were numerically assessed and then those achieving high and low ratings were identified to assist in the qualitative analysis of the transfer of learning into practice from the reflection analysis. The other open-ended questions in the feedback form as well as the reflections underwent thematic content analyses.

Findings

This section presents the findings from the feedback forms that evaluated participants learning effectiveness from the training as well as findings on participants' reflections about their transfer of learning into practice.

Feedback form

The analysis of the feedback form data focused on the participants learning effectiveness from the IPCR training. The findings provided an understanding of participants' reported change in knowledge and skills based on their learning outcome ratings. The total mean learning gained from 270 participants was a score of 32.67 out of 35, which represented 93.3% learning effectiveness from the training program (see Table 5.9 below).

Table 5.9

Comparison of IPCR Learning Objectives and their Rating as an Outcome from the Training (out of mean item score of 5.00)

Learning Objectives	Learning Outcomes	*MIS rating*
To verbally express the disagreement within team	I now have a better appreciation of why it is important to verbally express the disagreement in team	4.75
To explore and explain the variant viewpoints	I now understand how to explore together the variant viewpoints	4.64
To find a common acceptable alternative of all viewpoints	I now have an understanding how to find a common acceptable alternative of all viewpoints	4.64
To achieve a shared course of action to an agreement	I have gained knowledge how to achieve a shared course of action to assist my team during conflicting situations	4.64

The ratings for learning outcomes were high ranging from 4.7 to 4.6 which are positive for the effectiveness of the training program. The highest rating was given to the first learning outcome which turned out to be the first step of IPCR. The analysis of open-ended questions from the feedback form identified one theme (#5), offering continuous professional development programs presented.

Reflections

Participants' reflections analysis identified five emerging themes. These five themes related to the transfer of IPCR learning into practice are (#1) transfer of IPCR skills into practice, (#2) insights into team conflict resolution, (#3) openness to the application of IPCR into practice, (#4) commitment and empowerment leading to positive workplace change, and (5) offering continuous professional development programs. Codes and themes that emerged from participants transcriptions are presented (see table 5.10 below).

Table 5.10

Codes and Themes that Emerged from Participants Reflections and feedback

Codes	Themes
Use of new IPCR skills Value of intervention and use of new IPCR skills Emphasis on openness to discussion	• Transfer of IPCR skills into practice • Insights into team conflict resolution • Openness to the application of IPCR steps into practice
Reaching agreement through IPCR steps Positive Change in team performance New way of dealing with team conflict Collaborative leadership to apply IPCR	• Commitment and empowerment leading to positive workplace change
Need for continuous refresher IPCR course Allocate more time on training Reach more health care providers	• Offering continuous professional development programs

Theme One: Transfer of learned IPCR skills into practice

Participants from all three hospitals (*n*=15 out of 266) reported using newly gained conflict resolution skills in IP team conflict situations. One participant explained how the gained knowledge was used in a specific situation:

> *"… we met with many situations… an example is a case related to referring a pregnant woman… related to drugs prescriptions*, [that lead to] *issues between nurses, medical doctors, and anesthetists" (P3).*

Another participant expressed:

> *"Such situation cannot [be] miss[ed] in our day- to- day practice, I meet them and solve them reflecting on what we learned" (P7).*

Theme Two: New insights into team conflict resolution

Since the training, respondents have changed how they see or deal with direct or indirect IP conflict. A participant expressed how the training changed the team's mindset concerning how they handle disagreements:

"These [disagreements] *are our day to day issues, most of the time we meet with disagreement situation that requires… use [of] conflict resolution skills, the skills we gained are skills that are helping us, even if we are not applying them 100% depending on the time and the context we are working in, but they are helpful to practice in expressing issue address it to the right person, and you leave the issue solved" (P10).*

Even those who did not yet use the knowledge gained emphasized that they feel equipped with the knowledge and skills and felt ready to use it once they meet such a situation. These participants explained:

"So far, I have not yet met with such situations, but I now talk to my colleagues from health centers about how they can handle such situations as I have the knowledge and skills (P5)."

Training triggered participant mindsets towards team conflict, in turn, seeing disagreement through a positive lens.

Theme Three: Openness to the application of IPCR into practice

These participants explained how being able to express verbally their concerns within the team lessened their focus on the other steps to the extent they were not conscious of passing over them.

"Most of the time, we use verbalization of the issue and make it clear. For example, today, I prescribed Gentamycin, then the nurse said she was not administering it because I exceeded the maximum dose …. So you understand that these are some of the skills we got from the training; if you are ready to understand someone, maybe she has a reason, this is very helpful (P2)."

Participants reported that they are applying steps of interprofessional conflict resolution to resolve disagreements. Still, they emphasized openness as a crucial first step ("verbally expressed disagreement") to navigate the remaining IPCR steps toward team conflict resolution.

Theme Four: Commitment and empowerment leading to positive practice change

Most participants reported the training to have a significant impact on their practice. Their changes from pre-training to post-training were explained as follows:

> *"The workshop changed my practice when you see how I used to work before the training, now there is a big difference using the example of the mentioned case; the knowledge gained helped me to handle the situation in an appropriate way which satisfied all parties, now they are working together collaborating well .... The training really played a big and important role (P5)."*

> *"The training had really brought the change, for example...before people were not giving importance to complaints of their colleagues but now if you express* [your concern about an] *issue everyone understands it easily, and you find a solution together, ...those issues of coming late and delaying their colleagues are no more here at Hospital A or B or C (P9)."*

> *"As you see, there is really a visible change. For example, the way of understanding a problem and discussing it first. It really opened our minds to how people now are able to solve conflicts problems between people before it goes to another level; that is the approach we are using now (P7)."*

They emphasized that the workshop has changed how they react to disagreements, solve conflicts, and work with each other. In addition, they reported that the training equipped them with the knowledge that they are using today in conflict resolution or the capacity to advise or empower other HCPs who face conflicts. Finally, participants highlighted how the commitment and empowerment of everyone in conflict resolution played a significant role in positive change within their workplace:

> *"The training played a huge role, today people are awake if there is a problem no one can leave that problem without solving it, which is totally different to the way we worked before, where people were leaving disagreements without solving them (P12)."*
>
> *"The training was very important as it equipped us with the knowledge that we are using today in conflict resolution or in advising people who face conflicts (P10)."*

Theme Five: Offering Continuous professional development programs

Participants valued and appreciated the training content and design in meeting their expectations and goals. Participants recommended providing the training to all health professionals and providing refresher training for those who are already trained to retain the skills.

> "*Many things have changed, after realizing how good the training was… now it is really bringing the Improvement" (P2)*
>
> "*The training was very important as it equipped us with knowledge that we are using today in conflicts resolution or in advising people who face conflicts."* (P7)

Two participants explained how the training changed their practice and the need for refresher training.

"The workshop has changed our practice…; we even want you to come back and train those who did not get a chance, even those trained before we really need a refresher course, please come back (P6)."

> *"Most of the time it requires continuous teaching. However, in 3 months following the training people were referring to the approach, it really requires a refresher course (P9).*
>
> "*Provide many more opportunities to many hospitals to make the same understanding of how to solve the conflict" (P4)*

Summary

This chapter examined the value and learning gained from an IPCR training program and its transfer of learning into practice. The findings indicated that participants' perceived learning effectiveness based on their learning outcome ratings represented 93.3% learning effectiveness from the training program. This study identified five emerging themes from participants' open ended answers from the feedback form right after the intervention and reflections of learning transfer into their practice six weeks after the intervention. Themes that emerged were: (#1) transfer of IPCR skills into practice, (#2) insights into team conflict resolution, (#3) openness to

the application of IPCR into practice, (#4) commitment and empowerment leading to positive workplace change and (#5) necessity of offering continuous professional development programs.

Discussion

In this study, participants valued and appreciated the content of the training they received. They reported that the design and quality of the training based on their perceived learning effectiveness scores and integrated into their practice environment. In order to achieve the above, training program content was tailored to meet participants' expectations and training program goals. The findings emphasized the importance of organizations or trainers paying close attention to the content of the training context and perspectives of their audience (Orchard, 2015). The main goal was to equip participants with the knowledge of an interprofessional conflict resolution process applied through activities that are realistic to their work environment for facilitation of learning transfer to practice. Therefore, in this study, researchers developed the training in consideration of the context and prospects of participants' hospital environments based on their lived experience and collaboration with people from that context. Participants also confirmed the value of the training content meeting their expectations by its transfer being applied into practice.

Hajian (2019) suggested that participants who utilize and learn from the training in their workplace, do so because of the meaningful knowledge gained from the program (Hajian, 2019). Furthermore, attention to designing learning based on setting goals for the program is more likely to enhance success in transfer of learning (Burke & Hutchins, 2007). Thus, the IPCR training program and the design goals are likely to have helped transfer learning to their workplace.

Transfer of learning occurs when the learner recognizes common characters among learned concepts, skills, or principles; links the information into memory, and sees the value of utilizing what was learned in one situation or another (Curry et al., 2005). In this study, participants who completed the reflection form recognized the steps of IPCR; and they applied it into practice. Similarly, transfer of learning occurs when learning in one context, such as training, improves a related context performance in the workplace (Curry et al., 2005). In this study, participants confirmed the positive change in their team performance; one stated that the training had changed the participant's ways of dealing with disagreement, thus improving care quality. Specifically, for transfer to happen, "learned behavior must be generalized to the job context and maintained over some time on the job" (Baldwin & Ford, 1988, p.63). This resonates with findings that noted that actual transfer happens when people carry over something they learned in one theoretical context to a 'significantly practical' context (Hajian, 2019). This echoes with the case in this study whereby participants appreciated learning the IPCR steps, which drove their ability to transfer learning within workplaces over time. When trainees have the same knowledge and guidelines, they are more likely to effortlessly process the change while potentially embracing new insight from theoretical perspectives to on-the-job application.

Commitment and empowerment leading to positive change into practice were also expressed by participants. Participants felt a smooth change in dealing with conflict in their workplace teams. This led to a commitment to use the learning due to the value and need for change. Peers or trainees were empowered, stimulating them to channel a positive change in practice. Participants approved that receiving the training in their teams, facilitated the change from the willingness and support from their team peers. These findings are confirmed by Curry et al.(2005), who noted that for trainees who networked with peers and shared ideas on training

content, their skill transfer was elevated six months after training (Curry et al., 2005). In the case of this study transfer reported findings are at six weeks following the training program.

The findings of this study revealed the need for a continuous professional development programs in IPCR for all healthcare providers. This is supported by Curry et al. (2005) who found that the transfer of learning from training to the workplace is determined by participants who complete the training and then apply their new knowledge, skills, or techniques on the job. Similarly, the transfer of learning is described as a measure of the extent to which participants change their on-the-job behavior due to the training (Curry et al., 2005; Bray, 1928). In this study participants reported behaviour change in openness to deal with conflict, which is the first step in interprofessional conflict resolution. They also recommended providing refresher training and allotting more time for those already trained.

Conclusion

Training is one of the most frequently cited interventions used to combat job performance issues. In this study, interprofessional team conflict and its resolution was an ongoing performance issue experienced by those participants. This study has emphasized the importance of IPCR training and its transfer of learning to address practice-based team conflicts. The reported effectiveness of learning from the training and themes that emerged from this study demonstrated some key aspects related to the transfer of IPCR learning for health professionals. The qualitative findings reinforce the importance of well-tailored training activities based on relevance to practice situations that are meaningful to health providers to improve their own and their team members' performance. However, further research is needed to evaluate replication of this transfer of learning, and educational intervention as well as further studies in other countries and settings is still needed

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Chapter Six: Effect of Interprofessional Conflict Resolution on Interprofessional Collaborative Practice among Health Care Providers

Abstract

Interprofessional collaboration (IPC) has been reported to improve patient outcomes and satisfaction with their care while decreasing untoward events and reducing staff turnover rates and conflicts. Yet, to overcome disparities between health providers in their knowledge, power, varying goals in patient care, allocation of resources, workloads, and longer shifts requires attention to several elements, including interprofessional conflict resolution in healthcare teams. This study tested and refined a theoretically derived model linking selected contributory variables (general self–efficacy, team psychological safety, interpersonal communication competence, and interprofessional conflict resolution) to interprofessional collaborative practice (IPCP) among healthcare providers in hospitals. The research questions for this study were: What are the relationships between healthcare practitioner's (HCPs') personal factors (general self-efficacy, team psychological safety), interpersonal communication competence, and IP collaborative practice? Does IP conflict resolution moderate the relationship between interpersonal communication competence and IP collaborative practice?

The results revealed a statistically significant relationship between general self-efficacy and IP collaborative practice and between interpersonal communication competence and IP collaborative practice. However, team psychological safety was not significantly related to IP collaborative practice. Furthermore, interprofessional conflict resolution had a moderating effect on the relationship between interpersonal communication competence and IP collaborative practice.

Keywords: Model testing, Structural Equation Model, IP collaborative practice, Healthcare providers, interprofessional conflict resolution

Introduction

The value of interprofessional collaborative practice (IPCP) has been reported to include: improved patient health status and satisfaction with care (Bell et al., 2014), treatment compliance and reduction in clinical errors (Archer et al., 2011); enhanced staff satisfaction, and increased performance motivation among employees (Craven & Bland, 2013). Moreover, IPCP in health systems has also been associated with reduced staff turnover and lower hospital admission rates, shortened lengths of stay, and lower costs (Mitchell et al., 2012). Thus, IPCP is believed to have considerable value for patients, professionals, healthcare organizations, and systems (World Health Organization 2010).

However, IPCP cannot be achieved in teams when there are unresolved professional conflicts. In health care, when conflicts between health professionals occur, these can negatively impact patient care unless involved parties can resolve their conflicting viewpoints (Sexton & Orchard, 2016). Furthermore, conflicts arise from interactions between at least two parties often associated with socially-based issues (Sarma et al., 2012). Thus, this study theorized that an interprofessional conflict resolution process might moderate strengthen, diminish, negate, or otherwise alter the relationship between interpersonal communication competence and interprofessional collaborative practice. Furthermore, an interprofessional conflict resolution process might impact relationships between health care providers' general self-efficacy and their team psychological safety on their interpersonal communication competence and result in IPCP.

The purposes of this study were to explore and describe IPCR as an influential moderator to successful interprofessional collaborative practice among health providers in hospital settings. The current study tested and refined a theoretically derived model linking selected contributory

variables (general self–efficacy, team psychological safety, interpersonal communication competence) to interprofessional collaborative practice among healthcare providers (HCPs) in Rwandan hospital settings. And further, that interprofessional conflict resolution would moderate the relationship between interpersonal communication competence and IPCP.

Literature Review

In 2010, the World Health Organization (WHO) developed an action framework for interprofessional education and collaborative practice that highlighted the importance and need for interprofessional collaboration (IPC) from education to practice (Bosch & Mansell, 2015; Sunguya et al., 2014). For example, as part of its interprofessional collaborative competency framework, the Canadian Interprofessional Health Collaborative (CIHC) developed six interconnected competency domains, namely patient/client/family/community-centered care, interprofessional communication, role clarification, team functioning, collaborative leadership, and dealing with interprofessional conflict resolution (Canadian Interprofessional Health Collaborative, 2010). However, while attention to IPCP can be a strategy for enhanced healthcare teamwork, authors have reported that few health professionals have the skills to address and resolve team conflicts (Dondorf et al., 2015, Brown et al., 2011).

While some degree of disagreement can be expected, team members may benefit from being able to resolve conflicts to ensure effective patient care. However, interprofessional health providers' effectiveness in collaborative teams is challenged due to their traditional profession-specific education and socialization into practice (Orchard, 2010). One of these socialization challenges is addressing team conflicts between professionals to assist in arriving at shared decisions that can move towards cooperative work (Bridges et al., 2011).

Theoretical Model

The theoretical model for this study was underpinned by intergroup contact theory (Mohaupt et al., 2012; Pettigrew et al., 2011). This study proposed that HCPs' *personal factors* (general self-efficacy and team psychological safety) can contribute to their participation in effective *interpersonal communication competence* resulting in *IPCP*. However, no studies were located that examined the direct relationship of *general self-efficacy* and *team psychological safety* leading to *interpersonal communication competence* resulting in *IPCP*. Furthermore, there was a paucity of studies that examined the moderating effect of *IP conflict resolution* on the above relationship. Thus, this study will focus on the following research questions:

Question1: What are the relationships between HCPs' personal factors (General self-efficacy, Team psychological safety), interpersonal communication competence, and IPCP?

Question 2: Does IP conflict resolution moderate the relationship between interpersonal communication competence and IPCP?

The following hypotheses were tested to address research question 1:

H1: HCPs who possess higher levels of *general self-efficacy* will report higher levels of *interpersonal communication competence*.

H2: HCPs who possess higher levels of *team psychological safety* will report higher levels of *interpersonal communication competence*.

H3: HCPs with higher levels of *general self-efficacy* will report higher levels of *IP team collaborative practice*.

H4: HCPs who possess higher levels of *team psychological safety* will report higher levels of *IP team collaborative practice*.

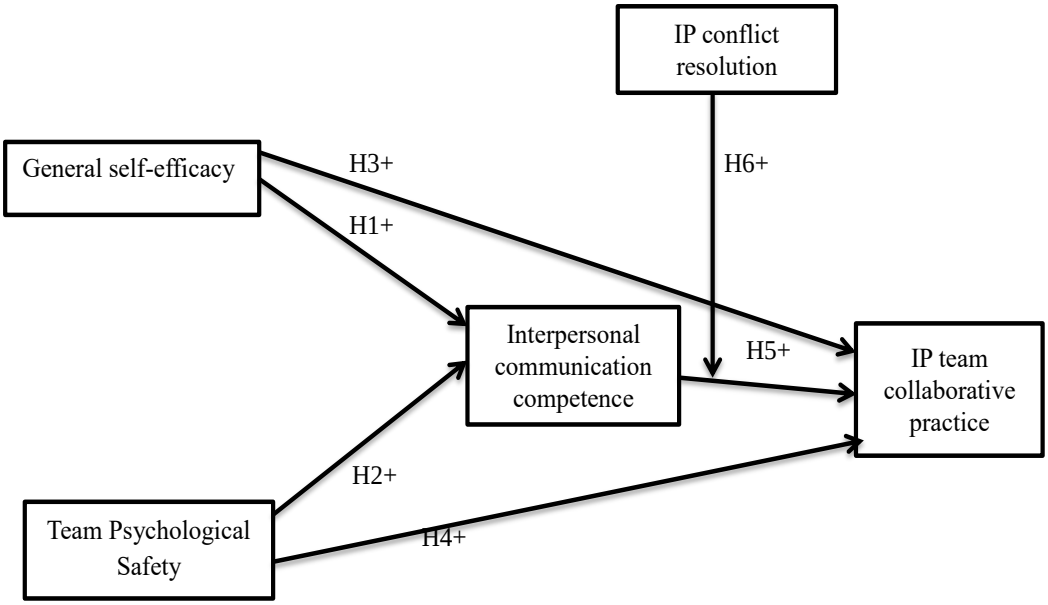
H5: HCPs who possess higher levels of *interpersonal communication competence* will report higher levels of *IP team collaborative practice*.

To study question 2, the following hypotheses were tested.

H6: HCPs' level of *IP conflict resolution* will moderate the relationship between interpersonal communication competence and IPCP.

Figure 6.5

Hypothesized theorized model



Note: H1 refers to the regression effect of general self-efficacy (GSE) on interpersonal communication competence (IPCC), H2 is the regression effect of team psychological safety (TPS) on IPCC, H3 refers to direct effect of GSE on interprofessional collaborative practice (IPCP), H4 denotes the direct effect of TPS on IPCP, H5 is direct effect of IPCC on IPCP and H6 represent the moderation effect of interprofessional conflict resolution (IPCR) on the relationship between IPCC and IPCP.

Methodology

Design

This study used a mixed-method intervention with repeated measures design to test the study's theoretically derived model, linking predicted personal factors (general self-efficacy and team psychological safety) to interpersonal communication competence and IPCP. To address qualitative questions: What is the value of an IP conflict resolution educational intervention on developing IP conflict resolution skills among health practitioners? What is the experience of transfer of learning of IPCR skills into practice by HCPs? Qualitative results were reported in chapter five. In this chapter only the quantitative methodology for the study will be reported.

Sample and Sampling Frame

A non-probability convenience sampling method was used to select participants. Participants in this study were healthcare providers working in three selected Rwandan district hospitals. Kline (2015) claims that during repeated data collection participants' attrition rate can be up to 20%. To ensure a sample size that accounted for this attrition rate, the projected sample size for this study was of 240 participants using purposive convenience sampling. The researcher obtained 270 (at time one and two) and 266 participants at time three which were sufficient for this study. Inclusion criteria for participants were: 1) being part of a regulated health or social care profession; 2) being involved in direct client care practice; 3) willingness to participate in the study, and 4) being an English reader. Exclusion criteria were health care providers on leave such as annual, sick, education, emergency or maternity leave; and those not in direct patient care positions, such as administrative roles.

Recruitment

After obtaining ethical approval from relevant human subjects' institutional review boards (the University of Western Ontario, the University of Rwanda, and the Rwandan Ministry of Health), the author obtained permission to conduct the study from administrative representatives of three Rwandan district hospitals. A notification email was sent to the designated administrator in each hospital, followed by a telephone call requesting them to authorize access to hospital staff for each site's research assistant (RA) and to facilitate the recruitment process. The unit managers were responsible for daily activities in hospitals, including informing health care providers of any ongoing studies. Each RA was assigned to support one of the district hospitals involved in the study. Due to COVID-19, the researcher was required to work remotely via daily Zoom meetings with local research assistants (RA) who were also supervised by Dr. Nzayirambaho Manasse (the researchers University of Rwanda-based supervisor).

RAs visited their respective participating hospitals and units to meet unit managers to explain the study, answer any questions, and seek their study assistance. Hence, some participants received an invitation through unit managers and others from RAs. In addition, in some areas, unit managers provided access to RAs during the morning staff meeting to explain and invite staff to participate in the study.

Each RA obtained signed consent from participants in their respective hospitals before beginning data collection. Paper-based surveys comprised of demographic questions (What is your age? What is your gender? What is your highest level of education? How long have you been working as a registered profession? How long have you been working in your current unit? What is your current discipline category?), and four instruments to measure general self-efficacy,

team psychological safety, interpersonal communication competence, IP team collaborative practice, and a newly developed instrument to measure IP conflict resolution for this study were provided to all consenting participants (see Appendix C). After participants completed their scheduled surveys, each hospital RA regularly collected completed surveys from a unit specific box provided for this purpose.

Instruments

General self-efficacy was measured using the New General Self-Efficacy Scale (NGSE) (Chen et al., 2001), which is a single dimension eight-item measure using a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Individuals' ratings on the eight items assessing GSE were averaged to determine an overall general self-efficacy score for each participant, with higher scores reflecting greater GSE. New general self-efficacy internal consistency was α = .87, .88, and .85 respectively (Chen et al., 2001)). In the present study the GSE internal consistency was α =.87

Team psychological safety was measured using the Team Psychological Safety Scale (TPS) (Edmondson, 2004), which is a single dimension seven-item measure using a five-point scale ranging from 1(strongly disagree) to 5 (strongly agree). Individuals' ratings on the eight items assessing TPS were averaged to determine an overall team psychological safety score for each participant with higher scores reflecting greater TPS. TPS's reported internal consistency was *a* = .82 (Ming et al, 2015, Edmondson, 2004). In the present study TPS internal consistency was *a* = .81.

Interpersonal communication competence was measured using the Interpersonal Communication Competence Scale (Rubin & Martin, 1994), which is a single dimension 10-item measure using a five-point scale ranging from almost never (1) to almost always (5). Individuals'

ratings on the eight items assessing IPCC were averaged to determine an overall interpersonal communication competence score for each participant, with higher scores reflecting greater interpersonal communication competence. IPCC's internal consistency was reported as *a* = .86 (Forbat et al, 2019; Rubin & Martin, 1994). In the present study IPCC internal consistency was *a* = .81.

IP team collaborative practice was measured using the Assessment of Interprofessional Team Collaboration Scale (AITCS-II practitioners) (Orchard et al., 2018). AITCS II (practitioner) was rated using a five-point scale that ranges from never (1) to always (5) and comprised of 23 items within three dimensions: partnership (8-items), cooperation (8-items), and coordination (7 items). Means of items on each of the three subscales were summed and averaged to provide each subscale score. These three subscale scores were then summed together to create an overall IPCP score, where scores at or above a mean of 4.0 indicated greater perceptions of interprofessional team collaborative practice. The CFA for the AITCS-II (for practitioners) showed a similar good model fit comparable to instrument developers Orchard et al. (2018) model fit (x^2 =749.37, df 225, $p < .000$), RMSEA 0.059, CFI= 94, TLI =0.935 and RMR= 043). Cronbach alpha coefficient reported across the scale was 0.894 (range from 0.898 to 0.924). In the present study, the reliability coefficient was α =.93.

Interprofessional conflict resolution was assessed using a new researcher-developed instrument, the Interprofessional conflict resolution Scale (IPCRS) (Ugirase et al., 2019), is comprised of 11-items distributed across three dimensions, including verbal expression (3-items), exploration of variant view (3-items) and shared agreement (5-items). Items were rated using a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items on each of the three subscales were summed and averaged to provide each subscale score. These three

subscale scores were then summed to create an overall IPCR score, where higher scores indicating greater interprofessional conflict resolution. Development and testing of the instrument are reported in chapter three. IPCR was validated by Ugirase et al. (2019) with an acceptable model fit ($x^2 53.673(41)$, CFI=.98, TLI= .97, GFI=.96, RMR=.04, RMSEA=.03).The overall reliability coefficient was α =.7.

Data collection using the survey package varied across three data collection times. Time one (T1) and Time three (T3) both comprised all five instruments, while Time two (T2) only the IPCRS data was collected the results were reported in chapter 3. T1 provided a baseline of data prior to the training intervention, while T3 reported on any change from the baseline and occurred six weeks following the training intervention (reported in chapter 5).

Data Analysis

Data were analyzed using the Statistical Package for Social Sciences Version 25.0 (IBM, 2021). Initially, a descriptive data analysis was carried out, followed by correlational analyses. The initial baseline (T1) dataset contained 270 cases but there was an attrition of 4 cases at T3. thus this analysis used 266 cases . Next, a case-by-case missing values analysis for all survey scales was conducted to identify cases with large missing values. For this study, there were no non-random missing data. Therefore all 266 cases were available for data analyses.

The normality of data were further assessed using Mahalanobis and Cook's Distance (Tabachnick & Fidell, 2020). Mahalanobis was calculated based on four dependent variables used in this study (General Self-efficacy, Team Psychological Safety, Interpersonal Communication Competence, and Interprofessional conflict resolution. The Mahalanobis critical value for four variables was 18.47. Only one respondent exhibited a value greater than 18.47

(value = 46.82), however the T3 data set had a Cook's distance of .35 which is less than 1.00 value (Kline, 2015). Therefore, this data set was retained.

Skewness and kurtosis of data using the Shapiro-Wilk R Test of Normality found a reasonably normal distribution. Thus, a total of 266 respondents were used for further analyses (Tabachnick & Fidell, 2020). Descriptive statistics (means, standard deviations and ranges) were calculated for all variables and key constructs in the theorized model (see Figure 6.5) were calculated. These statistics included means or sums for the subscales, standard deviations, and ranges as well as summed total mean scores for each of the variables under investigation, the cut off score for the scale was based on mean score for the scale items (MIS) as suggested by Sullivan & Artino (2013). Next, preliminary analyses were conducted to assess bivariate relationships among the independent and dependent variables.

Parceling

Because of the large number of items in some of the measures used for this study, to reduce their number for parameters in the testing model, random parceling for the unidimensional scales (general self-efficacy, team psychological safety, and interpersonal communication competence) was used (Matsunaga, 2008). Parcels were created using a factorial algorithm method recommended by Matsunaga (2008). Initially, a factor analysis was performed on three independent variables within the measures stated above. This was followed by reviewing each scale’s item factor loadings and creating parcels by sequentially selecting the item with the highest and lowest factor loadings repeated three times resulting in a total of three parcels providing three observed indicators for each latent indicator of the single dimension scales. The use of parceling then allowed for the model to be just-identified while minimizing the number of parameters to be estimated as a means to prevent estimation bias (Matsunaga, 2008).

The latent variables of GSE, TPS and IPCC resulted in three observed variables each: namely GSEparcel1 (.85), GSEparcel2 (.84), and GSEparcel3 (.78); PSparcel1 (.83), PSparcel2 (.79), PSparcel3 (.81) IPCCparcel1 (.77), IPCCparcel2 (.76), and IPCCparcel3 (.85).

Lastly, Structural Equation Modeling (SEM) using Analysis of Moment Structures (AMOS) Version 27 (IBM, 2021) was used to assess relationships between each of the observed variables shown in the path model (Figure 6.5). To measure for moderation, the latent variables of interprofessional collaborative practice and interpersonal communication competence were transformed to be a single observed variable. To do this, scores on the items corresponding to interprofessional collaborative practice and interpersonal communication competence were averaged and saved as standardized scores (Z-score). Interaction terms were created by multiplying the Z-scores of interpersonal communication competence and IPCR for the interaction term and were added to the SEM model.

Fit indices were estimated to determine how well the model fit. A good model fit was defined as having a CFI value greater than .90, TLI value greater than .90, an SRMR value less than .08, and a RMSEA value less than .08 (Kline, 2015). These fit indices (Chi square, RMSEA, CFI, TLI, and SRMR) offered support for the hypothesized relationships in the model.

Results

Demographics of the Respondents

The time three dataset of 266 respondents was used for the demographic analysis. The majority of respondents 57.5% (n =153) were female, 42.5% (n = 113) were male. Table 12 summarizes the number and frequency of survey respondents who were represented by seven different discipline categories. Nurses included registered nurses (Bachelor' degree and Advanced Diploma Nurses holders) who represented the majority of respondents (43.6%;

n=116), followed by paramedic and social professionals (24.4%; n=65), Midwifery (11.7%; n=31), Medicine (10.9%; n=29), Biomedical laboratory technicians (7.5%; n=20), dental therapists and mental health practitioners comprised less than 5%.

Table 6.11

Number and Frequency of Healthcare Providers by Professions and Gender (N=266)

Discipline category	*N*	Sample %
Nursing	116	43.6
Paramedical & social Worker	65	24.4
Midwifery	31	11.7
Medicine	29	10.9
Biomedical Laboratory	20	7.5
Dental therapy	3	1.1
Mental Health	2	.8
Gender		
Female	153	57.5
Male	113	42.5
Totals	266	100

Descriptive Data Analysis

Participants' General self-efficacy had a mean (M) of 33.65 (n = 266, SD = 4.3) and a mean item score (MIS) of 4.2. Their team psychological safety M = 24.34 (n = 266 SD = 5.34, MIS = 3.4) and healthcare providers' interprofessional communication competence had a M of 39.56 (n = 266, SD = 5.09; MIS = 4.0). Participants' interprofessional conflict resolution had a M of 92.49 (n = 266, SD = 8.89, MIS = 4.0) a mean of 29.30 in their verbal expression mean of 29.30 (n = 266, SD = 3.50, MIS = 4.1), a mean of 16.82 in their exploration and expression of viewpoints (n = 266, SD = 4.90, MIS = 3.3), and a mean of 21.32 of shared agreement (n = 266, SD = 2.64, MIS = 4.2). Participants mean of 95.47 in interprofessional

collaboration (n = 266, SD = 11.09, MIS = 4.15) with a mean of 32.96 (n = 266, SD = 4.22, MIS 4.12), in their partnership, a mean of 33.37 (n = 266, SD = 4.34, MIS = 4.17) in cooperation and a mean of 29.14 (n = 266, M = 29.14, SD = 3.83, MIS = 4.16) in coordination. In this study, given that mean score from 1 - 1.80 is (very low); to 1.80 - 2.60 is (low); from 2.60 - 3.40 is (moderate); 3.40 - 4.20 is (high); mean score from 4.20 - 5.00 is (very high); a MIS of 4.0 was used as a cut-off point score. Thus, considering the above reported *MIS*, participants had a moderate level of team psychological safety (MIS = 3.4) and their overall IPCR was reaching a high level in their teams but there remained slightly high in their exploration dimension. At the same time their general self-efficacy, interpersonal communication competence, and IPCP was also at a high level within their team work.

Table 6.12

Means, standard deviations, range of responses and MIS of study concepts.

Variables	Means (SD)	Range	*MIS*
General self-efficacy	33.65(4.3)	8-40	4.2
Team Psychological safety	24.34(5.34)	7-35	3.4
Interpersonal communication competence	39.56(5.09)	20-50	4
IP Conflict resolution	92.49(8.89)	53-115	4
Verbal expression	29.30(3.50)	9-35	4.1
Exploration	16.82(4.90)	5-25	3.3
Shared Agreement	21.32(2.64)	12-25	4.2
IP Collaborative practice-AITCS	95.47(11.09)	46-115	4.15
Partnership	32.96(4.22)	16-40	4.12
Cooperation	33.37(4.34)	16-40	4.17
Coordination	29.14(3.83)	14-35	4.16

Inferential Data Analysis

Further analyses were carried out to determine if there were significant changes in participants' (n = 266) mean scores on the theorized constructs following the training program intervention (discussed in a previous chapter). Specifically, each of the study variables and their subscales were analyzed using paired *t* tests to assess for changes in mean scores and if so their level of significant between T1 and T3. A significant change between T1 and T3 was found, for general self-efficacy (1.36), (*t* [266] = 4.08, *p* = .000) mean from T1to T3 increased (32.29 to 33.65) , team psychological safety (2.21), (*t* [266] = 6.01, *p* = .000) mean from T1to T3 increased (22.13 to 24.34) , interpersonal communication competence (1.23), (*t* [266] = 3.44, *p* = .001) mean from T1to T3 increased (38.33 to 39.56), interprofessional conflict resolution (4.15), (*t* [266] = 6.21, *p* = .000) mean from T1to T3 increased (88.34 to 92.49) and for interprofessional collaborative practice (4.32), (*t* [266] = 4.42, *p* = .000) mean from T1to T3 increased (91.15 to 95.47).

Confirmatory Factor Analysis

The plan was to first test the instruments validity for this study using CFAs to compare reported model fits by instrument developers with our findings using this study's dataset as the precursor for the SEM. However the interpersonal communication competence scale, the team psychological safety scale and new general self-efficacy lacked model fit data. Therefore, for these three instruments comparisons with this study's dataset were based on reliabilities instead of both reliabilities and CFAs. TPS's internal consistency was *a* = .82 (Ming et al, 2015, Edmondson, 2004) , new general self-efficacy internal consistency was α = .87, .88, and .85 respectively (Chen et al., 2001) and IPCC's internal consistency was reported as *a* = .86 (Forbat

et al, 2019; Rubin & Martin, 1994). In the present study both TPS and IPCC internal consistencies were *a* = .81, while GSE internal consistency was α =.87.

Confirmatory factor analyses (CFA) using maximum likelihood estimates (ML) were conducted on Interprofessional Conflict Resolution Scale and AITCS-II (for practitioners). The CFA results of the Interprofessional Conflict Resolution scale was validated by Ugirase et al. (2019) with an acceptable model fit (χ^2/df = *83.387(51)*, CFI =*.94,* RMSEA = 0.*04*, GFI = *.94)* and SRMR=*.02*). Since the validation was established with this study's dataset no further CFA was carried out. The CFA for the AITCS-II (for practitioners) showed a similar good model fit comparable to instrument developers Orchard et al. (2018) model fit (χ^2 =749.37, df 225, *p* < .000), RMSEA 0.059, CFI= 94, TLI =0.935 and RMR= 043). In the present study, the reliability coefficient was α =.93. All the above results indicated that the scales tested were minimally acceptable based on recommendations by Kline (2011) and with instruments aligned with reported CFAs and/or internal consistencies by instrument developers.

Table 6.13

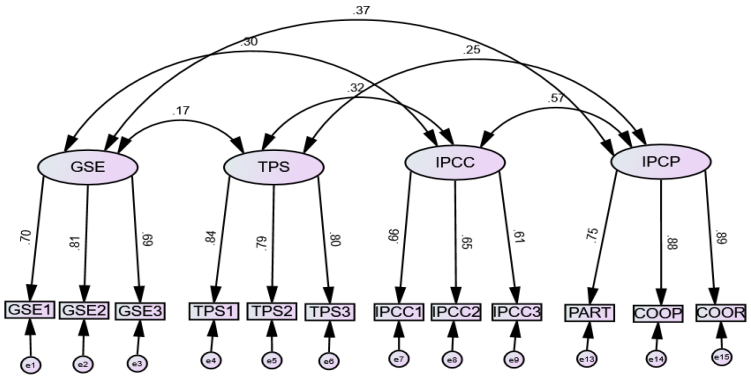
Internal Consistency and Confirmatory Factor Analysis of Study Variables

Measures	α	$\chi 2$ (df)	p	CFI	TLI	SRMR	SMSEA
General self-efficacy	.87	-	-	-	-	-	-
Team psychological safety	.81	-	-	-	-	-	-
Interpersonal communication competence	.81	-	-	-	-	-	-
IP conflict resolution	.70	106.94(41)	.000	.93	.93	.04	.07
IP collaborative practice-AITCS	.93	399.46(217)	.000	.93	.91	.02	.05

Model Fit Analysis

Structural equation modeling (SEM) using the Analysis of Moment Structures (AMOS Version 27.0) software was used to analyze relationships among the major study variables (GSE, TPS, IPCC, and IPCP). The latent variables for IPCP were created using the composite scores of the observed variables from the CFA and latent variables for general self -efficacy, team psychological safety and interpersonal communication competence were created using parceling. All factor loadings were statistically significant at $p < .001$ (see Figure 6.6)**.**Next, factor correlations and regression estimates were evaluated. Lastly, an interaction term (Z-scores of IPCC and IPCR) was created to assess the moderating effects of interprofessional conflict resolution on the relationship between interpersonal communication competence and interprofessional collaborative practice (Hopwood, 2007).

Figure 6.6



Note: All factor loadings were statistically significant at $p < .000$

Model Specification. An acceptable model fit was achieved for the first model (without moderator variable added). The initial results of the model showed good model fit [x^2 = 107.336(48), GFI = .93; CFI = .96; TLI = .95 RMSEA= .06; and SRMR= .05]. The fit statistics showed that the model was reasonably specified without modification indices (see table 6.14).

Table 6.14

Model Fit Statistics for the proposed Model

Model	X^2 (df)	GFI	CFI	TLI	RMSEA	SRMR
Model 1	107.336(48)	.93	.96	.95	.06	.05

Factor correlations. Factor correlations were calculated between the five factors of the proposed model (Table 6.15). General self-efficacy had relationships with interpersonal communication competence (r = .46), interprofessional collaborative practice (r = .34) and team psychological safety (r = .27). Team psychological safety had relationships with interpersonal communication competence (r = .43) and interprofessional collaborative practice (r = .18). Interpersonal communication competence had a relationship with interprofessional collaborative practice (r = -.47).

Table 6.15

Correlations between the study's independent and dependent variables

	Correlations			
Variables	GSE	TPS	IPCC	IPCP
GSE	1.0			
TPS	.271**	1.0		
IPCC	.465**	.430**	1.0	
IPCP	.349**	.183**	.471**	1.0

Notes: **p < .01. GSE = General Self-Efficacy, TPS = Team Psychological Safety, IPCC = Interpersonal Communication Competence, IPCP = Interprofessional collaboration Practice.

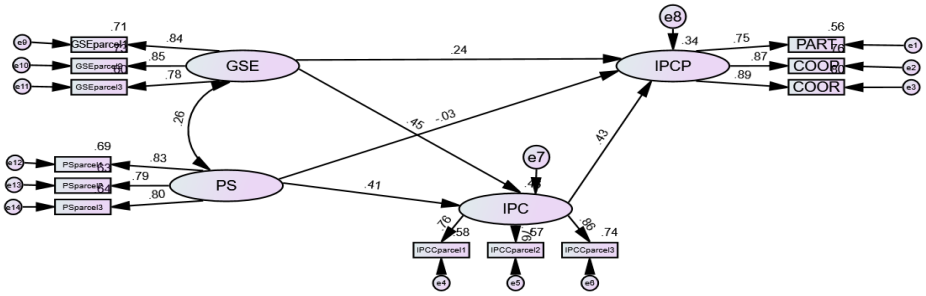
Explained Variance. Next the variance between sets of latent variables in the path model were determined using squared correlations (r^2).The r^2 value calculated between GSE and TPS vs. IPCC showed that GSE and TPS represented 45.8% of IPCC variance prediction (r^2 =.45), with 54.2% of the variance being unaccounted . Next, GSE, TPS and IPCC vs. IPCP r^2 revealed that

the r^2 value of GSE, TPS and IPCC represented 34.1% of IPCP variance prediction (r^2=.34), with 65.9% of the variance being unaccounted for.

Regression Estimates. Regression paths between each latent constructs (GSE, TPS, IPCC), and outcome (IPCP) were created. Standardized regression paths were then identified for GSE on IPCC (β=.45, p = .001), for TPS on IPCC (β=.41, p= .001), for GSE on IPCP (β =.24, p = .002), for IPCC on IPCP (β=.43, p =.001) all showing statistical significance accounting for respectively 45%, 41%, 24% and 43% of the variance in these paths. However the path for TPS on IPCP showed no statistical significance (β = -.03, p = .669) and a small negative variance. (see Figure 6.7).

Figure 6.7

Path Diagram with Standardized Regression Estimates



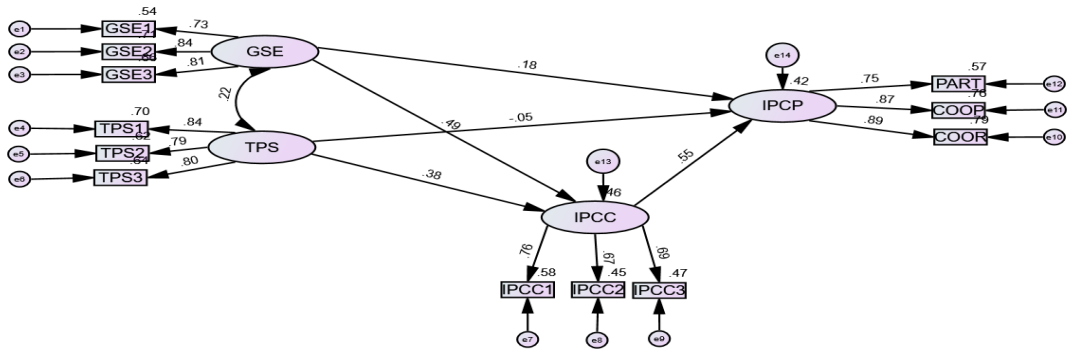
Note: GSE= General Self-Efficacy, PS=Team Psychological Safety,

IPC=Interpersonal Communication Competence, IPCP=Interprofessional Collaborative Practice

The linkages between predictor variables (GSE, TPS and IPCC) and the outcome (IPCP) were tested in a model. In this study, direct effect is the pathway from the predictor variables to the outcome and the indirect effect describes the pathway from the predictor variables to the outcome through the mediator.Path analyses found that GSE had a statistically significant total (.448, 95%CI=.603.222, *p*=.005) and indirect (.271, 95%CI=.438 .132, *p*=.005) effect on IPCP. While, the direct effect of GSE on IPCP was not statistically significant (.177, 95%CI=.442 -.082, *p*=.194) the total effect of TPS on IPCP (.157, 95%CI=.309 .027, *p*=.017) and indirect effect (.209, 95%CI=.423 .094, *p*=.003) were statistically significant. Interestingly, the direct effect of TPS on IPCP was not statistically significant (-.052, 95%CI=.129 -.227, *p*=.657). Furthermore, the total and direct effect of IPCC on IPCP (.553, 95%CI=.812 .288, *p*=.000) were statistically significant. (see Figure 6.8).

Figure 6.8

Initial model with predictors and outcome variables



Moderation. The theorized model in this study hypothesizes that interprofessional conflict resolution moderated the relationship between the independent variable (interpersonal communication competence) and dependent variable (interprofessional collaborative practice). To measure for moderation, the latent variables of interprofessional collaborative practice and interpersonal communication competence were transformed to be a single observed variable. To do this, scores on the items corresponding to interprofessional collaborative practice and interpersonal communication competence were averaged and saved as standardized scores (Z-score). Interaction terms were created by multiplying the Z-scores of interpersonal communication competence and IPCR for the interaction term (Hopwood, 2007). The result revealed that the independent variable IPCC (p=.05), moderator IPCR (p=.000) and interaction IPCC*IPCR (p=.02) variable had a statistically significant impact on the dependent variable, which concluded that the moderation effect of IPCR was on IPCP. Thus H6 was supported.

Next the moderation effect of IPCR was added into the full model analysis. This led to gradual decrease and change in directions in GSE direct effect (.170, p=.09) and indirect effect (.-048, p=.01) and TPS direct effect (-.061, p=.5) and indirect effect (.-042, p= .01). Examination of the fit statistics indicated that the initial model was not specified, *(χ2 (df)* = 435.193(66), GFI=.82, $p < .001$, CFI = .63, SRMR = .29, RMSEA = .25, TLI=.51). To improve the model fit, modification indices were examined. The suggested covariance between r2 with IPCR and IPCC*IPCR (see figure 6.8) would improve the fit and resulted in an acceptable model fit (*χ2 (df)* = 135.45.454 (64), $p < .001$, GFI =.93, RMSEA = .06, SRMR=.05, CFI =.97, TLI=.96) (see Table 6.16).

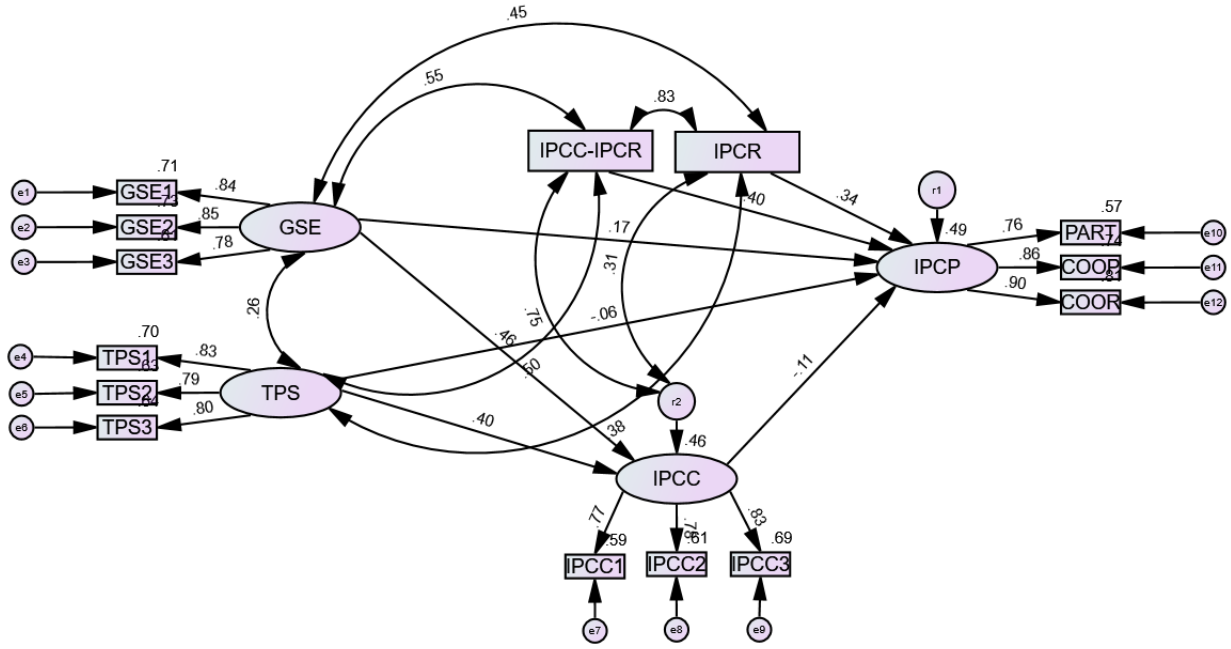
Table 6.16

Full structural equation model fit indices

Model	X^2 *(df)*	CFI	TLI	GFI	SRMR	SMSEA
Model 1	435.193(66)	.63	.51	.82	.29	.25
Model 2	135.454	.97	.96	.93	.05	.06

Figure 6.9

Full Structural Equation Modeling with moderator interaction



Summary of the Results

This study used a theoretically derived model to test two research questions that consisted of six hypotheses using structural equation modeling. The SEM initially did not show a good model fit but was improved by addressing the suggested covariance between r2 with IPCR and IPCC*IPCR and this led the model to fit the data. Once an acceptable specified model fit was found, the factor correlations and regression estimates were assessed. The factor correlations showed relationships between the latent variables (GSE, TPS, IPCC and IPCP).

The study research question one asked; what are the relationships between HCPs' personal factors (general self-efficacy, team psychological safety), interpersonal communication competence, and IP collaborative practice.

Hypothesis 1 theorized that when HCPs possess a higher level of general self-efficacy, they will report a high level of interpersonal communication competence. In the study, the standardized regression path for GSE on IPCC showed statistical significance (β =.45, p = .001), indicating a relationship between general self-efficacy and interpersonal communication competence. Therefore H1 was supported.

Hypothesis 2 theorized that when HCPs possess a higher level of team psychological safety, they will report higher levels of interpersonal communication competence. In this study, the standardized regression path for TPS on IPCC showed statistical significance (β =.41, p = .001), indicating a relationship between team psychological safety and interpersonal communication competence. Therefore H2 was supported.

Hypothesis 3 theorized that when HCPs possess a higher level of general self - efficacy, they will report higher levels of interprofessional collaborative practice. In this study, a

standardized regression path for GSE on IPCP showed statistical significance *(β*=.24, *p* = .002), indicating a relationship between GSE and IPCP. Thus H3 was supported.

Hypothesis 4 theorized that when HCPs possess a higher level of team psychological safety, they will report higher levels of interprofessional collaborative practice. In this study the standardized regression path for TPS on IPCP showed no statistical significance (*β* =-.03, *p* = .669), indicating no relationship between team psychological safety and IPCP. Hence, H4 was not supported.

Hypothesis5 theorized that when HCPs possess a higher level of interprofessional communication competence, they will report higher levels of interprofessional collaborative practice. In this study the standardized regression path for IPCC on IPCP showed statistical significance (*β*=.43, *p* =.001), indicating a relationship between IPCC and IPCP. Therefore, H5 was supported.

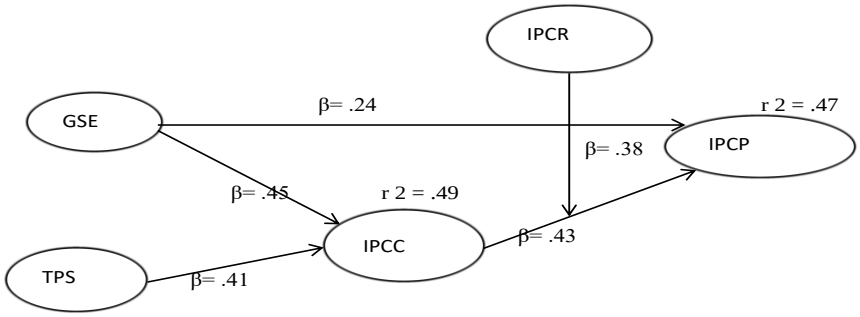
Research question two asked does IP conflict resolution moderate the relationship between interpersonal communication competence and IPCP.

Hypothesis 6 theorized that HCPs' level of IP conflict resolution moderated the relationship between interpersonal communication competence and IP collaborative practice. The result revealed that moderator IPCR (*p*=.000) and interaction IPCC*IPCR (*p*=.02) variables had a statistically significant impact on the dependent variable (IPCP), which concluded the moderation effect. Thus H6 was supported.

In summary, the theoretically derived model tested in this research study was supported by the data collected, with the exception of one hypothesis (H4). (see Figure 6.10).

Figure 6.10

Final path model of the effect of IP conflict resolution on IP collaborative practice



Discussion

Interprofessional collaborative practice plays a vital part in addressing clients' complex needs in today's healthcare. Healthcare providers are required to work collaboratively in interprofessional teams to achieve improved patient health outcomes. The nature of this study enabled the author to examine and explore variables involved in building, continuing, and applying IP collaborative practice in healthcare settings. In this study, general self-efficacy was found to predict interprofessional collaborative team practice and this relationship was strengthened by their interpersonal communication competence. This finding aligns with Bandura's (1982, 1977) suggestion that one's general self-efficacy can affect feelings, thoughts, and behaviors influenced by actions taken. In the case of this study, one's general self-efficacy seemed to influence how effectively individuals engaged in IPCP with their IP team members. A high level of general self-efficacy may therefore heighten a team member's confidence and competence in their practice (Luszczynska, 2005, Bandura & Adams, 1977). In this study interpersonal communication competence also was enhanced by perceptions of team psychological safety. However, team psychological safety did not directly influence perceptions of team's collaborative practice. Interprofessional conflict resolution was also a significant

moderator of interpersonal communication competence and on their IP collaborative practice. This new finding in healthcare research has a potential to contribute to the current body of knowledge about interprofessional team collaborative practice.

The findings from this study illuminated the need in the health care system to consider personal factors (GSE and TPS) of team members that may predict their interpersonal communication competence as an important skill to contribute to the overall team's interprofessional collaborative practice. New knowledge found from this study regarding interprofessional conflict resolution as a moderator provides beginning insight on the need for training in IPCR that may assist team members in adopting IPCR as a norm in their collaborative healthcare team building. Moreover, interpersonal communication competence also adds to overall team's interprofessional collaborative practice. From an administrative perspective, the study's findings may supply joint initiatives to engage different stakeholders, including hospitals, teaching institutions, and non-profit organizations, with information necessary for considering the importance of IPCR training programs to address the negative consequences of unresolved IP conflict within HCPs teams. Further research is needed to further test the IPCRS to validate its use across other health care settings and countries.

Limitations

The use of a convenience sample of voluntary participants may have limited the representativeness of the sample with respect to all HCPs working in Rwandan hospital settings. To overcome the use of a convenience sample repeated paired measures were used to provide measures that relate to each participants change over time. This may have inflated the magnitude of the observed relationship between variables. Another limitation of the study was the potential for common method variance, from use of self-report measures.

The use of parceling to address one dimensional instrument may have altered results by deleting some key items in the instruments. Care was taken in using a factorial algorithm approach to try to overcome this limitation (Matsunaga, 2008). This study was also conducted during the Covid-19 pandemic and may have limited some participation in the study by potential subjects fearing a risk of infection. Care was taken to prevent any loss of social distancing throughout the study. Unrecognized issues associated with the implementation of the study may have occurred that could have impacted the study results. Lastly, the lack of psychometric validity testing of some instruments to ensure they were measuring accurately for the concept intended was another limitation.

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Chapter Seven: Interprofessional Conflict Resolution Study: Integration of Quantitative and Qualitative Data, Summary of Key Findings, Implications, and Limitations

This chapter summarizes the results of the six components of this dissertation and then reports on key findings from this study through integration of both quantitative and qualitative data. It then provides implications for practice, education, policy, and future research from the study.

Summary of Results

The results of the present dissertation are presented in five original research chapters. Chapter two, titled Interprofessional Conflict Resolution: A Concept Analysis, provided new information on a set of antecedents, attributes, and consequences of the concept. The outcome provided a definition of IPCR as: "a process that allows a dispute or disagreement between two parties who perceive threats to their interests to fully explore and explain meanings to each party, reaching a decision to an agreement about the dispute, and achieving a satisfactory course of actions" (Ugirase et al., 2019). Chapter three titled Development and Testing of the Interprofessional Conflict Resolution Scale (IPRCS) provided a discussion of development and psychometric analyses of the IPRCS. This appears to be one of the first instruments directly focused on conflict resolution in health care teams. The results provided beginning evidence of the instrument's validity (concept, criterion, and construct) and reliability. The IPCR scale comprised 11 items within three dimensions – expression of disagreement, exploration and explanation of variant viewpoints, and shared agreement and its brevity indicated that it can be completed in less than five minutes. Chapter four focused on the Methodology, Literature Review and Development of a Theoretical Model for Interprofessional Conflict Resolution.

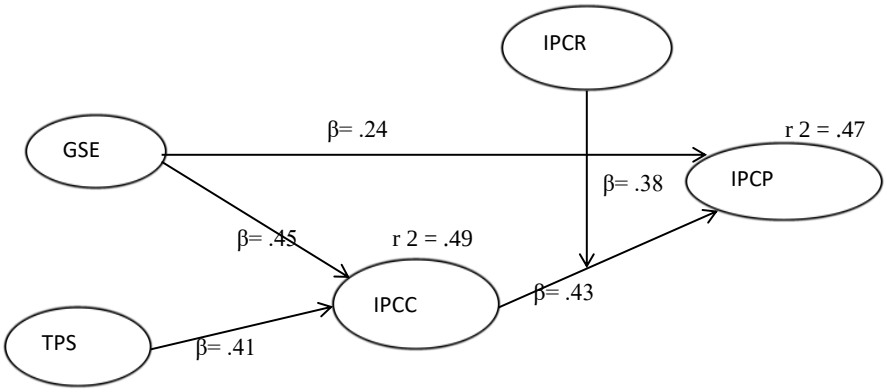
Chapter five focused on the transfer of learning from interprofessional conflict resolution training program to the workplace within hospital settings. This paper synthesized evidence on the transfer of learning from the interprofessional conflict resolution training program to the workplace. Data obtained from participants' feedback forms provided a mean of 32.67 (out of a possible 35.00) learning gained from participants (n = 270). Thus, participants rated the program's learning effectiveness as 93.3%. This result was supported by the five themes that emerged from qualitative analysis of open-ended questions from feedback (What is the most significant thing you will take away from this workshop? Are there any changes you would recommend for a future offering of this workshop?) as well as participants' reflections themes: (1)Transfer of learned IPCR skills into practice, (2)New insight to team conflict resolution, (3) Openness key to the application of IPCR steps into practice (4) Commitment and empowerment leading to positive workplace change and (5) Need for offering continuous professional development program. These themes emerged from this study espoused the successful transfer of learning. In addition, this study provided convincing evidence that well-tailored training activities have a meaningful impact on improving the performance results achieved from training. Chapter six was titled Explaining Effect of IP Conflict Resolution on IPCP among health care providers' teams in three Rwandan district hospitals. This chapter reports on development and testing of the study's theorized model effect of IP conflict resolution on IP collaborative practice. It also highlighted the other variables that had more significant associations with IPCP. A structural equation modeling (SEM) approach was used to test six hypotheses within two research questions. Research question one focused on the relationships between HCPs' factors (general self-efficacy, team psychological safety), and both interpersonal communication competence, and IP collaborative practice. Research question two explored

whether IP conflict resolution moderated the relationship between interpersonal communication competence and IPCP.

The theoretically derived model tested in this research study was supported by the data collected, except for the relationship between team psychological safety and IPCP that was not significant. The SEM initially did not provide a good model fit but was improved by covering *r2* with IPCR and IPCC with IPCR, and this led to an acceptable model fit ($\chi 2\ (df)$ = 135.45.454 (64), $p < .001$, GFI =.93, RMSEA = .06, SRMR=.05, CFI =.97, TLI=.96).The final model is presented below.

Figure 7.1

Final path model of the effect of IP conflict resolution on IP collaborative practice



Integration of Quantitative and Qualitative Data

In this study, integration of qualitative and quantitative findings provided a more in-depth understanding of the effect of interprofessional conflict resolution and its other contributory factors on IP collaborative practice in healthcare teams. Our integrated findings showed the importance of training teams to address their conflicts and resolve these as a group to improve their IPCP. Participants reported that the design and quality of the training met their expectations

by using realistic scenarios that reflected their practice environment context. The value of the training program was evidenced by perceived learning effectiveness scores at 93.3%.

When describing their experiences in applying IPCR skills into practice, participants made connections between IPCR steps and its application into their collaborative practice. Participants recognized the steps of IPCR, which drove their ability to transfer learning within the workplace over time. They identified the need for offering a continuous professional development program in IPCR for all healthcare providers to address how to overcome disagreements as they arise in practice. This was reinforced in both the feedback data and also participants' reflections on the value of having this training in their practice and how it saved time in their work. The quantitative data findings provided evidence of positive changes in participants' IPCP moderated by their ability to enact IPCR. The ability to use the learning from the training program was also related to each participant's general self-efficacy and perception of team psychological safety that seemed to influence their competence to interpersonally communicate with others in the team. General self-efficacy and interpersonal communication competence did have a relationship with participants' IPCP moderated by their IPCR skills. However, team psychological safety, while not directly impacting IPCP, did relate to both their general self-efficacy and interpersonal communication competence. Hence, attention to creating the environment for team psychological safety in the training program likely influenced participants' capacity to use their interpersonal communication when applying the IPCR process to team disagreements.

Participants further stressed the need for the training program to be provided for all health providers with periodic refreshers to reinforce the process for addressing and resolving conflicts

with others. Hence, IPCR may also assist team members in enhancing their collaborative healthcare team building.

This study provided new information regarding the importance of interprofessional conflict resolution as a moderator of the relationship of interpersonal communication competence and IP collaborative practice. Thus, the importance of attention to communication between team members, which, in turn, integrates their capacity to address and resolve disagreements, is an important component to their collaborative team performance. Correspondingly, the health care system needs to consider the importance of training in IPCR to enhance the quality of team-based collaborative patient care. Equally important is the capacity of health professionals to have general self-efficacy and interpersonal communication competence and then feel a sense of team psychological safety to fully participate within their respective IPC teams. This is further supported by Shuffler et al (2020), who stress the importance of team building to achieve improved team performance. Therefore to fully achieve the intent of IPCP in improving health outcomes, health administrators must pay attention to a workplace environment providing health professionals with a sense of team psychological safety. When IPCR approaches are present, health professionals are likely more comfortable exercising their general self-efficacy and interpersonal communication. This research demonstrates that health professionals are more likely to address disagreements in their teams when trained in an IPCR steps which, in turn, enhances their IPCP. Interestingly, when the study's proposed theorized model was tested, while most of the relationships were supported, a direct relationship between team psychological safety and IPCP was not significant. This finding does not mitigate the need for team psychological safety to be present for effective IPCP to occur but does present this concept as

more likely an individual perception that does not then directly impact on the total team's IPCP. Hence, team psychological safety is needed for personal factors studied related to IPCP.

Study Implications

This study has many potential implications for practice, education, and research.

Implication for practice. The study's findings served as a departure from how managers have considered workplace conflict resolution at the individual level, encouraging a focus on interprofessional collaborative team practice. Specifically, the study findings highlight the importance of providing IPCR training programs to all health providers to improve job retention, team psychological safety, and overall IPCP enhancement. Different hospitals may choose to engage in a standardized training program to offer health providers a means to overcome workplace factors that contribute to staff burnout and turnover—both of which are costly to health care systems. In addition, the results provided valuable indications about factors to consider while conceiving IPCR education programs for sustained transfer of learning into practice from training programs. Following up on the recommendations and reflections from training program participants will demonstrate the cost-benefit from such training initiatives.

Therefore, employers of nurses and other health providers may find this study of value as they set policies for their health providers' orientation and continuing education to expand to IPCR training and communication competence in general as well. Such attention is more likely to assist in the retention of health providers due to the value they perceive from having the skills to address and resolve workplace conflicts in their team-based practice.

Implication for nursing and continuing education programs. While the empirical research evidence and comprehensive evaluations of IPCR education programs are scant, findings of this study may inform current continuing education program offerings by raising awareness about the

importance of IPCR training. Additionally, this study provides a means to consider the learning goals, strategies, activities, and feedback that may be valuable for other educators to use in designing training programs for IPCR to support in-service health care providers' continuing education development. This study also focuses on the transfer of learning into practice and provides the impact of such a follow through from a training program. In order to justify the expense of taking health providers out of the work for training, it must be demonstrated that the learning was applied to improve their practice. Finally, this study's results have relevant implications for nursing education programs as they launch into helping future nurses effectively work within interprofessional teams in their healthcare practice.

Implication for future research. For the interprofessional collaboration field, this study provided evidence of beginning assessment of the IPCRS' reliability and validity. This tool is now available to measure change in the area of IPCR from a training program or to gain a baseline of the existing IPCR within teams in practice. This was one of the first studies of its kind to examine conflict resolution within health provider teams. More research is required to validate the IPCRS in different populations and settings using longitudinal studies over more extended periods. It is recommended that such studies use a training intervention as provided in this study. By doing so, limitations such as social desire will be overcome because health providers are better at resolving conflicts individually rather than as a team. Researchers can better understand IP team collaborative practice by considering factors other than general self-efficacy and team psychological safety (antecedent contributory) and their relationship to interpersonal communication competence.

Furthermore, the application of IPCR in a direct relationship to IPCP may also provide further impacts within teams. Another area of study worth further examination is testing the final

theorized model with larger samples of healthcare providers in different countries. Further studies using a similar intervention in other countries and settings may potentially determine broader applications beyond this study.

Overall Conclusion

This was one of the first studies of its kind to examine interprofessional conflict resolution within health provider hospital-based teams. The chosen antecedent contributory variables associated with individual health providers' personal factors and their relationship to interpersonal communication competence provided a means to determine their impact on IP team collaborative practice. Findings from this study indicated that general self-efficacy appears to directly contribute to HCPs interpersonal communication competence and to their perceptions of collaboration in teams. In addition, examining IPCR as a moderator in the study provided insight into the ways in which IPCR contributes to the strength of the relationship between interpersonal communication competence and the outcome of IPCP. This study was also unique in considering the transfer of learning from IPCR training into their actual team practice.

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CURRICULUM VITAE

Sibylle Ugirase

Educational Background

- PhD; Western University, Arthur Labatt Family School of Nursing, London, ON
- MSc; the University of Rwanda, School of Nursing and Midwifery, Rwanda, Kigali, 2017
- BScN with Honor; the University of Rwanda, School of Nursing and Midwifery, Rwanda, Kigali, 2012
- Nursing Diploma; Sainte Elizabeth School of Nursing, Rwanda, 2007

Language skills

- Bilingual: Fluent in French and English

Professional Organizations

- National Council of Nurses and Midwives, Rwanda, member, 2012 – Present
- Registered Nurses and Midwives Union, member, 2012 – Present
- Sigma Theta Tau, Iota Omicron Chapter, member, 2018 - Present

Employment History

Academic

- 2017-present Graduate Teaching Assistant, Western University, London ON
- 2012-2017 Nursing faculty (full-time), University of Rwanda, Kigali
- 2017-2018 Nursing faculty liaison, Western University and University of Rwanda
- 2016-2017 One Health Central and East Africa faculty lead, University of Rwanda

Clinical Mentorship Practice

- 2019-2020 Mentor Professional New comers (part-time),College Boreal, London ON
- 2018-2019 Mentor women empowerment program (part-time), College Boreal, London ON
- 2013-2017 Youth program mentor (part-time), Imbuto Foundation, Rwanda
- 2012-2017 Clinical instructor(full-time), University of Rwanda, Kigali
- 2012-2017 One Health Central and East Africa faculty (part-time), University of Rwanda
- 2007-2009 Youth empowerment leader(casual part-time), Imbuto Foundation, Rwanda
- 2007-2008 School nurse staff (full-time), Mater Dei secondary school, Rwanda

Leadership and Volunteering Activities

- 2020-2021 African Institute Graduate Committee member, Western University
- 2018-2019 School Council Graduate Representative, Western University
- 2018-2020 City of London/ Member of the working group for diversity and inclusion
- 2018-2021 Immploy connecting employers to immigrant talent - Advisory Committee Member
- 2017-Present Francophone immigrant support club member, CCRL, London ON
- 2009-2017 Post Genocide trauma support program, Mentor, Imbuto Foundation, Rwanda
- 2016-2017 E-learning and telemedicine committee member, University of Rwanda
- 2016-2017 One Health student club faculty lead, University of Rwanda

- 2015-2017 Student endowment fund, committee member, University of Rwanda
- 2013-2017 Clinical placement committee member, University of Rwanda
- 2014-2017 Rwanda Nurses and Midwives Union education chapter chairperson, Rwanda
- 2011-2017 Best performing Girls Alumni Network chairperson, Rwanda

Areas of Interest

- Nursing education and practice
- Research (Nursing curriculum and Interprofessional research)
- Nursing education and practice in Africa
- Community service
- Interprofessional conflict resolution
- Interprofessional healthcare education and practice

Honours/Awards

- 2021 Out of Province Bursary, Society of Graduate Student, Western University
- 2019 Irene E. Nordwich Foundation Graduate Award
- 2019 African Institute Graduate Student Research Fund, Western University
- 2017 Western Graduate Research Scholarship for PhD in the nursing program
- 2017 Best student Award, Master program, University of Rwanda
- 2012 Best student Award, Bachelor of Science in Nursing, University of Rwanda
- 2011 Overall outstanding academic performance, Generation Rwanda
- 2008 Generation Rwanda, Scholarship
- 2008 High school best academic performing girls in Rwanda, First lady Prize, Rwanda

Courses Taught

Western University, Graduate Teaching Assistant

- Nursing 1060A Foundational concepts of professional Nursing 1, Sept 2018; Sept 2019; Sept 2020
- Nursing 2220A Community health Nursing, Sept 2018
- Nursing 3910A Health promotion and Caring: Client with Health Challenges, Sept 2019, Sept 2020
- Nursing online course Intercultural Learning: Leadership in Clinical Decision Making, 2018

The University of Rwanda, School of nursing

- NUR2 Health Assessment module 2014; 2015; 2016; 2017
- NUR4 Leadership and management module 2015,2016,2017
- NUR4 Specialized nursing module 2015,2016
- NUR1 Fundamental of nursing I Module 2013,2014,2015,2016,2017
- NUR1 Anatomy, physiology, and pathophysiology 2013
- Nursing online course Intercultural Learning: Leadership in Clinical Decision Making, 2017

Contributions to Teaching Practice

Course/Curriculum Development:

- Mental health Elective course development, Western University 2017

- Revision of Bachelor of the nursing curriculum, University of Rwanda 2016

- Development and implementation of intercultural Learning: Leadership in Clinical Decision Making in Nursing course, Western University and University of Rwanda collaboration 2017, 2018
- Revision of Registered Nurses entry to practice competencies, National Council of Nurses and Midwives, Rwanda 2018

Research projects and conferences

- 2017-2022: Research project "Effect of interprofessional conflict Resolution on Interprofessional collaboration among Health Care Provider in Hospitals."
- January 2021: Canadian Interprofessional Health Collaborative (CIHC) Guest speaker series
- June 2018 Presented in STLHE annual conference, Quebec
- May 2017: Spring Perspectives on Teaching, Western University
- May 2017: Participation in East Africa Health Research Journal review
- June 2015: International Council of Nurses Conference and CNR 2015, Seoul, Korea 2017
- March 2015: Global Innovation in Nursing and Midwifery, education, research, and practice conference
- 2011: Mwiseneza MJ, Rugema J, **Ugirase S**, et al. Factors associated with multi-drug resistant tuberculosis in Kibagabaga Hospital. Unpublished manuscript Kigali Health Institute 2011; 1-44.

Published work

- 2020: Ugirase, S. (2020). The Effect of Interprofessional Conflict Resolution on Interprofessional Collaborative Practice among Healthcare Providers in Hospitals. Africa-Western Collaborations Day | Africa Western Collaborations Day | Western University (uwo.ca)
  - June 2017: Ugirase, S. (2017). Exploring nurses' clinical decision-making experience in Rwanda Military Hospital. African Theses: Search Dissertation
- 2015: New Options for Fighting the Global Disease of Tuberculosis By Donaghy, Claire P. **Ugirase**, **Sibylle** American Nurse Today, Vol. 10, No. 2, February 2015.