

The relationship between stress and teamwork during interprofessional collaboration: an integrative literature review

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PREFACE

This study is presented in an article format according to the North-West University 2016 guidelines. The Master of Health Sciences student, Ms F. Delawala, conducted the research and wrote the manuscript under the guidance and supervision of Prof. Gerda Reitsma and the co-supervision of Dr Yolande Heymans. The student wrote the manuscript: "The relationship between stress and teamwork during interprofessional collaboration: an integrative literature review" according to the author guidelines for the Journal of Interprofessional Care, to which it will also be submitted for possible publication. The reference list of the manuscript is included at the end of Chapter 2 , and the combination of all references are presented at the end of Chapter 3 of the dissertation. The APA referencing style was used. Available and relevant literature was reviewed to address the topic of this research.

Permission was obtained from Prof. Reitsma and Dr Heymans to submit the dissertation for examination purposes.

DECLARATION

I hereby declare that this dissertation is my own work and that it has not been submitted earlier to any other institute or for any other qualification. I declare that the sources have been acknowledged and referenced according to the regulations in the bibliography. I declare that this research has been approved by the Ethics Committee of the North-West University (NWU-00509-19-A1) and that it complies with all the ethical standards issued by the institution.



Farhin Delawala
November 2019

DEDICATION

This dissertation is dedicated to my father, Ghulam, and my dearest Yasin for always giving me the ultimate support and encouragement. You have been the backbone on my journey, providing constant guidance, kindness and hope. Thank you for being my pillars of strength through thick and thin.

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This year has been a journey worth remembering in my academic undertakings. I was able to move out of my comfort zone and challenge myself whilst working effectively in the field of Health Professions Education. The road to success in my Master's studies, has certainly not been easy yet definitely been rewarding indeed regarding the support and encouragement that I have received from various people.

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- I thank my Alma Mater, the North-West University for providing me with the opportunity to improve upon my education in order to contribute towards society.

ABSTRACT

The challenges in healthcare such as the inadequate training of graduates, the complex and expensive healthcare systems, health inequity, and working in professional silos, demand a more effective and holistic approach to patientcare. Interprofessional care entails an approach to providing full health services to patients by different health professionals working collaboratively in order to provide quality care within and across certain settings. Interprofessional collaborative practice is the implementation of interprofessional care in health practice through the combined effort of different health professions to improve patientcare through teamwork. Interprofessional collaboration and teamwork involves health professionals (and students) who work closely with one another to provide quality patientcare and to learn with and from different professions. Healthcare staff are widely regarded as a group that is at high risk of work stress. In addition, working in teams, especially in a healthcare environment which involves the health of a patient, can add to this stress. The experience of stress, whether positive or negative, can influence team dynamics, successful collaboration and ultimately, patientcare. In addition, in an educational set-up, stress may influence student learning, especially when Interprofessional Education is new and students still lack confidence. Interprofessional teamwork has been widely researched, but it is not clear if there is a relationship between interprofessional collaboration, teamwork and stress.

The purpose of this research was to find evidence of a relationship between interprofessional collaboration, teamwork and stress through an integrative literature review. The concept of stress is used in an attempt to understand whether it influences team dynamics during interprofessional activities, and thus consequently affects effective interprofessional teamwork.

The integrative literature review method was used to collect, analyse and synthesise published research on interprofessional collaboration, teamwork and stress, in order to find a link between these three concepts. Initially 4 887 articles were found on the North-West University library databases using the keywords Interprofessional AND Team* AND Stress. After date limitations had been applied and duplicates removed (n=630), the remaining articles (n=4257) were imported into the Evidence for Policy and Practice Information reviewer software programme (EPPI-Reviewer). The titles of the remaining articles were read and articles with unrelated titles were removed (n=3908), resulting in 349 articles remaining. The abstracts of these articles were then scrutinised for relevance, resulting in another 316 articles being excluded. A further 21 articles were removed based on language, accessibility, embargoes, lack of content or irrelevant context. Six articles identified from the reference lists of the

included articles were added to the database. A total of 18 articles were then appraised and retained for analysis.

The results showed that interprofessional collaboration and teamwork are clearly linked, yet published research on how stress is linked to both these concepts in an interprofessional healthcare context, are limited. Factors that can contribute to stress and consequently influence effective interprofessional collaboration and teamwork, were identified. Further research on the stress experienced by health professionals and students working in interprofessional teams, is recommended.

KEYWORDS: Stress, Interprofessional Collaboration, Teamwork, Integrative Literature Review Method.

GLOSSARY OF TERMS

Several terms have been used throughout this dissertation. This glossary aims to provide a better understanding of terms used, on reading the proposal.

Interprofessional Education	Interprofessional Education occurs when students or members of two or more professions learn with, from and about each other to improve collaboration and quality of care (Barr & Gray, 2013).
Interprofessional Teamwork	The levels of cooperation, coordination and collaboration characterising the relationships between professions in delivering patient-centred care (Interprofessional Education Collaborative Expert Panel [IECEP], 2011).
Competency	The skills required to do a job (The Cambridge Dictionary, 2019a).
Integrative Literature Review	A literature process used to address existing and emerging topics of interest as knowledge is 'improved' overtime (Whittemore, Chao, Jang, Minges, & Park, 2014). An integrative literature review consists of theoretical, empirical and conceptual literature forming part of the process in reviewing, and which also serves as the foundation for new knowledge and practice (Whittemore & Knaf, 2005).
Interprofessional Care	Providing full health services to patients by various caregivers working collaboratively to provide quality care within and across settings (Health Force Ontario, 2007).
Interprofessional Collaborative Practice	Numerous health workers from various professional backgrounds delivering thorough services by working with patients, their families and communities to provide the ultimate quality care across settings (World Health Organization [WHO], 2010).
Interprofessional Education and Collaborative Practice	Health students and health workers who learn and work together in order to optimise healthcare through collaboration (WHO, 2010).
Pervasive Skills	Attributes allowing individuals to work in a sound and operative style with others (Keevy, 2015).
Stress	Stress is a reaction to external stimuli and responses which may include physical, mental or emotional changes, e.g. headaches, muscle tension and forgetfulness (Kranner, Minibayeva, Beckett, & Seal, 2010; Shargo, 2010).
Team	People with harmonizing skills dedicated to shared purposes, performance goals and methods for which they hold themselves equally responsible (Contu & Pecis, 2017).
World Health Organization (WHO)	An organization with 194 member states across six regions that is committed to bringing or providing better health to the world in general, through health promotion, safety and serving the vulnerable, which ultimately strengthens the impact of health intervention at country level (WHO, 2019).

ABBREVIATIONS AND ACRONYMS

The abbreviations and acronym list below, aims at providing guidance when reading the proposal.

ACR	Adaptive Communication and Response
ANOVA	Analysis of Variance
APA	American Psychological Association
CANMEDS	Canadian Medical Education Competency Framework
CASP	Critical Appraisal Skills Program
CASS	Contextual Activity Sampling System
CFT	Couples and Family Therapy
EPPI-Reviewer software	Evidence for Policy and Practice Information-Reviewer Software
FHS	Faculty of Health Sciences
HFS	High Fidelity Simulation
HPE	Health Professions Education
ICCC-GRS	Interprofessional Care Core Competencies Global Rating Scale
ICCS-SF	Interpersonal Communication Competence Scale
IECEP	Interprofessional Education Collaborative Expert Panel
IEPS	Interprofessional Education Perceptions Scale
ILR	Integrative Literature Review
IMMERSe	Integrated Multidisciplinary Model of Education in Rural Settings
IP	Interprofessional
IPC	Interprofessional Care
IPCP	Interprofessional Collaborative Practice
IPE	Interprofessional Education
IPEC	Interprofessional Education Collaborative
IPECP	Interprofessional Education and Collaborative Practice

IPL	Interprofessional Learning
IPTI	Interprofessional Team Immersion
IPTW	Interprofessional Training Ward
ISVS	Interprofessional Socialization and Valuing Scale
IUSIR	Indiana University Simulation Integration Rubric
JHMP	Jefferson Health Mentors Program
JIC	Journal of Interprofessional Care
LA	Los Angeles
LSU	Louisiana State University
MHSc	Master of Health Sciences
NP	Nurse Practitioner
NWU	North-West University
NWU-HREC	North-West University Health Research Ethics Committee
OR	Operation Room
ORTAS	Operating Room Teamwork Assessment Scale
OT	Occupational Therapy
PSI	Problem Solving Skills Scale
PT	Physical Therapy
RIPLS	Readiness for Interprofessional Learning Scale
SBTT	Simulation-Based Team Training
SSRQ	Students Stereotypes Questionnaire
TBB	Team-Based Behaviours
TBS	The Burn Suites
TPOT	teamSTEPPS Team Performance Observation Tool
TSAQ	Team Self-Assessment Questionnaire
UK	United Kingdom
USA	United States of America
WHO	World Health Organization

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CHAPTER 1: ORIENTATION TO THE STUDY

1.1 Introduction

This Master's dissertation is presented in the Article format, with Chapter 1 providing an orientation to the study, Chapter 2 the manuscript and Chapter 3 the conclusion and recommendations.

Chapter 1 provides a short overview of the study by explaining the background and context, stating the problem and describing the methodology.

1.2 Background

The challenges in healthcare demand a more effective and holistic approach to patientcare. Frenk et al. (2010) identified some of these challenges and shortcomings for instance, inadequately-trained graduates, complex and expensive healthcare systems, health inequity, and so-called tribalism (professional segregations), where health professionals limit their interactions to their own professions. This is especially true in South Africa against its history of a lack of equity regarding access to resources, privilege, and lack of a majority of perspectives (Bozalek & Boughey, 2012).

In Interprofessional Collaborative Practice (IPCP), the formulation of "teams" and executing teamwork is apparent. The Cambridge Dictionary (2019b) defines the term "team" as contributing efforts to successfully complete a project. In an interprofessional team (IP team), health workers with different knowledge and skills, work together to achieve common goals in a project or service (Nancarrow et al., 2013). Creating IP teams may deliver a basis which strengthens members' abilities in design, resolution, awareness and judgement so that optimal health education is reached; as Sargeant, Loney, and Murphy (2008) indicate that merely promoting collaboration and expecting professionals to work together, is not an adequate intervention in healthcare. The purpose for health professionals to work as a team and not just simply work together is that in a team, there is a shared vision, purpose and mutual accountability whereas in groups, there is an ensemble of individuals who collaborate with the intent of individual input and accountability (Contu & Pecis, 2017). In an interprofessional team, the individual may be both a team player and leader with an understanding of the barriers to teamwork (The World Health Organization[WHO], 2010).

Dow et al. (2017) states that teamwork has been the main conceptualization for interprofessional practice over the past two decades. Individuals in health teams should also be equipped with stress management skills by being able to foresee stressful conditions or

overcoming them as a team. Interprofessional Education and Collaborative Practice (IPECP) emphasizes the development of pervasive skills critical in a healthcare environment (IECEP, 2011). The ability to manage stress within teamwork can be an important pervasive skill. Pervasive skills are attributes allowing individuals to work in a sound and operative style with others (Keevy, 2015). Kim, Radloff, Stokes, and Lysaght (2018) suggest that 'participation' and 'meeting goals' as a team are important skills required in health education.

As barriers are removed between health professionals, and as the need for collaboration arises through teamwork, stress may play a role in the optimal functioning of the IP teams. Although there are benefits to working in IP teams, the cohesion within teams may be influenced by factors that create stress which will affect optimal performance. These factors may include time constraints (Teng, Shyu, Chiou, Fan, & Lam, 2010), poor communication (Lown & Manning, 2010), lack of team cohesiveness (Thompson et al., 2015) disagreement on ethics (Engel & Prentice, 2013), as well as conflict and poor management (Greenberg, 2011). Additional factors such as intra-team conflict (Puck & Pregernig, 2014), trust issues (Han & Harms, 2010), lack of support and work overload (Khamisa, Oldenburg, Peltzer, & Ilic, 2015) may lead to stress. The above-mentioned factors may contribute towards the creation of stress and influence teamwork during collaboration.

Niks, Jonge, Gevers, and Houtman (2018) state that healthcare staff are widely regarded as a group that is at high risk of work stress. This statement is supported by Eddy, Jordan, and Stephenson (2016), who describe the kind of teamwork that especially health professionals need to conduct, and the factors that contribute to them experiencing stress due to these teamwork demands. Health Professionals may experience short-term stress as they are challenged to provide patientcare in interprofessional teams. Performance is influenced by stress as it is subjected to combined demands experienced when working collaboratively (Bashir & Ismail Ramay, 2010; Greenberg, 2011). Responses to stress may differ, based on the intensity of the experience and the way that the human body reacts through adaptation or action (Zuckerman, 2014). In relation to IP teamwork, stress and conflict may play an important role when collaboration happens during the phases of task management (Gorman, Cooke, & Amazeen, 2010).

Stress is a reaction to external stimuli and responses which may include physical, mental or emotional changes, e.g. headaches, muscle tension and forgetfulness (Kranner et al., 2010; Shargo, 2010). It is generally accepted that stress occurs on the grounds of limited resources available to the individual to cope with the demands of the external world (Kellmann, 2010). Stress is associated with the imbalances of the external or internal environment and can have a direct influence on the well-being of a singular or collective entity (Greenberg, 2011). Stress

can either be positive or negative, otherwise known as **eustress** and **distress** respectively. Eustress may be defined as the positive response to obstacles whilst distress is the negative response to obstacles (Merino, Privado, & Arnaiz, 2019). Mild stress may improve or diminish certain traits during teamwork. Mild stress has the potential of being a sole stimulus in determining the outcome and success of an intended idea. Short-term stress is integral to human existence and therefore, forms part of the basics of survival (Dhabhar, 2014). It is not restricted to negative influences such as conflict, but also arises due to positive factors such as increasing individual or team productivity. Short-term stress may be defined as an experience where one would feel anxiety, nervousness, distraction, worry or pressure (McEwen & Sapolsky, 2006). According to Joëls, Pu, Wiegert, Oitzl, and Krugers (2006), short-term stress, which is experienced for a short span of time, could be beneficial in terms of learning and memory as individuals are better equipped for potentially stressful conditions. The authors further mention that it brings about an adaptive process for the individual so he or she mentally stores the information which has been learnt, for future use. The response to stress may differ based on the intensity of the experience, however, the human body responds in the form of adaption or action (Zuckerman, 2014). In terms of IP teamwork, short-term mild stress may be beneficial during interprofessional collaboration, as it may bring about cooperation and learning in teams and a stronger focus in reaching the team goals. Stress may impact the quality of learning in IP teams, especially if the teams have to work collaboratively under pressure.

In teamwork, certain barriers create or lead to stress such as the personal effects of judgment, critique and rejection, and when there is a limited or insignificant role for an individual (Folkman, 2013) which may lead to the individual feeling isolated and possibly experiencing negative emotions. Ultimately, the individual does not attempt to communicate or contribute towards the collective goals or take part in the planning, decision-making or processing of those goals. In interprofessional teams, mutual decisions are taken, but if that is not the case, then it may lead to disagreement. Weller, Barrow, and Gasquoine (2011) proposed that decision-making involves collective information so that problems may be addressed properly. Stress increments motivate the need for cooperation and decrease the need for leadership roles (Cruz & Pil, 2011). Hence, stating that members' determination to be in charge and to carry out final decisions, may ultimately diminish, and consequently, collective consultation with respective members, may be established. When working collectively, individuals may be able to support one another and possibly manage or cope with the stress of the task or workload. However, if a person is not mentally prepared to handle an uncontrollable event, then he or she may view the situation on a larger scale than what may seem realistic, for the

magnitude of the event depends on the perception of the stressor and coping mechanism of the individual (Shargo, 2010).

Reflecting on the possible stress experienced by health teams in reality, the question arises as to how teamwork by students may be influenced during interprofessional education. According to Barr et al. (2015) the majority of students enrolled in specific health profession education programmes are not well-informed about the roles of other health professions. This can be due to the already existing segregations in health education which limit students from understanding the roles and responsibilities of other health professionals and collaborating with them to provide holistic health services. Pressure is increasing on tertiary health education institutions to deliver graduates with the key graduate competencies obtained as health profession students, e.g. learning to collaborate with other health professionals, as described by the Canadian Medical Education Competency Framework (CANMED) (Frank, 2005). The utilization of the CANMED framework is necessary for the South African health system because a graduate health student should be a professional, a scholar, a health advocate, a leader and manager, a collaborator and a communicator (Frank, 2005).

Interprofessional Education (IPE) can help prepare students for collaboration to meet the needs of the healthcare system (Hammick, Freeth, Koppel, Reeves, & Barr, 2007), referring to individuals, learning institutes and resources required to overcome these needs. This can be done through teamwork and communication skills required for health professionals (VanKuiken, Schaefer, Hall, & Browne, 2016). WHO has listed specific outcomes for interprofessional education (WHO, 2010):

- 1 "Teamwork: being able to be both a team leader and a team-member; knowing the barriers of teamwork;
- 2 Roles and responsibilities: understanding one's own roles, responsibilities and expertise, and those of other types of health workers;
- 3 Communication: expressing one's opinions competently to colleagues; listening to team members;
- 4 Learning and critical reflection: considering one's own relationship within a team critically; transferring interprofessional learning to the work setting;
- 5 Relationship with, and recognition of the needs of the patient: working collaboratively in the best interest of the patient; engaging with patients, their families, carers and communities as partners in care management;

- 6 Ethical practice: understanding the stereotypical views of other health workers held by self and others; acknowledging that each health worker's views are equally valid and important" (p.26).

With the WHO endorsing IPE as an important approach for creating a creative, collaborative and prepared health workforce (WHO, 2010), engaging in IPE can be beneficial for all disciplines by challenging prevailing disciplinary discourse. The development of IP competencies is becoming a focus area in health professions-training globally, and in the Faculty of Health Sciences (FHS) at the North-West University (NWU). Making IPE a significant part of each curriculum may aid in collaboration, clarification of roles, teamwork and improved understanding of the scopes of practice of different disciplines. In future, this could support practices of correct patient referral and reduce uncertainties about the roles and responsibilities of different disciplines in the workplace. Students can gain a better understanding of and apply critical knowledge related to their profession in interdisciplinary teams (Reitsma et al., 2019). However, from the preliminary literature review, it is not clear if the envisioned interprofessional learning occurs when experienced stress compromises effective interprofessional teamwork.

1.3 Problem Statement

IP teamwork has been themed around the point of collaboration, where conflict due to different personalities, disagreement, conformity to a higher command and role confusion, is likely to occur. Since these factors are generally stipulated as external cues, they may lead to some form of stress, if not approached correctly. In teamwork, stress must be considered and examined as factor of influence during team collaborations. The intensity of stress may affect how behaviour is carried out as well as the conscious processing of cognition to counter the external stressors. As stress is associated with conflict in a team-based condition, it must be given consideration for its stimulating effect in the improvement or deterioration of certain types of behaviour. Stress may have both **positive** consequences, e.g. cooperation and working together to meet deadlines, and **negative** consequences, e.g. conflict and restricted autonomy. Although the characteristics of mild stress can display tension, irritation or restlessness, they may be beneficial in the sense that the individual, team or organisation develops congruent strategies (Hargrove, Becker, & Hargrove, 2015; Simmons & Nelson, 2007). In IPE students learn interprofessional competencies through teamwork which may create the same experiences of stress that is relevant to IP teamwork.

Interprofessional teamwork has been widely researched, but it is not clear if there is a relationship between interprofessional collaboration, teamwork and stress.

1.4 Purpose of the Research

The purpose of this research is to find evidence of a relationship between interprofessional collaboration, teamwork and stress through an integrative literature review. Stress is used to determine whether it influences team dynamics during interprofessional activities, and thus ultimately affects effective interprofessional teamwork.

1.5 Research Aims and Objectives

The aim of this research is to address the above-mentioned problem statement, namely:

To determine whether there is a possible relationship between interprofessional collaboration and stress in health teams through a literature study.

The main objective of this study is:

To investigate the possible relation of interprofessional collaboration and perceived stress in health teams through a literature study.

1.6 Research Design and Methodology

A short overview of the methodology is provided and additional information that was not included in chapter 2 (the manuscript) is also provided.

1.6.1 Integrative literature review.

An integrative literature review (Whittemore et al., 2014) for addressing existing and emerging knowledge and literature regarding interprofessional collaboration, stress, and teamwork was done in order to gain new perspectives on the research theme. The literature was applied in a manner that brought about new understandings in a combined style (Torraco, 2005). An integrative literature review consists of theoretical, empirical and conceptual literature forming part of the process in reviewing, and which also serves as the foundation for new knowledge and practice (Whittemore & Knaf, 2005).

An integrative literature review could be considered as the type of review method that allows for the inclusion of a number of additional approaches in a concurrent manner such as quantitative and qualitative methods, which could include reviews from experts for an understanding of such an incident. Integrative literature is used to address existing and emerging topics of interest as knowledge is somewhat 'improved' over time (Whittemore et al., 2014).

Whittemore and Knafl (2005) indicate different stages for reviewing which comprise of: problem identification, literature exploration, data evaluation and analysis and feedback. Thus, for the purpose of this study, the integrative literature review will be used to analyse research findings on interprofessional collaboration, teamwork and stress related concepts. To include the concept of IPE, the word 'education' has also been included in the search.

1.6.2 Methodology.

The methodology for an integrative literature review proposed by Whittemore and Knafl (2005) was applied.

1.6.2.1 Step 1: Identifying the keywords for this research.

The research objective describes the problem identified and was used to identify appropriate keywords for the literature searches.

For the literature search on the different databases, terms such as:

- “interprofessional AND team”,
- “collaboration AND stress”,
- “teamwork AND stress”,
- “interprofessional OR higher education”,
- “interprofessional AND healthcare”,
- “interprofessional OR competencies OR stress”,
- “effective teamwork AND competencies”,
- “health professions education (HPE) OR interprofessional AND collaboration OR stress”, were identified for this study.

However, given the limitations of these terms, the terms “**interprofessional AND team* AND stress**” were used to gain a more comprehensive set of searches.

The three main themes, i.e. interprofessional, teamwork and stress were used as keywords when extracting articles from databases. The proposed keywords were used in combination as follows: interprofessional AND team* AND stress. During a preliminary literature search, a wide variety of publications on interprofessional teams as a concept, and teamwork and

stress was identified, but limited studies on the combination of interprofessional, teams and stress were found.

1.6.2.2 Step 2: Literature search.

The NWU library website showed a total number of 302 databases for academic search of which 18 were relevant to this study. EBSCOhost provided access to databases for literature search for the relevance of this study such as: Academic search premier, AHFS Consumer Medication Information, CINAHL, Health Source: Consumer Edition, Health Source: Nursing/Academic Edition, MasterFILE Premier, MEDLINE, PsycARTICLES®, The PsycINFO® database and SocINDEX. Not all relevant databases were available on EBSCOhost, however, so a separate search was conducted which included publications from other sources. These relevant databases which were also available on the NWU website were similarly consulted such as: ScienceDirect, Scopus, Web of Science, African Journals (Previously Sae Publications), Index to South African Periodicals (ISAP), PubMed Central (PMC) and The Cochrane Library.

Below is an explanation of the databases (North-West University, 2019):

- **Academic search premier** covers over 8000 journals of which 85% are peer-reviewed and 55% are in full-text format; the full-texts consist of almost 3900 peer-reviewed titles from a number of disciplines.
- **AHFS Consumer Medication Information** is a trusted source and recognized standard for patient drug information, available in both English and Spanish. Published by the American Society of Health-System Pharmacists, AHFS includes more than a thousand drug-information monographs written in lay-language for consumers and has been a Top Ten Award Winner in the Department of Health and Human Services National Consumer Education Materials Contest. This content is updated monthly.
- **CINAHL** with full-text is the world's most comprehensive source of full-text for nursing and allied health journals providing full-text for nearly 600 journals indexed in CINAHL. This authoritative file contains full-text for many of the most used journals in the CINAHL index – with no embargo. Full-text coverage dates back to 1981.
- **The E-Journals** database provides article-level access for thousands of e-journals available through EBSCO Subscription Services. For users with a valid subscription, EBSCO's SmartLinks technology provides direct links to publishers' content.

- **Health Source: Consumer Edition:** This database is the richest collection of consumer-health information available to libraries worldwide, providing information on many health topics including the medical sciences, food sciences and nutrition, childcare, sports medicine and general health. *Health Source: Consumer Edition* provides access to nearly 80 full-text, consumer-health magazines.
- **Health Source: Nursing/Academic Edition:** This database provides nearly 550 scholarly full-text journals focusing on many medical disciplines. *Health Source: Nursing/Academic Edition* also features the *AHFS Consumer Medication Information*, which covers 1,300 generic drug-patient education sheets with more than 4,700 brand names.
- **MasterFILE Premier:** Designed specifically for public libraries, this multi-disciplinary database provides full text for nearly 1,700 periodicals with full-text information dating as far back as 1975. Covering virtually every subject area of general interest, *MasterFILE Premier* also contains full-text for nearly 500 reference books and over 164,400 primary source documents, as well as an Image Collection of over 592,000 photos, maps & flags. This database is updated daily via EBSCOhost.
- **MEDLINE** provides authoritative medical information on medicine, nursing, dentistry, veterinary medicine, the healthcare system, pre-clinical sciences, and much more. Created by the National Library of Medicine MEDLINE uses MeSH (Medical Subject Headings) indexing with tree-hierarchy subheadings and explosion capabilities to search citations from over 4 800 current biomedical journals.
- **PsycARTICLES®**, from the American Psychological Association (APA), is a definitive source of full-text, peer-reviewed scholarly and scientific articles in psychology. It contains articles from journals published by the American Psychological Association (APA), its imprint the Educational Publishing Foundation (EPF), and from allied organizations including the Canadian Psychological Association and the Hogrefe Publishing Group. It includes all journal articles, book reviews, letters to the editor, and errata from each journal. Coverage spans 1894 to the present and nearly all APA journals go back to Volume 1, Issue 1.
- **The PsycINFO®** database, American Psychological Association's (APA) renowned resource for abstracts of scholarly journal articles, book chapters, books, and dissertations, is the largest resource devoted to peer-reviewed literature in behavioural science and mental health. It contains records and summaries dating as far back as the 1600s with one of the highest DOI matching rates in the publishing industry. Journal

coverage, which spans from the 1800s to the present, includes international material selected from periodicals in dozens of languages.

- **SocINDEX with Full-Text** is the world's most comprehensive and highest quality sociology research database. The database features more than 2.1 million records with subject headings from a 20,000+ term sociological thesaurus designed by subject experts and expert lexicographers. *SocINDEX with Full-Text* contains full text for more than 860 journals dating back to 1908. This database also includes full-text for more than 830 books and monographs, and full text for over 16,800 conference papers.

Other relevant databases that were made available by the NWU website were similarly consulted:

- **ScienceDirect** is a leading full-text scientific database offering articles/chapters from more than 2 500 peer-reviewed journals and more than 11 000 books. There are currently more than 9,5 million articles/chapters in a content-base that is growing at a rate of almost 0,5 million additions per year.
- **Scopus** is the world's largest abstract and citation database of peer-reviewed literature and quality web sources.
- **Web of Science** consists of seven databases containing information gathered from thousands of scholarly journals, books, book series, reports, conferences, and more.
- **African Journals (Previously Sae Publications):** The most comprehensive searchable collection of full-text electronic South African journals in the world, focuses on making journals published in South Africa, available online.
- **Index to South African Periodicals (ISAP)** covers indexed articles from more than 900 South African periodicals. Specialist periodicals are indexed fully whereas general and popular periodicals are indexed selectively. This database is compiled under the ownership of the National Library of South Africa.
- **PubMed Central (PMC)** is the U.S. National Institutes of Health (NIH) free digital archive of biomedical and life sciences journal literature.
- **The Cochrane Library** is a collection of databases that contains high-quality independent evidence to inform healthcare decision-making.

The Evidence for Policy and Practice Information or EPPI reviewer software from Microsoft Silverlight (version 5.1.50918.0) was used to aid with the database searches and export the documents. The EPPI reviewer allowed the researcher to remove any duplicate publications and to review the abstracts of each search result. The abstracts served as a general guideline of the legibility of that particular publication for this study.

Inclusion and exclusion criteria were identified and implemented to guide the literature search process. To determine if a publication was acceptable for inclusion in the research, the following criteria were applied: 1) at least one of the keywords needed to be present for analysis 2) the scientific quality of the journal in which the article or literature was published 3) and publications that were limited to the years between and including 2009 – 2019. Grey literature, which can be defined by Williams-Whitt et al. (2016) as publications outside the academic environment such as the ones made available by organisations were excluded. Publications which were not accessible due to embargoes or not available in English, were also excluded.

1.6.2.3 Step 3: Data evaluation phase for the research.

The final sample of articles and publications were reviewed for quality in terms of the purpose of the research, the data provided, the key terms used, the definitions of the themes in their sense of understanding, the sample from the population, methods used to obtain the data, methods used to analyse their findings as well as their results and conclusions on the data. According to Whitemore and Knafl (2005), the abovementioned considerations were appropriate to be used for quality evaluation.

For the critical appraisal of the publications the following tools were used:

The John Hopkins Research Evidence Appraisal Tool (Addendum B, as well as the Critical Appraisal Skills Programme (CASP, 2018) tool (Addendum C) were used. The John Hopkins Research Evidence Appraisal Tool focused more on quantitative research, and the CASP focused on qualitative research. Publications that followed a mixed-method approach, were evaluated for quality, using both the CASP and John Hopkins Research Evidence Appraisal tool as this methodology made use of both qualitative and quantitative data. Only articles that adhered to 70% of the criteria were included in the analysis phase. The purpose of using this scoring was to provide surety that there is an above-average rating according to the tools utilized for the literature.

1.6.2.4 Step 4: Data analysis phase of the research.

The selected articles were summarised in a table so that data could be extracted to provide a short version of the scientific information in each article. Once the data had been summarised, it was compared for similarity using a constant comparative method (Creswell & Poth, 2018). A concept matrix table was compiled on the identified themes presented in the articles and was compared with similar findings. To assist with the correctness of the procedure followed, the supervisor verified the process carried out during the analysis phase. Additionally, the co-supervisor confirmed the process followed.

1.6.2.5 Step 5: Data presentation.

The results of the data analysis phase were synthesised and interpreted to provide structured and clear evidence of the information collected during the integrative literature search, in order to answer the research question. The research process and findings are presented in the form of a research article to be submitted for publication in an accredited journal.

1.7 Quality of the Research

As with any other form of research, rigour should also be evident in the integrative literature review process. Torraco (2005) states that there is a “misconception that integrative literature reviews are less rigorous or easier to write than other types of research articles” (p. 356). In Table 1.1, the steps proposed by Torraco (2005) for ensuring rigour in an integrative literature review are presented as it was applied in this research study.

Table 1.1: Steps to ensure rigour in an integrative literature review (Torraco (2005) as applied in this study

Conceptual structuring of the review	For an integrative literature review, conceptual structuring or point of view about a topic is required for organization. The researcher clearly stated a point of view about the topic at the beginning of the review process. The themes (stress and team) were clearly described and their importance and combinations within interprofessional education and Interprofessional collaborative practice, were stated.
Describing how the review was conducted	The researcher followed accepted conventions for reporting on the way in which the study was conducted. The researcher clearly explained how the literature was identified, analysed, synthesised and reported.

	<p>The researcher provided full descriptions of all the relevant processes and decisions that were taken during the review, including the motivations for each decision.</p> <p>The review process was described in such a way that if other researchers would attempt to replicate the study, sufficient information would be available to do so.</p>
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1.8 Ethical Considerations

Ethical clearance for this study was obtained from the North-West University Health Research Ethics Committee (NWU-HREC). This study was permitted for initiation as a 'no risk study' by the NWU-HREC (NWU-00509-19-A1), (Addendum A). An integrative literature review can be classified as a low or no-risk study, as the research does not include any persons or animals, nor does it require empirical data gathering. Thus, the study follows non-maleficence and beneficence procedures. The researcher should, however, still comply with ethical standards such as honesty, veracity, trustworthiness and an attitude of doing good while conducting the research in a professional and scientific way.

The integrative literature review consists of literature as data, and the data should be managed according to good ethical principles: The literature was collected and analysed electronically, thus no hard copy data was included.

During the research, the electronic data was saved on the researcher's and the supervisors' password-protected computers. After completion of the study, the data was transferred from the computers to two USBs (one for backup), and locked away in the supervisor's office. The electronic data will be kept for a minimum of five years as a valuable set of resources.

1.9 Limitations of the Study

All limitations of the study were either identified or confirmed once the study was concluded. However, the researcher was aware that limitations typical to literature review studies, such as problems with accessing relevant research articles due to embargoes, language or content may result in not including important information in the final data-set. The limitations of the study are discussed in more detail in Chapter 3.

1.10 Dissemination of the Results

- The results formed part of a dissertation for the MHS in Health Professions Education with Interprofessional Education as a focus.
- Publishing at least one journal article in an accredited journal is envisioned, in this case, The Journal of Interprofessional Care (JIC).

CHAPTER 2: MANUSCRIPT

The relationship between stress and teamwork during interprofessional collaboration: an integrative literature review.

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This article will be submitted to the Journal of Interprofessional Care. The article included is presented in accordance with the specific guidelines for the journal, as well as the instructions for authors, are presented in Addendum E . Exceptions were made for the prescribed margins, line-spacing and font to adhere to the North-West University guidelines to maintain uniformity of the thesis. Tables and figures will also be included with the text to facilitate easier reading and comprehension.

Role of the supervisor: the supervisors have provided input and guidance in the writing of this article; however, the main research, reporting and finalising of the manuscript was done by the student.

2.1 Abstract

Stress occurs on the grounds of many factors such as lack of communication, role ambiguity, time constraints, disagreement, conflict, poor management, lack of trust, lack of team cohesiveness, lack of support and work overload. The aim of this study is to gather, examine and integrate knowledge in relation to interprofessional collaboration, teamwork and stress in addition to determining the likely role that stress may play in healthcare teams when collaboration takes place. An integrative literature review search was conducted to address the aim of this research. In order to conduct the search, 18 relevant databases from the North-West University library site were consulted. A number of articles were found and analysed for critical appraisal. A total of 18 publications were eligible for appraisal and data extraction that included five quantitative studies, three qualitative studies and 10 mixed-methods studies. Articles were summarised to identify the main findings. Emerging themes were identified and analysed in relation to the aim of this study. A conceptual framework was developed based on the main findings. The findings from the themes suggested that stress does affect teamwork in interprofessional collaboration and that there is indeed a lack of research regarding interprofessional collaboration, teamwork and stress.

Keywords: Interprofessional collaboration, teamwork, stress, integrated literature review, quantitative, qualitative, mixed-methods.

2.2 Introduction

Interprofessional Collaborative Practice (IPCP) can be defined as numerous health workers from various professional backgrounds delivering thorough services by working with patients, their families and communities to provide the ultimate quality care across settings (World Health Organization [WHO], 2010). These health workers work collaboratively to provide optimal and holistic patientcare. There are various advantages with collaborative working as summarised by Jaruseviciene et al. (2019) that include better patientcare and quality of life, decreasing the cost of healthcare, improving job satisfaction and decreasing medical errors through the improvement of communication amongst health professionals. Collaboration requires health workers to work in teams to provide optimal healthcare services. Formulating teams for teamwork is definite in IPCP and “team” can be defined as people with harmonizing skills dedicated to shared purposes, performance goals and methods for which they hold themselves equally responsible (Contu & Pecis, 2017). In IPCP, Interprofessional teams (IP teams) are created consisting of individuals with different knowledge and skills (competencies). These competencies are “combined” when individuals work together to reach common goals in a service or project (Nancarrow, Booth, Ariss, Smith, Enderby, & Roots, 2013). Forming such teams in IPCP could improve in Interprofessional Care (IPC) where members are able to develop a way forward in optimal patientcare.

Certain barriers can affect team collaboration in IPCP. This research focused specifically on stress as a barrier to effective interprofessional team collaboration. Stress is a reaction to external stimuli and responses include physical, mental or emotional changes, e.g. headaches, muscle tension and forgetfulness (Kranner, Minibayeva, Beckett, & Seal, 2010; Shargo, 2010). Stress is subjected to combined demands experienced when working collaboratively (Bashir & Ismail Ramay, 2010; Greenberg, 2011). Stress and the intensity of stress may impact the quality of learning in IP teams, especially if the teams have to work collaboratively under pressure. Stress arises when team performance and competency development is influenced by factors leading to stress, for instance, time constraints (Teng, Shyu, Chiou, Fan, & Lam, 2010), poor communication (Lown & Manning, 2010), lack of team cohesiveness (Thompson et al., 2015), disagreement on ethics (Engel & Prentice, 2013), conflict and poor management (Greenberg, 2011), intra-team conflict (Puck & Pregernig, 2014), trust issues (Han & Harms, 2010), lack of support and work overload (Khamisa, Oldenburg, Peltzer, & Ilic, 2015). These factors may affect the overall aim of collaboration as well as the timeous achievement of goals.

2.3 Background

Interprofessional education (IPE) is used to address current healthcare problems through health education (Treadwell, Van Rooyen, Havenga, & Theron, 2014; Van Wyk & De Beer, 2017). IPE increases interactions between different health students (Burch, 2014) who are usually trained in isolated learning environments. Isolated learning may lead to “tribalism.” Due to the fact that education methods require improvements, the shift from tribalism to combined learning in IPE are advocated (Treadwell et al., 2014). IPE is a form of ‘pre-service learning’ (Cooke, Pursifull, Jones, & Goodell, 2017) focussing on educating health students with team-based initiatives (Simko, Rhodes, McGinnis, & Fiedor, 2017; Taylor et al., 2019) and preparing students for collaboration to meet the needs of the healthcare system (Hammick, Freeth, Koppel, Reeves, & Barr, 2007). IPECP training may diminish error and allow for holistic treatment of patients whilst breaking barriers to learning and decreasing the lack of understanding for other health professions (Darlow et al., 2015). IPE prepares students for collaborative practices and for this reason, IPE points out the need for collaborative learning in health teams so that students are prepared for IPCP. IPCP addresses the practical components of service used for working professionals to refine their skills and encourage team diversification in patientcare (Prelock, Potvin, & Savard, 2017). IPE and IPCP attempt to sequence their respective education and practices towards a state of holistic health in the context of individual, community and society at large.

IPE attempts to better prepare students for the healthcare system by encouraging teamwork in learning. However, the effectiveness of teamwork may be influenced by factors that cause stress such as time constraints (Teng et al., 2010), poor communication (Lown & Manning, 2010), lack of team cohesiveness (Thompson et al., 2015) disagreement on ethics (Engel & Prentice, 2013), conflict and poor management (Greenberg, 2011). Furthermore, intra-team conflict (Puck & Pregernig, 2014), trust issues (Han & Harms, 2010), lack of support and work overload (Khamisa et al., 2015) may lead to stress. Team members may experience conflicting factors whilst working in health teams which lead to stress. However, there is limited literature findings which address the role of stress and teamwork during IP collaboration. The overall aim of this research project is to determine whether there is a possible relationship between interprofessional collaboration and stress in health teams through a literature study.

2.4 Methods

For this research study, an Integrative Literature Review (ILR) process was used. According to Torracco (2005), ILR is where skills pertaining to research and insight are required so that

appropriate literature findings are analysed and scrutinized accordingly. Torraco (2005) further mentions that although existing publications are reviewed, new and emerging concepts in research are analysed for innovative findings. This is especially true in IPE, teamwork and stress as these three concepts may be closely linked in practice and may influence each other in some way. Whittemore and Knafl (2005) conclude in their findings that combining different data for a holistic comprehension could be challenging, thus employing certain techniques may reduce bias as well as error. An integrative literature review consists of theoretical, empirical and conceptual literature forming part of the process in reviewing and will serve as the foundation for new knowledge and practice (Whittemore & Knafl, 2005). The purpose of this ILR is to address the themes, i.e. IPCP, teamwork and stress and conceptualise and synthesize the literature on these topics (Torraco, 2005, p. 357).

2.4.1 Ethical Considerations

Ethical clearance (NWU-00509-19-A1) was given by the North-West University Health Research Committee (NWU-HREC). This study was qualified as a 'no risk study' by the NWU-HREC. An integrative literature review can be classified as a low or no-risk study, as the research does not include any persons or animals, nor does it require empirical data gathering. Thus, the study follows non-maleficence and beneficence procedures. The investigator followed other ethical standards, i.e. honesty, veracity, trustworthiness and an attitude of doing good whilst steering the study in a professional and scientific approach.

2.4.2 Identifying Keywords.

Interprofessional collaboration, teamwork and stress were used as concepts when extracting articles from databases. Generally, the search was limited to higher education although certain literature containing valid information outside of higher education was used in a contextualised manner. There was a wide variety of information available for interprofessional collaboration and teamwork, teamwork and stress but interprofessional collaboration and stress were found to be restrictive in the sense that not many publications were found to support these two concepts together.

In this case, stress and teamwork were combined to service the integration of interprofessional collaboration in learning. The keywords were used in combination as follows: (a) Interprofessional AND Team* AND Stress. Each database search consisted of making use of these three to obtain literature related to the research question. Education was included to include the IPE context as the ultimate aim is to use the findings in this research to understand and improve IP learning in educational settings. Further criteria was used in order to exclude

or include literature for this study. The main objective served as a guideline for the purpose of this research:

To determine the possible relation of team collaboration and perceived stress in interprofessional health teams.

The literature was checked by the supervisor and the necessary inclusions and exclusions were made according to the purpose of this study and the applicability of the published works. The inclusion and exclusion criteria were based on: 1) at least one keyword which had to be present for analysis 2) the scientific quality of the journal where the article or literature was published 3) and limiting publications to the years 2009 – 2019.

2.4.3 Databases for academic use

The NWU library website showed a total number of 302 databases for academic search of which 18 were relevant to this study according to the recommendations of the faculty librarian. The Evidence for Policy and Practice Information or EPPI reviewer software from Microsoft Silverlight (version 5.1.50918.0) was used to aid with the database searches and export the documents. It was used to remove any duplicate publications and only full-text articles and literature was used. The abstract of the articles served as a general guideline of the legibility of that particular publication for this study. A “criterion” was used to determine the publication “fit for purpose and use”. For instance, at least one of the themes needed to be present for analysis; the theme was then considered for contextualising in the study; concurrent views were consulted on the themes and the accessibility of full-text versions were put forth. The journal in which the article or literature was published, was considered. The works of international and national authors in terms of Interprofessional collaboration was synchronised for similarity. Webpage searches were kept at minimal but considered when believed appropriate. The years 2009 – 2019 were selected to analyse the growth of interprofessional collaboration as an emerging concept during a 10 year period. Critical appraisal was done and grey literature, defined by Williams-Whitt et al. (2016) as publications outside of the academic environment like those made available by organisations were excluded as well. In Table 2.1, search results from databases hosted in the search engine, EBSCOhost, are presented.

Table 2.1 provides a graphical representation on the databases found in the EBSCOhost search engine.

Table 2.1: Databases and number of articles found using EBSCOhost before date-limitations

Search terms used– “Interprofessional AND Team* and Stress”	Search results
MEDLINE	308
CINAHL with full text	257
Academic search premier	165
PsycINFO	113
Health Source: Nursing/Academic Edition	101
E-Journals	52
SocINDEX with Full-Text	27
MasterFILE Premier	26
PsycARTICLES	5
Health Source - Consumer Edition	1
<i>TOTAL SEARCH</i>	<i>1055</i>

A total number of 1055 articles were found on the EBSCOhost platform. These searches included all databases that addressed the themes, without date limits. Further searches were conducted on PubMed, Scopus and Web of Science using the same keywords and limiting the search to the dates mentioned earlier. The search on EBSCOhost was also repeated with the date-limitation. The results of this process are presented in Table 2.2.

Table 2.2 provides a graphic representation of the database findings after limitations.

Table 2.2: Document count after the date-limitations

Search terms used: "Interprofessional AND Team* AND Stress"	
Search engines used	After date-limitations and/or automatic removal of duplicate results
EBSCOhost	469
PubMed	196
Scopus	2389
Web of Science	77
Index to SA Periodicals (ISAP)	0
Cochrane Library	9
African Journals (Previously SAePublications)	74
ScienceDirect	1673
<i>TOTAL FINDINGS</i>	<i>4887</i>

2.5 Data Collection

Duplicate data was automatically marked and the number of documents was reduced from 4887 to 4302. Documents were filtered according to the year of publication and those that did not meet the date-limitations were excluded (n= 19) (e.g. PubMed). Title sifting was done on the remaining publications and irrelevant documents were removed which brought down the amount to 349 documents for abstract reviewing. Publications which were not presented in full-text format and which could not be accessed through the university were removed (n=319). Articles with an embargo of 18 months were removed (n=2). Articles not presented in English were removed (n=8). Other relevant articles identified from the reference lists, were added (n=6). Articles lacking content and context, were excluded from critical appraisal (n=8). Ultimately, 18 articles were appraised using the relevant tools. A schematic overview of the literature process is presented in Figure 2.1.

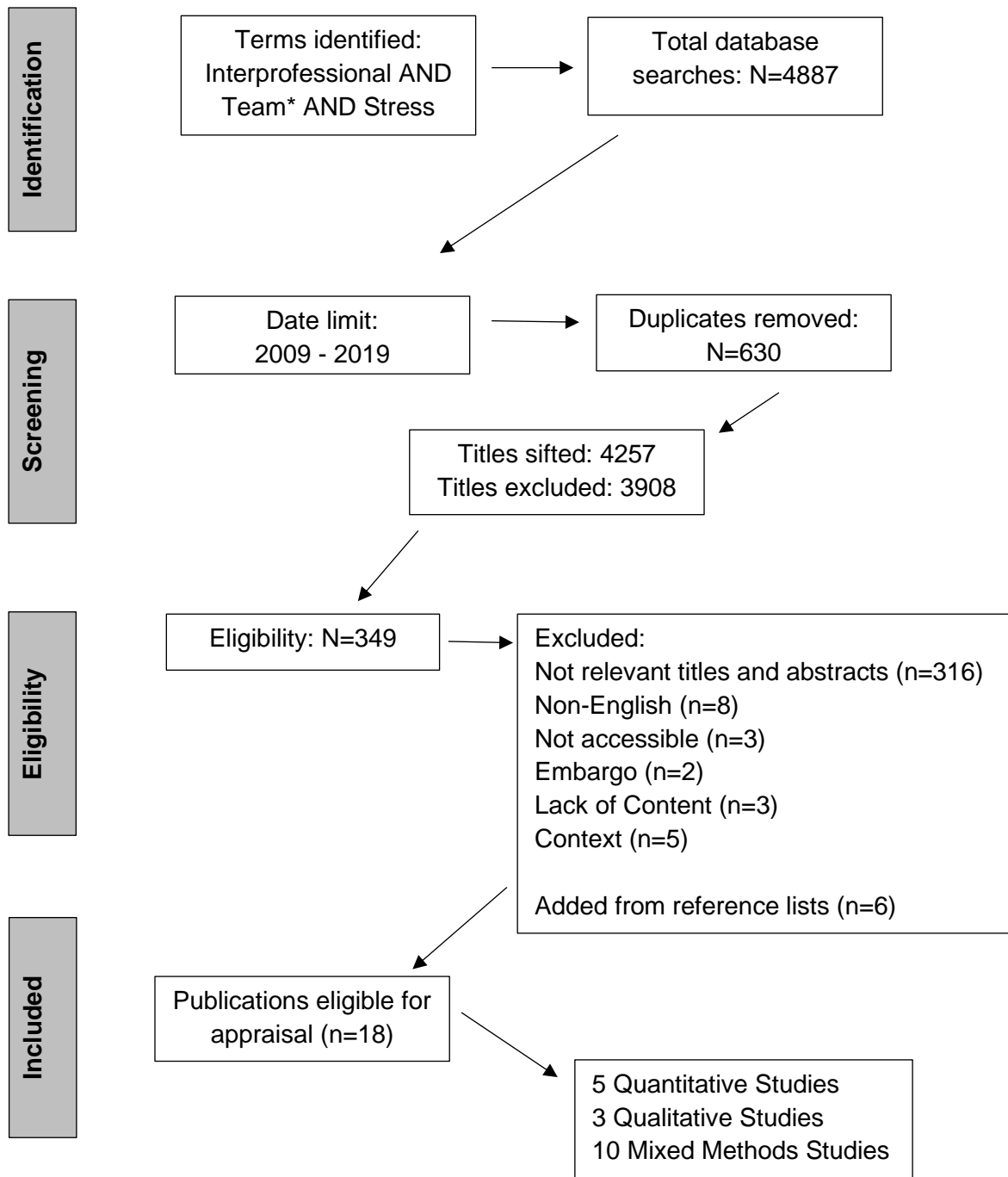


Figure 2.1: The Literature review process summary

2.6 Data Evaluation (analysis)

The final sample of articles and publications was reviewed for quality in terms of the purpose of their research, the data provided, the terms used, the definitions of the themes in their sense of understanding, the sample from the population, methods used to obtain the data, methods used to analyse their findings as well as their results and conclusions on the data. Since the ILR was diverse in terms of sampling, the above-mentioned considerations were appropriate to be used for quality evaluation (Whittemore & Knafelz, 2005). The John Hopkins Research Evidence Appraisal Tool (Addendum B), (John Hopkins University, 2017) was used to evaluate the quantitative studies. The Critical Appraisal Skills Programme (CASP) tool (Addendum C) was used for qualitative studies (CASP, 2018). The CASP tool in addition to the John Hopkins Tool was used for the mixed-methods studies because the John Hopkins Research Evidence Appraisal Tool did not report on all the issues related to qualitative research.

After reviewing the publications, all quantitative studies and quantitative sections of the mixed-methods studies were assessed as given below:

- 1 Does the researcher identify what is known and not known about the problem and how the study will address any gaps in knowledge?
- 2 Was the purpose of the study clearly presented?
- 3 Was the literature review current (most sources within last five years or classic)?
- 4 Was sample-size sufficient based on study design and rationale?
- 5 If there is a control group:
 - (a) Were the characteristics and/or demographics similar in both the control and intervention groups?
 - (b) If multiple settings were used, were the settings similar?
 - (c) Were all groups treated equal except for the intervention group(s)?
- 6 Are data-collection methods described clearly?
- 7 Were the instruments reliable (Cronbach's α [alpha] ≥ 0.70)?
- 8 Was instrument validity discussed?

- 9 If surveys/questionnaires were used, was the response rate $\geq 25\%$?
- 10 Were the results presented clearly?
- 11 If tables were presented, was the narrative consistent with the table content?
- 12 Were study limitations identified and addressed?
- 13 Were conclusions based on results?

For qualitative studies and the quantitative section of mixed-method studies, the CASP tool was used as follows:

- 1 Was there a clear outline of the aim of the research?
- 2 Was the qualitative method appropriate?
- 3 Was the research design appropriate to address the aims of the research?
- 4 Was the recruitment strategy appropriate to the aims of the research?
- 5 Was the data collected in a way that addressed the research issue?
- 6 Has the relationship between the researcher and participants been adequately considered?
- 7 Have ethical issues been taken into consideration?
- 8 Was the data analysis sufficiently rigorous?
- 9 Was there a clear statement of findings?
- 10 How valuable was the research?

Percentages were calculated for the qualitative, quantitative and mixed-method studies. Since the quantitative studies were appraised on the basis of 13 questions, a score was calculated out of 13. If certain traits or aspects were irrelevant or not applicable to the study during the appraisal, then the critical appraisal was calculated accordingly, e.g. if only 12 items were applicable for scoring, then a score out of 12 was determined. The qualitative studies were appraised using 10 questions and therefore, a score was calculated out of 10. For the mixed-method studies calculations, both the CASP and John Hopkins Research Evidence Appraisal Tool were used, so, scoring was done accordingly (Table 2.3-Table 2.6).

Table 2.3: Critical appraisal of Quantitative studies using the John Hopkins Research Evidence Appraisal Tool

Authors	What is known and not known about the problem	The Purpose of the Study	The Literature Review (<5 Years)	Sample Size	Control Group	Data Collection Methods	Instruments Reliable (Cronbach's A [Alpha] > 0.70)	Instrument Validity	The Response Rate > 25%	Clear Results	Table Content And Narrative	Limitations	Conclusions	Critical Appraisal Score	Percentage
Ketcherside, Rhodes, Powelson, Cox, and Parker (2017)	√	√	√	X	N/A*	√	√	√	√	√	√	√	√	11/12	91.6%
King, Shaw, Orchard, and Miller (2010)	√	√	X	√	N/A*	√	√	√	√	√	√	√	√	11/12	91.6%
Maharajan et al. (2017)	√	√	½**	√	N/A*	√	√	√	√	√	√	√	√	11.5/12	95.8%
Reising et al. (2017)	√	√	√	√	N/A*	√	√	√	√	√	√	√	√	12/12	100%

Authors	What is known and not known about the problem	The Purpose of the Study	The Literature Review (<5 Years)	Sample Size	Control Group	Data Collection Methods	Instruments Reliable (Cronbach's A [Alpha] > 0.70)	Instrument Validity	The Response Rate > 25%	Clear Results	Table Content And Narrative	Limitations	Conclusions	Critical Appraisal Score	Percentage
Sexton and Orchard (2016)	√	√	√	√	N/A*	√	√	X	√	√	√	√	√	11/12	91.6%

*Not relevant for the study

**A partial mark given only when the criteria was met partially

Table 2.4: Critical Appraisal of Qualitative studies using the CASP checklist

Authors	Clear statement of aims	Is qualitative method appropriate?	Research design	Recruitment strategy	Data collection	Relationship between researcher and participant	Ethics	Data analysis	Findings	Value of research	Critical appraisal score	Percentage
Aune and Olufsen (2014)	√	√	√	√	√	√	√	√	√	√	10/10	100%
Gum et al. (2013)	√	√	√	√	√	√	½**	√	√	√	9.5/10	95%
Peterson and Brommelsiek (2017)	√	√	√	√	√	√	X*	√	√	√	9/10	90%

*Not relevant for the study

**A partial mark given only when the criteria was met partially

Table 2.5: Critical Appraisal for Mixed-Method studies (quantitative sections) using the John Hopkins Appraisal Tool

Authors	What is known and not known about the problem	The Purpose of the Study	The Literature Review (<5 Years)	Sample Size	Control Group	Data Collection Methods	Instruments Reliable (Cronbach's A [Alpha] > 0.70)	Instrument Validity	The Response Rate > 25%	Clear Results	Table Content And Narrative	Limitations	Conclusions	Critical Appraisal Score	Percentage
Ateah et al. (2011)	√	√	X	√	√	√	√	X	√	√	√	√	√	11/13	84.6 %
Dennis, Furness, Duggan, and Critchett (2017)	√	√	½**	X	N/A*	√	√	√	√	√	√	√	√	10.5/12	87.5 %
Konrad, Cavanaugh, Rodriguez, Hall, and Pardue (2017)	√	√	½**	√	N/A*	√	X	X	√	√	√	√	√	9.5/12	79.1 %
Lachmann, Ponzer, Johansson, Benson, and Karlgren (2013)	√	√	X	X	N/A*	√	¾**	√	√	√	√	√	√	9.75/12	81,25 %

Authors	What is known and not known about the problem	The Purpose of the Study	The Literature Review (<5 Years)	Sample Size	Control Group	Data Collection Methods	Instruments Reliable (Cronbach's A [Alpha] > 0.70)	Instrument Validity	The Response Rate > 25%	Clear Results	Table Content And Narrative	Limitations	Conclusions	Critical Appraisal Score	Percentage
Michalec, Giordano, Dallas, and Arenson (2017)	√	√	X	√	N/A*	√	½**	√	√	√	√	√	√	10.5/12	87.5 %
Paige et al. (2014)	√	√	X	√	√	√	X	X	√	√	√	√	√	10/13	76.9 %
Sadideen, Wilson, Moiemien, and Kneebone (2015)	√	√	X	√	N/A*	√	√	√	√	√	√	√	√	11/12	91.6 %
Shortridge et al. (2019)	√	√	√	√	N/A*	√	√	√	√	√	√	X	√	11/12	91.6 %
Stepney, Callwood, Ning, and Downing (2011)	√	√	X	√	N/A*	√	X	X	√	√	√	√	√	9/12	75%

Authors	What is known and not known about the problem	The Purpose of the Study	The Literature Review (<5 Years)	Sample Size	Control Group	Data Collection Methods	Instruments Reliable (Cronbach's A [Alpha] > 0.70)	Instrument Validity	The Response Rate > 25%	Clear Results	Table Content And Narrative	Limitations	Conclusions	Critical Appraisal Score	Percentage
Turrentine et al. (2016)	√	√	√	√	N/A*	√	X	√	√	√	√	√	√	11/12	91.6 %

*Not relevant for the study

**A partial mark given only when the criteria was met partially

Table 2.6: Critical Appraisal for Mixed-Method studies (qualitative sections) using the CASP checklist

Authors	Clear statement of aims	Is qualitative method appropriate?	Research design	Recruitment strategy	Data collection	Relationship between researcher and participant	Ethics	Data analysis	Findings	Value of research	Critical appraisal score	Percentage
Ateah et al. (2011)	√	√	√	√	√	X	√	√	√	√	9/10	90%
Dennis et al. (2017)	√	√	√	√	√	X	√	√	√	√	9/10	90%
Konrad et al. (2017)	√	√	√	√	√	√	X	√	√	√	9/10	90%
Lachmann et al. (2013)	√	√	√	√	√	X	√	√	√	√	9/10	90%
Michalec et al. (2017)	√	√	√	√	√	√	½**	√	√	√	9.5/10	95%
Paige et al. (2014)	√	√	√	√	√	X	X	√	√	√	8/10	80%
Sadideen et al. (2015)	√	√	√	√	√	√	½**	√	√	√	9.5/10	95%
Shortridge et al. (2019)	√	√	√	√	√	X	X	√	√	√	8/10	80%
Stepney et al. (2011)	√	√	√	√	√	X	√	√	√	√	9/10	90%
Turrentine et al. (2016)	√	√	√	√	√	X	X	√	√	√	8/10	80%

**A partial mark given only when the criteria was met partially

The selected articles were summarised in Tables 2.7-2.9 for data extraction. Extracted data was compared for similarity using a constant comparative method (Creswell & Poth, 2018). A concept matrix table (Table 2.10) was set up which included identified themes presented in the articles which was compared with similar findings from existing literature. To assist with the correctness of the procedure followed, the supervisor and co-supervisor verified the process carried out during the analysis phase.

Table 2.7: The analysis of the eligible Quantitative articles in a summarised format

Quantitative Studies N=5							
Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Ketcherside, M; Rhodes, D; Powelson, S; Cox, C; Parker, J. <i>Journal of Professional Nursing, 33: 370-377.</i>	2017	Translating Interprofessional theory to Interprofessional practice. (Focus: IPCP & IPE)	Kirksville, MO, USA and Brockport, NY, USA.	A total of 148 previous undergraduate students participated. 34 community/public health education professionals and 114 registered nurses participated in the survey. The Interprofessional Socialization and Valuing Scale (ISVS) was contextualised to measure current perceptions and attitudes of interprofessional collaboration.	Descriptive statistics and measures of central tendency had been computed on variables. Independent sample t-tests were conducted to compare mean scores of health education professionals and registered nurse respondents.	Population size not mentioned. According to the authors, the sample size was small. Lack of validity of self-reported data. Instrument was validated with only occupational therapy and nursing students. There is limited generalizability in the greater clinical context.	Positive perceptions and attitudes found in IP collaboration possibly due to early exposure of IPE. The curriculum concentrated on teamwork behaviours and abilities could possibly have contributed to respondents' positive translation of IP theory to IP practice. Recommended for IPE at undergraduate level.

Quantitative Studies N=5

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
King, G; Shaw, L; Orchard, C.A; Miller, S. <i>Work, 35: 77-85.</i>	2010	The Interprofessional Socialization and Valuing Scale: A tool for evaluating the shift toward collaborative care approaches in health care settings. <i>(Focus: IPE)</i>	Bloorview Research Institute, Toronto, Ontario, Canada. University of Western Ontario, London, Ontario, Canada. Middlesex-London Health Unit, London, Ontario, Canada.	124 health professional students participated in the Interprofessional Socialization and Valuing Scale (ISVS) to measure beliefs, behaviours and attitudes.	The ISVS provided conceptual comprehension of central aspects of IP socialization and a way to determine one of the complex dimensions of IPC – the dealings of professionals within a socio-cultural environment.	Population size not mentioned. Sample generally was made up of males. Results cannot be applied to clinicians as they were not properly represented.	Challenge with comfort in working with others. IPE workshops had a strong influence on the perception of working with others, valuing in working with others and appreciation and understanding of interprofessional Practice were matched.

Quantitative Studies N=5

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Maharajan, M.K; Rajiah, K; Khoo, S.P; Chellappan, D.K; De Alwis, R; Chui, H.C; Tan, L.L; Tan, Y.N; Lau, S.Y. <i>Plos One, 12(1): e0168863.</i>	2017	Attitudes and readiness of students of healthcare professions towards Interprofessional learning. <i>(Focus: IPE & IPL)</i>	International Medical University, Kuala Lumpur, Malaysia.	Out of the population of 975, 809 students responded from medical, pharmacy, dental and health sciences programmes by completing the survey. The instruments used were The Readiness for Interprofessional Learning Scale (RIPLS) and The Interdisciplinary Education Perception Scale (IEPS).	Large sample size. Good response rate of 83%.	The study was a cross-sectional and explorative design and therefore, could not be extended to other universities. More research needed for Interprofessional Learning (IPL) and practice.	Students accepted the importance of IPL in healthcare. Students understood the importance of shared learning with clinical problems. Collaborative learning influences perceptions and attitudes for future collaborations. IPL develops communication skills. Attitudes for IPL readiness changed according to the year or level of students from different health professions. IPL should be incorporated in healthcare curriculums.

Quantitative Studies N=5

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Reising, D. L; Carr, D.E; Barnes, R; Garletts, D; Ozdorgan, Z. <i>Journal of Interprofessional Education and Practice, 8: 80-85.</i>	2017	An analysis of interprofessional communication and teamwork skill acquisition in simulation. <i>(Focus: IPE & IPL)</i>	Indiana University, Bloomington, USA	94 nursing and medical students took part in the study where interprofessional communication and team performance were measured as they were expected to work in an interprofessional High Fidelity Simulation setting. The Indiana University Simulation Integration Rubric (IUSIR) was used.	Good sample size. Study was consistent with previous findings and providing more proof on the sequential high fidelity. Simulation's effectiveness in communication.	Population size not mentioned. Study was done with only nursing and medical students.	IP simulation activities improve communication and teamwork skills. The results from this study favoured team training for teamwork and communication skills.

Quantitative Studies N=5

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Sexton, M; Orchard, C. <i>Journal of Interprofessional Care, 30(3): 316-323.</i>	2016	Understanding healthcare professionals' self-efficacy to resolve interprofessional conflict. <i>(Focus: IPECP)</i>	University of Toledo, Ohio, USA and University of Western Ontario, Ontario, Canada.	Population size was 700. 183 licensed individuals from nursing, medical, pharmacy and social work responded to the study. The interpersonal communication competence scale (ICCS-SF), the problem-solving skills scale (PSI) and team self-assessment questionnaire (TSAQ) were used to gather data.	Good sample size and health professions representation.	Low response rate of 29%.	Healthcare professionals indicated a mid-level confidence to solve team conflict and competence in interprofessional communication. Most believed that not having adequate training or education = barrier to solve conflict. Need to educate and train health professionals to solve conflict in interprofessional teams.

Table 2.8: The analysis of the eligible Qualitative articles in a summarised format

Qualitative Studies N=3							
Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Aune, I; Olufsen, V. <i>Midwifery, 30: 353-358.</i>	2014	From fragmented to interdisciplinary understanding of integrated antenatal and postnatal care- An interprofessional project between public health nursing students and midwifery students. <i>(Focus: IPECP)</i>	Sør-Trøndelag University College, Trondheim, Norway.	58 midwifery and public health students participated in the project using reflection notes.	Students were able to reflect freely and anonymously. The qualitative data were analysed carefully through systematic text condensation by the first and second authors.	Only nursing and midwifery students.	Although, initially negative about collaborations, students found blind-spots in their own understandings and awareness about other professions. Interdisciplinary understanding. Change in knowledge and attitudes. Practical collaboration was helpful in optimal care.

Qualitative Studies N=3

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Gum, LF; Richards, JN; Walters, L; Forgan, J; Lopriore, M; Nobes, C	2013	Immersing undergraduates into an interprofessional longitudinal rural placement.	Flinders University Rural Clinical School, South Australia, Australia.	An Integrated Multi-disciplinary Model of Education in Rural Settings (IMMERSe) program was piloted in a rural region of South Australia. 5 students (nutrition & dietetics, speech therapy and paramedics programme) were part of the pilot program. Students' perspectives on rural interprofessional clinical placements were explored through focus group interviews and reflective writing.	The study was undertaken using complexity theory as a conceptual framework. Data analysis took place in relation to the students' views and reflections around professionalism, teamwork and academic relationships.	Only three represented professions. The views of clinicians and educators were not included.	New level of respect for health professionals from other disciplines. Understanding of how to utilise their own roles. IPL in rural community placements improves on teamwork, professionalism and collegiality. IPE is important to allow collaborative works of graduates especially in the rural setting.
<i>The international electronic journal of rural and remote health research, education, practice and policy, 13: 2271.</i>		<i>(Focus: IPE & IPL)</i>	Allied Health/Health Promotion, South East Regional Community Health Service, Mt Gambier, South Australia, Australia.				

Qualitative Studies N=3

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Peterson, J.A; Brommelsiek, M. <i>Journal of Interprofessional Education and Practice, 7: 1-3</i>	2017	Interprofessional education to foster communication and resilience among health professional students. <i>(Focus: IPE)</i>	University of Missouri Kansas City, School of Nursing, Kansas, USA	Students from nursing, pharmacy, clinical psychology and social work participated. Classroom immersion with case studies and patient scenarios were used to add towards humanistic values and interprofessional relations. The focus was on the veteran patient population. Journals for student reflections and focus groups were used to gather data.	Data was collected through weekly reflections from students and end-of-course focus groups using guided semi-structured interviews and detailed discussions of their attitudes and perceptions. Colaizzi's method was used to analyse the data.	'Resilience' needs to be included objectively as a quantitative measure in the evaluation of the original course session.	The Interprofessional Education Collaborative (IPEC) core competencies were central to the curriculum development. The IPE course was offered to build resilience even in stressful situations such as patient challenges and interprofessional conflict. Problem-solving skills, effective coping strategies and confidence in managing negative emotions improved.

Table 2.9: The analysis of the eligible Mixed-Methods articles in a summarised format

Mixed method Studies N=10							
Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Ateah, A. A, Snow, W; Wener, P; MacDonald, L; Metge, C; Davis, P; Fricke, M; Ludwig, S; Anderson, J <i>Nurse Education Today 31: 208-213</i>	2011	Stereotyping as a barrier to collaboration: Does interprofessional education make a difference? <i>(Focus: IPE)</i>	University of Manitoba, Winnipeg, MB, Canada	51 participants were divided into three groups, i.e. control, education and practice site immersion. A modified experimental pre-test, post-test design was used. Students were from medical, nursing, occupational therapy, physical therapy, dental hygiene, pharmacy and dentistry. The Student Stereotypes Questionnaire (SSRQ) and an open-ended question was added to the administration of the SSRQ used to gather data.	Data was collected four times (Before and after the IPE classroom intervention, After the IPE immersion experience and four months later.	Population not mentioned for quantitative section. Small sample size. The study compared the effects of intervention with education with or without immersion, however, there was no comparison on the effects of an education or an immersion intervention.	IP teams should have a basic understanding of other professions and their roles in the healthcare system. The ability of IPL opportunities to increase positive impressions of other professions may contribute to effective teamwork.

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Ateah, A. A, Snow, W; Wener, P; MacDonald, L; Metge, C; Davis, P; Fricke, M; Ludwig, S; Anderson, J <i>Nurse Education Today 31: 208-213.</i> <i>(Continued from previous author)</i>	2011	Stereotyping as a barrier to collaboration: Does interprofession al education make a difference?			Data was analysed with one-way analysis of variance (ANOVA) comparisons between groups to study baseline differences in relation to participant age, sex, program and program-year and two-way repeated measures (2R-) ANOVA comparisons with post hoc means tests (Least Squares) used to examine variations in group ratings.		Exposing students earlier to these learning experiences may aid in establishing effective and collaborative working relationships in the healthcare team.

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Dennis, D; Furness, A; Duggan, R; Critchett, S. <i>Clinical Simulation in nursing, 13: 501-510.</i>	2017	An Interprofessional Simulation-based learning activity for nursing and physiotherapy students. <i>(Focus: IPE & IPL)</i>	Curtin University, Bentley, Australia. Curtin University, Perth, Australia.	198 nursing and physiotherapy students took part. The Satisfaction and Self-Confidence in Learning Survey and five questions from the Instructional Materials Motivational Scale were given to students. Additionally, open-ended questions were asked. Qualitative data was explored using thematic analysis.	The study was a mixed method observational study, thus, results were strengthened. Simulation of a patient-centred scenario was used to bring an IPL activity.	Population size not mentioned for quantitative section. The Satisfaction and Self-Confidence in Nursing' scale has not been validated in other of healthcare providers' groups. No demographic data was captured, which may limit the comparability of this study. Only two professions were included and therefore, the results may not be generalized for other health professions.	Respondents mentioned the benefits of IP interactions, their roles and the roles of others, improvements in communication and working as team to reach the best outcome for the patient.

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Konrad, S.C; Cavanaugh, J.T; Rodriguez, K; Hall, K; Pardue, K. <i>Journal of Interprofessional Education and Practice, 6: 49-54.</i>	2017	A five-session Interprofessional team immersion program for health professions students. <i>(Focus: IPE & IPL)</i>	University of New England, Portland, ME, USA.	30 Students from physical therapy, dental hygiene, occupational therapy, social work, dental medicine, nursing, pharmacy, and physician assistant completed the pre-Interprofessional Team Immersion (IPTI) survey before the program and 32 completed the post-IPTI survey after the program. The Interprofessional Education Perceptions Scale (IEPS) was shortened and used.	Analyse comparing changes in self-reported pre- and post-IPTI ratings on the IEPS and ICCG-GRS were conducted using Wilcoxon Signed-rank tests. An inductive approach was used to thematically code the qualitative data.	Population size not mentioned for quantitative section. Selection-bias. Small sample. Tools with limited validation.	Professional knowledge, role overlaps and appreciation for other professions were revealed in the post-IPTI survey. Students indicated that they would apply what they have learned in their future practice. Desire for more teamwork and patient-centric focus was shown. Teamwork built confidence, communication and reinforced their own abilities.

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Konrad, S.C; Cavanaugh, J.T; Rodriguez, K; Hall, K; Pardue, K. <i>Journal of Interprofession al Education and Practice, 6: 49-54.</i>	2017	A five-session Interprofession al team immersion program for health professions students.		The Interprofessional Care Core Competencies Global Rating Scale (ICCC- GRS) was adapted. Both instruments were self-assessment tools. The survey also included 2 open-ended questions.			

*(Continued
from previous
author)*

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Lachmann, H; Ponzer, S; Johansson, U; Benson, L; Karlgren, K. <i>Journal of Interprofessional Care, 27:137-145.</i>	2013	Capturing students' learning experiences and academic emotions at an Interprofessional training ward. (Focus: IPE & IPL)	Karolinska Institute, Stockholm, Sweden.	42 students (medical, nursing, physiotherapy and occupational therapy) participated by answering 30-40 questionnaires. Students also had to describe certain ratings. They reported their experiences, learning activities and academic emotions many times in a day during the course, with the use of mobile phones.	Descriptive design used to understand experiences and academic emotions during collaborations and triological activities. CASS allows for the collection of frequent and systemic data inspired by the Experience sampling method. Factor analysis was conducted.	Population size not mentioned for quantitative section. Other mandatory activities caused fear of stress resulting in only 37 out of the 42 students completing the study. Small sample size. Non-participants may have led to biased results.	The results showed an understanding of the students' experiences of academic emotions and how new knowledge was created collaboratively. Students experience of stress decreased compared to the first day of interprofessional team ward (IPTW).

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Lachmann, H; Ponzer, S; Johansson, U; Benson, L; Karlgren, K. <i>Journal of Interprofessional Care, 27:137-145.</i> <i>(Continued from previous author)</i>	2013	Capturing students' learning experiences and academic emotions at an Interprofessional training ward.		The Contextual Activity Sampling System (CASS) research methodology and CASS-query application were used to retrieve questionnaires and the CASS questionnaire contained 30 questions of which 18 were included in relation to the objective of this study.			Triological approach (beyond individual and community knowledge) leads to "flow", i.e. experiencing high challenge and competence.

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Michalec, B; Giordano, C; Dallas, S; Arenson, C. <i>Journal of Interprofessional Education and Practice, 6: 71-79</i>	2017	A longitudinal mixed-methods study of IPE students' perceptions of health profession groups: Revisiting the contact hypothesis. <i>(Focus: IPE)</i>	University of Delaware and Thomas Jefferson University, USA.	528 students enrolled for a two-year IPE program called the Jefferson Health Mentors Program (JHMP) completed the Students Stereotypes Ratings Questionnaire (SSRQ). Students from Couples and family therapy (CFT), medicine, nursing, occupational therapy (OT), pharmacy and physical therapy (PT) completed the SSRQ by rating different health profession programs according to academic ability, professional competence, interpersonal skills, leadership abilities, ability to work independently, ability to be a team player, ability to make decisions, practical skills and confidence.	Descriptive statistics were used and the SSRQ was compared with t-test. 20 randomly-selected students from six different health professions took part in the semi-structured sample interviews.	Study was conducted with only one group of students from one institute. Small sample size for quantitative part of the study.	Stereotyping of other health professions decreased. Informal interactions may have a positive impact on the perceptions and knowledge of other health professions.

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Michalec, B; Giordano, C; Dallas, S; Arenson, C. <i>Journal of Interprofessional Education and Practice</i> , 6: 71-79. Continued from previous author)	2017	A longitudinal mixed- methods study of IPE students' perceptions of health profession groups: Revisiting the contact hypothesis.		Interviews were conducted with 20 students.	Coding was done and interviews were compared. For inter-coder reliability, the coding team met before and after each stage of the analysis to discuss outcomes, memos and notes.	There was no 'treatment' group meaning that there was a possibility that stereotypes of students could have shifted overtime without an IPE program. A more extensive study with observations and interviews of the JHMP is needed.	

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Paige, J.H; Garbee, D.D; Kozmenko, V; Yu, Q; Komenko, L; Yang, T; Bonanno, L; Swartz, W. <i>Journal of the American college of surgeons, 218: 140-149.</i>	2014	Getting a head start: High-fidelity, simulation-based operating room team training of Interprofessional students. (Focus: IPE & IPL)	Louisiana State University Health Sciences Center, New Orleans, Los Angeles, USA.	66 students, 18 nursing students, 20 nurse anaesthetist students, and 28 medical students participated. Pre- and Post- training questionnaires were completed and teams were observed with the Operating Room Teamwork Assessment Scale (ORTAS). The Team-Based Behaviours (TBB) and Adaptive Communication and Response (ACR) were used to measure different aspects. Three open-ended questions were asked about the simulation experience.	A quasi-experimental pre-/post-intervention comparison design was used for this study. Pre- and post- scores were analysed with t-tests and mean scores for the teamwork scales were calculated and analysed using one-way ANOVA and t-test. The responses to the open-ended questions were transcribed then analysed using the qualitative methods of Miles and Huberman. Data triangulation was done for trustworthiness.	Population size not mentioned for quantitative section. Small sample size for this study, thus, findings cannot be generalized, however the sample size was within the required range. Three scenarios had an excess of medical students. The ORTAS rating for participants and observers were not individual-based.	High Fidelity Simulation (HFS) Operation Room (OR) team training caused immediate improvement in attitudes and behaviours. Communication improves. Interprofessional student team training improves attitudes and behaviours. HFS helps to transform culture and improve team function.

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Sadideen, H; Wilson, D; Moiemmen, N; Kneebone, R. <i>Journal of Burn and care research, 37(4): 235-242.</i>	2016	Using “The burn Suite” as a Novel High Fidelity Simulation Tool for Interprofessional and Team Training. (Focus: IPC & IPL)	Imperial College London and New Queen Elizabeth Hospital Birmingham, United Kingdom	22 healthcare practitioners which included doctors, nurses, and nursing assistants as well as simulated patients participated in “The Burn Suites (TBS)”, a novel tool to advance the delivery of burns education for clinicians. Five-point Likert-type questionnaires were distributed to evaluate TBS and semi-structured interviews were held to gather data after the simulation experience. TBS was explored within Simulation-Based Team Training (SBTT) and SBTT is used a means to improve interprofessional practice.	TBS is a low-cost, high-fidelity, portable, immersive simulation setting. Five-point Likert-type questionnaires were developed for face and content validity. Semi-structured interviews gathered responses for qualitative thematic analysis allowing data triangulation.	Population size not mentioned for quantitative section. This was a pilot study. There was no follow-up. Limited participants and limited professionals in terms of diversity.	Participants found the experience to be authentic as the simulation had high psychological and social fidelity and it improved interprofessional relations as well as communication and teamwork in burns and other emergencies. TBS was a strong trigger for positive and authentic response. Simulation training can influence specific teamwork competencies without patient harm.

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Shortridge, A; Steinheider, B; Bender, D. G; Hoffmeister, V.E; Ciro, C. A; Ross, H, M; Randall, K; Loving, G. <i>Journal of Interprofessional Education and Practice, 16: 100233.</i>	2019	Teaching and evaluating interprofessional teamwork using sequenced instruction and teamSTEPPS Team Performance Observation Tool (TPOT). (Focus: IPE & IPL)	University of Oklahoma College of Nursing, Tulsa Schusterman Campus, USA. Department of Psychology for author Brigitte Steinheider, College of Allied Health,. Tulsa, Department of Psychology University of Oklahoma.	Out of 98 students enrolled, 63 OT, PT and nurse practitioner (NP) students participated. Five to six interdisciplinary teams were formed. The TPOT survey was completed after one hour to rate team performance in team structure, leadership, situation monitoring, communication, and mutual support. Students were requested to add reflections with the TPOT. 31 reflections were added by students after the teamwork.	Analysis of covariance had been conducted to measure variations in team performance ratings. Reflections indicated that students learnt how to work together in a healthcare team.	Not mentioned, however, no structured analysis for qualitative data was conducted as student reflections were short.	Team performance was positive. Student reflections showed patient-centeredness, respect for other professions and family-centred decision making. Teaching interprofessional knowledge and skills is supported.

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Shortridge, A; Steinheider, B; Bender, D. G; Hoffmeister, V.E; Ciro, C. A; Ross, H, M; Randall, K; Loving, G. <i>Journal of Interprofessional Education and Practice, 16: 100233</i> <i>Continued from previous author)</i>	2019	Teaching and evaluating interprofessional teamwork using sequenced instruction and teamSTEPPS Team Performance Observation Tool (TPOT).	University of Kansas Medical Center, Department of Occupational Therapy. College of Public Health, College of Allied Health, Tulsa Schusterman Campus. College of Nursing, University of Oklahoma Oklahoma City Campus, USA.				

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Stepney, P; Callwood, I; Ning, F; Downing, K. <i>Educational Studies, 37(4): 419-434.</i>	2011	Learning to collaborate: a study of nursing students' experience of Inter-professional education at one UK university. <i>(Focus: IPE & IPL)</i>	School of Health and Wellbeing, University of Wolverhampton, UK. Academic Planning and Quality Assurance, The Office of the Provost, University of Hong Kong, Hong Kong.	105 students were registered and a total of 23 nursing students of which seven were post-graduates and 16 were undergraduates completed the questionnaire after collaboration. The pre-survey was used before the training and the post- survey was used after training to collect data. Semi-structured interviews were conducted at the end of the module. Two self-completion questionnaires which included, open and closed questions were used.	Mixed-methods design. Before and after methods confirmed the nature of independent variables. Longitudinal designs indicated the directions of causal influences. Study was enriched through open and closed questions and qualitative data interviews. A non-parametric statistical analysis (Rao-Scott-corrected chi-square analysis) was conducted to check statistical significance.	Small sample size for quantitative data. Focused on only nursing students' data. The questionnaire did not use previously-tested scales. Before and after methods used have weak internal validity. Stability of questions needs creation by using a larger sample size. Control group may be added as well as random allocation of participants.	Undergraduates and postgraduates differed in their understanding of collaboration. The importance of cohesion in teams, need for tolerance and respect, good communication and inter-dependence were confirmed during interviews. Good communication, interprofessional teamwork and respect for others in ethical practice are central for interprofessional working. Learning collaboratively is important for collaborating in practice.

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Stepney, P; Callwood, I; Ning, F; Downing, K. <i>Educational Studies, 37(4): 419-434.</i> <i>Continued from previous author)</i>	2011	Learning to collaborate: a study of nursing students' experience of Inter-professional education at one UK university.				Rao-Scott-corrected chi-square analysis only indicated the existence of a relationship and little on the strength of it. Additionally, students mentioned insufficient time and trust to collaborate.	

Mixed method Studies N=10

Authors	Date	Title	Setting	Sample and Data sources	Strengths of the research	Limitations of the research	Main findings
Turrentine, F. E; Rose, K. M; Hanks, J. B; Lorntz, B; Owen, J. A; Brashers, V. L; Ramsdale, E. E. <i>Nurse Education Today, 40: 33-38.</i>	2016	Interprofessional training enhances collaboration between nurses and medical students: A pilot study. (Focus: IPE & IPL)	University of Virginia, Department of Surgery; Department of Medicine, Emily Couric Cancer Center; School of Nursing, Charlottesville, USA.	145 fourth year nursing, Clinical Nurse Leader, and Registered Nurse to Bachelor of Science in Nursing students and 155 fourth year medical students were invited to participate. 15 nursing and medical students completed a pre and post-test, before and after collaborations on standardized patients. Students were shown a geriatric assessment videotape showing collaborative behaviour and teaching geriatric assessment skills. A study team member examined student interactions and took notes during the project.	A 10-question geriatric test was administered. The pre- & post-test were validated by content experts. Data was analysed with descriptive statistics, paired samples t-tests and independent samples t-test.	Small sample for quantitative data. Measuring IPE skills was limited to time. Every interaction was not recorded and thus, transcript analysis could not be performed.	Learning geriatric assessment skills with IPE aims allowed students to work together and examine patients. An analysis of the notes suggested that shared problem solving, conflict resolution, patients' needs, decision-making, roles, communication and sharing knowledge portrayed interprofessional skills.

Table 2.10: Concept Matrix table for the Integrative Literature Review

Articles for ILR	Themes mentioned											
	Stress	Conflict	Confidence	Respect	Knowledge and/or skills	Perceptions and/ or attitudes	Roles	Communication	Optimal patientcare/ healthcare	Collaborative value	Interprofessional education	Team/ Teamwork
*Mixed methods studies ** Qualitative studies *** Quantitative studied												
Ateah et al*			√				√		√	√	√	√
Aune & Olufsen**						√	√		√	√	√	√
Dennis et al.*				√			√	√	√	√	√	√
Gum et al.**				√	√	√	√	√	√	√	√	√
Ketcherside et al.***					√	√					√	√
King et al.***						√				√	√	√
Konrad et al.*			√		√		√	√		√	√	√
Lachmann et al.*	√				√						√	√
Maharajan et al.***						√		√	√	√	√	√
Michalec et al.*						√	√			√	√	√
Paige et al.*						√		√			√	√
Peterson & Brommelsik**	√	√	√		√	√			√		√	√
Reising et al.***								√			√	√
Sadideen et al.*					√				√	√	√	√
Sexton & Orchard***		√	√					√	√		√	√
Shortridge et al.*				√	√		√			√	√	√
Stepney et al.*	√			√			√	√		√	√	√
Turrentine et al.*		√			√			√	√	√	√	√
Total	3	3	4	4	8	8	8	9	9	12	18	18

The summaries from 'Table 2.7-2.9' were used to create the concept matrix table above (Table 2.10) where the themes mentioned were listed and compared. Interprofessional, Team and Stress, formed the central points in compiling the concept matrix table.

2.7 Results and Discussion

The concept matrix table acknowledged themes relevant to IPE. Data extraction was done to understand the relevance of the initial IPE themes with existing literature. Themes were identified, schematically represented in Figure 2.2 and discussed thereafter.

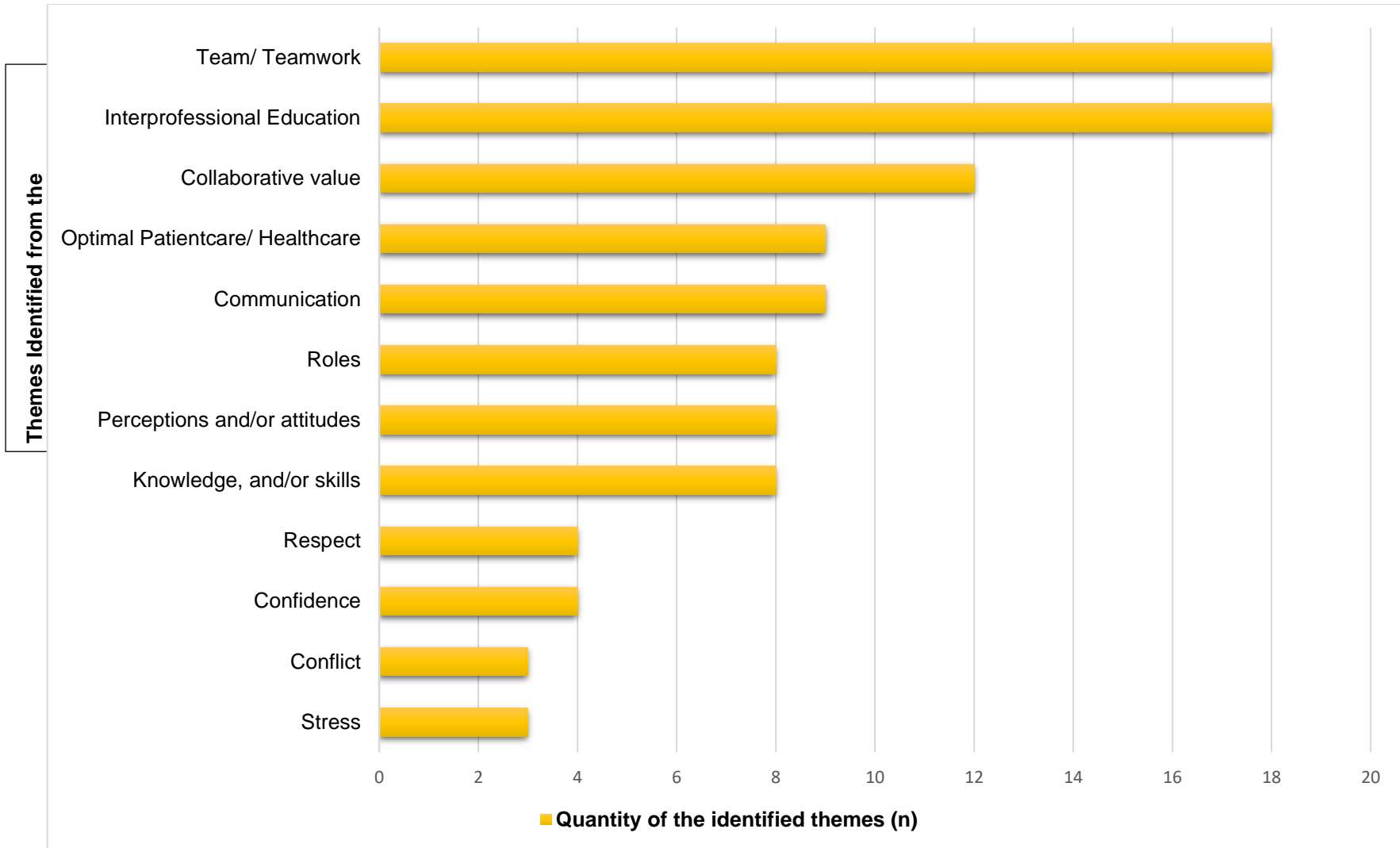


Figure 2.2: A schematic representation of themes identified from appraised literature

As expected, team collaboration and interprofessional learning, were the themes most abundantly represented in the articles. However, stress (and conflict) were the least addressed, although stress was one of the main keywords used during the literature search. In the following section, the different themes as identified in the literature will be discussed. The three main themes were **stress**, **team** and **interprofessional** and sub-themes as they emerged from the literature were elaborated on. Some themes overlapped and were subsequently discussed under more than one concept.

2.7.1 Stress

Stress as a theme in IP collaboration was mentioned in only three of the 18 articles. Stress was acknowledged during IPE immersion experiences, and also coping skills required against stressors, leading to resilience, were acknowledged. Peterson and Brommelsiek (2017) mention that success in stressful or adverse situations, requires resilience. Anticipating challenges and coping with them in IP learning can help students develop confidence to manage stress and negative emotions. The intensity and impact of stress must be foreseen so that planning can take place beforehand (Neves De Jesus & Conboy, 2001), and students can be prepared so that they will know how to function in a stressful situation.

It is apparent from the literature that hierarchies and power relations may influence the experience of stress. Stepney et al. (2011), identified one respondent who mentioned experiencing stress due to limited opportunity to collaborate as a result of power relations and hierarchies. Gergerich, Boland, and Scott (2019) mention that poor communication and conflict may result from these hierarchies. Once hierarchies form, support may be limited to certain professions. Greenberg (2011) confirms that the lack of support is one of the major causes of stress. This meant that collaborations may fail because individuals find comfort in knowing that they are able to confide in their team and seek guidance, which is not possible under hierarchies and power relationships.

Students may experience high levels of stress when starting out on interprofessional collaborative practice, but as they work collaboratively over time, stress may decrease. Lachmann et al. (2013) investigated learning experiences and academic emotions (including stress) of students participating in an Interprofessional Training Ward (IPTW) programme. Students in this study were given phones to access questionnaires five times per day. The CASS questionnaire-rating for stress was found to be high on the initial day ($p < 0,001$) compared to the other days. This could be due to the fact that the course was a new form of learning and students had not had previous contact, communication or understanding of the different health professions. Lachmann et al. (2013) found that initial participation in the IPTW

programme was limited, apparently due to student-fear of experiencing increased stress. However, as the course continued, the students' experience of stress decreased.

Another cause of stress is what Greenberg (2011) calls 'role ambiguity'. He explains that role ambiguity causes stress when individuals are unclear about their roles and expectations, therefore, role clarification is important. Early exposure in IPE may possibly reduce role ambiguity, improve better patientcare as well as future collaborations (Soubra, Badr, Zahran, & Aboul-Seoud, 2018).

2.7.2 Conflict

Although this theme was only addressed in three of the articles, conflict can be one of the reasons for creating stress in team collaboration (Deshkulkarni, 2009). There are various reasons for interprofessional conflict, e.g. hierarchy and moral dilemmas (Peterson & Brommelsiek, 2017). Peterson and Brommelsiek (2017) offered an IPE course where health conditions and the patientcare challenges were imbedded with potential team-conflict. In their study, interprofessional student-teams were able to manage challenges and conflicts surrounding ethics, cultural differences and hierarchies in the healthcare environment. Sexton and Orchard (2016) indicate that communication skills were linked with confidence in resolving conflict, however, there is a lack of addressing these topics in health education and training. Goldberg (2015) mentions 'Communication' as one of the competencies gained in an interprofessional environment. Listening and speaking are not the only aim of communication but it also provides effective feedback when there is conflict in a team. Turrentine et al. (2016) reports that conflict resolution was used to address the different opinions and recommendations of students. These studies highlighted the need of imbedding conflict in learning so that individuals are able to counter those tensions by developing coping and conflict resolution skills.

2.7.3 Respect for professional roles

Respect is a theme that was addressed in four of the 18 articles. Stepney et al. (2011) found that tolerance and mutual respect in interprofessional teams are important. O'Daniel and Rosenstein (2008) mentions that respect is one of the characteristics that determine an effective team. The field of IPE demands that various professionals are able to work together and learn from one another (Bridges, Davidson, Soule Odegard, Maki, & Tomkowiak, 2011). Appreciation and respect for professional roles, role-overlap and the importance of one's own role have been identified as key learning gains by students (Aune & Olufsen, 2014; Dennis et al., 2017; Gum et al., 2013; Konrad et al., 2017). Each individual has a certain role and specific

responsibilities in an IP team. According to Konrad et al. (2017), engagement into interprofessional teams increases student knowledge about other professions. Gum et al. (2013) explains that when students identify and understand overlaps in health roles, they are able to respect one another better. This in turn will promote collaboration, as Lankhof (2018) found that there is a positive relationship between mutual respect and collaboration.

Gorman, Cooke, and Amazeen (2010) explain that stress and conflict may play an important role when collaboration happens when managing tasks (Gorman et al., 2010). A non-significant role or lack of respect of an individual in a team, where a person feels that he or she is rejected, criticized or judged by others, may contribute to stress (Folkman, 2013). Isolation may be felt, leading to negative emotions and affecting communication as well as contributions to meeting goals. Therefore, there is a possibility that, whilst learning from other fields of knowledge, individuals may find it difficult to grasp certain ideas. This may bring about stress when they are unable to fully understand why certain routes to treatment are chosen over others. Hence, when facing this, efficient communication through mutual respect and professional recognition, is stimulated.

2.7.4 Confidence

Confidence was addressed in four of the 18 articles. From the literature, it is apparent that confidence in interprofessional collaboration increases when knowledge and understanding of other health professions increases. Ateah et al. (2011) mention that there was an increase in confidence after the post-immersion survey, suggesting that healthcare professionals require IPE to improve healthcare education. Konrad et al. (2017) indicated that through Interprofessional Team Immersion (IPTI) student knowledge of other health professionals increased and this helped them to gain confidence as they worked collaboratively in these teams. Peterson and Brommelsiek (2017) found that participants gained confidence in managing negative emotions, e.g. stress during interprofessional collaboration, thus assisting in coping strategies throughout challenging situations which influence confidence. Sexton and Orchard (2016) reported that healthcare professionals felt that they had the confidence to resolve team conflicts as they had experience in interprofessional team resolutions and conflict management. Working in an interprofessional setting leads to the development of confidence which can assist with team cohesion when resolving conflict. The collaborative approach in interprofessional teamwork helped with the management of negative emotions and with conflict resolution.

2.7.5 Perceptions and/or Attitudes

Research studies on perceptions and attitudes of students and health workers in IPE and IPCP were more common, with eight articles reporting on this theme. Studies such those by Maharajan et al. (2017), Michalec et al. (2017), Paige et al. (2014) and Ketcherside et al. (2017) mention the improvement of perceptions and attitudes towards other health professionals during IP teamwork. King et al. (2010) address the importance of self-perceived ability to work with others in terms of how they perceive themselves and others. If there is limited exposure to other health professionals in IP teamwork, individuals may not completely break free from professional segregations and then, when expected to collaborate, individuals may not want to cooperate in reaching goals as an IP team during teamwork. This can lead to barriers in learning through IPE which affects communication in teamwork and leads to stress (Deshkulkarni, 2009).

2.7.6 Communication

Communication in IPCP and IPE was one of the themes that came out more strongly, with half of the articles (n=9) referring to communication. Interprofessional communication was important during teamwork so that patient safety was promoted (Keller, Eggenberger, Belkowitz, Sarsekeyeva, & Zito, 2013).

Reising et al. (2017) reported that communication and teamwork skills were evident during simulation training. Stepney et al. (2010) also reported that students saw the importance of communication and teamwork skills in benefitting patientcare (Stepney et al., 2011). Dennis et al. (2017) stated that communication could change the manner in which patient-care occurs. Thistlethwaite and Moran (as cited in Lachmann et al., 2013) mentioned that one of the key learning outcomes in IPE and IPCP was communication. Gum et al. (2013) based a program in a rural setting where working in professional isolation was broken through interprofessional and team collaboration. Lack of communication due to working or learning in segregation could lead to ineffective team functioning, which in turn might increase stress in IP teams.

2.7.7 Optimal Patientcare/ Healthcare

The main drive for IPCP and IPE is to provide optimal patientcare and quality healthcare (Frenk et al., 2010). Nine of the 18 articles specifically referred to optimal patient or healthcare as an outcome of team collaboration.

Peterson and Brommelsiek (2017) used IPE immersion to prepare students in delivering optimal care. Students commented on interactions with one another for providing optimal care

with confidence, coordination and commitment to support patientcare. Sadideen et al. (2015) report that they used simulated training to allow students to practise skills safely without harming the patient and improving patient satisfaction. During interprofessional simulation training, students experience the challenges of taking care of a patient as if it were in the real world, with the same pressure and expectation. These students have to function in teams, under stress (even though simulated), which could improve their performance (O'Sullivan, 2011). In IP teamwork, positive stress (eustress) is encouraged. Gorman et al. (2010) agree that positive stress can assist with facilitating the execution of a task and probing cooperation in a collaborative setting. So, success in optimal healthcare requires some input of stress in order to unify a team and allow its members to work together to achieve health goals.

2.7.8 Value of collaboration

A theme that was significantly presented in 12 of the 18 articles was the value of working collaboratively in IP teams. Collaboration was reported as valuable for learning, for patientcare and it increased over time in an interprofessional setting where individuals were required to work together in order to overcome health challenges.

In terms of learning, Maharajan et al. (2017) mention that attitudes and levels of learning, i.e. their year of study, and degree of willingness or readiness to learning, amongst students play a role in interprofessional collaboration. The study made use of the Readiness for Interprofessional Learning Scale (RIPLS) and Interdisciplinary Education Perceptions Scale (IEPS) to gather data. Respondents indicated that shared learning developed communication skills in healthcare although they preferred to work with people from their own field. The findings also indicated that the level of learning played a role in the perceptions and attitudes of students, where 'teamwork and collaboration' was higher for 4th years compared to 2nd years. Konrad et al. (2017) used the post Interprofessional Team Immersion (IPTI) survey and found that participants agreed to the value of collaboration. The study also mentioned the role of patient-involvement and feedback in a collaborative setting in providing quality learning.

King et al. (2010) used the Interprofessional Socialization and Valuing Scale (ISVS) to measure self-perceived ability to work with others, value in working with others and comfort in working with others. They found that although there were positive attitudes indicated by participants when it came to collaborative value and comfort, there was a low correlation (0.34) between these items. This meant that there were positive responses associated with the collaborations but the results indicated low comfort levels bringing us back to the study of Lachmann et al. (2013) where students reported that it was uncomfortable and stressful for them to work with individuals whom they did not initially know. Ateah et al. (2011) confirm that

learning in an interprofessional setting would develop patient-centred collaborative practices whereas Turrentine et al. (2016) provide evidence of IPE skills, through the analysis of observational notes, during interactions which included the recognition of patient-needs. Early exposure to Interprofessional teamwork can reduce stress and improve comfort whilst collaborating. Wilhelmsson, Ponzer, Dahlgren, Timpka, and Faresjo (2011) found that students who had been exposed to IPE at an earlier stage were more positive towards teamwork. Once the exposure to IP teams takes effect, competencies such as communication, attitudes, patient-centred care and simulated learning would take place.

2.7.9 Team/ Teamwork

As expected, all the articles referred to teamwork, as it was one of the keywords used in the literature-search confirming that 'teamwork' is one of the central components of IPCP and IPE. Dennis et al. (2017) mention that working together, in an interprofessional setting, promotes optimal patientcare. Teamwork is necessary for optimal healthcare in order to overcome complex health challenges, as was explicitly stated by Ateah et al. (2011). The important role of a team leader in effective team-functioning was evident in the literature. Although IPCP and IPE require the input of a collaborative team, a team leader is required to guide the team in timeously achieving health goals. Greenberg (2011) indicates that some team members may not feel the need to work together which could cause stress; thus, the responsibility of others to participate is under the care of the leader so that members may contribute. As the leader of the team, it is the duty of the front-runner to make certain of the responsibilities, awareness, satisfaction and contribution of each team player (Lovelace, Manz, & Alves, 2007; Selart & Johansen, 2011) and the team as a whole. The leader must prepare the members to become resilient to stress in particular situations so that the operations of a task are in line with the limitations of time. Additionally, the leader should be able to recognise factors that are most likely to cause stress within teams or in the collaborative environment.

2.8 Conclusion

The results of the ILR showed that interprofessional collaboration and teamwork were commonly addressed in IPCP and IPE research; the term stress, however, was not extensively reported on. Through the analysis phase, it came about that additional terms were used or situations were described that could **either** decrease stress (e.g. experiencing the value of collaboration, increasing confidence, understanding different professions and their roles) , **or** increase stress (e.g. lack of respect, lack of communication, resistance to work in interprofessional teams, inexperience or newness to the IP environment and conflict). In order

to provide a clear overview of the findings of the ILR, a conceptual framework depicting the link between IPE, teamwork and stress was developed (Figure 2.3).

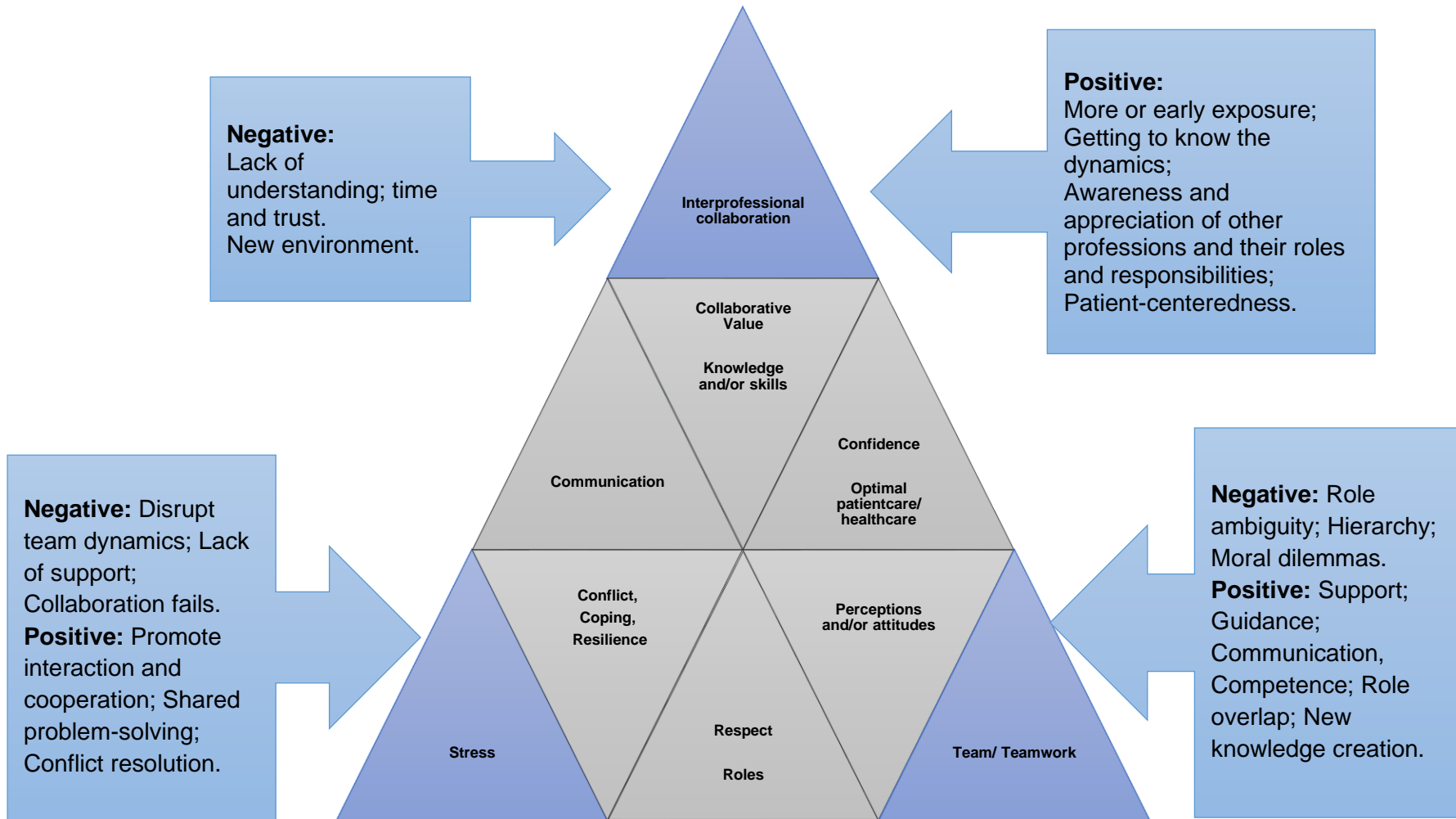


Figure 2.3: A conceptual framework depicting the link between IPE, teamwork and stress

In this framework, the three main concepts (stress, team/teamwork and interprofessional collaboration) present the outer corners of the triangle as well as their positive and negative aspects. The centre of the figure (in grey) provides the themes which play a role in the main concepts which were identified by the ILR. Interprofessional collaboration, if not implemented timeously may lead to negative factors such as a lack of understanding in collaborative teams, lack of time to collaborate and lack of trust as individuals may find it to be a new environment (especially if there was limited or no prior exposure to collaborate). The positive aspects of interprofessional collaboration include more or early exposure so that individuals are better prepared for the health environment, getting to know the dynamics of collaboration, awareness and appreciation of other professions and their roles and responsibilities and promoting patient-centeredness.

Similarly, 'team/ teamwork' has negative and positive aspects in IP collaboration such as role ambiguity that can cause conflict and affect communication; hierarchy in the healthcare system affects interpersonal relations and causes moral dilemmas. The positive aspects include support since stressful conditions demand cooperation, guidance from members, and support induces communication in teams, improves competence in teamwork, understands role overlap and assists with new knowledge creation.

Stress may be viewed as negative and positive during IP collaboration and during IPE. The negative aspects include: disruption of team dynamics as conflict may arise, lack of support possibly due to the hierarchies and collaboration failure under increased stress. The positive aspects include: promoting interaction and cooperation, and sharing problem-solving and conflict resolutions.

Take home message

Stress is an important factor that can influence teamwork, which is critical in interprofessional collaboration. Educators, health professionals and managers should be aware of the different factors that can create stress, either with a positive or a negative impact on IPEPC.

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CHAPTER 3: CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This dissertation was presented in three chapters, with Chapter 1 presenting the introduction and background of the research, as well as details of the methodology not included in Chapter 2 (Manuscript). In this chapter (Chapter 3), the aim and objective will be revisited, concluding comments on the ILR and findings will be provided, the limitations of the study will be declared and lastly, the recommendations for IPCP and IPE, as well as further research, will be stated.

3.1 Introduction

The focus of this study was on interprofessional collaboration and teamwork, and the possibility of a link between these two concepts and stress. An integrative literature review was conducted to investigate if there were research publications available where the link between interprofessional collaboration, teamwork and stress was evident.

3.1.1 Aim and objective.

The aim was to determine whether there is a possible relationship between *interprofessional collaboration and stress in health teams through a literature study*.

The main objective of this study was to investigate the possible relation of *interprofessional collaboration and perceived stress in health teams through a literature study*.

3.1.2 Conclusion regarding the literature review.

During the integrative literature review, 18 studies were identified that conformed to the inclusion criteria set out at the beginning of the study. The articles conformed to the quality criteria presented in the Johns Hopkins Nursing Evidence-Based Practice Research Evidence Appraisal Tool and the Critical Appraisal Skills Programme instruments.

Out of these studies, all 18 were linked to Interprofessional Collaboration and Teamwork, yet only three studies mentioned **stress** as a possible factor in interprofessional collaboration and/or teamwork. In the other studies, factors that could contribute to either positive or negative stress were mentioned, especially in the context of collaborative teamwork within an interprofessional scenario. These factors were: conflict; respect; confidence; perceptions; communication and collaboration. Other factors that played a role in the interprofessional team dynamics included interprofessional education, teamwork, knowledge and/or skills, roles and optimal patientcare/healthcare.

3.1.3 Conclusion regarding the aim and objective.

In conclusion, this study found that literature on **IP collaboration** and **teamwork** as a link was much more common than literature linking **stress** to these two concepts. The appraised literature acknowledged some forms of stress, or factors that may contribute to stress in team collaboration within an IP context, but this link was not clearly stated in most of the articles. Although most of the literature did not mention the word 'stress' in relation to IP collaboration and teamwork, there was enough evidence of related factors to confirm a possible relationship between IP collaboration, teamwork and stress. These factors were further analysed and described to show how they influenced stress, interprofessional collaboration and teamwork. They can have positive and/or negative influences on the above-mentioned key concepts. These influences are discussed under 'results and discussion' in Chapter 2, presented in Figure 2.3 and followed by a brief explanation thereof.

3.2 Limitations

The researcher acknowledges that certain limitations would have an influence on the findings. These limitations include:

- Limited access to articles due to the embargo set on retrieving them from the databases available from the NWU.
- The language structure used (other than English) meant that those publications could not be included for evaluation.
- Literature which did not fall under the date limits was excluded. There may have been relevant publications that were not included due to the date-settings.
- Title and abstract sifting was done, and therefore, not all the articles were thoroughly read for data extraction, meaning that some important information could have been missed.
- No distinction was made between articles that focused on health professionals and health students.
- The contents of certain studies that did not meet the 'inclusion criteria' for the ILR were removed. Thus, there was a possibility that important information was not included from the publications that were removed based on the inclusion criteria.
- Certain publications that were added from the reference list of the included articles meant that there was also a possibility of "missing out" on important data from the reference lists

of the excluded articles. The reference lists of these excluded documents might have contained sources with works or findings which could have been beneficial to this study.

- The ILR process was conducted in a limited time and therefore, research that was in progress or yet to be published during this time could not be included and only published articles were analysed.
- Although key words were used to widen the search results on the databases and to find publications for the ILR, some valuable studies may have been possibly missed or left out due to the key words used.
- Another shortcoming of the ILR process is that, depending on the type of research or study one conducts, literature bias could be an issue during data-collection. These limitations could possibly influence the omission of important information as well as the final outcome of the results. Therefore, more than one person could have been involved in screening articles and determining the inclusion and exclusion of the articles in order to limit literature bias.
- Articles were generally focused on IPE and training or learning within this setting, therefore, results are generally applicable to the education context.

3.3 Recommendations

After concluding this study, the following recommendations for IPCP and IPE (as well as for further research) were identified:

3.3.1 Recommendations for IPCP and IPE.

- Teamwork is integral to IP collaboration, whether in practice or during IPE. It is recommended that IP teams take into consideration that team members may experience different levels of stress which may impact performance (positively and negatively), due to a number of related factors. Effective team management (e.g. through good team leadership) and being aware of the factors in interprofessional contexts that may contribute to stress, may influence IP collaboration positively.
- This is also important when learning is involved, as student-learning is influenced (positively and negatively) by stress. The value of IP collaboration and teamwork in IPE may be diminished if students are not equipped to handle stressful situations. Equipping students with the necessary skills to predict and overcome adversities such as stress may positively affect the manner in which they overcome health challenges once they graduate.

IPE should thus focus on training students to work successfully in teams in stressful conditions, so that they can prevail successfully despite those conditions.

3.3.2 Recommendations for Further Research.

- The study established a gap in literature in terms of finding limited evidence of a link between stress and the other two concepts (interprofessional collaboration and teamwork). Future research on how students and health professionals experience stress in a team during IPE and IPCP and how it impacted on interprofessional collaboration and teamwork, needs to be conducted and published.
- Stress needs to be extensively researched as it has an influence on team dynamics, reaching objectives and determining the intensity of optimal patientcare.

3.4 Closing Statement

Interprofessional collaboration and teamwork involves health professionals (and students) working closely with one another to provide quality patientcare and to learn along with and from different professions. Working in teams, especially in a healthcare environment where the health of a patient is involved, can be stressful for those involved. The experience of stress, whether positive or negative, can influence team dynamics, successful collaboration and ultimately, patientcare. In addition, in an educational set-up, stress may influence student learning, especially when IPE is new and students still lack confidence. The ILR methodology was used to find evidence of a perceived link between interprofessional collaboration, teamwork and stress. A clear link between IPC and teamwork was found, but the evidence linking stress to these two concepts was limited. The aim and objective of this study have been successfully reached and the research question was answered.

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ADDENDUM A: RESEARCH ETHICS COMMITTEE LETTER



Private Bag X1290, Potchefstroom
South Africa 2520

Tel: 086 016 9698
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**North-West University Health Research Ethics
Committee (NWU-HREC)**

Tel: 018 299-1206
Email: Ethics-HRECApply@nwu.ac.za (for human
studies)

28 August 2019

RESEARCH ETHICS COMMITTEE LETTER OF DECISION: NO RISK

Based on the review by the North-West University Health Research Ethics Committee (NWU-HREC) on 26/08/2019, the NWU-HREC hereby clears your study as a no risk study. This implies that the NWU-HREC grants its permission that, provided the general conditions specified below are met, the study may be initiated, using the ethics number below.

Study title: The relationship between stress and teamwork during interprofessional collaboration: an integrative literature review																															
Principal Investigator/Study Supervisor/Researcher: Prof GM Reitsma																															
Student: F Delawala - 24965480																															
Ethics number:	<table border="1"><tr><td>N</td><td>W</td><td>U</td><td>-</td><td>0</td><td>0</td><td>5</td><td>0</td><td>9</td><td>-</td><td>1</td><td>9</td><td>-</td><td>A</td><td>1</td></tr><tr><td colspan="3">Institution</td><td colspan="5">Study Number</td><td colspan="2">Year</td><td colspan="5">Status</td></tr></table>	N	W	U	-	0	0	5	0	9	-	1	9	-	A	1	Institution			Study Number					Year		Status				
N	W	U	-	0	0	5	0	9	-	1	9	-	A	1																	
Institution			Study Number					Year		Status																					
<u>Status:</u> S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation																															
Application Type: Single study	Risk: <table border="1"><tr><td>No Risk</td></tr></table>	No Risk																													
No Risk																															
Commencement date: 28/08/2019																															

General conditions:
<i>The following general terms and conditions will apply:</i>
<ul style="list-style-type: none">• The commencement date indicates the first date that the study may be started.• In the interest of ethical responsibility, the NWU-HREC reserves the right to:<ul style="list-style-type: none">- request access to any information or data at any time during the course or after completion of the study;- to ask further questions, seek additional information, require further modification or monitor the conduct of your research;- withdraw or postpone clearance if:<ul style="list-style-type: none">· any unethical principles or practices of the study are revealed or suspected;· it becomes apparent that any relevant information was withheld from the NWU-HREC or that information has been false or misrepresented;· submission of the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and/or· new institutional rules, national legislation or international conventions deem it necessary.• NWU-HREC can be contacted for further information via Ethics-HRECApply@nwu.ac.za or 018 299 1206

The NWU-HREC would like to remain at your service and wishes you well with your study. Please do not hesitate to contact the NWU-HREC for any further enquiries or requests for assistance.

Yours sincerely,



Digitally signed by Wayne
Towers
Date: 2019.09.04
15:56:57 +02'00'

Prof Wayne Towers
Chairperson NWU-HREC



Digitally signed
by Prof Minrie
Greeff
Date: 2019.09.10
06:20:27 +02'00'

Prof Minrie Greeff
Head of the Faculty of Health Sciences Ethics Office

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26 August 2019

File reference: 9.1.5.4.3

ADDENDUM C: CASP TOOL



CASP Checklist: 10 questions to help you make sense of a **Qualitative** research

How to use this appraisal tool: Three broad issues need to be considered when appraising a qualitative study:

- ▶ Are the results of the study valid? (Section A)
- ▶ What are the results? (Section B)
- ▶ Will the results help locally? (Section C)

The 10 questions on the following pages are designed to help you think about these issues systematically. The first two questions are screening questions and can be answered quickly. If the answer to both is “yes”, it is worth proceeding with the remaining questions. There is some degree of overlap between the questions, you are asked to record a “yes”, “no” or “can’t tell” to most of the questions. A number of italicised prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.

About: These checklists were designed to be used as educational pedagogic tools, as part of a workshop setting, therefore we do not suggest a scoring system. The core CASP checklists (randomised controlled trial & systematic review) were based on JAMA ‘Users’ guides to the medical literature 1994 (adapted from Guyatt GH, Sackett DL, and Cook DJ), and piloted with health care practitioners.

For each new checklist, a group of experts were assembled to develop and pilot the checklist and the workshop format with which it would be used. Over the years overall adjustments have been made to the format, but a recent survey of checklist users reiterated that the basic format continues to be useful and appropriate.

Referencing: we recommend using the Harvard style citation, i.e.: *Critical Appraisal Skills Programme (2018). CASP (insert name of checklist i.e. Qualitative) Checklist. [online] Available at: URL. Accessed: Date Accessed.*

©CASP this work is licensed under the Creative Commons Attribution – Non-Commercial-Share A like. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-sa/3.0/> www.casp-uk.net

Paper for appraisal and reference:

Section A: Are the results valid?

1. Was there a clear statement of the aims of the research?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

- HINT: Consider
- what was the goal of the research
 - why it was thought important
 - its relevance

Comments:

2. Is a qualitative methodology appropriate?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

- HINT: Consider
- If the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants
 - Is qualitative research the right methodology for addressing the research goal

Comments:

Is it worth continuing?

3. Was the research design appropriate to address the aims of the research?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

- HINT: Consider
- if the researcher has justified the research design (e.g. have they discussed how they decided which method to use)

Comments:

4. Was the recruitment strategy appropriate to the aims of the research?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

HINT: Consider

- If the researcher has explained how the participants were selected
- If they explained why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study
- If there are any discussions around recruitment (e.g. why some people chose not to take part)

Comments:

5. Was the data collected in a way that addressed the research issue?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

HINT: Consider

- If the setting for the data collection was justified
- If it is clear how data were collected (e.g. focus group, semi-structured interview etc.)
- If the researcher has justified the methods chosen
 - If the researcher has made the methods explicit (e.g. for interview method, is there an indication of how interviews are conducted, or did they use a topic guide)
 - If methods were modified during the study. If so, has the researcher explained how and why
 - If the form of data is clear (e.g. tape recordings, video material, notes etc.)
 - If the researcher has discussed saturation of data

Comments:

6. Has the relationship between researcher and participants been adequately considered?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

HINT: Consider

- If the researcher critically examined their own role, potential bias and influence during (a) formulation of the research questions (b) data collection, including sample recruitment and choice of location
- How the researcher responded to events during the study and whether they considered the implications of any changes in the research design

Comments:

Section B: What are the results?

7. Have ethical issues been taken into consideration?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

HINT: Consider

- If there are sufficient details of how the research was explained to participants for the reader to assess whether ethical standards were maintained
- If the researcher has discussed issues raised by the study (e.g. issues around informed consent or confidentiality or how they have handled the effects of the study on the participants during and after the study)
- If approval has been sought from the ethics committee

Comments:



8. Was the data analysis sufficiently rigorous?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

- HINT: Consider
- If there is an in-depth description of the analysis process
 - If thematic analysis is used. If so, is it clear how the categories/themes were derived from the data
 - Whether the researcher explains how the data presented were selected from the original sample to demonstrate the analysis process
 - If sufficient data are presented to support the findings
 - To what extent contradictory data are taken into account
 - Whether the researcher critically examined their own role, potential bias and influence during analysis and selection of data for presentation

Comments:

9. Is there a clear statement of findings?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

- HINT: Consider whether
- If the findings are explicit
 - If there is adequate discussion of the evidence both for and against the researcher's arguments
 - If the researcher has discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)
 - If the findings are discussed in relation to the original research question

Comments:

Section C: Will the results help locally?

10. How valuable is the research?

HINT: Consider

- If the researcher discusses the contribution the study makes to existing knowledge or understanding (e.g. do they consider the findings in relation to current practice or policy, or relevant research-based literature
- If they identify new areas where research is necessary
- If the researchers have discussed whether or how the findings can be transferred to other populations or considered other ways the research may be used

Comments:

ADDENDUM D: LANGUAGE EDITOR'S DECLARATION



Language Editor's Declaration

- Language Matters Pty Ltd
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- 082 920 2991
- www.languagematters.co.za

Language editing – Translation – Transcription - Simultaneous interpreting

Date: 15 November 2019

info@languagematters.co.za

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2531

To whom it may concern,

This document certifies that the manuscript/title listed below was edited for proper usage, syntax, grammar, punctuation, spelling and the overall stylistic requirements of the English language by one or more editor(s) at Language Matters. All revisions made by the editor are recommendations; the overall quality and content of the final manuscript remain the responsibility of the client/author.

Manuscript title: The relationship between stress and teamwork during interprofessional collaboration: an integrative literature review

Author(s): Farhin Delawala ([orcid.org/ 0000-0002-7985-3684](https://orcid.org/0000-0002-7985-3684))

Date Issued: 15 November

Issued by: Simone Barroso

Language Matters co-founder

B.A. Language Practice and Communications (2010)

B.A. Hons. Language Practice (2011)

Associate Member of the Professional Editors' Guild (PEG)

Accredited Member of the South African Translators' Institute (SATI)

ADDENDUM E: INSTRUCTIONS FOR AUTHORS

Instructions for authors

Thank you for choosing to submit your paper to us. These instructions will ensure we have everything required so your paper can move through peer review, production and publication smoothly. Please take the time to read and follow them as closely as possible, as doing so will ensure your paper matches the journal's requirements. For general guidance on the publication process at Taylor & Francis please visit our Author Services website.



SCHOLARONE MANUSCRIPTS™

This journal uses ScholarOne Manuscripts (previously Manuscript Central) to peer review manuscript submissions. Please read the guide for ScholarOne authors before making a submission. Complete guidelines for preparing and submitting your manuscript to this journal are provided below.

Electronic Submission

Manuscripts for consideration should be submitted online via the Journal's ScholarOne Manuscripts website.

Manuscripts must be written in English and should be double spaced and use 12-point font. The main document, title page, and any tables/figures/boxes should each be submitted as separate files. The main document that will be sent for review should contain no identifying information. The title page, submitted as a file not for review, should include the title of the paper, author names, work titles and affiliations; contact information (email, mailing address, telephone number), keywords and running head. Manuscripts should be prepared in accordance with American Psychological Association's (APA) guidelines – see below for further details. On receipt of the submission, all listed authors will be immediately acknowledged by email.

All submissions are assessed initially to determine their suitability for publication in the *Journal of Interprofessional Care*. An email will be sent to the authors, usually within 3 to 4 weeks, if a manuscript is considered not suitable for publication. Manuscripts that are assessed as having potential for publication are sent, with no identifying author information, to peer reviewers.

The Journal's editors oversee the process of peer review: they correspond with authors and make decisions on the submitted papers. Following the receipt of the reviewer's comments, editors will make one of the following decisions: publication without revision; publication after minor revisions, publication after major revisions or rejection. A manuscript may need to undergo a number of revisions prior to a final acceptance. Accepted papers may also be edited to meet certain standards on presentation and structure. Authors can track the progress of their manuscript on the ScholarOne Manuscripts website.

The following issues must be addressed by authors submitting manuscripts to the *Journal of Interprofessional Care*:

- All submissions to the Journal must include full disclosure of relationships that could be viewed as presenting potential conflicts of interest. If there are no conflicts of

interest, authors should state that there are none. (See Declaration of Interest section, below, for further details about disclosing this information.)

- All research submissions should include information about approval by the relevant research ethics board within the text of the paper.
- All authors must comply with the following policies on Authorship, Submissions, Plagiarism and Peer Review; Clinical Trials Registry; and Copyright and Submissions.
- Authors should provide clear and consistent terminology in their paper (see below).

Types of Manuscripts Accepted

The *Journal of Interprofessional Care* publishes the following:

1. Peer-reviewed Original Articles (research studies, systematic/analytical reviews, theoretical papers) that focus on interprofessional education and/or practice, and add to the conceptual, empirical or theoretical knowledge of the interprofessional field.
2. Peer-reviewed Short Reports that describe research plans, studies in progress or recently completed, or an interprofessional innovation.
3. Peer-reviewed Interprofessional Education and Practice Guides that offer practical advice on successfully undertaking various interprofessional activities.
4. Non-peer-reviewed Guest Editorials that discuss a salient issue related to interprofessional education and practice.
5. Non-peer-reviewed Book and Report Reviews that offer summaries of recently published books and reports (published on the Journal's Blog).

Original Articles

These papers should usually have no more than 8,000 words (including abstract, main text and references). The total number of words should be indicated in the ScholarOne Manuscripts system during the online submission process. Authors wishing to submit manuscripts that exceed 8,000 words should contact the Editor-in-Chief before submission.

Abstract

The abstract should be written in paragraph form (not structured with sub-headings) and describe the main elements of the manuscript using no more than around 300 words.

Keywords

4-6 keywords, that address both methodological and content areas, should be selected. Keywords should be listed both in ScholarOne Manuscripts system during the submission process and on the title page.

Manuscript text

The text should be divided into sections with the headings: Introduction, Background, Methods (with sub-headings on Methodology/Research design, Data collection, Data analysis, and Ethical considerations), Results/Findings, Discussion (including a discussion of limitations) and Concluding comments. However, these headings may be altered depending upon the type of work being presented. Formatting of headings and subheadings should follow APA style. References should be APA style as noted below.

Tables, Figures and Boxes

Tables, figures and boxes should be referred to in text as follows: Table 1, Table 2, Figure 1, Figure 2, etc. The location at which a table, figure or box is to be inserted in the text should be indicated clearly on the manuscript. Each table/figure/box must have a descriptive title

that explains its purpose. Each table/figure/box must be uploaded separately from the main document. Tables and boxes are considered textual and should be included in a format compatible with MS Word.

Illustrations

Illustrations submitted (line drawings, halftones, photos, photomicrographs, etc.) should be clean originals or digital files. Digital files are recommended for highest quality reproduction and should follow these guidelines:

- 300 dpi or higher
- sized to fit on journal page
- EPS, TIFF, or PSD format only

If embedded in text files, please check figure resolution.

Color art will be reproduced in color in the online publication at no additional cost to the author. Color illustrations will also be considered for print publication; however, the author will be required to bear the full cost involved in color art reproduction. Please note that color reprints can only be ordered if print reproduction costs are paid. Print Rates: \$900 for the first page of color; \$450 per page for the next three pages of color. A custom quote will be provided for articles with more than four pages of color. Art not supplied at a minimum of 300 dpi will not be considered for print.

Footnotes

If necessary, footnotes can be included in a manuscript. Number all text footnotes consecutively throughout the manuscript and compile them on a separate page at the end of the manuscript.

Appendices

While the journal will aim to publish one or two short appendices, longer appendices can be published online as supplementary materials.

Supplemental online material

Supplemental material can be a video, dataset, fileset, sound file, or anything else which supports (and is pertinent to) your paper. Supplemental material must be submitted for review upon paper submission. Additional text sections are normally not considered supplemental material. We publish supplemental material online via Figshare.

Short Reports

Short Reports are submissions that describe research plans, studies in progress or recently completed, or innovative initiatives in the interprofessional field. These papers have a maximum of 1,500 words and up to 8 references, and may contain no more than 2 tables/figures/boxes. Short Reports also should have an abstract no more than 200 words written in paragraph (not structured) form. Authors should include 4 to 6 keywords. The text should be divided into sections with the headings: Introduction, Background, Methods, Results, Discussion and Conclusion. However, these headings may be altered depending upon the type of work being presented. Short Reports should also follow instructions for formatting of abstracts, tables/figures/boxes, footnotes and appendices (above); and the formatting of references (below).

Interprofessional Education and Practice (IPEP) Guides

IPEP Guides aim to provide practical advice for novice and experienced colleagues involved in the design, development, implementation, evaluation and assessment of interprofessional activities. IPEP Guides should be between 4,000 and 5,000 words in length and should

include: overview of the IPEP activity; approach to implementing the activity; 10 to 20 key guidance issues (e.g., lessons learned); key resources and references. IPEP Guides should also follow instructions for formatting of abstracts, tables/figures/boxes, footnotes and appendices (above); and the formatting of references (below).

Guest Editorials

Guest editorials are usually invited, but we welcome unsolicited submissions. Editorials aim to discuss a key issue or element related to the interprofessional field. Ideas for possible editorials need to be discussed with the Editor-in-Chief before submission.

Book and Report Reviews

Published on the Journal's Blog, book and report reviews summarize the key contents of recently published books and reports that focus on interprofessional issues. In general, reviews should be approximately 500 words. Suggestions for materials for the reviews section should be discussed with the Editor-in-Chief before submission.

Journal of Interprofessional Care Blog

In addition to publishing book/report reviews, the Journal's Blog publishes other content such as summaries of published articles and reports as well as announcements. See: Journal Blog. Suggestions for Blog materials should be discussed with the Editor-in-Chief.

Themed Issues

On occasions, the Journal publishes 'themed issues' in which a number of manuscripts that focus on a specific topic of interest to the interprofessional field (e.g., shared decision making) are commissioned. All submitted articles and reports are peer-reviewed and need to follow instructions for formatting. Ideas for possible themed issues need to be discussed with the Editor-in-Chief.

Referencing

Manuscript references should be formatted in APA (American Psychological Association) 6th Edition referencing style. Please refer to this site or to the APA Manual for specific guidelines when preparing your manuscript.

All citations in the text should include author(s) surname and the year of publication, e.g. (Smith, 2015) or "Smith (2015) demonstrated the importance of..." For a work by two authors, both authors are listed in the text-based phrase or in the parentheses each time the work is cited. Use the word "and" between the authors' names within the text and use "&" in the parentheses. For a work by three to five authors, list all the authors the first time the source is cited, and use only the first author's last name followed by "et al." in subsequent citations. For a work by six or more authors, use the first author's name followed by et al. for all citations.

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Journal Papers

-Papers with up to six authors:

Seif, G., Coker-Bolt, P., Kraft, S., Gonsalves, W., Simpson, K., & Johnson, E. (2014). The development of clinical reasoning and interprofessional behaviors: Service-learning at a student-run free clinic. *Journal of Interprofessional Care*, 28, 559–564. (doi:10.3109/13561820.2014.921899)

-Papers with seven or more authors:

Sullivan, K., Charrette, A., Massey, C., Bartlett, D., Walker, C., Bond, I., ... Fong, J. (2015). Interprofessional education with a community fall prevention event. *Journal of Interprofessional Care*, 29, 374–376. (doi:10.3109/13561820.2014.969834)

Books

Jindal-Snape, D. & Hannah E. (2013). *Exploring the dynamics of personal, professional and interprofessional ethics*. Bristol: Policy Press.

Book Chapters

Wee, B. & Goldsmith, J. (2008). Preparing facilitators for interprofessional learning. In E. Howkins & J. Bray (Eds.), *Preparing for interprofessional teaching: Theory and practice* (pp. 55-68). Abingdon: Radcliffe Publishing.

Web-based Publications

Institute of Medicine. (2015). *Measuring the impact of interprofessional education on collaborative practice and patient outcomes*. Retrieved from http://www.nap.edu/catalog.php?record_id=21726

For additional information on manuscript submission see:

<http://jicareblog.org/blog-article-ten-tips-for-publishing-manuscripts-in-the-journal-of-interprofessionalcare/>

Acknowledgments and Declaration of Interest sections

These two sections are different, and each has a specific purpose. The Acknowledgments section details special thanks, personal assistance, and dedications. Contributions from individuals who do not qualify for authorship should be acknowledged here. Declarations of Interest, however, refer to statements of financial support and/or statements of potential conflict of interest. Within this section also belongs disclosure of scientific writing assistance (use of an agency or agency/freelance writer), grant support and numbers, and statements of employment, if applicable.

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Terminology

Given the ongoing terminological uncertainty within the interprofessional field, the Journal now employs a range of key terms – each with an associated definition*. Submitting authors

therefore need to ensure they select terms that best describes the activities presented in their work. They should also ensure they use the selected terms consistently:

Disciplines are regarded as broad academic fields, with examples including, anthropology, economics, geography, social science and political science.

Interdisciplinary teamwork is an approach like interprofessional teamwork (see below) but differs as the team members are composed of individuals from different disciplines such as psychology, anthropology, economics and geography.

Interprofessional collaboration involves different health and social care professions who regularly come together to negotiate and agree how to solve complex care problems or provide services. It differs from interprofessional teamwork as colleagues do not share a team identity and work together in a less integrated and interdependent manner.

Interprofessional coordination involves different health and social care professions whose work together is focused on coordinating care tasks between one another. It is also seen as a more 'limited' working arrangement than interprofessional collaboration.

Interprofessional education occurs when members (or students) of two or more health and/or social care professions engage in learning with, from and about each other to improve collaboration and the delivery of care.

Interprofessional learning is learning arising from interaction between members (or students) of two or more professions. This may be a product of interprofessional education or happen spontaneously in the workplace or in education settings and therefore be serendipitous in nature.

Interprofessional networks are loosely organised groups of individuals from different health and social care professions who meet and work together on a periodic basis.

Interprofessional teamwork involves different health and/or social care professions who, for example, share a team identity and work closely together in an integrated and interdependent manner to solve complex care problems and deliver services.

Intraprofessional is a term which describes any activity which is undertaken by individuals within the same profession.

Multidisciplinary teamwork is an approach where team members work alongside one another: in other words, parallel rather than interactive work. These types of teams are composed of different academic disciplines (social sciences, geography, economics) rather than different health and social care professions such as medicine, nursing and social work.

Multiprofessional teamwork is an approach where team members work alongside one another: in other words, parallel rather than interactive work. These types of teams are composed of different health and social care professions.

Professions are occupational groups who in general provide services to others. Traditionally it has been used to describe the more established professions such as nurses, physicians or social workers. However, due to the on-going expansion of different roles in health and social care, it can also be employed to describe newer occupational groups; thereby providing a more inclusionary definition of this term.

Transdisciplinary practice occurs when an individual from one disciplinary group takes on a roles or tasks of another disciplinary group. While these disciplinary activities are outside

their usual scope of practice it is assumed they have the necessary expertise to complete them.

Transprofessional practice occurs when an individual from one professional group undertakes the roles or tasks of another profession. While these professional activities are outside their usual scope of practice it is assumed they have the necessary expertise to complete them.

Unidisciplinary is an activity undertaken by one discipline alone.

Uniprofessional is an activity undertaken by one profession alone.

A final note on terminology

'Allied health' has been used as a 'catch-all' term to describe a diverse range of professional groups (e.g. occupational therapists, dietitians, physiotherapists). This is a misleading term as it assumes these different groups are homogeneous in some way and that they are also 'allied' to something. As a result we discourage its use. Instead, authors should list the different professional groups involved in their manuscripts.

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** These terms are based on glossaries published in: Barr, H., Koppel, I., Reeves, S., Hammick, M. & Freeth, D. (2005). *Effective interprofessional education: Argument, assumption and evidence*. Oxford: Blackwell and also in: Reeves, S., Lewin, S., Espin, S. & Zwarenstein, M. (2010). *Interprofessional teamwork for health and social care*. London: Blackwell-Wiley.

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