

CHAPTER 4

INVESTIGATING THE RELATIONSHIP BETWEEN STRESS AND TEAMWORK DURING INTERPROFESSIONAL COLLABORATION

¹. F Delawala / ². Y Heymans

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¹. Centre for Health Professions Education
Faculty of Health Science, North-West University
Potchefstroom, South Africa
rhini.delawala@gmail.com
ORCID: 0000-0002-7985-3684

². Centre for Health Professions Education
Faculty of Health Science, North-West University
Potchefstroom, South Africa
Yolande.heyman@nwu.ac.za
ORCID: 0000-0003-4459-2266

Abstract

This study explored the relationship between stress and teamwork in interprofessional collaboration (IPC). Stressors arising from collaborative efforts can either hinder or enhance team performance, ultimately shaping IPC dynamics. While stress is often associated with negative outcomes, it can also foster teamwork, enhance performance, and build resilience, particularly within IPC settings.

We conducted an integrative literature review of published data from 2013 to 2023, critically analysing and synthesising 16 studies. Several key themes emerged regarding IPC, teamwork, and stress. Our analysis revealed that while excessive stress can significantly undermine IPC, moderate levels of stress can promote collaboration, improve problem-solving skills, drive innovation and support professional growth. Conversely, excessive stress exacerbates issues such as poor communication, role ambiguity, and power imbalances, all of which compromise optimal healthcare delivery, negatively affect patient well-being and hinder holistic care.

Introducing moderate stressors in interprofessional education and training is encouraged to enhance IPC in healthcare service delivery. Health professions students must be equipped with skills that foster resilience and enable them to cope effectively with stressors in IPE. Therefore, stress management should be integrated into IPE curricula to prepare students for the challenges of high-pressure environments, ensuring they can contribute to optimal healthcare delivery through collaborative practices.

Keywords: interprofessional collaboration, stress, teamwork, interprofessional education, health professions education, resilience.

1 Introduction and background

Interprofessional Collaborative Practice (IPCP) is the applied model that brings together health professionals from diverse backgrounds to work with patients, families, and communities, ensuring comprehensive, holistic, and high-quality care across various settings (World Health Organization, 2010). IPCP offers numerous benefits, including, but not limited to, improved patient care and quality of life, reduced healthcare costs, increased job satisfaction, and fewer medical errors (Jaruseviciene et al., 2019). Interprofessional (IP) teamwork is fundamental to IPCP. Within the context of this chapter, a team is defined as a group of individuals with complementary knowledge, skills, and attributes – collectively referred to as competencies – who share a common goal: optimal patient care (Contu & Pecis, 2017). While IP teamwork enhances patient outcomes, several barriers can hinder effective collaboration, one of the most significant being stress.

Stress is a response to external stimuli and demands (Bashir and Ismail Ramay, 2010), often manifesting as physical, emotional or cognitive symptoms such as headaches, tension and forgetfulness (Kranner et al., 2010). In IP teams, the pressures of collaboration can amplify stress, potentially affecting the quality of learning and teamwork. Stress arises from the combined demands experienced in collaborative work, and its intensity can impact the quality of learning in IP teams. Factors 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 and Prentice, 2013), conflict and poor management (Greenberg, 2011), intra-team conflict (Puck & Pregernig, 2014), trust issues (Han & Harms, 2010), and lack of support and work overload (Khamisa et al., 2015) contribute to stress. These elements not only affect collaboration but also hinder the timely achievement of goals.

Interprofessional Education (IPE) aims to address current healthcare challenges through education (Van Wyk & De Beer, 2017) and fosters interactions among health students (Burch, 2014) who are traditionally

trained in isolation, leading to “tribalism”. While improvements in educational methods are necessary, the transition from tribalism to collaborative learning is advocated (Treadwell et al., 2014). As a form of pre-service learning, IPE focuses on equipping health students with team-based initiatives (Taylor et al., 2019), preparing them for effective collaboration to meet the evolving needs of the healthcare system (Almoghira, Nazar & Illing, 2021).

2 Problem statement and aim

Interprofessional Education and Collaborative Practice (IPECP) training helps reduce errors, facilitate holistic treatment, break learning barriers, and improve understanding across health professions (Laverentz, Young & Cramer, 2021). IPE prepares students for collaboration, fostering collaborative practice which addresses practical components, enabling professionals to refine their skills and promote team diversification (Prelock, Potvin & Savard, 2017). While IPE enhances students’ readiness for the healthcare system by encouraging teamwork, its effectiveness may be influenced by stress-related factors (Lachmann et al., 2013). Team members may experience conflicting pressures that contribute to stress, potentially affecting collaboration. However, there is limited literature exploring the relationship between stress and teamwork in IPC. This study aims to investigate whether a relationship exists between IPC and stress in health teams through an integrative literature review.

3 Research design and methodology

To analyse and synthesise data related to IPC, teamwork and stress, the authors conducted an integrative literature review following the five-step methodology proposed by Whittemore and Knafl (2005). By immersing and integrating themes from various academic sources, it minimised errors and bias while providing insights into how these themes interact in training and practice contexts (Whittemore & Knafl, 2005). This study was classified as no-risk and aligned with the ethical principles of beneficence and non-maleficence. Ethical approval was obtained from the North-West University

Health Research Ethics Committee (NWU-HREC) under clearance number NWU-00509-19-A1. The ILR design facilitated secure data retrieval and ensured compliance with ethical standards.

3.1 Step 1: Problem identification and keyword development

The research objective informed the identification of keywords for the literature search. Initial search terms included combinations of *interprofessional*, *teamwork*, *collaboration*, *competencies* and *stress*. Preliminary searches indicated limited literature addressing the intersection of these concepts. Consequently, the authors applied a refined search string – *interprofessional AND team AND stress** – reflecting the three central constructs of the review.

3.2 Step 2: Literature search

The authors conducted a systematic search using databases available through the North-West University (NWU) library. Databases accessed via EBSCOhost included Academic Search Premier, CINAHL, MEDLINE, PsycINFO®, PsycARTICLES®, and SocINDEX. Additional databases consulted were ScienceDirect, Scopus, Web of Science, African Journals, Index to South African Periodicals (ISAP), PubMed Central, and the Cochrane Library. The authors used the EPPI-Reviewer software to manage records, remove duplicates, and screen abstracts for relevance.

3.3 Step 3: Data evaluation

During preliminary screening, it became evident that stress was frequently not identified as a primary keyword in IPE and collaboration studies, but rather embedded within related constructs such as conflict, role ambiguity, coping, resilience and emotional burden. To avoid the exclusion of relevant literature and in keeping with the principles of an integrative literature review, studies were therefore retained where stress-related experiences were discussed implicitly within IP teamwork or education contexts, even when stress was not the primary indexed term. While substantial research exists on teamwork and collaboration in IP settings, limited studies explore their relationship with stress. Therefore, selection criteria were restricted to

studies published between 2013 and 2023 containing at least one of the key terms or conceptually relevant stress-related constructs and demonstrating scientific rigour. The primary focus was to investigate the connections between IPC, teamwork, and stress, particularly within the contexts of IPE and Interprofessional Learning (IPL). Searches were streamlined using the EPPI-reviewer software, facilitating the elimination of duplicates and the retention of relevant full-text articles. On EBSCOhost, an initial search without date constraints yielded 1,055 results. By expanding the search across multiple databases with date limits, a total of 4,887 articles were identified. After removing duplicates and studies that fell outside the specified date range, 4,257 records remained.

Grey literature (Williams-Whitt et al., 2016), non-English publications and inaccessible sources were excluded. Quality appraisal was conducted using the Johns Hopkins Research Evidence Appraisal Tool and the Critical Appraisal Skills Programme (CASP) tool, depending on study design. Studies meeting at least 70% of appraisal criteria were included. A concept matrix (Figure 4.1) was developed by aligning identified themes from the articles with existing literature. The core concepts – *interprofessional*, *team* and *stress* – formed the foundation of the matrix's structure and comparisons.

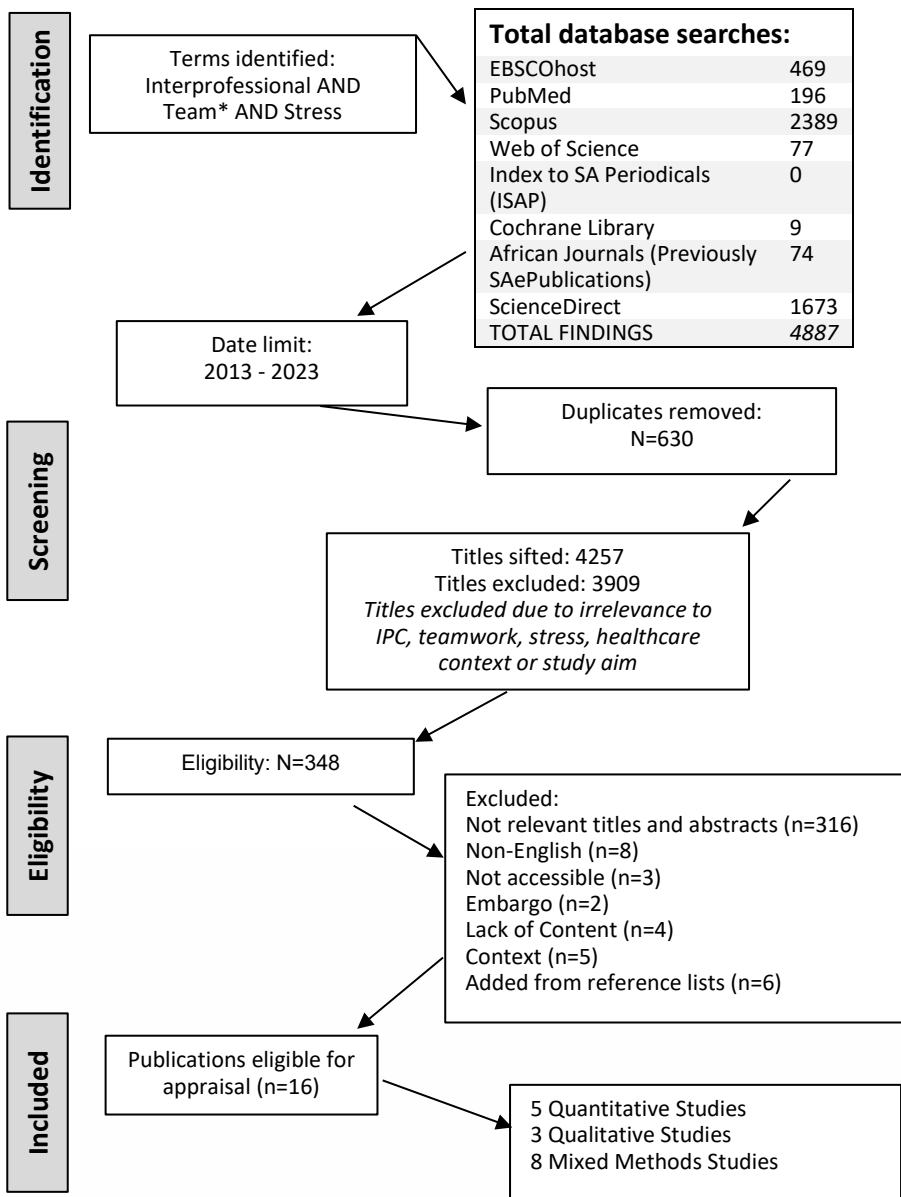


Figure 4.1: Summary of the literature review process

3.4 Step 4: Data analysis

During data analysis, the included studies were summarised in tabular format and compared using a constant comparative method (Creswell & Poth, 2018), supported by a concept matrix and verification by an experienced researcher. Following rigorous screening based on language, embargo status, format compliance, title relevance and overall significance, 16 critically assessed publications were selected. Non-academic and grey publications were excluded to maintain academic rigour.

The selected studies were analysed using the constant comparative method (Bridges et al., 2011). Quality appraisal focused on purpose, content, thematic definitions, sampling methods, data collection and analysis, and conclusions. Given the diversity of sampling in the ILR, this comprehensive approach was appropriate (Whittemore & Knafl, 2005).

Quantitative studies were appraised using the Johns Hopkins Research Evidence Appraisal Tool (Johns Hopkins University, 2017), qualitative studies using the Critical Appraisal Skills Programme (CASP) tool (CASP, 2018), and mixed-methods studies using both tools, as the Johns Hopkins tool alone did not fully address qualitative components. Scores were calculated as percentages based on applicable appraisal criteria: quantitative studies were scored out of 13, qualitative studies out of 10, and mixed-methods studies using an adapted scoring approach based on relevance and applicability.

3.5 Step 5: Data presentation

Findings were synthesised to address the research question and prepared for dissemination in an accredited journal. The selected articles are summarised in Table 4.1-Table 4.3.

Table 4.1: Summary of eligible quantitative articles

Quantitative studies N = 5				
Reference	Setting	Sample and Data sources	Strengths & Limitations	Key Study Outcomes
Ketcherside et al. (2017). Translating Interprofessional theory to interprofessional practice.	Kirkville and Brockport.	148 participated in the survey, including 34 community/public health education professionals and 114 registered nurses (RN). The Interprofessional Socialisation and Valuing Scale (ISVS) measured perceptions and attitudes of IPC.	Descriptive statistics and measures of central tendency were calculated for the study variables. Independent sample t-tests were conducted to compare participants' mean scores. Limited by a small sample size and the absence of population parameters. Self-reported data introduced validity concerns, and the instrument had not been validated across all groups. Generalisability was restricted in the broader clinical context.	Early exposure to IPE contributed to positive perceptions and attitudes toward IPC. The development of teamwork behaviours and competencies facilitated the effective translation of theoretical knowledge into clinical practice. These findings support the recommendation of incorporating IPE at the undergraduate level.
King et al. (2010). The Interprofessional Socialization and Valuing Scale: A tool for evaluating the shift toward collaborative care	Bloorview Research Institute; University of Western Ontario; Middlesex-	124 health professional students participated in the ISVS measuring beliefs, behaviours and attitudes.	The ISVS offered conceptual insights into key aspects of socialisation, enabling the examination of professional interactions within a socio-cultural context. No population size, the sample consisted exclusively	Participants reported initial discomfort with collaboration; however, participation in IPE workshops positively influenced their perceptions, sense of value, appreciation

Quantitative studies N = 5				
Reference	Setting	Sample and Data sources	Strengths & Limitations	Key Study Outcomes
approaches in healthcare settings.	London Health Unit.		of male participants. The findings cannot be generalised to clinicians who were not represented in the sample.	and understanding of collaboration.
Maharajan et al. (2017). Attitudes and readiness of students of healthcare professions towards Interprofessional learning.	International Medical University.	809 students from medical, pharmacy, dental and health sciences completed the survey. The Readiness for Interprofessional Learning Scale (RIPLS) and Interdisciplinary Education Perception Scale (IEPS) were employed.	The study employed a large sample size and achieved a strong response rate of 83%. The study employed a cross-sectional and exploratory design, which limits the extent to which its findings can be generalised to other university contexts.	IPL integrated with clinical problem-solving was identified as valuable. Participation in IPL positively influenced students' perceptions and attitudes toward future collaborative practice and enhanced their communication skills. Readiness varied by academic year and health profession. These findings support the integration of IPL into healthcare curricula.
Reising et al. (2017). An analysis of interprofessional communication and teamwork skill acquisition in simulation.	Indiana University.	94 nursing and medical students participated in the study, which evaluated IP communication within a high-fidelity simulation setting. The Indiana University Simulation Integration Rubric (IUSIR) was employed.	Robust sample size, and its findings were consistent with previous research, offering additional evidence supporting the sequential use of high-fidelity simulation. Findings confirmed the effectiveness of simulation-	IP simulation activities enhanced communication and teamwork competencies. The findings supported the use of team-based training as an effective approach for developing these skills.

Quantitative studies N = 5				
Reference	Setting	Sample and Data sources	Strengths & Limitations	Key Study Outcomes
			based methods in enhancing communication skills. The study did not report the overall population size and included only nursing and medical students.	
Sexton et al. (2016). Understanding healthcare professionals' self-efficacy to resolve interprofessional conflict.	University of Toledo and University of Western Ontario.	183 licensed individuals from nursing, medical, pharmacy and social work (SW) responded. The interpersonal communication competence scale (ICCS-SF), problem-solving skills scale (PSI), and team self-assessment questionnaire (TSAQ) were employed.	The study featured a substantial sample size with broad professional representation. The study yielded a low response rate of 29%.	Participants demonstrated moderate confidence in managing team conflict and communicating effectively in IP settings. However, inadequate training and education were identified as key barriers to conflict resolution.

Table 4.2: Summary of eligible qualitative articles

Qualitative studies N = 3				
Reference	Setting	Sample and Data sources	Strengths & Limitations	Key Study Outcomes
Aune and Olufsen (2014). From fragmented to interdisciplinary understanding of integrated antenatal and postnatal care- An interprofessional project between public health nursing students and midwifery students.	Sør-Trøndelag University College.	58 midwifery and public health students participated in the project, with reflection notes as part of the data collection process.	Students provided anonymous and unrestrained responses. Qualitative data were rigorously analysed using systematic text condensation by the first and second authors. Only nursing and midwifery students.	Although students initially held negative perceptions of collaboration, they identified blind spots in their understanding and awareness of other professional roles, leading to improved interdisciplinary understanding and shifts in knowledge and attitudes. Engagement in practical collaborative activities was perceived as beneficial for delivering optimal patient care.
Gum (2013). Immersing undergraduates into an interprofessional longitudinal rural placement.	Flinders University Rural Clinical School. South East Regional Community Health Service.	The Integrated Multi-Disciplinary Model of Education in Rural Settings (IMMERSe) was piloted in a rural region. five students (nutrition & dietetics, speech therapy and paramedics) participated in the pilot. Data collection involved focus	Complexity theory informed the study's conceptual framework. Data analysis was conducted in relation to students' perspectives and reflections on professionalism, teamwork and academic relationships. Only three professional roles were represented, and the	Students developed a newfound respect for professionals from other disciplines and gained a clearer understanding of how to utilise and integrate their own roles within teams. IPL in rural community placements improved teamwork, professionalism, and collegiality. Findings

Qualitative studies N = 3				
Reference	Setting	Sample and Data sources	Strengths & Limitations	Key Study Outcomes
		group interviews and reflective writing.	perspectives of clinicians and educators were not included.	underscored the importance of IPE in fostering IPC among graduates, particularly in rural healthcare settings.
Peterson and Brommelsiek (2017). Interprofessional education to foster communication and resilience among health professional students.	University of Missouri	Students from nursing, pharmacy, clinical psychology and SW participated. The programme featured classroom-based immersion using case studies and patient scenarios centred on the veteran patient population. Data were gathered through student reflection journals and focus groups.	Data were collected through weekly student reflections and end-of-course focus groups using guided semi-structured interviews. Colaizzi's method was employed to analyse the qualitative data. Resilience was incorporated as an objective quantitative measure in the evaluation of the original course session.	The Interprofessional Education Collaborative (IPEC) core competencies informed the curriculum design. The course aimed at enhancing resilience in contexts involving patient-related challenges and IP conflict. Participation led to improvement in problem-solving skills, coping strategies, and confidence in managing negative emotions.

Table 4.3: Summary of eligible mixed-methods articles

Mixed method N = 8				
Reference	Setting	Sample and Data sources	Strengths & Limitations	Key Study Outcomes
Dennis et al. (2017). An Interprofessional Simulation-based learning activity for nursing and physiotherapy students.	Curtin University	198 nursing and PT students participated. The Satisfaction and Self-Confidence in Learning (SSCL) Survey and five items from Instructional Materials Motivational Scale were administered. Open-ended questions were used to capture qualitative insights, which were analysed using thematic analysis.	A mixed-method observational study was conducted, incorporating a simulated patient-centred scenario to facilitate an IPL activity. The quantitative component did not report the population size, and the SSCL scale had not been validated across other healthcare provider groups. The absence of demographic data limited cross-group comparability, and the sample represented only two disciplines.	Respondents highlighted the benefits of interactions, including enhanced role clarity, improved communication, and strengthened teamwork, all contributing to better patient outcomes.
Konrad et al. (2017). A five-session Interprofessional team immersion program for health profession students.	University of New England	30 students from PT, dental hygiene, OT, SW, dental medicine, nursing, pharmacy, and physician assistant completed the pre-Interprofessional Team Immersion (IPTI) survey, 32 completed the post- survey. A shortened version of the IEPS, the Interprofessional Care Core Competencies Global Rating Scale (ICCC-GRS) and	Changes in self-reported pre- and post-IPTI intervention scores on the IEPS and ICCG-GRS were analysed using related-samples Wilcoxon signed-rank tests. An inductive approach was employed for thematic coding of the qualitative data. The quantitative section did not report the overall population size. The study was further constrained by selection bias, a small sample	Post-IPTI survey results revealed enhanced professional knowledge, recognition of role overlap and increased appreciation for other disciplines. Students applied their expertise in prospective practice settings and expressed a desire for improved teamwork and patient-centred focus. IP teamwork was associated

Mixed method N = 8				
Reference	Setting	Sample and Data sources	Strengths & Limitations	Key Study Outcomes
		open-ended questions were utilised.	size, and the use of measurement tools with limited validation.	with increased confidence, communication and competencies.
Lachmann et al. (2013). Capturing students' learning experiences and academic emotions at an Interprofessional training ward.	Karolinska Institute.	42 students (medical, nursing, PT and OT) responded to 30-40 questionnaires. Using mobile phones, they reported their experiences, learning activities, and academic emotions multiple times throughout the course. Data were collected via the Contextual Activity Sampling System (CASS) and CASS-query application, which delivered questionnaires consisting of 30 questions.	A descriptive design was employed to explore students' experiences and academic emotions during collaborative and triological activities. The CASS, informed by the Experience Sampling Method, facilitated the systematic and frequent collection of data. Factor analysis was conducted. The quantitative component lacked a predetermined population size. Due to competing activities and anxiety-related concerns, 37 of the 42 students completed the study. The resulting small sample size, coupled with participant attrition, may have introduced bias into the findings.	The results indicated a nuanced understanding of students' academic emotional experiences and the collaborative creation of new knowledge. Reported stress levels decreased compared to the first day of the Interprofessional Team Ward (IPTW). Engagement in the triological approach was associated with high challenges and increased competence.

Mixed method N = 8				
Reference	Setting	Sample and Data sources	Strengths & Limitations	Key Study Outcomes
Michalec et al. (2017). A longitudinal mixed-methods study of IPE students' perceptions of health profession groups: Revisiting the contact hypothesis.	University of Delaware and Thomas Jefferson University.	528 students from the Jefferson Health Mentors Program (JHMP) completed the SSRQ. Couples and family therapy, medicine, nursing, OT, pharmacy, and PT students completed the SSRQ by rating different health profession programmes via academic ability, competence, interpersonal and leadership skills, independence and teamwork, decision-making, practical skills, and confidence.	Descriptive statistics were utilised and SSRQ scores were compared using a t-test. Semi-structured interviews were conducted with 20 randomly selected students. Interviews were transcribed, coded, and compared. The coding team held consensus meetings to review outcomes, memos and notes. The study was conducted with a single cohort of students, and the quantitative component involved a small sample size. In the absence of a control group, it is possible that changes in student stereotypes may have occurred over time independent of the IPE programme.	A reduction in the stereotyping of other health professions was observed. Informal IP interactions may have contributed positively to students' perceptions and understanding of other professional roles.
Paige et al. (2014). Getting a head start: High-fidelity, simulation-based operating room team training of Interprofessional students.	Louisiana State University Health Sciences Center.	18 nursing, 20 nurse anaesthetist, and 28 medical students participated. Pre- and post-training questionnaires were administered, and team performance assessed using the Operating Room Teamwork Assessment Scale (ORTAS). The Team-Based Behaviours framework and	A quasi-experimental pre-/post-intervention comparison design was employed. Pre- and post-intervention scores were analysed, using t-tests, while mean scores on the teamwork scales were evaluated using both one-way ANOVA and t-tests. Responses were transcribed and analysed Data triangulation was conducted.	High-fidelity simulation (HFS) operation room (OR) team training led to immediate improvements in participants' attitudes, behaviour, and communication. HFS was also associated with cultural shifts and enhanced team functioning.

Mixed method N = 8				
Reference	Setting	Sample and Data sources	Strengths & Limitations	Key Study Outcomes
		Adaptive Communication and Response tool were employed to evaluate distinct components. Open-ended questions captured students' reflections.	No predetermined population size was established for quantitative component. The small sample size limits the generalisability of the findings. Three simulation scenarios were represented by medical students. ORTAS ratings were aggregated at the group level.	
Sadideen et al. (2016). Using "The Burn Suite" as a Novel High Fidelity Simulation Tool for Interprofessional and Team Training.	Imperial College London and New Queen Elizabeth Hospital Birmingham	22 doctors, nurses, nursing assistants and simulated patients participated in "The Burn Suite (TBS)" designed to enhance the delivery of burns education for clinicians. Evaluation included five-point Likert-type questionnaires and post-experience semi-structured interviews. TBS was examined as part of a simulation-based team training programme.	TBS is a low-cost, high-fidelity, portable, immersive simulation environment. Five-point Likert-type questionnaires were developed to establish face and content validity. Semi-structured interviews conducted for data triangulation. No defined population was established for the quantitative component, as this was a pilot study without follow-up. The participant pool was limited in size and lacked diversity across professional backgrounds.	The simulation experience was perceived as authentic due to its high psychological and social fidelity, contributed to improvements in IPC, communication and teamwork. TBS elicited positive and genuine responses from participants. Simulation-based training effectively fostered the development of specific teamwork competencies without posing risk to patient safety.
Shortridge et al. (2019). Teaching and evaluating	University of Oklahoma and	63 OT, PT and nurse practitioner students organised into teams. After an hour of activities,	Analysis of covariance was conducted to assess variations in team performance ratings. Student reflections indicated that the	Team performance outcomes were positive. Student reflections highlighted patient-centeredness, mutual

Mixed method N = 8				
Reference	Setting	Sample and Data sources	Strengths & Limitations	Key Study Outcomes
interprofessional teamwork using sequenced instruction and TeamSTEPPS Team Performance Observation Tool (TPOT).	University of Kansas	participants completed the TPOT, evaluating performance across domains including team structure, leadership, situation monitoring, communication, and mutual support. Students submitted reflective statements.	experience enhanced their understanding of effective collaboration within a healthcare team. No structured qualitative analysis was conducted, as the student reflections were brief.	respect among health professions and family-centred decision-making. These findings support the importance of teaching IP knowledge and skills within healthcare education.
Turrentine et al. (2016). Interprofessional training enhances collaboration between nurses and medical students: A pilot study.	University of Virginia.	145 fourth-year nursing students, clinical nurse leaders, RNs, and 155-fourth year medical students participated. A subset of 15 nursing and medical students completed pre and post-tests using standardised patients. Collaborative behaviour and geriatric assessment instructions were captured on videotape, and interactions were subsequently reviewed by a member of the study team.	A 10-question geriatric assessment was administered, with both pre- and post-tests validated by content experts. Data were analysed using descriptive statistics, paired samples t-tests, and independent samples t-tests. The quantitative component was limited by a small sample size. The assessment of IPE was constrained by time, and not all interactions were recorded, precluding the possibility of transcript-based analysis.	The integration of geriatric assessment skills within IPE enabled students to collaborate effectively in patient evaluations. Analysis revealed that IP competencies were demonstrated through shared problem-solving, conflict resolution, patient-centred care, decision-making, role clarification, communication, and knowledge exchange.

Table 4.4: Concept Matrix table for the Integrative Literature Review

Themes mentioned												
	Stress	Conflict	Confidence	Respect	Knowledge and/or skills	Perceptions and/or attitudes	Roles	Communication	Optimal Care	Collaborative value	IPE	Team/ Teamwork
Qualitative studies												
Aune & Olufsen (2014)						√	√		√	√	√	√
Gum et al. (2013)				√	√	√	√	√	√	√	√	√
Peterson & Brommelsik. (2017)	√	√	√		√	√			√		√	√
Quantitative studies												
Ketcherside et al. (2017)					√	√					√	√
King et al. (2010)						√				√	√	√
Maharajan et al. (2017)						√		√	√	√	√	√
Reising et al. (2017)								√			√	√
Sexton & Orchard (2016)		√	√					√	√		√	√
Mixed methods studies												
Dennis et al. (2017)				√			√	√	√	√	√	√
Konrad et al. (2017)			√		√		√	√		√	√	√

Themes mentioned												
	Stress	Conflict	Confidence	Respect	Knowledge and/or skills	Perceptions and/ or attitudes	Roles	Communication	Optimal Care	Collaborative value	IPE	Team/ Teamwork
Lachmann et al. (2023)	√				√						√	√
Michalec et al. (2017)						√	√			√	√	√
Paige et al. (2014)						√		√			√	√
Sadideen et al. (2015)					√				√	√	√	√
Shortridge et al. (2019)				√	√		√			√	√	√
Turrentine et al. (2016)		√			√			√	√	√	√	√
Total	2	3	3	3	8	8	6	8	8	10	16	16

4 Results and discussion

Table 4.4 identified IPE-relevant themes, and data extraction was conducted to examine their alignment with existing literature. 'Collaboration' and 'IPL' emerged as the most prevalent themes, whereas 'stress' and 'conflict' were the least explored. The primary themes were reinforced by various sub-themes, with some overlap prompting discussion across multiple conceptual domains.

4.1 Stress

Although stress was explicitly addressed in only a small number of studies, it emerged most clearly within IPE immersion experiences, emphasising the importance of coping skills and resilience. Anticipating challenges in IPL fostered confidence in managing stress and negative emotions (Peterson & Brommelsiek, 2017). Stress levels were frequently high at the outset, largely due to hierarchical structures and unfamiliarity with peers from different professions, impeding communication and support. However, as collaboration improved over time, stress levels declined (Lachmann et al., 2013). Role ambiguity was also identified as a significant stressor; yet early exposure to IPE mitigated role ambiguity, enhanced patient care, and fostered potential collaboration. Our findings suggest a need for IPE programmes to incorporate stress management strategies to prepare students for the realities of clinical practice.

4.2 Conflict

Conflict was a significant source of stress in IP teams, arising from hierarchical structures, ethical dilemmas and cultural differences (Peterson & Brommelsiek, 2017). Communication skills were linked to conflict management and confidence (Sexton & Orchard, 2016). In resolution strategies, communication was identified as a core competency. Students reported applying conflict resolution skills to navigate differences in perspectives and recommendations. Integrating conflict into IPE supports

students in developing coping mechanisms and resolution strategies for managing IP challenges.

4.3 Respect for professional roles

Respect for professional roles was a critical factor in effective teamwork. In IPE, professionals are expected to work and learn together, necessitating recognition and appreciation of distinct roles and overlapping responsibilities. Students identified respect and role comprehension as essential learning outcomes (Konrad et al., 2017). Engagement in collaborative teams enhanced professional knowledge, and improvements in teamwork were observed when overlapping roles were acknowledged, fostering mutual respect as a core competency positively correlated with effective collaboration. Conversely, disrespect generated tension and conflict, negatively impacting communication and goal attainment through sentiments of rejection or criticism. Furthermore, difficulties in understanding diverse perspectives hindered effective collaboration and contributed to increased stress.

4.4 Confidence

Enhanced knowledge of other professions improved students' self-assurance (Konrad et al., 2017). Confidence was developed in managing negative emotions during IPC, which supported effective coping strategies (Peterson & Brommelsiek, 2017). Prior experience in IPC fostered healthcare professionals' confidence in conflict resolution (Sexton & Orchard, 2016).

4.5 Perceptions and/or attitudes

IP teamwork contributed to improved attitudes toward other health professions (Ketcherside et al., 2017). The importance of a self-perceived capacity for collaboration was emphasised, while limited collaboration posed a barrier to IPE (King et al., 2010). Inadequate IPC reinforced professional silos, hindering communication and increasing stress levels.

4.6 Communication

Enhanced communication and simulation contributed to optimal patient care (Reising et al., 2017), which was essential in addressing professional isolation in remote areas (Gum et al., 2013). Tribalism-driven communication barriers hindered teamwork and elevated stress levels, whereas purposeful communication fostered collaboration and reduced stress. Consequently, ensuring patient safety necessitated efficient IP communication.

4.7 Optimal care

IPE immersion equipped students with confidence, coordination, and a patient-centred approach to care (Peterson & Brommelsiek, 2017). Simulations were emphasised as safe environments for practising care delivery under stressful conditions (Sadideen et al., 2015). While positive stress (eustress) in IPC enhanced performance, excessive stress impeded collaboration.

4.8 Collaborative value

Collaboration was the cornerstone of IPE and was influenced by attitudes, preparedness, and educational attainment; students demonstrated superior teamwork and collaborative abilities. Fostering teamwork necessitated patient input and involvement. However, working with unfamiliar individuals often evoked apprehension and anxiety. Early exposure to teamwork enhanced collaborative skills, improved patient care, increased comfort levels, and ultimately reduced stress (Turrentine et al., 2016). In our analysis, collaboration was described as a mindset; therefore, curricula should intentionally cultivate shared responsibility, mutual respect, and role clarity across disciplines – ultimately aligning with the WHO 2010 framework.

4.9 Team/teamwork

Teamwork was essential for addressing complex health challenges and optimising patient care (Dennis et al., 2017). Leadership within teams

played a pivotal role in ensuring effective functioning, though some members resisted collaboration, creating stress for facilitators. Facilitators fostered resilience, participation, and satisfaction, guiding teams to achieve goals under pressure. ILR analysis indicated that stress, teamwork, and IPC are interconnected, with facilitators mitigating stressors such as lack of respect, poor communication, and role ambiguity.

Overall, these findings demonstrate that while IPE research emphasises collaboration and shared learning, it must equally consider the psychosocial factors that shape team dynamics. Addressing underexplored areas such as stress and conflict may lead to more resilient, adaptable interprofessional teams and enhance the sustainability of collaborative practice in diverse health settings.

Figure 4.2 provides a visual synthesis of the integrative literature review findings, illustrating how stress, teamwork, and IPC interact across the included studies.

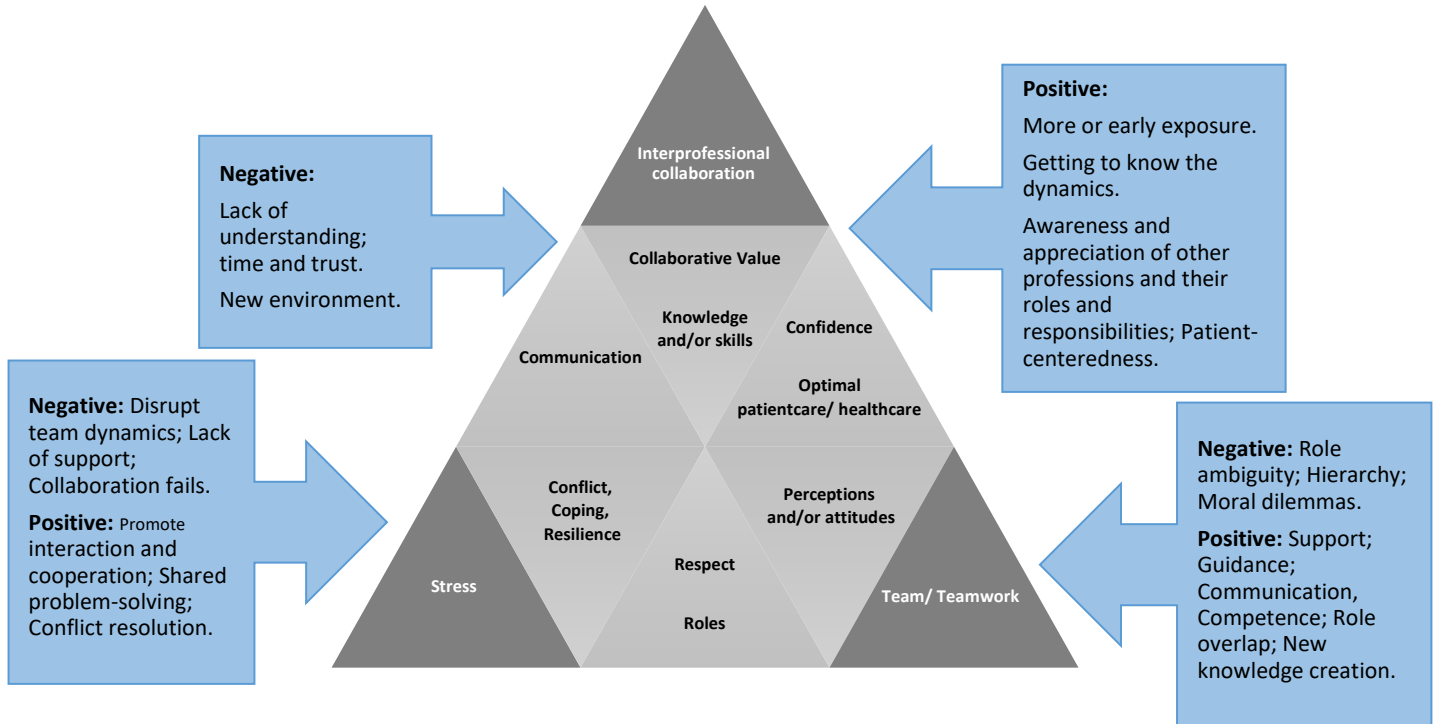


Figure 4.2: Visual synthesis of findings depicting the relationships between IPC, teamwork and stress

5 Conclusion

In the ILR, 16 studies met the inclusion and quality criteria. While all examined IPC and teamwork, only three explicitly identified stress as a contributing factor. However, many studies referenced related elements – such as conflict, confidence, perceptions, and collaboration – that influence stress. Additional team dynamics were shaped by IPE and the pursuit of optimal patient care. A deeper analysis was conducted through thematic coding and comparison, which allowed us to examine how these related elements interacted within and across studies. This approach highlighted that stress often functioned as a latent factor, driven by commonly studied components including hierarchical structures, power dynamics, communication barriers, role ambiguity, and respect for professional roles. Although stress was not always explicitly mentioned, its contributing factors were deeply embedded within IPC processes and experiences. Educators and health professionals should remain aware of the various factors that can generate stress, recognising both its positive and negative impacts on IPC. This insight underscores the importance of integrating stress management and resilience-building strategies into IPE curricula to better prepare health professionals for collaborative practice.

6 Limitations

No research is without limitations. Embargo restrictions prevented access to certain articles, and limiting the search to English-language publications may have excluded relevant non-English studies. The focus on a specific time frame may have omitted older, recent or emerging research. Title and abstract screening may have overlooked key information not immediately visible. Additionally, the review did not differentiate between studies targeting students and healthcare professionals, reducing specificity. Strict eligibility criteria and reliance on references from excluded studies may have led to the omission of valuable data. Finally, keyword selection may have inadvertently excluded relevant research.

7 Recommendations

Recognising that team members experience stress differently is crucial, as it directly impacts team performance. Effective team management and awareness of stress-related factors in IP settings are essential for fostering positive collaboration. To sustain the effectiveness of teamwork, it is essential that students develop the skills necessary to manage stress. Preparing students to anticipate and navigate stressful situations enhances their ability to address health challenges in real-world settings. Therefore, equipping students to function effectively in high-pressure team environments should be a priority for IPE programmes.

This study identified a gap in the literature concerning the relationship between stress, IPC, and teamwork. Future research should explore how stress influences teamwork and performance in IPECP for both students and healthcare professionals. To inform educational strategies and clinical practice, a more comprehensive investigation is needed into the impact of stress on IP teamwork, goal attainment, and the quality of patient care.

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