

# Considerations for promoting the implementation of work-based interprofessional education programmes: A scoping review

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## Highlights

- This review identified considerations for promoting the implementing work-based IPE programmes
- Research relating to work-based IPC/IPE interventions remain under investigated
- Low to middle income countries healthcare delivery could be addressed by IPC/IPE
- Barriers to implementation should be considered prior to the implementation of IPE programmes

## Abstract

**Background:** Effective inter-professional collaboration may improve healthcare outcomes, including maternal and child healthcare settings where unfavourable outcomes are often due to communication and collaboration failures.

**Objective:** Explore the considerations for promoting the implementation of work-based interprofessional education programmes.

**Methods:** A scoping review guided by the methodological framework of Arksey and O'Malley was used to analyse 28 articles published between 2000 and 2020. The reporting was guided by the PRISMA extension for Scoping Reviews.

**Results:** Twenty-seven of 28 articles were studies conducted in high-income countries. The review revealed considerations which were themed as 1) mobilisation of resources, 2) helpful learning environment, 3) healthcare professional's valuation and 4) barriers prior to implementing IPE/IPC. Successful implementation of interventions triggered motivation, confidence, self-efficacy, value for IPE/IPC.

**Conclusion:** Our findings demonstrate that there are specific considerations that can contribute to the uptake of IPE/IPC interventions in the clinical setting.

**Keywords:** Inter-professional collaboration; Inter-professional education; Work-based inter-professional education

## 1. Introduction

In healthcare, effective inter-professional collaboration (IPC) may improve organisational efficiency (Lutfiyya et al., 2019) and health outcomes (Schot et al., 2020). Subsequently, healthcare organisations have started to integrate IPC with service delivery to enhance coordination, and effectively use resources and services (Hardin et al., 2017; Lutfiyya et al., 2019; Mahmood et al., 2018). Inter-professional collaboration may also improve patient-provider satisfaction, improve patient safety (Lutfiyya et al., 2019) and reduce healthcare costs (Matthys et al., 2017). In healthcare settings, IPC may be fostered through inter-professional education (IPE).

Inter-professional education is a collaborative teaching approach where healthcare professionals learn about, from, and with each other; to develop complementary skills aimed at achieving quality healthcare outcomes (World Health Organization (WHO), 2010). Healthcare professionals who receive IPE are better prepared and supported to deliver IPC in an effective and coordinated manner (Interprofessional Education Collaborative, 2016; World Health Organization (WHO), 2010).

Globally, evidence suggests that establishing IPC and IPE initiatives is challenging (Carron et al., 2021; Prabawati, 2017). Existing training programmes for healthcare professionals rarely address IPC. When IPC is discussed, discussions are usually limited to case studies and disease-specific management (Carney et al., 2019). Consequently, few healthcare professionals join the workplace able to collaborate with professionals from other disciplines (Ahmady et al., 2020; Carron et al., 2021). The WHO has urged all stakeholders to explore innovative approaches for developing and successfully implementing IPE interventions (World Health Organization (WHO), 2010). One option may be to develop work-based IPE programs to narrow the education-practice gap in clinical settings (Meffe et al., 2012).

Work-based IPE programmes may be particularly suited to healthcare settings in low to middle-income countries, where resource constraints are particularly challenging (Ahmady et al., 2020; Steihaug et al., 2016). Before work-based IPE programmes can be developed, stakeholders need to identify factors which may facilitate or impede the development and implementation of such a programme (Greenhalgh et al., 2011). An important factor may be the collaborative needs in a specific setting.

Certain settings are in dire need of improved healthcare delivery, such as maternal healthcare in low and middle income countries. The United Nations document has identified maternal morbidity and mortality as a priority healthcare issue in the 21st century (United Nations and Department of Economic and Social Affairs: Population Division, 2019). According to the WHO, maternal mortality remains unacceptably high, and most cases are preventable (World Health Organization, 2019). Sub-Saharan Africa is the most affected, accounting for 66 % of global maternal deaths (United Nations and Department of Economic and Social Affairs: Population Division, 2019; World Health Organization, 2019). Maternal healthcare settings may benefit from workplace IPE programmes and enhanced IPC, especially in low and middle income countries.

Despite the importance and benefits of IPE and IPC, there is limited evidence of interventions being implemented in low and middle-income countries (Prabawati, 2017; Reeves et al., 2016; Reeves et al., 2017). This review maps the specific considerations for promoting the

implementation of a work-based IPE programme, which can be used to plan an IPE programme for low to middle income countries.

## **2. Methodology**

### **2.1. Design**

IPC and IPE are inherently complex interventions surrounded by numerous contextual factors that should be taken into consideration as it may positively or negatively impact efficacy (Greenhalgh et al., 2011). The rationale for the scoping review is to collate existing evidence to take advantage of the considerations to navigate pitfalls, which may then be used to inform the development of new IPE programmes (Munn et al., 2018). The scoping review followed Arksey and O'Malley's five stage framework: Identify the research question; identify relevant studies, select the studies, chart the data and collate, summarise and report results (Arksey and O'Malley, 2005). The structure of the scoping review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist (Tricco et al., 2018).

### **2.2. Step 1: identify research question**

What are the considerations for promoting the implementation of work-based IPE programmes?

### **2.3. Step 2: identify relevant studies**

In collaboration with an information specialist, we searched online databases including Academic Search Complete, Africa Wide Information, CINAHL, ERIC, Health Source: Nursing /Academic Edition and Medline. The search strings used were: (IPE or inter-professional education or collaborative learning or IPC) AND (maternity care' or 'antenatal care' or 'prenatal care' or 'obstetric care or midwife or midwives or Midwifery') AND (hospital or inpatient or ward or hospital ward or hospital room). The search was limited to articles published between 2000 and 2020 as inter-professional collaboration and education only gained popularity in the mid-nineties (Fransworth et al., 2015). The search identified 234 articles (Fig. 1).

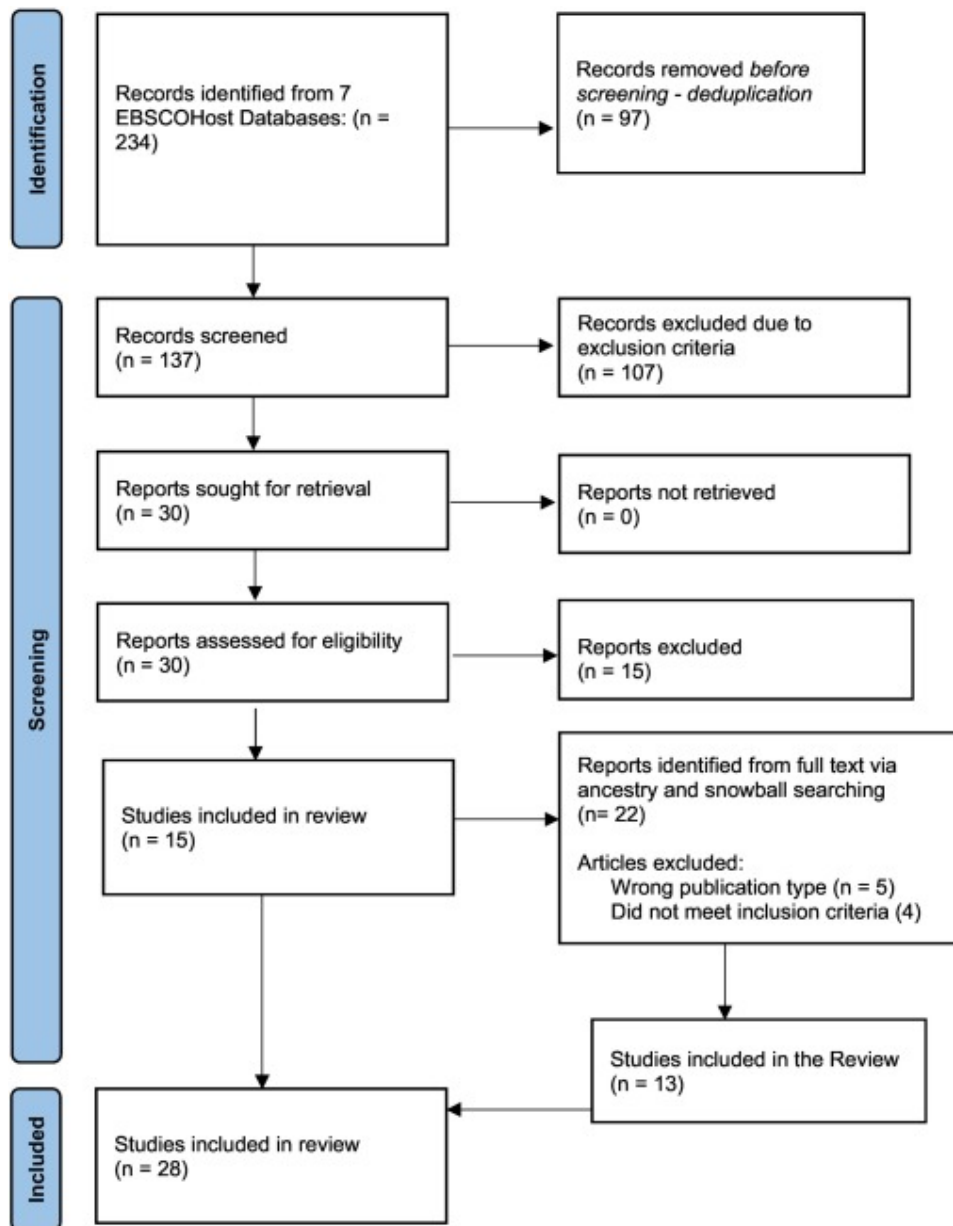


Fig. 1. PRISMA flow diagram.

### 2.4. Step 3: select the studies

We included articles that reported on work-based IPE to promote collaboration for care in hospital settings, including maternity care regardless of research design. The selected literature had to include participants who were healthcare professionals and/or students working or attached to a hospital-setting. We adopted the Population, Concepts, Context (PCC) elements which guided the development of the specific inclusion and exclusion criteria (See Table 1).

**Table 1.** PCC: Search terms and eligibility criteria.

Variable	Description	Inclusion criteria	Exclusion criteria
Population	Healthcare professionals, including all persons who are or have been trained to work in a health or health-related field	English studies Healthcare professionals and/or students in healthcare	Non-English studies Non-healthcare professionals Healthcare professionals involved in veterinarian healthcare
Concept	Inter-professional education (IPE) or collaborative learning or inter-professional collaboration (IPC)	Work-based or work-place based	Presented in classroom setting IPE that are part of undergraduate curriculum IPE that focuses only on clinical skills
Context	Health care setting	'Maternity care' or 'antenatal care' or 'prenatal care' or 'obstetric care or midwife or midwives or Midwifery' AND (hospital or inpatient or ward or hospital ward or hospital room)	Primary healthcare setting, community setting Veterinary sciences

The automatic deduplication system removed 97 articles. Two authors screened the titles and abstracts of 137 articles and excluded 107 due to the exclusion criteria. Thirty full text articles were assessed for eligibility. We removed 15 articles, including newsletters (n = 2) and IPC training focusing only on clinical skill(s) (n = 13). Ancestry and snowball searching provided a further 22 articles of which five were excluded due to wrong publication type and four did not meet the inclusion criteria. A total of 28 articles were included in the review.

## 2.5. Chart the data

We extracted data from the included articles using a Google Form, ensuring that the authors' wording and terminology were maintained. The form included the following information: authors, context, population, study design and considerations prior to implementation.

## 2.6. Collate, summarise and report

We used content analysis to collate the considerations for the successful implementation of work-based IPE programmes. All three authors reached consensus on the final four themes that emerged from the results of the included articles (n = 28).

## 3. Results and discussion

We reviewed 28 articles that used various study designs, including two experimental studies, eight interventional studies, 12 observation studies and six concept or opinion papers. Of the articles reviewed, 27 were from high-income countries including the USA (10), UK (7),

Canada (5), Netherlands (2), Australia (1), Denmark (1) and Switzerland (1). One article was from Ethiopia in Africa, a low to middle-income country.

Four themes emerged from the data: 1) mobilisation of resources, 2) helpful learning environment, 3) healthcare professional's valuation and 4) barriers to implementing IPC/E.

### **3.1. Mobilisation of resources**

The forces driving the demand for IPC practice included national level support through the availability of policies, funding structures, accreditation and licensure bodies (Avery et al., 2012; Grymonpre, 2016). Guiding policies and adequate funding allowed for large scale implementation of IPC/E initiatives and standardised IPE curricula and training programmes (Avery et al., 2012; Lenguerrand et al., 2020; Nielsen et al., 2007; Steinhardt, 2015). Licensure bodies that endorsed IPC/E competencies as a requirement for graduating triggered students' motivation and eagerness to participate in IPE workshops (Steinhardt, 2015).

Our review of the literature revealed that buy-in from management and leaders was important as these role players have the capacity to initiate change (Contratti et al., 2012). When policies and guidelines that support IPC/E are in place, resources and infrastructure can be mobilised to develop interventions that will trigger enthusiasm among healthcare professionals to embrace IPC/E activities (Behruzi et al., 2017; Meffe et al., 2012; Murray-Davis et al., 2014; Sørensen et al., 2009; Visser et al., 2020; Watson et al., 2016). In this study, successful interventions were also associated with structured IPE programmes integrated with a formal IPC programme with competent IPE facilitators and champions (Avery et al., 2012; Contratti et al., 2012; Grymonpre, 2016). Other institutional factors that promoted the success of IPC/E programmes included creating a motivational environment, providing incentives for attendees, adequate time for practitioners to attend workshops and engaging in interactive learning, and consistently reinforcing IPC principles and holding staff accountable (Baird and Graves, 2015; Contratti et al., 2012; Freeth et al., 2009; Grymonpre, 2016).

Successful IPE programmes were also promoted by positive workplace environments. Healthcare professionals learnt better if they felt that the learning environment was engaging, stimulating; supportive of their needs, and allowed them to interact and exchange their learning experiences freely (Avery et al., 2012; Contratti et al., 2012; Fraser et al., 2005; Freeth et al., 2009). Healthcare professionals were especially enthusiastic when well-resourced simulation rooms, IPE wards, and physical space designated for simulation and clinical practice were made available (Avery et al., 2012; Baird and Graves, 2015; Steinhardt, 2015).

### **3.2. Helpful learning environment**

Healthcare and specifically maternity care, is a multidisciplinary field which lends itself to rich learning and collaboration, where practitioners from different fields have to appreciate others, engage in shared decision making and complement each other while delivering IPC/E interventions (Baird and Graves, 2015; Freeth et al., 2009; Gordon et al., 2013). When resources are available for IPC/E interventions, further support is needed in the form of networks that include academia, professional bodies, and the medical community. By involving the community, best practices can be benchmarked and access to IPC/E expertise ensured (Haller et al., 2008; Steinhardt, 2015; Visser et al., 2020). Benchmarking exercises generally lead to improved credibility of facilitators and IPE interventions, triggering enthusiasm to implement IPC interventions (Table 2).

**Table 2.** Summary of reviewed studies.

Authors	Setting	Study participants	Study design/type and training models	Type/purpose of intervention
1. Avery et al., 2012	USA	Midwives, obstetricians & gynaecologists	Concept: the ACNMACOG IPE project	Described the ACNMACOG IPE project and implementation of inter-professional activities at four demonstration sites
2. Baird and Graves, 2015	Tennessee, USA, St Thomas Health Services (STHS)	Nurses and physicians working in maternity care settings	Intervention (REACT project)	Multidisciplinary team. Develop, implement and evaluate an IPE program emphasising how to recognise and manage a compromised obstetric patient. <i>E-learning</i> and multimedia experts engaged.
3. Behruzi et al., 2017	Canada-hospitals in Quebec	HCPs and administrators	Observation Case study design;	Exploring barriers and facilitators of inter-professional and organisational collaboration between midwives in birthing centres and other HCP in hospitals.
4. Chau et al., 2017	USA- Brigham and Women's Hospital in Boston	L&D nurses, midwives, obstetricians and anaesthesiologists	Observation Factor analysis using 5-point Likert scale	Perceptions of mandatory one hour structured interdisciplinary rounds (SIPPs) and effectiveness in improving teamwork 3 yrs. after implementation
5. Contratti et al., 2012	USA_NYU – labour and delivery unit.	HCPs working in the labour and delivery unit	Intervention Description of the intervention process	Description of lessons learned while implementing the Team Performance Plus program for IPC
6. Cullen et al., 2003	UK-University of Nottingham	Project Team- midwives and obstetricians	Concept paper	Overview of the processes involved in implementing an IPE strategy
7. Fraser et al., 2005	UK, University of Nottingham	Medical and midwifery students	Concept paper	Describing implementation of IPE initiatives during an obstetrics and gynaecology attachment for medical students
8. Freeth et al., 2009	USA	Experienced midwives, obstetricians and obstetric anaesthetists.	Observation MOSES course	Evaluated participants' perceptions of MOSES courses focused on non-technical aspects, their learning, and the transfer of principles to clinical practice
9 Gordon et al., 2013	UK	Postgraduate neonatal nurses and midwives	Intervention study, action-based design	Piloting the acceptability and effectiveness of a team objective structured clinical encounter (TOSCE) as an inter-professional teaching tool to support team-working skills
10. Grymonpre, 2016	University of Manitoba, Winnipeg, Canada	Faculty	Concept paper Report	Describing strategies that fostered IP faculty development for an IPE initiative
11. MCP, 2006	Canada Ottawa	Health care professionals working in maternity care settings	Intervention Delphi approach	Development of guidelines for the development of a multidisciplinary collaborative primary care model

12. Haller et al., 2008	Switzerland, Geneva, MOH, and the University Hospital of Geneva (HUG)	Nurses, physicians, midwives, and technicians from the departments of anesthesia, obstetrics, paediatrics and aviation experts	Observation Post-training Satisfaction survey	Assessment of participants' satisfaction with the Ensemble program (based on principles of Crew Resource Management (CRM) in improving teamwork; 2 day seminar of 12 people
13. Lenguerrand et al., 2020	UK, Scotland	All maternity staff	Experimental Twelve randomised control trial in maternity units with $\geq 900$ births/year	Investigated the effect of implementing PROMPT training at a national scale
14. Lown et al., 2011	USA	Health professionals	Concept Paper Co-development of a CPD model for inter-professional shared decision making	Described a model that can be used to design, implement and evaluate CPD curricula for IP shared decision making and decision support
15. Mann and Pratt, 2008	Boston, USA	Concept paper for the maternal health care setting	Concept paper	Described how CRM is implemented to improve team approach in labour and delivery
16. Meffe et al., 2012	Large urban hospital in Canada	Nursing, midwifery, and medical students in the third or final year of their respective programs	Observation Exploratory case study approach	Evaluated how participating in the IPE pilot program may enhance knowledge, skills/attitudes and promote student's collaborative behaviour
17. Melkamu et al., 2020	Ethiopia Jimma University Specialized teaching Hospital	Nurses and midwives working with the physician	Observational Cross-sectional study	Assessing inter-professional collaboration between HCPs
18. Molenaar et al., 2018	Netherlands	Parents, primary care midwives, hospital-based midwives, obstetricians, obstetric nurses, and maternity care assistants	Observational A qualitative design using focus groups	Exploring the experiences and needs of parents and professionals regarding shared decision making in inter-professional antenatal, natal, and postnatal care
19. Murray-Davis et al., 2014	England, UK, four universities with similar IPE curricula	Midwifery educators, Midwifery students, new midwives - prior involvement with IPE curriculum; and managers- employers of midwives	Observational A qualitative, grounded theory methodology	Exploring how newly qualified midwives transferred their IPE training to the sphere of IPC
20. Nielsen et al., 2007	15 US hospitals	Hospital emergency and obstetric departments	Experimental A cluster-randomised controlled trial-7 intervention and 8 control hospitals	Evaluated the effectiveness of a teamwork training intervention in reducing adverse outcomes and improving the process of care in hospital labour and delivery units. Four hr-MedTeams Labour & Delivery Team Coordination Course, based on CRM.
21. Olander et al., 2018	UK	Midwives, health visitors (trained nurses specialising in community care for children 0–5 years), and general	Intervention Multi-method convergent design	Assessed the perceived impact of inter-professional workshops in enhancing collaboration among HCP who care for women during and after pregnancy. One-



		practitioners (GPs) in the case of a low-risk pregnancy		day training workshop developed and delivered by an inter-professional team.
22. Reis et al., 2015	The south-eastern US university	Nurse-midwifery and third-year medical students utilising the Virtual Community Clinic Learning Environment (VCCLE)	Observational Exploration	Describe students' experiences of using VCCLE to learn clinical competencies and competencies for IPC.
23. Saxell et al., 2009	University of British Columbia, Vancouver, Canada	Health care students studying medicine, midwifery and nursing	Observational.	Describe how practitioners can implement various approaches to IPE interventions to facilitate IPC care
24. Sørensen et al., 2009	Copenhagen, Denmark, local hospital	Doctors, midwives, auxiliary nurses	Intervention study	Implementation and evaluation of a mandatory multi-professional simulation-based training program in a local hospital
25. Steinhardt, 2015	United States	Residents in obstetrics and gynaecology in their 4th, 5th and final years of training.	Intervention study	Workshop to augment the professionalism curriculum mandated by the ACGME-1st to focus on the IPE of obstetrics residents.
26. Visser et al., 2020	The Netherlands, Obstetric IPE ward	Supervising clinicians (9) from nursing, midwifery and medicine- working with students in an IPE ward in a teaching hospital	Intervention Study exploratory study	Investigated how supervising clinicians guide the clinical reasoning of diverse students in their last years of training
27. Watson et al., 2016	Australia Queensland Maternity Care	Midwives and doctors	Observational exploratory factor analysis (Survey) Social Identity theory (SIT)	A survey measuring maternity care professionals' perceptions of inter-professional practice and factors affecting collaboration in maternity care services, 2010
28. Weiner et al., 2016	USA University of Kansas Hospital,	Personnel in obstetric and nursery units All obstetrics and gynaecology physician trainees and all obstetrics faculty	Observational	Explored the impact of PROMPT on care outcomes and quality of nurse/physician communication, pre and post-practical Obstetric Multi-Professional Training- PROMPT training

Successful IPC/E interventions depend on successful inter-professional teamwork (Steinhardt, 2015). Healthcare professionals working in a team require trust and confidence in each other's abilities, which can be promoted by flattening hierarchical gaps and promoting collective decision-making (Contratti et al., 2012). The studies that we reviewed all supported the pooling of experts with diverse talents and skills to enhance the learning experience by exposing participants to different viewpoints (Avery et al., 2012; Haller et al., 2008; Mann and Pratt, 2008). Additionally, IPC/E programmes were made more meaningful and relevant by the availability of an IPE facilitator to structure and guide the process (Chau et al., 2017; Grymonpre, 2016).

Facilitators should implement an array of teaching strategies to maximise inter-professional interactions and inter-professional collaborative learning. The reviewed articles identified diverse teaching strategies including simulation-based learning; inter-professional collaboration, coaching, mentorship, small group learning techniques, reflective learning and practical exposure to clinical situations (Avery et al., 2012; Freeth et al., 2009; Lenguerrand et al., 2020; Visser et al., 2020).

Simulations enabled healthcare professionals to participate in case scenarios in small groups that promoted non-threatening quality interaction leading to improved inter-professional communication and building positive relationships (Freeth et al., 2009; Haller et al., 2008). Real-time learning opportunities such as ward rounds created a space for discussing patients while healthcare professionals and students interacted as part of a broader inter-professional team, creating cohesion and a bond among staff (Avery et al., 2012; Contratti et al., 2012). Consequently, healthcare professionals and students felt empowered to participate in inter-professional learning, triggering a mutual commitment to interact and share their clinical experience (Fraser et al., 2005; Freeth et al., 2009). Additionally, e-learning enabled participants to engage freely in learning at their own time and in a non-threatening environment, which benefitted group discussions (Baird and Graves, 2015; Visser et al., 2020).

An enabling learning environment was also fostered if workshops had a flexible schedule and were spread over time (Gordon et al., 2013; Nielsen et al., 2007; Saxell et al., 2009; Sørensen et al., 2009; Steinhardt, 2015). Sørensen et al. (2009) observed that mandatory, small group training offered during working hours were poorly attended, while after-hours training with remuneration attracted an attendance rate of 94 to 96 %.

### **3.3. Healthcare professionals' valuation**

Our review revealed that healthcare professionals were enthused by IPC, especially when they saw a well-respected physician facilitating training with nursing assistants, which in turn mitigated the power differences between professional groups (Contratti et al., 2012). Health professionals who participated in successful IPC/E programmes highly appreciated a team approach to training and being part of a 'supra-identity' working towards patient-centred care (Haller et al., 2008; Meffe et al., 2012; Sørensen et al., 2009). Successful IPC/E teams included healthcare professionals from different disciplines, senior managers, IPE champions, e-learning specialists, teamwork specialists for training development and implementation (Baird and Graves, 2015; Lenguerrand et al., 2020; Meffe et al., 2012). Participants also valued integrating IPE training into clinical practice, which encouraged interaction and experiential learning, as well as sharing of experiences (Grymonpre, 2016; Murray-Davis et al., 2014).

### **3.4. Barriers to the implementation of IPC/E**

Senior staff mentioned several reasons for not fully participating in IPC activities that required them to engage with students during rounds. These reasons included staff shortages, high work demands and professionals' busy schedules (Contratti et al., 2012; Fraser et al., 2005; Visser et al., 2020). Sub-optimal IPC/E programmes were also characterised by groups that did not represent clinical settings (Cullen et al., 2003; Freeth et al., 2009; Murray-Davis et al., 2014). Non-representative groups seemed to be associated with a lack of commitment of healthcare professionals and facility managers to attend workshops (Fraser et al., 2005; Freeth et al., 2009). Healthcare professionals who had a limited understanding of IPC/E were also reticent to engage in IPC activities (Behruzi et al., 2017; Watson et al., 2016). Effective teaching and learning was also hindered by workshops being too short (Nielsen et al., 2007; Visser et al., 2020) and practitioners being ill-prepared (Contratti et al., 2012).

### **4. Strengths and limitations**

Our scoping review comes with limitations as there is some degree of subjectivity and therefore other researchers may classify the information differently. Conversely, the systematic appraisal and data extraction, with focus on explanation rather than judgement, adds to the strength of the review. This is the first scoping review that identifies the considerations prior to implementing work-based IPE programmes in healthcare settings.

### **5. Conclusion and recommendations**

We reviewed literature on IPC/E published between 2010 and 2020. Our findings provide a perspective of the considerations prior to IPE programme implementation in clinical settings. We found few articles explicitly addressing IPC/E in maternity settings (Carney et al., 2019). Most IPE programmes described in the literature focused on disease-specific healthcare issues. We found that education institutions offer IPE as part of undergraduate programmes, including maternity care settings, but IPE is rarely offered for qualified professionals (Steinhardt, 2015). In maternity care, IPC/E mainly focused on emergency obstetrics in hospital settings (Sørensen et al., 2009; Visser et al., 2020; Watson et al., 2016). Developing IPE programmes is complicated by a lack of standardised IPE interventions (Patel et al., 2016; Reeves, 2016) and the diversity of specialities that need to be amalgamated (Chen et al., 2019). This review highlights the considerations prior to implementing work-based IPE programmes and could be used to inform programmes for low to middle-income countries where maternity care remains a challenge.

### **CRedit authorship contribution statement**

All three authors have made a substantial contribution to the article and approved the final article submitted for review.

<b>Author</b>	<b>Contribution</b>
Montlenyane Madisae	Developed the proposal Involved in data collection and interpretation Participated in drafting the article Wrote sections of the article Critically read and revised the article
Celia Filmalter	Assisted with proposal development Involved in data collection and interpretation Participated in drafting the article Wrote sections of the article Critically read and revised the article
Tanya Heyns	Assisted with the proposal development Involved in data collection and interpretation Participated in drafting the article Wrote sections of the article Critically read and revised the article

### **Declaration of competing interest**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. The authors further declare the following financial interests/personal relationships which may be considered as potential competing interests: Montlenyane Madisa was provided financial support by the Botswana Open University.

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