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CO-CREATING A WORK-BASED INTERPROFESSIONAL EDUCATION PROGRAMME FOR COLLABORATIVE PRACTICE IN MATERNITY SERVICES IN BOTSWANA

by

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Submitted in fulfilment of the requirements for the degree

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School of Health Care Science

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DEDICATION

No matter what accomplishments you make, somebody helped you.

- Althea Gibson

This study is dedicated to my family, friends, and colleagues at Botswana Open University and University of Pretoria without whose unconditional love and support I could have not done it. And to all the women and children who died of preventable adverse events because we (healthcare professionals) could or did not communicate effectively or work interdependently to complement each other to achieve a common goal.

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DECLARATION

I, **Montlenyane Madisa**, declare that **Co-creating a Work-based Interprofessional Education Programme for Collaborative care in Maternity Services in Botswana** is my own work and that all sources that have been used or quoted (from printed, Internet or other sources) have been indicated and acknowledged by means of complete references and that this work has not been submitted for any other degree at any other institution.

16 June 2024

Signed **Date**

Montlenyane Madisa

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ABSTRACT

Background: Interprofessional collaboration is the foundation for improved patient and provider satisfaction, as well as increased organisational efficiency. Poor collaborative practices and communication failures have been identified as major contributors to preventable adverse events, organisational inefficiency, patient and provider dissatisfaction, and increased health care costs. The Joint Commission on Root Causes and Percentages for Sentinel Events reported poor communication and teamwork for 60% to 70% of adverse events and medical mishaps in health care systems between 2004 and 2015. Root cause analysis of maternal deaths yielded similar results in low- and middle-income countries. Poor communication and teamwork contribute to the lack of capacity and support to engage in interprofessional collaborative practice. Therefore, health care professionals should receive context-based work-based training in inter-professional collaborative care. Interprofessional collaborative care promotes patient-centred care and self-management, which improves healthcare outcomes. It also strengthens healthcare systems, resulting in better service delivery and health outcomes.

Aim: The aim of the study was to co-create a work-based interprofessional education programme to enhance collaborative patient care in the context of hospital-based maternal health services in Botswana.

The objectives were divided into three phases, which aligned to the Design-Based Research (DBR), used as a methodological framework:

Phase 1: Analysis of practical problems

Phase 2: Development of solutions

Phase 3: Iterative cycles of testing and refinement

Methodology: The Design-Based Research (DBR) was used as a methodological framework.

Multimethod research designs were used to assist in the development of the training programme, which included a scoping review and a qualitative the Criteria for Describing and Evaluating Training Interventions in Healthcare Professionals and a consensus design.

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In Phase 1, a scoping review was conducted to explore the considerations for promoting the implementation of work-based interprofessional education programmes. A stakeholder analysis followed and then a workshop with seven stakeholders provided their perspectives on the development of an interprofessional collaborative programme for maternity care healthcare professionals. In addition, women's and healthcare professionals' perceptions and experiences with interprofessional collaboration in a maternity care setting were explored. In Phase 2, the data collected in Phase 1 informed experts in research, clinical care and programme development to develop a work-based interprofessional education programme. In Phase 3, an online expert survey with qualitative (open-ended) and quantitative (Likert scale) questions was conducted to validate the co-created work-based interprofessional education programme.

Findings: In Phase 1, data from the scoping review revealed limited articles (n=28) explicitly addressing interprofessional collaboration in maternity settings. Although some educational institutions offered interprofessional collaboration training as part of undergraduate curricula, including maternity care, qualified professionals were rarely given this training. Four themes emerged as issues to consider when developing and implementing interprofessional collaboration intervention: resource mobilisation, conducive learning environment, healthcare professional valuation, and barriers to interprofessional collaboration/education implementation.

The findings of the stakeholder analysis and engagement revealed that the following key stakeholders should participate at various stages of the study, beginning with the design phase and ending with the evaluation of the implemented training programme: (1) Health care providers and beneficiaries; (2) Curriculum development and training specialists; (3) Interprofessional Collaboration and Education networks and champions; (4) Quality/assurance (Validation and Evaluation) groups, and (5) Strategist/policy developer/advocacy groups.

Evidence from the workshop with stakeholders confirmed the lack of interprofessional collaboration in maternity settings and provided insight into the needs, implementation concerns, and competency gaps associated with interprofessional collaboration in the maternity care setting, as well as how the training programme should be structured to address interprofessional competency gaps. The stakeholders suggested that we name the programme '*MabogoDinku a Thebana'*, which loosely translates as 'together we can'. The programme was con consequently renamed Mabogo-Dinku work-based interprofessional education programme for collaborative care in maternity care setting.

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In-depth interviews with women (n=13) and healthcare professionals (n=27) revealed that they perceived poor communication, disrespectful behaviour, ineffective teamwork practices, a lack of understanding of each other's roles and responsibilities, ineffective resource coordination, hierarchical power struggles, and weak collaborative leadership as interrelated factors that influenced the delivery of interprofessional collaborative care.

Based on the findings from Phase 1, a five to seven-week self-paced online work-based interprofessional education programme was co-created.

In phase 3, six IPC experts/champions and e-learning specialists were recruited and provided content validation for the developed programme via a Google survey. The expert validation survey results revealed that the training programme had good content validity, with a mean of 0.88 for section B of the validation tool and 0.94 for section C.

Conclusion: This study describes the co-creation of the *Mabogo-Dinku work-based interprofessional education programme*, which is intended to improve and support interprofessional collaboration in maternity care settings in low- and middle-income countries. The training programme could support healthcare systems in reducing clinical errors, overcoming hospital-based maternal mortalities and morbidities, reducing healthcare costs and consequently improve quality of care and may be used to guide educators in integrating IPE into their curriculum to close education-practice gaps.

Key terms: Healthcare professionals; interprofessional collaborative care; inter-professional education; maternity, work-based.

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LIST OF PAPERS

The thesis by publication is based on the following papers:

- Madisa, M., Filmalter, C.J. and Heyns, T., 2023. Considerations for promoting the implementation of work-based interprofessional education programmes: A scoping review. *Nurse Education Today*, 120:105617.

- Madisa, M., Filmalter, C.J. and Heyns, T., 2023. Healthcare professionals and pregnant and post-natal women's perceptions of interprofessional collaboration in a maternity care facility: A qualitative study from Botswana. *Midwifery*, *125*:103768.

- Content validity of a work-based interprofessional collaboration training program for maternity care (Madisa, M., Filmalter, C.J. and Heyns, T. 2023. Journal of Advanced Nursing, ***Submitted for review***.

I also co-authored in the following paper:

- Brittz, K., Madisa, M., Hugo-Van Dyk, L., Filmalter, C. and Heyns, T., 2023. A Cost-Effective Work-Based Interprofessional Collaboration Program for Healthcare Professionals. *International Journal of Online Pedagogy and Course Design (IJOPCD)*, *13*(1):1-16.

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It's been true in my life that when I've needed a mentor, the right person shows up.

- Ken Blanchard

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LIST OF BBREVIATIONS	
ABBREVIATIONS	**MEANING**
AfrIPEN	African Interprofessional Education Network
BHPC	Botswana Health Professions Council
BQA	Botswana Qualification Authority
CHE	Council of Higher Education- Programme Accreditation Criteria
CIHC	Canadian Interprofessional Health Collaborative
CRE-DEPTH	Criteria for Reporting on Development and Evaluation of Professional Training interventions in Healthcare
DBR	Design Based Research
HCP	Healthcare Professional
HCPs	Healthcare Professionals
HEIs	Higher Education Institutions
HPCSA	Health Professions Council of South Africa
HRDC	Human Resource Development Council
IMR	Infant Mortality Rate
IPC	IPCP Interprofessional Collaboration
IPC/E	Interprofessional Collaboration and Education
IPCP	IPCP Interprofessional Collaborative Practice
IPE	IPE Interprofessional Education
LMIC	Low- and middle-Income countries
MMR	Maternal Mortality Rate
MOHW-Botswana	Ministry of Health and Wellness-Botswana
MOH-Botswana	Ministry of Health-Botswana (former name)
NMCB	Nurses and Midwifery Council of Botswana
SDG	Sustainable Development Goals
T & CM	Traditional and complementary medicine
U5MR	Under five (5) Mortality Rate
WHO	World Health Organization

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DEFINITION OF KEY CONCEPTS

In the context of this research, and for simplicity and consistency throughout this thesis, the following key concepts were defined as follows.

- **Co-creation** refers to a 'collaborative approach to the design and production of something new to be existent (De Koning et al.'2016; Bovill, 2013). For this study, co-creation will refer to engaging all relevant stakeholders in the design and development of an Inter-professional Collaborative training programme that offers experiential learning experience to staff. Relevant stakeholders include healthcare professionals, experts in curriculum development ' and experts in IPE and IPC.

- **Healthcare professionals**: refers to a wide variety of professions who have different background, education, and experience and who may practice independently or as a member of the health team to provide direct care or social support to patients in wide range of settings embedded in healthcare systems (Patey, et al., 2022). Healthcare professionals in this study is applicable to students, practitioners and support staff involved in medical care and social support of women requiring maternity care services in a hospital setting in Botswana. They include but not limited to medicine (general medical practitioners, obstetricians, neonatologists), nursing and midwifery, allied health professions (AHPs) such as nutritionists, psychologists and social workers, pharmacists, laboratory specialists; and healthcare auxiliary staff.

- **Inter-professional collaboration (IPC)**: It is a process whereby healthcare professionals, patients and other stakeholders build a relationship to engage in shared decision-making and responsibilities, a partner in planning and intervention and work interdependently to achieve a common goal (D'Amour et al., 2005). Inter-professional collaboration in this study refers to a situation whereby nurses, midwives, doctors, other healthcare professionals and patients come together to work as a team and equals with mutual respect to engage in shared decision-making and ensure optimal delivery of patient-centred care in hospital-based maternity care setting.

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- **Inter-professional education (IPE)** is training where two or more healthcare professionals are brought together to engage in interprofessional learning and learn about, from and with each other and complement each other's skills to improve collaboration and achieve safe, cost effective, quality patient centred care (WHO, 2010; Freeth et al., 2005). IPE in this study refers to providing training that promotes experiential learning experience by bringing together diverse groups of professionals to learn together and from each other the basic principles and processes of inter-profession collaboration and practice interprofessional collaborative care.

- **Inter-professional collaborative practice (IPCP)** is a collaborative practice that occurs when healthcare professionals or learners from diverse disciplines work together with patients and significant others to deliver patient-centred care to achieve quality healthcare outcomes (Interprofessional Education Collaborative, 2016). Collaborative practice, in this case, refers to a practice which occurs when health care professionals working in maternal health services work collaboratively, together with patients and their families to ensure delivery of patient-centred maternal health services in a hospital setting.

- **Interprofessional Learning:** Refers to learning that occur when two or professionals or students from different professions interact. It can be a product of a planned Interprofessional Education or can be unplanned and happen naturally in the workplace or in education settings when members of different professions interact. (Freeth, Hammick, Reeves, Koppel, & Barr, 2005). This definition applies to the study.

- **Maternal health services:** According to Kilpatrick et al, (2019) and WHO, (2017), the maternal health services refer to care of women during antepartum/prenatal. Intrapartum and postpartum/postnatal period. In the present study maternal health services applies to care provided to women admitted to maternity wards for pregnancy-related medical care, labour, childbirth and post-partum care.

- **Training Programme-** It is an organised tool designed to provide individuals with information, instruction, guidance, and practice to equip them with knowledge and skills required to boost performance and productivity in the work environment (Bhasin, 2020; Bovill, 2013)**.** For the purpose of this study, the training programme, includes the instructional design for the work-based interprofessional collaboration programme co-constructed to equip HCPs with

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knowledge and skills required for interprofessional collaboration. The instructional design includes content, teaching and learning process, assessment strategies and expected outcomes.

- **Work-based inter-professional education programme**: A work-based learning or education programme refers to any training programme that could be offered as a preservice programme or continuous professional development programme, designed to take place in the workplace and help the practitioner relate new knowledge directly to the work environment (Sweet, 2018; Burholt, e al., 2016; Chapman, 2006). In this study it refers to the formal experiential learning experience by HCP which is carried out in the workplace though a self-directed online short course training on IPC in conjunction with on-job hands practice to help practitioners gain knowledge and skills about collaborative practice. The course is designed for both working practitioners and learners.

  - **Women**- Refers to an adult human being. In this study a woman refers to a pregnant and *postnatal woman hospitalized in maternity care ward*

  - **Postnatal women** – Refers to women who just gave birth and it extends up to six weeks (42 days) after birth. In this study post-natal women refer to women immediately after the birth of the baby and throughout the period that they are hospitalised in the maternity care ward.

  - **Prenatal women:** Refers to any pregnant woman before giving birth. In our study, prenatal women refer pregnant women hospitalised in maternity ward for medical care or are not yet in labour stage but are waiting to progress to labour stage.

- **Intrapartum Women**: Refers to pregnant women hospitalised in maternity ward for labour and delivery

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CHAPTER 1: ORIENTATION TO THE STUDY

1.1 INTRODUCTION

Healthcare has become more complex in recent years and this complexity can best be addressed by interprofessional teams. Effective communication and co-operation among healthcare professionals is a requirement for modern and well-functioning health services (World Health Organization [WHO], 2010).

This chapter outlines the background to and rationale for the study, and emphasises the need to strengthen the coordination, communication, and organisation of components of the healthcare system. The aim and objectives of the study, theoretical framework guiding the development and delivery of interprofessional collaboration (IPC), research design and methodology, and the development of a work-based IPC training programme are briefly described.

1.2 BACKGROUND AND RATIONALE FOR THE STUDY

A well-functioning healthcare system is the foundation for delivering timely, efficient, and appropriate care to individuals and communities. To achieve optimal outcomes in healthcare delivery, including effectiveness, safety, and efficiency, it is imperative to establish a deliberate framework for organising and coordinating the various interconnected parts of the system. Moreover, fostering effective collaborative practices among health human resources is essential for enhancing the quality of care provided (WHO, 2013; Martinez-Garcia & Hermandez-Lemus, 2013). Today's healthcare systems, particularly in low- and middle- income countries, face many challenges that need to be tackled to address the emerging health needs and demands of individuals and various groups (WHO, 2013).

There are several causes of healthcare system failure in delivering quality healthcare services. One critical hindrance to quality service delivery is that a healthcare system is a dynamic complex system (Kruk, Gage, Arsenault et al, 2018) and therefore difficult to predict (Martinez-Garcia & Hermandez-Lemus, 2013). In the 21st century, the complexity of healthcare environments is a

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result of various factors which make it difficult for healthcare professionals (HCPs) to work collaboratively to ensure delivery of safe, reliable, cost-effective patient-centred care (Kruk et al, 2018; Clarke, Bourn, Skoufalos et al, 2017; Grossmann**,** Goolsby, Olsen & McGinnis, 2011). As medical knowledge evolves, different healing professionals, such as doctors, nurses, physiotherapists and others, have to work and interact together to achieve better healthcare outcomes. This becomes complex as they are expected to work collaboratively and interdependently to achieve that goal (Mahajan et al, 2018). Moreover, when diverse groups of healthcare professionals are expected to work together, there is often competitive human interaction resulting in a challenge for cooperation, confusion, misunderstanding, conflicts, and silo practices, consequently hindering health systems' performance (Trane, Aasbrenn, Rønningen et al, 2022; Martínez-García & Hernández-Lemus, 2013; Moncatar, Nakamura, Siongco et al, 2021). The shortage or increase in advanced technologies and the dynamic changes in treatment modalities also require more knowledge and skill to ensure cost-effective use and safe care delivery (Alotaibi & Federico,2017; Grossmann et al, 2011). Other issues that add to the complexity of the healthcare system are care coordination for patients with multiple chronic conditions (Clarke et al, 2017); rising demand for advanced services to achieve easily accessible, quality, cost-effective, patient-centred care (Kruk et al, 2018); shortage of skilled health workforces and inadequate allocation of resources, and poor maintenance of healthcare infrastructure (Kruk et al, 2018; Behruzi, Klam, Dehertog et al, 2017). The extent of complexity of health systems differs across various settings depending on patient needs and organisational structure, culture, and resource availability.

Maternity care service is among the most complex settings in health facilities because it involves care of a population that is primarily healthy compared to other hospital services, while at the same time presenting with physiological and anatomical changes which affect almost all systems of the body including cardiovascular, respiratory and haematologic systems (De Labrusse, Ramelet, Humphrey et al, 2017). The physiological changes occurring during pregnancy make it difficult for clinicians and allied health professionals to identify clinical indicators of complicating pregnancy. Furthermore, the need to save the lives of two or more people adds to the complexity of maternal health (Behruzi et al, 2017). Therefore, a rigorous collaborative effort is crucial to address such complexities. Medical doctors and midwives usually have different perceptions of pregnancy and childbirth. Negotiating how care should be rendered can be challenging, negatively impacting communication, interpersonal relationships, clarity of roles and responsibilities and service delivery facilities (Behruzi et al, 2017). Furthermore, emerging pre-existing conditions, such as diabetes mellitus, hypertensive disorders and anaemia, make

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maternal care very complex and challenging to handle (Arendt, Pedersen, Pedersen et al, 2021; Nesro, Dhinsa & Gelan, 2021; Bauserman, Lokangaka, Thorsten et al, 2015; Bramham, Parnell, Nelson-Piercy et al, 2014). Finally, prevailing socioeconomic and cultural factors in low- and middle-income (LMIC) countries increase populations' vulnerability to maternal complications and therefore require the collective effort of interprofessional health teams (Nesro et al, 2021). Health systems in Africa suffer from neglect and underfunding leading to severe challenges. Oleribe, Momoh, Uzochukwu et al (2019) found that the principal challenges were inadequate health resources, inadequate budgetary allocation to health, and poor leadership and management. African countries are affected because of socioeconomic and cultural issues which cut across institutional, human resources, financial, technical, and political developments (Nesro et al, 2021). The complex nature of these issues requires knowledgeable healthcare professionals who understand how to function in such constrained environment systems. Therefore, there is a need for innovative solutions that equip the health workforce with the skills required to function effectively in a complex system (Oleribe et al, 2019; Martínez-García & Hernández-Lemus, 2013). In their study, Oleribe et al (2019) highlighted training and capacity building as the leading solution to health system strengthening followed by increased health financing and advocacy for political support and commitment. Kruk et al (2018: e1202) emphasise capacity building as a radical innovative solution to health system strengthening because “providers, from health workers to managers, are fundamental for health systems, and require adequate numbers, preparation, professionalism, and motivation”. Lack of capacity building is among the contextual factors that limit the effective execution of non-technical skills in LMICs, in addition to overburdened healthcare systems and lack of provider empowerment (Scott, Revera Morales, McRitchie et al, 2016). Given the importance of training and capacity building in enhancing staff performance and reducing preventable human-related causes that lead to illness or premature death, developing and reinforcing training programmes that equip professionals with NTS should be given highest priority.

While staff training and capacity building should be diverse, for HCPs to survive in a complex healthcare system, they should possess non-technical skills (Morley & Cashell, 2017; Green & Johnson, 2015; Scott et al, 2016). Non-technical skills (NTS) are generic life skills including cognitive skills (such as decision-making, planning and situation awareness) and social skills (such as leadership, teamwork, communication, coordination, collaboration) required to carry out specific tasks (Flin, O'Connor & Crichton, 2017). These skills are considered the fabric of a well-functioning complex healthcare system because they are responsible for addressing the six dimensions of quality of care: safety, effectiveness, patient-centredness, timeliness, efficiency,

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and equity (Kruk et al, 2018). Accordingly, non-technical skills are needed to improve the performance of complex systems and minimise adverse events and clinical errors and consequently improve safety of patient care (Reeves, Pelone, Harrison et al, 2017; Reeves, Xyrichis & Zwarenstein, 2018). In short, acquiring non-technical skills enables one to cope effectively with challenges in clinical practice. For example, failure to effectively employ communication, collaboration and teamwork skills in clinical practice has been associated with over 50% of preventable and human-related errors or adverse events (The Joint Commission, 2019; Flin et al, 2017). Therefore, recognising the impact that communication, coordination failures and poor organisation have on service delivery is crucial because even the most knowledgeable and skilled practitioners cannot perform to their maximum if they are ill-prepared to function in a complex and flawed healthcare system (Grossmann et al, 2011).

Despite global interest in the relationship between non-technical skills and healthcare outcomes, however, more evidence is needed regarding adequate training and support of HCPs in non-technical skills, especially in LMICs (Scott et al, 2016). Achieving quality health outcomes necessitates strengthening the coordination, communication, and organisation of components of the healthcare system. The researcher, therefore, recognised the need for an intervention programme that is comprehensive enough to strengthen, promote and nurture the skills required to enhance efficiency of healthcare systems in a clinical setting, particularly for maternity care settings in Sub-Saharan Africa.

Interprofessional collaborative care is endorsed as an innovative approach central to managing the healthcare system by strengthening non-technical skills, such as collaboration, communication, coordination, and interdependence (Reeves et al, 2017; Reeves et al, 2018; WHO, 2010, 2016). Currently interprofessional collaboration is recognised as a means to reduce human-related adverse events and medication errors and improve patient satisfaction in a wide variety of healthcare settings (Carney, Thayer, Palmer et al, 2019; DeJesus, Howell, Williams et al, 2019; Schot et al, 2019). Effective interprofessional collaboration requires healthcare professionals to undergo interprofessional education.

1.2.1 Interprofessional collaboration

Interprofessional collaboration (IPC) is the hallmark of improved health outcomes and cost-effective care in a variety of settings. Interprofessional collaboration interventions address the

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needs of patients and practitioners, mitigate adverse events in clinical care environments, improve the standard of patient care and provide an opportunity to optimise the performance of healthcare systems (Reeves et al, 2017; Interprofessional Education Collaborative [IEC], 2016). Furthermore, IPC has a synergistic effect that is essential for delivering more efficient and comprehensive care compared to when it is solely provided by a single discipline (Wei, Corbett, Ray et al, 2020). Interprofessional cooperation is a well-recognised practice that involves the integration of healthcare professionals from many disciplines, as well as patients, families, and communities. This collaborative approach aims to foster a partnership-based decision-making process, effectively coordinate care, and execute strategies to achieve optimal healthcare outcomes (WHO, 2010).The importance of IPC lies in its emphasis on mutual respect, respectful care, and collective actions. Healthcare professionals must know and comprehend how to engage in collective actions to effectively address the challenges posed by the complexity of healthcare facilities. This includes maximising the utilisation of available resources, such as the health workforce, and striving to provide cost-effective, comprehensive patient-centred care (Reeves et al, 2017). Essentially, IPC is a cross-cutting, cost-effective strategy that plays a crucial role in addressing most of the non-technical skills. These skills include teamwork, shared decision-making, enhanced interpersonal relationships, conflict management, coordination and organisation and maximum utilisation of resources, delivery of comprehensive patient-centred care and conflict management (Reeves et al, 2017; Reeves, Fletcher, Barr et al, 2016; Interprofessional Education Collaborative [IEC], 2016).

Interprofessional collaboration (IPC) has been instrumental in improving the efficiency of healthcare systems, particularly in developed countries. Interventions in IPC are currently flourishing in high-income countries as one of the foremost tools for enhancing the quality of care by promoting the safe provision of comprehensive patient-centred services. Consequently, these interventions have a positive influence on self-management, patient satisfaction, and the overall care experience (DeJesus et al, 2019; Schot et al, 2019). Furthermore, the implementation of IPC has been found to have positive effects on employee satisfaction and staff retention, leading to improvements in staff and organisational performance as well as corporate image (Baik & Zierler, 2019; Galletta, Portoghese, Carta et al, 2016). IPC also strengthens health systems by improving professionals' coordination skills, thereby reducing the duplication of services, and enhancing the coordination of resources and the service efforts of healthcare professionals (Sibyl, Bennadi, Kshetrimayum et al, 2018; WHO, 2010). In particular, the concept of IPC challenges the fragmented and isolated approach to healthcare delivery, facilitating the active participation of professionals in shared decision-making and exchanging knowledge and best practices (Wei et

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al, 2020; Reeves et al, 2017; Green & Johnson, 2015). Lastly, working collaboratively fosters a synergistic approach that facilitates the efficient provision of services necessary for the effective management of patients' complex healthcare demands (Hanum & Findyartini, 2020; Wei et al, 2020; IEC, 2016). Despite the limited implementation of IPC, particularly in LMIC countries, the significance of IPC in maternal health care cannot be overstated. The scarcity of skilled human resources in these settings further emphasises the urgent need for the implementation of IPC (Sulistyowati & Walker, 2019; Thistlethwaite, Forman, Matthews et al, 2014; Oleribe et al, 2019).

The effectiveness of interprofessional education (IPE) in enhancing the efficiency of healthcare systems is widely acknowledged. However, there is a lack of clear guidance on how to effectively integrate it in practice and education, particularly in LMICs (Sulistyowati & Walker, 2019; Prabawati, 2018; Thistlethwaite et al, 2014). The barriers to the successful implementation of IPE encompass limited resources, such as insufficient staffing, financial constraints, and inadequate infrastructure (Rawlinson, Carron, Cohidon et al, 2021; Reeves et al, 2017). Additionally, professionals' lack of training in IPC, time constraints impeding the implementation of IPC practices, and a general lack of interest in engaging in interprofessional collaborative care are significant barriers (Monster, Nakamura, Siongco et al, 2021; Sulistyowati & Walker, 2019; Reeves et al, 2017).

A further obstacle to the successful implementation of IPC in LMICs pertains to the scarcity of regulations that enforce the adoption and execution of IPC protocols (Sulistyowati & Walker, 2019). The absence of enabling frameworks and effective leadership to advocate for IPC are also obstacles to the successful implementation of IPC (Rawlinson et al, 2021). Considering the various obstacles to collaboration, a viable course of action for healthcare systems would involve establishing a conducive workplace environment that fosters and cultivates collaborative care. Additionally, efforts should be made to enhance healthcare professionals' comprehension and recognition of the significance of interprofessional cooperation in enhancing patient healthcare outcomes. To accomplish this objective, it is imperative to prioritise capacity building of HCPs in IPC. This approach holds significant potential for changing HCPs' mindsets and fostering a proactive adoption of a collaborative culture.

The World Health Organisation (WHO, 2010) recognises and supports interprofessional education (IPE) and learning as a pedagogical strategy that may be utilised to cultivate a workforce capable of interprofessional collaboration and promote collaborative practices.

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1.2.2 Interprofessional Education (IPE)

Interprofessional education (IPE) emerged in the UK in the late 1960s, driven by developments in primary and community care (Barr, 2009, 2010). Teamwork became the cornerstone for effective collaboration. There were several challenges, but by the 1980s, it was more intent on exploring how the professions together could be more effective in improving services (Barr, 2010; WHO, 2010). The WHO (2010) emphasises the importance of ongoing education for physicians and the collaborative learning of healthcare professionals in order to foster effective teamwork and enhance health outcomes. Since then, IPE has been included in several international policies with the aim of fostering a climate of interprofessional collaboration (Interprofessional Educational Collaborative, 2016; WHO, 2010). IPE is widely considered a vital instructional approach for interprofessional collaboration (IPC) due to its emphasis on collaborative learning, knowledge exchange, constructive feedback, and practising in a real-world context (Avery, Jennings, Germano et al, 2020). IPE is an innovative pedagogical approach that fosters collaboration among healthcare and social care professionals. Its main objective is to impart knowledge and skills related to interprofessional collaboration (IPC), enhance comprehension of each other's roles and responsibilities, promote shared values and mutual respect, and leverage complementary skills to attain optimal healthcare outcomes (Carney et al, 2019; Health Professions Accreditors Collaborative [HPAC], 2019; Interprofessional Educational Collaborative [IEC], 2016).

The principle behind this approach is that once healthcare professionals are prepared and supported to deliver interprofessional collaborative care, they will work effectively in synergy and collaboratively in a coordinated manner (Wei, et al, 2020; IEC, 2016). Therefore, interprofessional collaborative education in both the pre-service and in-service training will improve HCPs' performance and ultimately that of the entire healthcare system (Reeves et al, 2016).

The primary advantages of IPE lie in its ability to foster collaborative team behaviours and interprofessional relationships. These outcomes, in turn, have a positive impact on patient care outcomes, as well as the elimination of silo practices and the enhancement of clinical skills. Consequently, patient care outcomes and customer satisfaction are improved (Homeyer, Hoffmann, Hingst et al, 2018; Herath, Zhou, Gan et al, 2017; Reeves et al, 2016). In addition, the implementation of interprofessional education among pre-service practitioners serves to cultivate and advance interprofessional thinking and practice, promotes mutual understanding and mitigates the perpetuation of stereotypes. Lastly, it enhances learners' conduct towards patients and other stakeholders (Homeyer et al, 2018). In their review, Herath et al (2017) found that IPE

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programmes were mostly at undergraduate level, and among all health care disciplines, nursing conducted most of the IPE programmes. As a result, there is a growing trend among educators and clinicians in developed countries to incorporate IPE into their higher education curricula and clinical practice (Prabawati, 2018; Herath et al, 2017).

Introducing interventions in IPE at the pre-service level would be a highly advantageous strategy, as it would facilitate the early socialisation of learners into a culture characterised by shared values, shared beliefs, teamwork, and collaboration. This, in turn, would effectively prepare them for the subsequent transfer to professional levels. The optimal period for early socialisation occurs within foundational educational programmes and is closely linked to individual growth and comprehension of various aspects, such as understanding the hierarchical structure and power dynamics, recognising responsibilities and expectations, internalising values, and beliefs, and familiarising oneself with customs, traditions, and implicit norms within a given profession (Strunk, Kipps-Vaughan, Pavelko et al, 2019). Introducing IPE at earlier tertiary level helps produce IPC-competent practitioners who upon graduation already understand each other's roles and responsibilities and can engage in respectful interprofessional interactions (Sibyl et al, 2018; HPAC, 2019).

At the same time, the implementation of IPE in preservice education poses challenges due to the need for curricular restructuring, which can be both financially burdensome and time-intensive, particularly in developing countries. Obstacles to the successful implementation and long-term viability of IPC include a scarcity of resources, such as a paucity of IPC trained personnel, inadequate infrastructure that is not equipped for interprofessional education (IPE), and budgetary limitations (Rawlinson et al, 2021; Sulistyowati & Walker, 2019). Moreover, the current implementation of IPE has not yet achieved a satisfactory level of effectiveness as many interventions to address Interprofessional Collaboration/Education (IPC/E) focus primarily on providing professionals with technical skills, with less emphasis on the acquisition of interprofessional competencies. Most modules or topics concentrate on IPC competencies (Sulistyowati & Walker, 2019). In their studies, Avery et al (2020) and Nyoni, Grobler & Botma (2021) raised concern regarding the minimum coverage of IPC in training. Moreover, further evidence of less global recognition of IPE is the absence of universally accepted instruments for evaluating the proficiency of healthcare professionals or students in interprofessional collaboration (IPC) in educational programmes that incorporate IPC principles.

In the WHO African Region, Nyoni et al., (2021) found that effective delivery of IPC was hindered by training programmes continuing to be offered to uni-professionals (discipline), while the

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continuous professional development programmes failed to address IPC and were offered away from the complex workplace environments. Furthermore, continuous professional development programmes failed to adequately address IPC competencies and were often conducted in settings that did not accurately reflect the complex workplace environments where IPC is crucial.

Considering the ongoing delay in the reengineering of training institutions' processes and policies to incorporate IPE into pre-service curricula, the researcher believed that initiating a short-term IPE programme could potentially accelerate the integration of interprofessional collaboration (IPC) in clinical environments. Cameron, Rutherford, and Mountain (2012) emphasise the advantages of a short course work-based IPE programme for both individuals and healthcare facilities. The course would enable healthcare practitioners to acquire relevant skills through training and modelling by a locally based experienced clinician. In addition, healthcare professionals (HCPs) would have the opportunity to acquire IPC skills and benefit from the mentorship from clinicians who have expertise in IPE and collaborative care. This mentorship occurs within a clinical care setting. The creation and implementation of work-based interprofessional education for interprofessional collaborative practice is highly important in the context of maternal health services, primarily due to the substantial number of maternal fatalities observed in LMICs between 2000 and 2020 (Statistics Botswana, 2019; WHO, UNICEF, UNFPA et al, 2023). Both developed countries and LMICs need a sufficient number of IPE interventions specifically designed to support healthcare professionals (HCPs) working in maternity settings (Davies, Fletcher & Reeves, 2016).

To overcome the challenges of interprofessional relationships, IPE curriculum, and administration and resources (Sulistyowati & Walker, 2019), the researcher considered a work-based training programme that would be offered online, self-paced and free to all professionals. A work-based learning or education programme refers to any training programme that could be offered as a pre-service programme or continuous (ongoing) professional development programme, designed to take place in the workplace and help the practitioner relate new knowledge directly to the work environment (Cameron, Rutherford & Mountain, 2012). Work-based learning is a pragmatic approach that emphasises lifelong learning, which is contextualised to professional settings and the needs and strengths of individuals and teams (Chapman, 2006; Cameron et al, 2012). Online training would allow for self-paced learning and promote experiential learning by providing learning activities that require participants to put knowledge acquired into practice in their clinical settings.

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1.3 PROBLEM STATEMENT

The impact of poor interprofessional collaboration draws attention to maternal health services because of high mortality rates that result from preventable pregnancy and childbirth-related causes, especially in low- and middle-income countries. In 2020, a woman died every two minutes from preventable pregnancy- or childbirth-related causes, which meant that almost 800 women died every day and 287 000 in a year (WHO, UNICEF, UNFPA, et al., 2013). The majority (95%) of maternal deaths occurred in LMICs, with Sub-Saharan Africa alone accounting for 70% of global maternal deaths.

In 2021, the maternal mortality rate in Botswana was almost 130.5 per 100 000 live births (Statistics Botswana, 2021). This statistic does not correlate with the country's reports of special access to care through offering accessible healthcare services to all, providing health facilities within walking distance to 95% of the population, and ensuring that more than 99% of women give birth in health facility settings (Statistics Botswana, 2019, 2021). Of particular concern is the high maternal mortality cases that were health facility based despite the country's effort to make care accessible and affordable (Statistics Botswana, 2021). Most of the deaths occurred in healthcare settings (Statistics Botswana, 2021). Major hospitals including referral hospitals see more than 60% of maternal cases and the major hospitals accounted for more than 50% of deaths in the country. The high mortality recorded among facility-based maternal health care services is a clear indication of poor health care service. Most Batswana women receive services provided by qualified healthcare professionals. Hospital-related mortality is not only a concern for maternal health care settings in Botswana; even in the general medical ward of a district referral hospital, patients continue to die due to preventable causes such as insufficient skills, a lack of resources, and poor equipment maintenance. (Kershaw, Williams, Kilaru et al., 2019). (Kershaw, Williams, Kilaru et al, 2019).

In advocating for health strengthening, Ghebreyesus (2018) stated that increased access to services will never translate to health improvements unless services are of sufficient quality. Having access to the physical structure of a health facility does not necessarily mean access to care, because without appropriate resources community and individuals' needs are not addressed leading to poor health outcomes, mistrust, and shunning of the healthcare system (Ghebreyesus, 2018). Accordingly, Ghebreyesus (2018) recommends physical health care service structures that are well resourced with appropriately trained healthcare professionals.

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It is concerning that most service delivery challenges are human-related factors and, therefore, preventable (Maphumulo & Bhengu, 2019; WHO et al, 2023). In Indonesia, Mahmood, Mufidah, Scroggs et al (2018) found a persistently high maternal mortality rate in a rural district. In Botswana, Madzimbamuto, Ray, Mogobe et al (2014) found the failure of interprofessional groups to work effectively in teams and communicate affected patient safety and caused maternal deaths. Other causes in Botswana include overcrowding in hospital settings, shortage of health care personnel and hospital equipment (Ramatiti, 2018), substandard administrative processes, and lack of innovative approaches to problem-solving (Seitio-Kgokgwe, Gauld, Hill & Barnett, 2016; Ray, Madzimbamuto, Ramagola-Masire et al, 2013), and inadequate knowledge and skills (Kershaw et al, 2019). Interprofessional education (IPE) to enhance interprofessional collaborative practices will be essential to address the causes of poor maternal healthcare outcomes. Despite the global recommendation for IPE in enhancing interprofessional collaborative practices and quality health care outcomes, the reality in Botswana and other LMICs is that IPE and IPC practices have still to be realised in the clinical setting because current health education programmes have not been designed to facilitate and support IPCP (Prabawati, 2018). Training institutions and continuous professional development programmes in developing countries continue to offer training in silos which promotes silo practices (Sulistyowati & Walker, 2019). Therefore, based on the challenges and benefits of implementing IPC in developing countries, particularly in Sub-Saharan Africa, specific IPE intervention would be essential to foster the adoption of IPE in the region.

1.4 AIM AND OBJECTIVES

The aim of the study was to co-create a work-based interprofessional education training programme to enhance collaborative patient care in the context of hospital-based maternal health services in Botswana.

To achieve the aim, the objectives as aligned to the design-based research approach (see Chapter 3, Section 3.2) for programme development were:

- Phase 1: Analysis of practical problems
    - Objective 1: To explore the considerations for promoting the implementation of work-based interprofessional education programmes (Chapter 4)

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- Objective 2: To involve stakeholders in the co-creation of the work-based interprofessional programme (Chapter 5)
  - Sub-objective 2a: To conduct a stakeholder analysis
  - Sub-objective 2b: To describe stakeholders' perceptions on the development of an interprofessional collaborative programme for healthcare professionals in a maternity care setting
  - Sub-objective 2c: To explore healthcare professionals and women's perceptions of interprofessional collaboration in a maternity care setting

- Phase 2: Development of solutions (Step 2: DBR) (Chapter 6)
  - Objective 3: To combine results from Phase 1 to co-create the programme.

- Phase 3: Iterative cycles of testing and refinement (Step 3: DBR) (Chapter 7: Article)
  - Objective 4: To validate the work-based inter-professional Education training programme for relevance in maternal health services.

1.5 RESEARCH QUESTION

To achieve the aim, the study wished to answer the following research question:

How can a work-based interprofessional education programme for inter-professional collaborative practice in maternal health services be structured?

1.6 DELINEATION

The work-based IPC training programme was developed for healthcare professionals working in the inpatient antenatal, delivery and post-natal wards in one referral hospital in the southern part of Botswana. A work-based IPE programme may be essential for maternal health services in a hospital setting because this is where a complex mix of health professionals works closely together and therefore needs to be trained and mentored on how to engage in interprofessional collaborative practice. The first three phases of the design-based research (DBR) methodological framework were used to guide the study. Phase 3 only included the validation of the work-based

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IPC programme and iterative cycles to refine the programme and Phase 4 was not included in the study (see chapter 3, section 3.2).

1.7 SIGNIFICANCE

The main aim of interprofessional collaboration is to ensure delivery of safe, cost-effective, highest quality patient-centred care to individuals, families and communities and thereby improving patient health care outcomes (Reeves et al, 2017). These outcomes can only be achieved when HCPs work in synergy and demonstrate good interpersonal relationships and leadership to facilitate working as a collective aimed at addressing complex healthcare system issues, including patients' complex medical issues and healthcare demands (Wei et al, 2020). Therefore, the developed work-based interprofessional training programme should benefit HCPs, practice, education, management, research, and regulators or accreditors.

1.7.1 Healthcare professionals (HCPs)

The work-based IPE programme should provide opportunity for HCP to strengthen their knowledge and skills in IPC to ensure they perform their day-to-day work effectively, consequently leading to an increase in the quality-of-service delivery, organisational performance, as well as improved employee and patient satisfaction. The developed programme should enhance HCPs' interprofessional collaborative competencies in team functioning; interprofessional communication; role clarification; patient-, family- and community-centred care; interprofessional conflict resolution and collaborative leadership (Behruzi et al, 2017; Canadian Interprofessional Health Collaborative [CIHC], 2010).

1.7.2 Practice

Developing and validating the work-based IPE programme for maternity care settings should support healthcare facilities in implementing the programme and consequently HCPs' involvement in their learning, acquisition of knowledge and development of competencies for

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interprofessional collaboration. Accordingly, this training programme should support healthcare systems in reducing clinical errors, overcoming hospital-based maternal mortalities and morbidities, reducing healthcare costs, and providing improved quality of care.

1.7.3 Education

The developed training programme should guide educators in integrating IPE into their curriculum to close education-practice gaps. Furthermore, the programme could also contribute to developing a conceptual framework for IPE for resource-constrained settings.

1.7.4 Management

Health facility managers could use the developed training programme to improve management of organisational and patient care activities. He training programme could also strengthen health system functions by providing HCPs that possess both clinical and non-technical skills required for delivery of safe, cost-effective high- quality patient-centred care (Lochner, Girardi, Pavcovich et al, 2018). Management could also use the programme to assess HCPs' collaborative behaviour in clinical practice.

1.7.5 Research

The implementation of the developed work-based IPE programme could be explored in LMICs, especially in the Sub-Saharan region, to generate evidence-based studies on IPE and IPC practice.

1.7.6 Regulators or accreditors

The programme could provide a blueprint for developing standards of practice for collaborative practice in future.

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1.8 THEORETICAL FRAMEWORK

A theoretical framework is the fabric of the research topic under study because it provides the structure linking the theories, concepts, epistemology, and methodology of the study (Grant & Osanloo, 2014). Furthermore, it provides a broad description of the context of the study, justifies the research methods used and the rationale for the study. Since the theoretical framework is the synthesis of expert findings in the selected area of study, it is a blueprint of how, why, and where the research should be conducted (Kivunja, 2018). It offers credibility for conducting research, therefore making the research findings meaningful and generalizable (Grant & Osanloo, 2014; Akintoye, 2015). In addition, it can also guide the researcher on how to solve the research problem and interpret data. A theoretical framework is a specialised lens guiding researchers on the research methods, recommendations, and conclusions (Kivunja, 2018). Therefore, it is important to understand, select and integrate an appropriate theoretical framework (Grant & Osanloo, 2014).

In this study, the researcher selected the Canadian Interprofessional Health Collaborative (CIHC) National Interprofessional Competency Framework (CIHC, 2010). The CIHC framework does not provide a step-by-step process of programme development but provides instructional designers and curriculum developers with IPC competencies and competency statements to describe the level at which individuals are expected to function in the present and future work environment (Smilski & Parrott, 2019). Employing a framework that provides descriptions of concepts and contexts for research enables researchers to adopt the framework, define concepts and make informed decisions to address problems (Kivunja, 2018).

The CIHC framework is central to IPE because it assumes that to produce collaborative practice ready practitioners requires a training programme that is context specific and describes interaction between competencies to achieve effective interprofessional collaborative practice. A context-specific curriculum or training programme addresses the larger political, socio-cultural, and environmental factors surrounding the profession for which the training programme is designed, thereby making it interesting, dynamic and multidimensional (O'Neill, 2015). Overlooking the contextual factors during programme development can slow the adoption of innovative approaches by individuals and institutions (Botma & Nyoni, 2015). Viljoen, Coetzee and Heyns (2017) emphasise the need to develop a context-specific training programme and ensure shared decision-making among all stakeholders from conceptualisation to development and implementation. A training programme that is context specific enhances HCPs' value for the

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programme thereby increasing motivation to run with the programme (Viljoen, Coetzee & Heyns, 2017). In this study, the purpose was to co-create a work-based interprofessional education training programme to enhance collaborative patient care in the context of hospital-based maternal health services in Botswana.

The researcher adopted the Canadian Interprofessional Health Collaborative (CIHC) National Interprofessional competency framework (CIHC, 2010) as shown in Figure 1.1 and Annexure 1.1. The framework is already utilized in various training programmes (Prast, Herlache-Pretzer, Frederick et al, 2016; Wong, Leslie, Soon et al, 2016; Zabar, Adams, Kurland et al, 2016; Rozensky, Grus, Goodie et al, 2018; Azim, Kocaqi, Wojkowski et al, 2022). Most importantly, the framework also aligns with the Global Competency and Outcomes Framework for Universal Health Coverage, which underlines people-centredness, communication and collaboration among other domains as essential competencies for facilitating universal health coverage (WHO, 2022).

The researcher adopted the CIHC framework for its robust description of the skills and qualities required for optimizing interprofessional collaboration and how competencies required for collaboration interact to achieve delivery of safe, patient-centred care and improved health outcomes (Wong et al, 2016; Brault, Kilpatrick, D'Amour et al, 2014). The CIHC framework further highlights considerations or elements that influence the success or failure of interprofessional collaborative practice (CIHC, 2010; Brault et al, 2014). The considerations determine the degree to which the IPC is implemented and therefore influence the application of competencies (Brault et al, 2014). Therefore, the training programme was grounded on the six IPC competency domains and the three determinants of success in implementing IPC.

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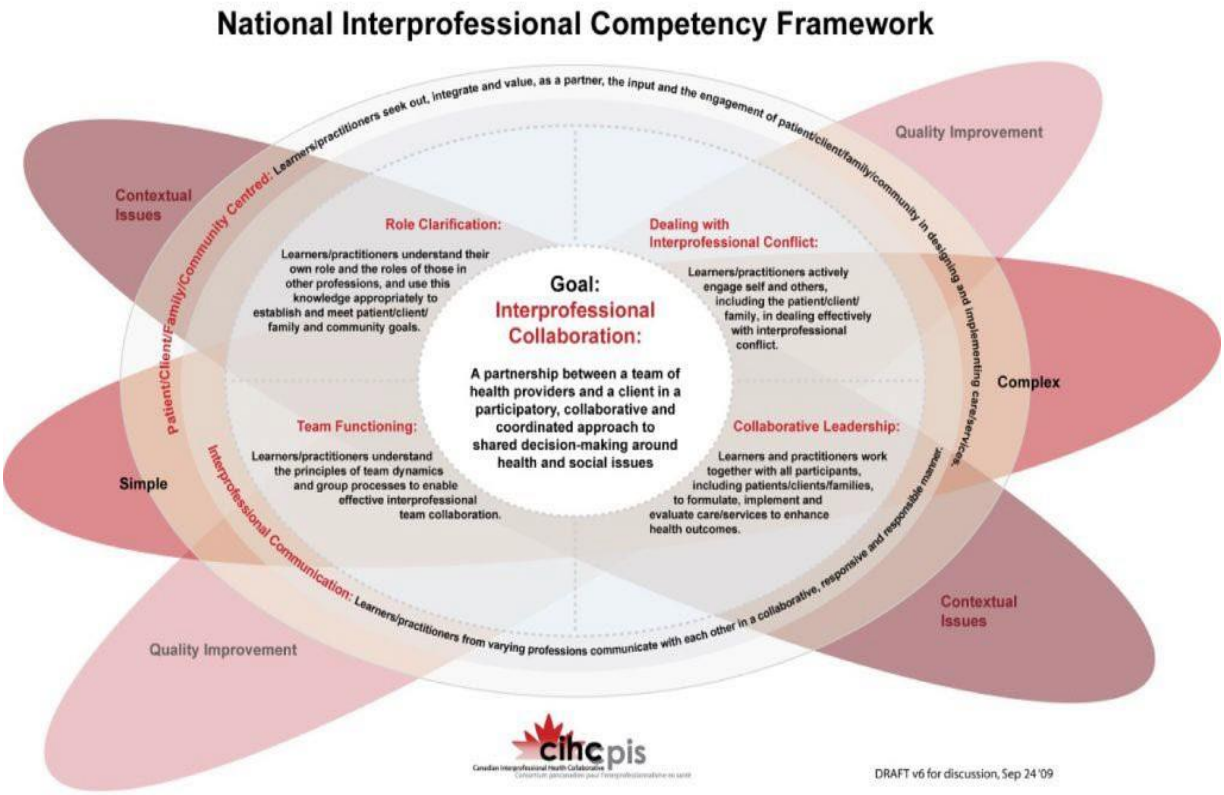

Figure 1.1 Canadian Interprofessional Health Collaborative (CIHC) National Interprofessional Competency Framework

Source: CIHC (2010)

The components of the framework are described next.

1.8.1 Complexity of clinical situations

The CIHC framework acknowledges the complexity of the healthcare system and suggests that IPC can be employed across a continuum from simple to complex situations (CIHC, 2010). Simple encounters, like uncomplicated medical conditions, require two to three healthcare professionals

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to collaborate, while patents with multiple interlinked conditions require the involvement of diverse groups of healthcare professionals to collaborate (CHIC, 2010). For example, the maternity care setting is usually a complex setting and therefore requires multidisciplinary services to achieve quality healthcare outcomes (Davies et al, 2016; Reeves et al, 2017). Accordingly, complex medical conditions or healthcare settings increase complexity of collaboration (Reeves et al, 2017).

1.8.2 Contextual situations

The context in which care is delivered also influences the intensity of interprofessional collaboration. Generally, context describes the environment in which healthcare is provided and may act as a barrier to or facilitator of delivering quality care (Bogren, Mwambali, Berg et al, 2021; Rogers, De Brún, McAuliffe et al, 2020). Context may include the physical environment, organizational culture, power dynamics and management support (Rogers et al, 2020; Erasmus, Gilson, Govender et al, 2017). Therefore, to achieve quality, healthcare interventions must be adapted to the context (environment or surroundings) in which an intervention is implemented (McCormack et al, 2015). Depending on the setting or environment, HCPs adapt differently to meet the needs of patients (Brault et al, 2014; CIHC, 2010).

Consequently, the CIHC framework is crucial in achieving quality, safety, and patient-centredness through effective collaboration because it suits any context (CIHC, 2010). For example, the framework supports comprehensive and consistent teams in non-emergency situations, general wards and rehabilitation settings (Reeves et al, 2017). At the same time, the framework also supports emergency or acute care situations where healthcare providers work as a team only for a short period until the patient is resuscitated (Reeves et al, 2017). In other settings, collaboration may need the involvement of professionals such as educators, researchers, policymakers, collaborative leaders, and external stakeholders (Reeves et al, 2017; Green & Johnson, 2015) as well as a change of mindset, power structures, values, and beliefs (Rogers et al, 2020) to achieve the desired outcomes. The CIHC framework was suitable for this study because it is effective for diverse healthcare settings.

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1.8.3 Quality improvement

Quality improvement is another consideration underpinning this framework because of its importance in patient safety. According to the CIHC framework (2010), working collaboratively across professions and across institutional roles rather than in uniprofessional teams, improves quality especially in complex systems (Rogers et al, 2020; CIHC, 2010). Interprofessional collaboration impacts positively on health system strengthening and consequently on delivery of quality, cost-effective, person-centred services (Janes, Rees & Zupan, 2022; Reeves et al, 2017). Therefore, achieving quality requires professionals with interprofessional collaborative skills, which can be achieved through interprofessional collaboration education (Brugman, Visser, Maaskant et al, 2022).

Complexity of clinical practice, contextual situations and quality improvement in clinical practice are the three elements of the organizational context in which care is provided (Brault et al, 2014; CIHC, 2010). Therefore, the interplay between these elements can facilitate or hinder interprofessional collaboration.

1.8.4 IPC competencies

The CIHC framework highlights the importance of interprofessional collaborative skills in delivery of quality, cost-effective patient-centred care. The professional's ability to integrate knowledge, skills, attitudes, and behaviours when engaged in clinical decision-making required under each competency domain to produce interprofessional collaboration is important (CIHC, 2010). The interprofessional collaborative skills include six intertwined competency domains (CIHC, 2010). Therefore, these competencies are expected of all professionals in order to be successful in their professional and personal lives.

The six competency domains include (1) interprofessional communication; (2) patient/family/community-centred; (3) team functioning; (4) role clarification; (5) dealing with interprofessional conflict, and (6) collaborative leadership (see Figure 1.1; Annexure 1.1). These competency domains are a collection of the non-technical skills needed by all professionals to facilitate communication, reduce errors, and enhance performance of healthcare professionals in simple and complex systems (Flin et al, 2017).

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Interprofessional communication and patient/family/community-centred domains are placed in the outer circle to envelop the other four domains and show that these two domains surround the other domains because they are key components that influence the other domains (CHIC, 2010; Flin et al, 2017).

The six competency domains are described next.

Interprofessional communication

Interprofessional communication is a core non-technical skill and aspect of interprofessional collaboration. The CIHC framework (2010) indicates that because the healthcare environment is complex, team members need to display the ability to engage in interprofessional communication in order to achieve the goal of delivering quality services to patients and addressing the professional members' needs. Effective communication is vital in IPC because it is a means to reduce clinical errors and ensure patient safety by enhancing interprofessional relationships, facilitating information and knowledge sharing, ensuring predictable behaviour patterns, and strengthening leadership and team coordination (Flin et al, 2017). The key descriptors of behaviours and attitudes that should be displayed by HCPs engaged in effective communication include, but are not limited to, listening and mutual respect, respectful interpersonal relationship with patients, families, and other stakeholders, sharing information with patients and colleagues, engaging in shared decision-making and clear teamwork principles (CIHC, 2010).

Patient/family/community-centred care

This framework suggests that patients' and family's needs and healthcare outcomes should be the driving force of any healthcare system. In patient-centred collaborative practice, patients "are seen as experts in their own lived experiences and are critical in shaping realistic plans of care" (CIHC, 2010:14). Therefore, to achieve quality health outcomes, the interprofessional teams should include patients, their families and community as partners in care to get their input in the development and implementation of plan of care. Patient and family-centred care encourages and

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strengthens interprofessional collaborative practice and shared decision-making between HCPs and consumers of care, consequently leading to delivery of customized care. The key descriptors of patient-centred care are that patients, families, communities are treated as partners in care; HCPs usually focus more on patients' 'problem' than on the diagnosis; there is usually a trusted relationship and respectful communication between patients and providers to facilitate understanding; it encourages open and healthy discussion; and there is enhanced participation in decision-making. HCPs also demonstrate respect for patients and families' preferences, values, socioeconomic and cultural practices. Lastly, the framework highlights information sharing, patient and family education, support and effective listening and communication as core elements of patient and family-centred care.

Team functioning

Team functioning is an essential element of interprofessional collaboration and a key determinant of implementation outcomes because healthcare systems rely on teamwork to effectively deliver services (Reeves et al, 2018). The framework suggests that complex healthcare systems require a large team of providers to ensure safe delivery of quality patient-centred care, therefore effective team function is an essential component of effective interprofessional collaborative practice (CIHC, 2010). Strong team functioning is associated with better implementation outcomes because there is cooperation among team members to contribute their special knowledge and skills and engage in shared decision-making to ensure delivery of patient-centred care (Rosen, DiazGranados, Dietz et al, 2018). Care and resources are also well coordinated to avoid errors and redundancy in care (Rosen et al, 2018; Reeves et al, 2018). Therefore, to achieve effective interprofessional team collaboration, it is important for HCPs to understand the principles of team dynamics and group processes. Furthermore, working in interprofessional teams requires understanding and respect for team ethics, including respectful communication; confidentiality, resource allocation, and professionalism (CIHC, 2010).

Role clarification

In complex healthcare systems, working effectively and interdependently as a team is the key to achieving implementation outcomes. Therefore, for the team to function effectively, it is important

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that HCPs and learners understand how each one's uniqueness, roles and responsibilities ensure that care provided is safe, effective and comprehensive enough to address patients' needs and wishes (Golom & Schreck, 2018; Reeves et al, 2017). Role clarity is thus a facet of interprofessional collaboration. Being interprofessional collaborative practice ready requires practitioners and learners to understand their roles and other professionals' roles and responsibilities, and how these roles complement each other in patient-family and community-centred care. Failure to understand each other's roles can lead to tensions and unnecessary conflicts among HCPs and cause role conflict consequently intensifying work-related stress and clinical care errors (Reeves et al, 2017). The framework places emphasis on helping HCPs and learners to understand their own roles and the roles of those in other professions, and to support them to use this knowledge appropriately to establish and meet patient/family and community goals (Golom & Schreck, 2018; Reeves et al, 2017).

Dealing with interprofessional conflict

Conflicts and differences in opinion are inevitable in today's complex healthcare system. Conflict resolution is an important skill in effective team functioning, because poorly managed conflicts can be a source of stress to HCPs leading to staff turnover and absenteeism from work. Workplace conflicts can also be a threat to patient safety (Saridi et al, 2021). Workplace conflicts may be a sign of poor individual or team performance, therefore the ability to manage and identify conflicts is an important aspect of the framework (Hussein & Al-Mamary, 2019).

The framework highlights the importance of effective conflict management styles and relating well with each other in order to achieve the shared goal (CHIC, 2010). The observable behaviours, attitude, and skills that HCPs should display to demonstrate capacity to deal with conflicts include an ability to identify situations that may cause conflict and employ constructive steps and appropriate strategies to address them and establish a safe environment in which team members feel free and safe to express their diverse opinions without fear of being judged or reprimanded. Conflict resolution is a subset of communication therefore should always be addressed when dealing with interprofessional communication issues (Tripathy, 2021). Poorly handled interpersonal communications can lead to interprofessional conflicts especially when negotiating, persuading, and trying to influence others.

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Collaborative leadership is the key element to ensuring that IPC practices are put into play. The framework suggests that healthcare leaders and HCPs need to employ leadership principles that support and nurture IPC practices (CHIC, 2010; Rosen et al, 2018). The behaviours and skills depicting effective interprofessional leadership skills include ability to engage in respectful consultation with team members and shared decision-making; working interdependently with mutual trust and respect; creating a climate that fosters interprofessional collaboration; co-creation of a climate for shared leadership and collaborative practice; inculcating a culture of continuous quality improvement through effective teamwork process (CIHC, 2010). Interprofessional collaborative practice requires healthcare leaders and HCPs who have the ability to understand and apply appropriate leadership principles in clinical practice (Rosen et al, 2018).

Effectively leveraging the key concepts of the framework in designing and implementing a work-based interprofessional education programme for maternity care settings should enhance performance in maternity care settings and consequently reduce human-related adverse events.

1.9 RESEARCH DESIGN AND METHODOLOGY

The researcher selected a mixed method research design for the study (see chapter 3 for full discussion). Table 1.1 summarises the research design and methodology.

Table 1.1. Summary of the research methodology

Phase 1: Analysis of practical problems					
To explore the considerations for promoting the implementation of work-based interprofessional education programmes.					
Design	**Methods**				
	Population	**Sampling**	**Data collection**	**Data analysis**	**Rigour**
Scoping review	Articles on interprofessional education programmes and	Published and unpublished articles between 2000 and 2020	Electronic database searches	PRISMA flow diagram for the scoping review process provided	- Arksey and O'Malley's (2005) six-stage methods for

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	collaborative interventions to enhance interprofessional collaborative practice in maternity care settings			search decision process. (Annexure 4.3) Data extraction chart was employed, and key findings organized into themes (Annexure 4.2)	scoping reviews was employed. - PRISMA extension for *scoping reviews* guided the selection of relevant articles for evaluation and reporting of the findings . (Annexure 4.3)
Objective 2: To explore the perceptions of healthcare professionals and women regarding interprofessional collaboration in a maternity care setting in Botswana					
Design	**Methods**				
	Population	**Sampling**	**Data collection**	**Data analysis**	**Rigour**
Qualitative	Healthcare professionals and patients in maternity care settings in one referral hospital in Botswana	Purposive sampling	Face-to-face, semi-structured interviews between the end of October 2020 and mid-February 2021 (Annexures 5.1, 5.3, 5.4, 5.5. 5.6.)	Thematic analysis using Braun and Clarke's (2006) methods	Compliance with quality standards for reporting qualitative studies, member checking/peer debriefing; data saturation; codebook development (Annexes 5.7, 5.8), using Braun and Clarke's (2006) data analysis process
	Stakeholders	Purposive sampling	Focus group discussion in a workshop	Content analysis	Debriefing
Phase 2: Development of solutions (Co-create the programme)					
Objective 3: Combine results from Phase 1 to co-create the programme					
The Mabogo-Dinku work-based interprofessional programme was co-constructed by the researcher, two educational experts and an e-learning instructional designer.					
Phase 3: Iterative cycles of testing and refinement (Validate the programme)					
Objective 4: To validate the developed work-based interprofessional education programme for relevance and appropriateness in maternity care settings					
Design	**Methods**				
	Population	**Sampling**	**Data collection**	**Data analysis**	**Rigour**
Expert review technique	Experts in IPC/E and curriculum development	Snowballing experts in IPC/E	Online survey using a Likert scale	content validation index	Predeveloped curriculum evaluation data-

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		and curriculum development	questionnaire with spaces to record suggestions (Annexure 7.1; 7.2)	(Table 1 and 2 as outlined in the manuscript submitted for publication)	collection tool adopted for use; content validation index computed and analysed and interpreted according to the set standard.

1.10 ETHICAL CONSIDERATIONS

Ethics deals with matters of right and wrong. When people are used as study participants care must be taken in ensuring that their rights are protected (Polit & Beck, 2021). In this study, the researcher adhered to the principles of the Belmont Report, 1979 (WHO, 2001).

Accordingly, the researcher obtained ethical approval and permission to conduct the study and upheld the principles of respect for persons and informed consent, and beneficence (Creswell & Creswell, 2018; Polit & Beck, 2021; Brink, van der Walt & van Rensberg, 2018).

- **Permission**

The researcher obtained written ethical approval and permission to conduct the study from the Research Ethics Committee of the Faculty of Health Sciences, University of Pretoria (122/2020-Line 3), (**Annexure 1.2**) and approval from the Ministry of Health Research and Development Committee in Botswana (HPRD: 6/14/1), (**Annexure 1.3**).

- **Respect for persons and informed consent**

The principle of respect for persons refers to participants' autonomy and right to self-determination, which means that participants have the right to decide whether to participate or not in the study (Brink et al 2018:29). The researcher informed the participants of the purpose of the study, the risks and benefits of the study, how they were identified to participate in the study, and who was conducting the study.

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The participants were informed that they had the right to participate or withdraw from the study at any time should they wish to do so without penalty (Creswell & Creswell, 2018; Creswell & Poth, 2018). The researcher assured them that the study data would be kept confidentially and locked in a safe cupboard to which only she had access. The participants were allowed to ask questions and then those willing to participate signed informed consent before participating in the study.

- **Beneficence**

The right to protection from discomfort and harm is based on the ethical principle of beneficence, which holds that one should do good and, above all, do no harm (Polit & Beck, 2021). The principle of beneficence includes the right to freedom from harm and discomfort and to protection from exploitation (Polit & Beck, 2021). The researcher informed the participants of the risks of participating in the study and that they had the right to withdraw if participating would cause any physical or psychological harm (Creswell & Creswell, 2018; Creswell & Poth, 2018). The participants were assured of minimal physical or psychological harm since data was collected in in-depth interviews. However, the participants were advised to report feeling unwell immediately so that the interview could be terminated, and a doctor or nurse-midwife consulted to attend to the patient.

- **Justice**

The principle of justice entails the right to fair treatment, privacy, anonymity, and confidentiality. The participants were selected and treated fairly. Anonymity was ensured by providing no names or identifying information. The participants were informed of the purpose and significance of the study and signed informed consent prior to participation. The interviews were conducted in a private room which was free from interruption and disturbance and at a time convenient for the participants (Polit & Beck, 2021). The study did not enrol participants who were not fluent in English or Setswana.

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1.11 LAYOUT OF THE STUDY

The study consists of eight chapters. Table 1.2 presents the layout of the study.

Table 1.2 Layout of the study

CHAPTER	TITLE	DESCRIPTION
1	Orientation to the study	Introduces the study including background, problem statement, research aims and objectives, theoretical framework and research design and methodology.
2	Context of the study	Chapter 2 discusses the context in which the study was conducted, focusing on the national context, health sector context; health-care regulatory services and policies contexts and workplace and organisational context
3	Research design and methodology.	Describes the philosophical framework and assumptions of the study and research design methods used to address each objective.
Chapter 4 and Chapter 5 outline Phase 1: Phase 1: Analysis of practical problems		
4	Considerations for promoting the implementation of work-based interprofessional education programmes: a scoping review	Chapter 4 addresses objective 1: To explore the considerations for promoting the implementation of work-based interprofessional education programmes. A scoping review was conducted, and a report published in a peer reviewed journal: Reference: Madisa, M., Filmalter, C.J. and Heyns, T., 2022. Considerations for promoting the implementation of work-based interprofessional education programmes: a scoping review. *Nurse Education Today, 120:105617* The abstract, background, methods, results, conclusions, and recommendations are outlined in the article.
5	Qualitative study Healthcare professionals and pregnant and postnatal women's perceptions of interprofessional collaboration in a maternity care facility: a qualitative study from Botswana	Outlines the second objective of exploring the healthcare professionals and patients' perceptions of interprofessional collaboration in a maternity care setting in Botswana a low-to-middle income country in Sub-Saharan Africa. The article includes abstract; background to the study, research objectives, theoretical framework, methods, settings, study participants, ethical considerations, data collection, data analysis, results, discussion, strengths and limitations, conclusions and, disclosure statements The article has been published in the journal *Midwifery*, Healthcare professionals and pregnant and post-natal women's perceptions of interprofessional collaboration in a maternity care facility: a qualitative study from Botswana *Midwifery* (IF 2.7) Pub Date: 2023-07-07 , DOI:10.1016/j.midw.2023.103768 Madisa, M, Filmalter, CJ, Heyns, T

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6	Phase 2: Development of solutions	Discusses phase 3 of the study aimed at combining results from Phase 1 to co-create a work-based inter-professional training programme for maternity care settings. The results of phase 1 were combined and analysed with the intention of developing a work-based IPE training programme This chapter describes how each phase of the DBR model was employed to collaboratively develop a short-term online-based training programme titled 'Mabogo-Dinku work-based interprofessional education programme' The process of programme development has been published in a peer reviewed journal: Brittz, K, Madisa, M, Hugo-Van Dyk, L, Filmalter, C and Heyns, T. 2023. A Cost-Effective Work-Based Interprofessional Collaboration Programme for Healthcare Professionals. *International Journal of Online Pedagogy and Course Design (IJOPCD)*, 13(1), pp.1-16.
7	Phase 3: Iterative cycles of testing and refinement	Discusses phase 3 of the study aimed at validating the developed work-based interprofessional education programme for relevance and appropriateness in maternity care settings.
8	General discussion, methodological considerations, contribution, and recommendations	Discusses the findings, implications and contributions of the study, and makes recommendations.

1.12 SUMMARY

This chapter discussed the issues related to interprofessional collaboration and education (IPC/E) globally and the significance of IPC/E in reducing preventable adverse events, morbidity and mortalities in healthcare settings. IPC promotes safe, comprehensive, cost-effective, patient-centred care leading to quality health outcomes and patient satisfaction. The chapter described the CIHC National Interprofessional Competency Framework (CIHC, 2010) as the most suitable framework to support developing and implementing IPC interventions in Africa, particularly in the maternity care setting. The researcher considered the CIHC framework suitable for the study because it emphasises patient-centredness (patient/family/community-centred care) and is suitable for various contextual settings. The CIHC framework formed the basis for the development of a work-based IPC training programme for maternity care settings.

Chapter 2 discusses the context of the study.

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CHAPTER 2: CONTEXT OF THE STUDY

2.1 INTRODUCTION

Chapter 1 outlined the background, problem, aim and objectives, and research design and methodology of the study. This chapter discusses the context of the study, including the national, health sector, health regulatory, services and policies, and workplace and organizational context.

2.2 NATIONAL CONTEXT

The study was conducted in Botswana, Sub-Saharan Africa.

2.2.1 Physical features or topography

Botswana is a landlocked country in southern Africa. It is bordered by South Africa to the south and east, Namibia to the west, and Zimbabwe to the east. It is connected to Zambia by the Kazangula Bridge across the Zambezi River, the shortest border between two countries (see Figure 2.1). The total land area of Botswana is about 567 000 km^2, with a population density of about 4 per km^2. The country has semi-arid vegetation and is sparsely populated because the Kalahari Desert, including the Kgalagadi Transfrontier Park, covers 70% of the total surface area. Most of the population resides in the eastern part of the country, away from the Kalahari Desert territory. The country is divided into ten (10) administrative districts and six (6) associated councils. The associated councils include Gaborone and Francistown city councils, and Lobatse, Selebi-Phikwe, Jwaneng, Selebi-Phikwe, Jwaneng town councils and a township authority for Sowa

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Town. There are two cities, five towns and 27 health districts. In 2020, an estimated 72.8% of the population lived in urban areas and 27.2% lived in rural areas (worldometers.info, 2020). Figure 2.1 illustrates a map of Botswana.

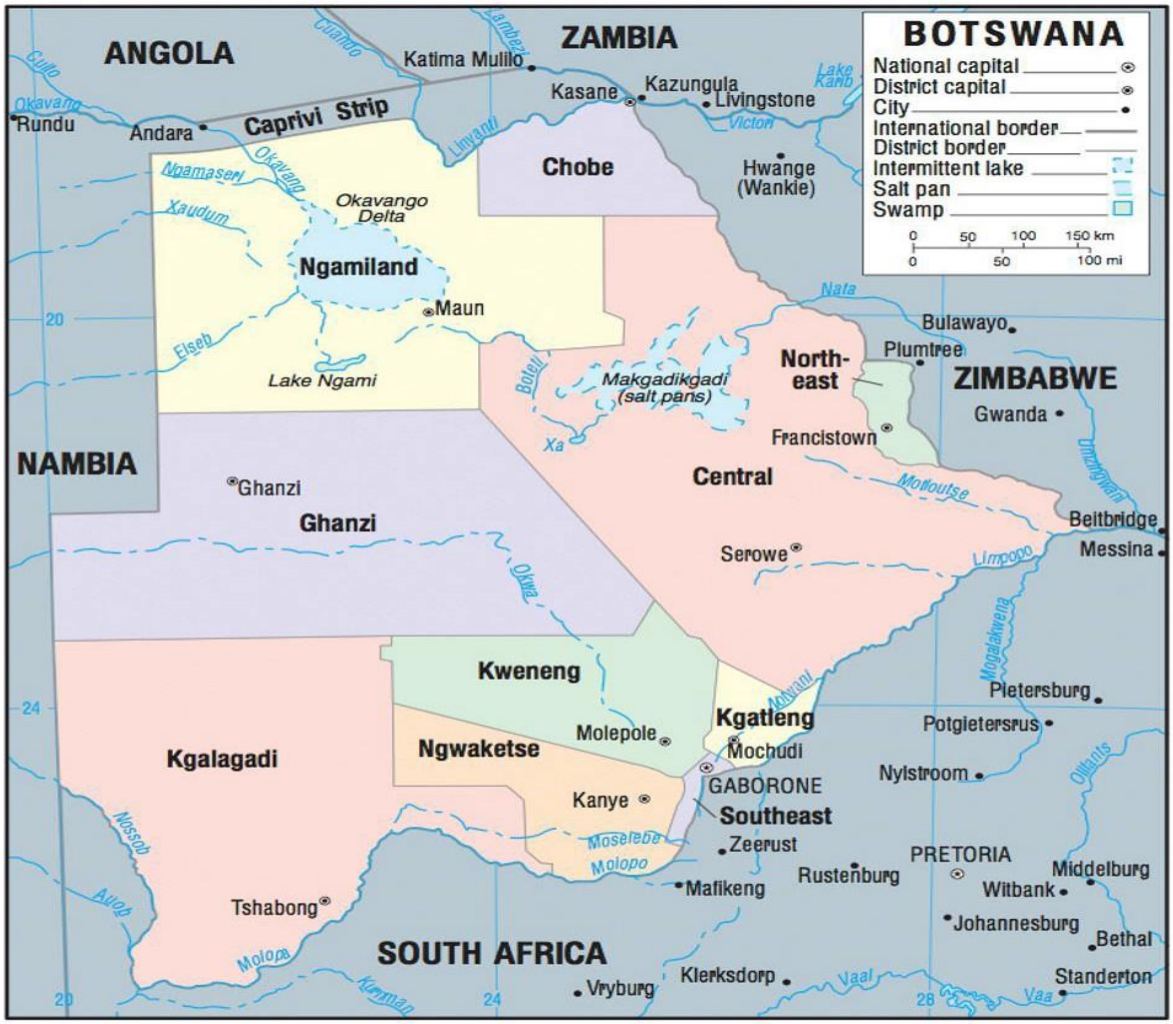

Figure 2.1 Map of Botswana showing administrative districts

Source: Mapsland

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2.2.2 Demographic background

Botswana is a multi-ethnic nation, mostly of African descent, with about 45 ethnic groups, including 8 Tswana-speaking and 37 non-Tswana-speaking ethnic groups. Botswana's population is predominantly of African descent. The official national languages are Tswana and English, while other languages are spoken throughout the country by different ethnic groups (Denbow &Thebe, 2006). Rapid and increased urbanisation in the country has slowly resulted in mixing of ethnic groups, with more and more people using Setswana and English to communicate in most parts of the country, especially in big villages and towns. Urbanisation increased from 54% in 2001 to 64% by 2011 (Gwebu, 2014). The rapid increase in urbanisation is attributed to upgrading of rural villages to urban status when the population reaches at least 5,000 and records a "minimum functional characteristic of being 75% non-agricultural" (Gwebu 2014:90). Therefore, of the country's total population of 2.4 million, only about half a million people live in big towns while 1.8 million live in big villages (urban villages) (Statistics Botswana, 2022b). Only approximately 200,000 people are found in localities (Statistics Botswana, 2022b). Table 2.1 shows the population in 2022.

Table 2.1 Total population, 2022

POPULATION	MALE	FEMALE	TOTAL
Cities and towns	218,337	234,011	452,348
Villages	806,150	899,280	1,707,072
All localities	125,857	75,496	200,189
Total	1,150,344	1,208,787	2,359,609

Source: Statistics Botswana (2022b)

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According to Statistics Botswana (2022b), the total population in each of the major villages was higher than most of the towns in Botswana, except the two cities of Gaborone and Francistown. Although population growth in big villages presents ideal opportunities for urbanisation economies, it poses serious socio-economic challenges in terms of ensuring that there is adequate social, physical environment and sustaining the environment" (Gwebu 2014:96).

2.2.3 Political and economic development

Politically, Botswana is a stable multiparty democratic nation and has enjoyed political stability since its independence from the British in 1966 (Denbow & Thebe, 2006; Beaulier, 2003). Economically, the country was one of the poorest developing countries at independence (Denbow & Thebe, 2006). The primary source of the economy around independence was the regular supply of migrant labour to work in South Africa Gold and Diamond Mines (Selelo-Kupe, 1993). However, since independence, the country's new leadership managed to transform it from one of the poorest countries in the world to an upper middle-income country with one of the fastest growing and sustained economies over the years (Denbow & Thebe, 2006; Trading Economics, 2023). The revenues from diamonds and agriculture have contributed to the country's sustained economic growth over the years, placing it among the upper-middle-class countries (Denbow & Thebe, 2006). Diamond mining is the main factor behind high growth rates because it accounts for more than one-third of GDP, the country's main export earnings, and a source of half of the government's revenues (Trading Economics, 2023). While agriculture used to be a major contributor to the country's good economic standing, its value has declined over the years and has been surpassed by other activities like construction, wholesale and retail and others (Statistics Botswana, 2023) Nonetheless, agriculture remains an important sector of the economy because more than 50% of rural households are dependent on subsistence crops and animal

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farming for food and informal revenue generation (Phiri, Malec, Sakala, et al, 2022; Lekobane & Seleka, 2005). Consequently, the decline in agricultural performance has been linked to accelerated rural-urban migration (Lekobane & Seleka, 2005). Botswana and other countries are experiencing fast urbanisation, which exacerbates unemployment rates and urban poverty.

At present, in addition to mining, the major contributors to Botswana's economy are construction, manufacturing (Phiri et al, 2022; Statistics Botswana, 2023); wholesale and retail; public administration and defence; finance, insurance and pension funding; and real estate activities (Statistics Botswana, 2023). The contributions of these economic activities have sustained Botswana's economy at middle class level, although the country's economic growth is on the decline. Currently, Botswana ranks as the 4th largest economy and is among the top 30 wealthiest countries in Africa. For example, as of 2019 the country's overall GDP was $43.907 billion while the GDP per capita income was recorded at $18.6 placing it among the top 30 wealthiest countries (Botlhale, 2019).

Although Botswana has achieved a fast-growing economy and an excellent economic standing over the decades, it has not performed well on other social indicators (Lekobane & Seleka, 2017). Unemployment and the sustained worsening of inequalities are making it difficult for the government to meet the basic needs of its citizens. At present, Botswana is among the countries with the highest degree of inequality in the distribution of income (World Bank, 2022a; UNDP, 2020). There is huge economic inequality in Botswana because of the prevailing different forms of inequalities experienced in the country, including gender inequality, land inequality, ethnic, and in-group inequalities (Martorano, Merkle, Hunns et al, 2021). In 2015, inequality was recorded at 53.3% and this disproportionate distribution of wealth resulted in 20.4% of the population falling

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within the multidimensional poor and 3.9% falling in the severe multidimensional poverty category (Martorano et al, 2021; Statistics Botswana & UNDP, 2021).

In addition to the issues of social and economic inequality, Botswana has a high unemployment rate (Martorano et al, 2021; Statistics Botswana & UNDP, 2021). The high unemployment rate is primarily due to the country's economic growth depending upon one sector: diamond mining. Depending on one source of income means that very few people can get jobs in the mining sector, leaving many without jobs (Sekwati et al, 2012). The COVID-19 outbreak exacerbated unemployment as many people lost businesses and jobs at its peak and the unemployment rate increased significantly more than in previous years (Sachs, Kroll, C, Lafortune et al, 2022). According to Statistics Botswana (2021), the labour force (18 years and above) decreased from 970, 139 in the fourth quarter of 2020 to 965, 680 in the fourth quarter of 2021. During the same period, the unemployment rate (18 years and above) increased by 1.4 % from 24.5 to 25.8%. Thus, by the end of 2021 only 965, 680 of the nearly 2.4 million Batswana were actively engaged in the economy (Statistics Botswana, 2021; World Bank, 2022 b).

Accordingly, the unequal distribution of resources and high unemployment rate in the country resulted in poverty increasing to a level of 51.8% (Statistics Botswana & UNDP, 2021). Poverty levels above 50% mean that only a fraction of a population has enough economic power to meet its basic needs, such as appropriate nutrition, shelter, medical care and education. Unemployment and poverty levels are higher in rural areas than in towns and cities. It is disheartening that the lack of job opportunities is gradually extending to cities (Statistics Botswana & UNDP, 2021; Lekobane & Seleka, 2017). Unemployment puts individuals, families, and communities under grave pressure, including financial strain, stress-related health issues, and dysfunctional interaction at family and community levels. Long-term unemployment and lack of jobs leads to

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more people becoming vulnerable and dependent on government support. These factors put additional strain on the healthcare system and population health outcomes.

2.2.4 Profile of Gaborone

The study was conducted in Gaborone, the capital city of Botswana. Gaborone is one of the two cities in Botswana and lies in the eastern part of the country (Sebego &Gwebu, 2013). It is about 15 kms from the South African border. Gaborone has no tribal affiliation and is the administrative capital and the headquarters of government ministries (Sebego & Gwebu, 2013). As a capital city, it is responsible for coordinating and servicing the primary economic structure of the country therefore it has well-developed infrastructure (UN, Statistics Botswana & UN-Habitat/ECA, 2018). As a result, the city has attracted diverse businesses and the migration of people from rural areas and neighbouring countries. Currently, Gaborone is the most populated city, with a population of 208,411 people. The population increase over the years necessitated the spatial expansion of the city into neighbouring ethnic villages, including, Tlokweng village in southeast district, Mogoditshane, Gabane, and Mmopane in the Kweneng district in the western side of the city (Sebego & Gwebu, 2013). These ethnic villages, peri-urban villages, and Gaborone city make up what is currently called the Greater Gaborone Region (Sebego & Gwebu, 2013) (**see Figure 2.2**). While the city has extended to the neighbouring ethnic villages, there is no spatial separation between the boundaries except for the cultural, economic, and political make-up of the villages. The local authorities administrate the peri-urban villages separately, namely the Kweneng District for Mogoditshane, Mmopane and Gabane areas, and the Southeast District for Tlokweng area (Sebego & Gwebu, 2013). These urban areas play a vital role in urbanisation because they provide the city with human resources and accommodation for most people who cannot find accommodation in the city. At the same time, the city provides these neighbouring villages with

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business opportunities, employment, health facilities, transport, and other services. However, despite the known benefits of economic growth and development of the city, the high urbanisation rate poses economic and social pressures for individuals, community, and government. These undesirable pressures include unemployment, poverty, increase in crime rates, overcrowding, and many more (Sebego & Gwebu, 2013; UN, Statistics Botswana & UN-Habitat/ECA, 2018).

While unemployment is a nationwide problem, in 2018 Gaborone reported a low unemployment rate of 12.4%, although that statistic was not the same across the Gaborone population as youth were more affected than the adult population. The disproportionate unemployment levels amongst population groups indicated the degree of inequality in the employment sector in the country, as the rate of youth unemployment was 25.6% compared to the average national unemployment level of 12.4% (UN, Statistics Botswana & UN-Habitat/ECA, 2018). Moreover, 42.1% of the city's residents were youth aged 15-24 years and part of the 73% of Gaborone working population (15-74years), (UN, Statistics Botswana & UN-Habitat/ECA, 2018). Gaborone employment levels are a reflection of the status of youth unemployment in Botswana which is currently classified among the countries with the highest unemployment in the world (World Bank, 2022d).

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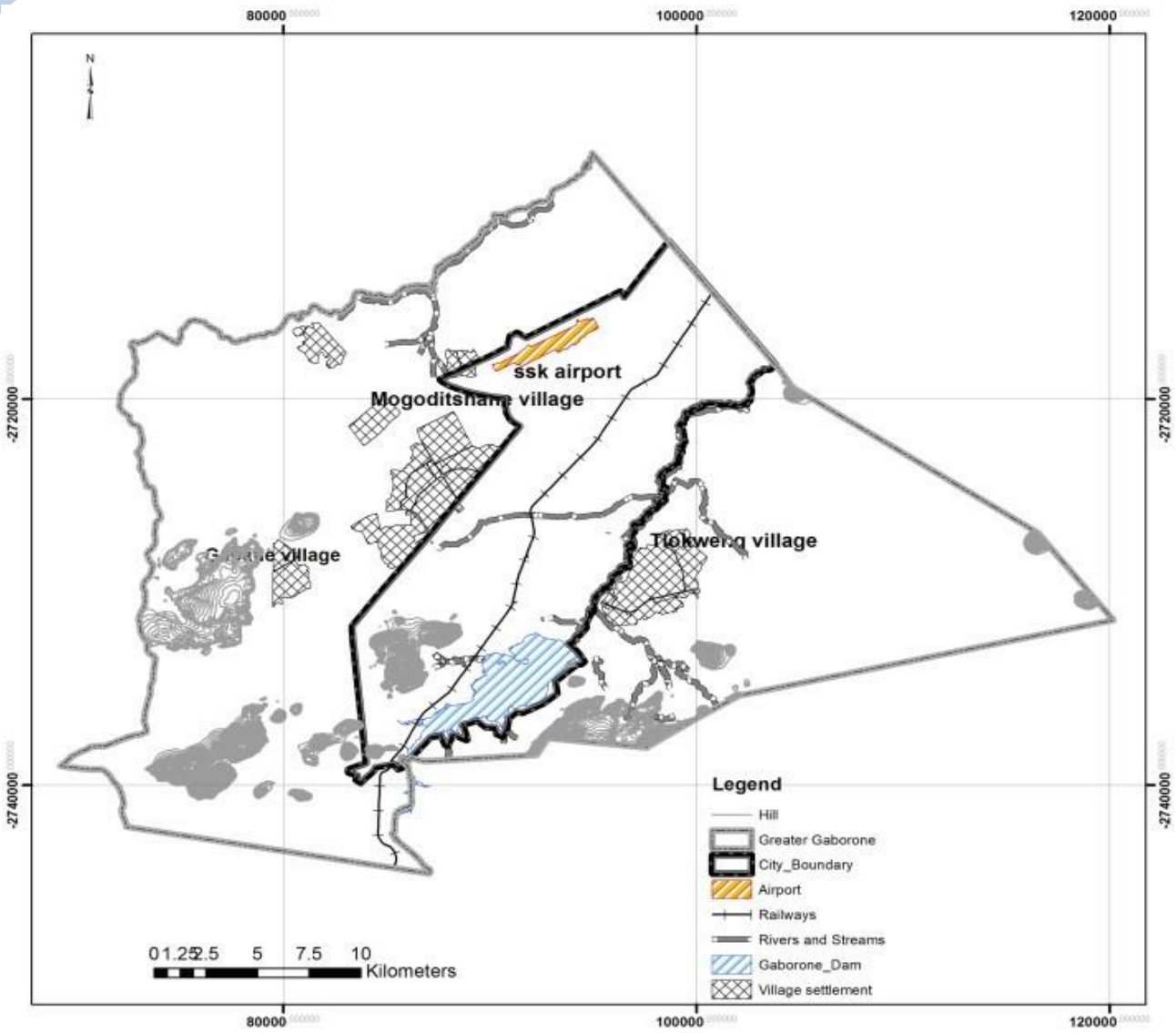

Figure 2.2 Map of Greater Gaborone Region

The high youth unemployment rate means that the city cannot create opportunities for youth to achieve a good quality of life. A poor quality of life translates to people becoming unhealthy and less productive in society. Youth unemployment can have serious social repercussions because unemployed youth are inclined to feel left out, marginalised, rejected, and anxious, which, in turn, pose a threat to social stability (Azeng & Yogo, 2013). Although the Botswana younger population

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are unemployed, they have not been involved in riots which cause instability in the country. However, the impact of unemployment on youth does indicate an upward trend in criminal activities (Adekoya, 2020; Yamben & Asaah, 2020). The high unemployment rate has been linked to poverty and consequently poor population health outcomes. A report by UN, Statistics Botswana and UN-Habitat/ECA (2018) linked Botswana's poor performance in maternal and child health to unemployment and advocated for appropriate interventions and strategies to be made available to improve quality of life and maternal and child health.

2.3 HEALTH SECTOR CONTEXT

The health sector refers to a system or organisation of people, institutions, and resources arranged together in accordance with established policies that delivers health care services to meet the health needs of the population they serve, while responding to people's legitimate expectations and protecting them against the cost of ill-health through activities whose primary intent is to improve health (WHO, 2013; Mortlock, Vasconez, Bittner et al, 2017). Therefore, this section briefly outlines the country's health status; healthcare regulatory legislation and policies, and resources such as financing, health workforce and infrastructure.

2.3.1 Current health status

Botswana has made significant strides in improving population health outcomes since independence, although there are still several challenges. One of the primary indicators of improved population health is the sustained increase in life expectancy from 56 in the 1970s to 65.3 in 1991 (Statistics Botswana, 2018). In the late 1990s, the HIV/AIDS pandemic stalled progress and began to reverse the country's developmental gains by reducing life expectancy

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from 65.3 in 1991 to 55.5 in 2001 (Statistics Botswana, 2018; Stover, Fidzani, Molomo et al, 2008). In 2002, Botswana experienced a turning point when antiretroviral therapy (ART) was introduced, and HIV-associated morbidity and mortality rates took a downward turn to a level that positively impacted life expectancy levels at birth.

The successful use of ART has increased the life expectancy of people living with HIV (PLHIV) closer to that of their HIV-negative counterparts. HIV treatment increased the life expectancy of the entire population from 55.5 in 2001 to 62.2 years in 2019 (World Health Statistics 2022). However, the documented average life expectancy at birth remains lower than the average life expectancy of the world population of 72.3 years. The slow decline in cases of communicable diseases such as HIV, Malaria, Covid19, and maternal and childhood illnesses are the major determinants of the country's life expectancy and population health. Communicable diseases account for more than 50% of morbidities and mortalities across all age groups (WHO, 2022).

Adult HIV/AIDS cases account for most of the communicable diseases and are the main cause of mortality in Botswana (**see Figure 2.3**). The prevalence rate of 20.3% makes Botswana one of the top four countries most affected by HIV and AIDS, after South Africa, Eswatini and Lesotho (UNICEF, 2021). Tuberculosis raises concern because in 2020, its rate was estimated at ≥ 236 cases per 100,000 population (CDC, 2020), and it has always been the leading cause of death among people infected with HIV (Tshitenge, Ogunbanjo, Citeya et al, 2018).

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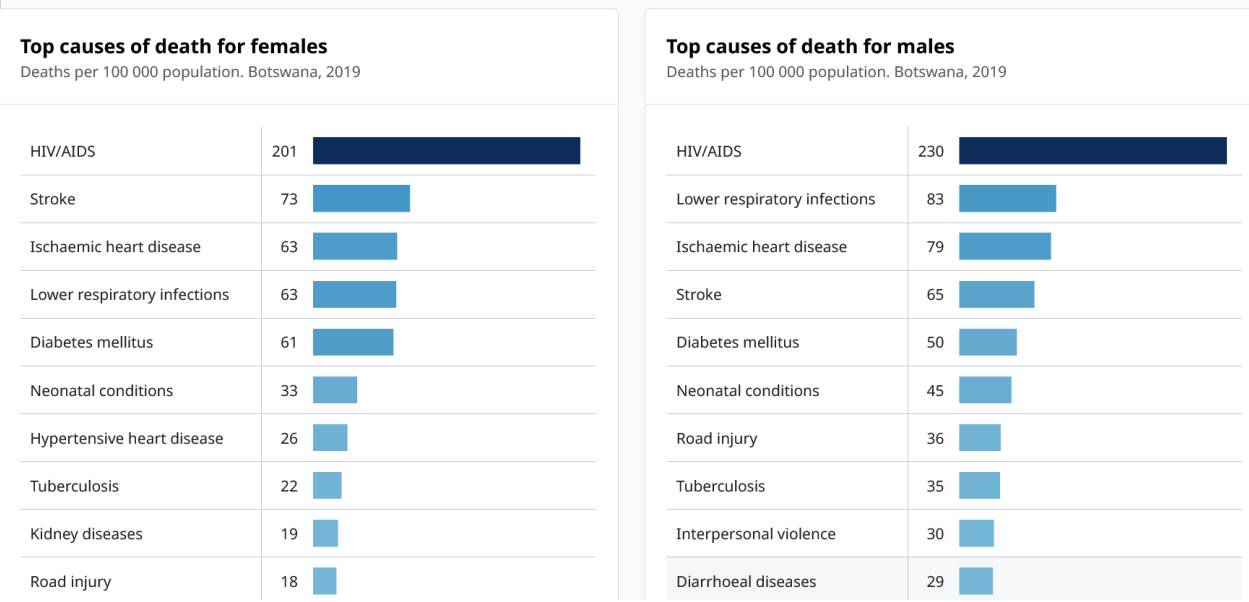

Figure 2.3 Leading causes of death in Botswana

Source: WHO (2023)

In addition, while infectious diseases are the biggest cause of death, non-communicable diseases are constantly rising and are new challenges threatening public health. In 2015, the global burden of non-communicable diseases surpassed that of communicable diseases (Murray, Barber, Foreman et al, 2015), and they account for 46% of mortalities between the ages of 30 and 70 years (WHO, 2022). The common non-communicable diseases include heart diseases, stroke, diabetes mellitus, injuries, and trauma

(**See Figure 2.3**). Deaths from road traffic accidents and suicides account for 26.4 deaths and 16.9 deaths per 100,000 population (WHO, 2022). Although cancers are not among the top 10 causes of death, they are of concern because they are on the increase and are among the four major NCDs in Botswana (WHO, 2016). They account for 82% of NCD-related deaths (WHO 2016) and 7% of all deaths in Botswana (WHO, 2018) (**see Figure 2.4**).

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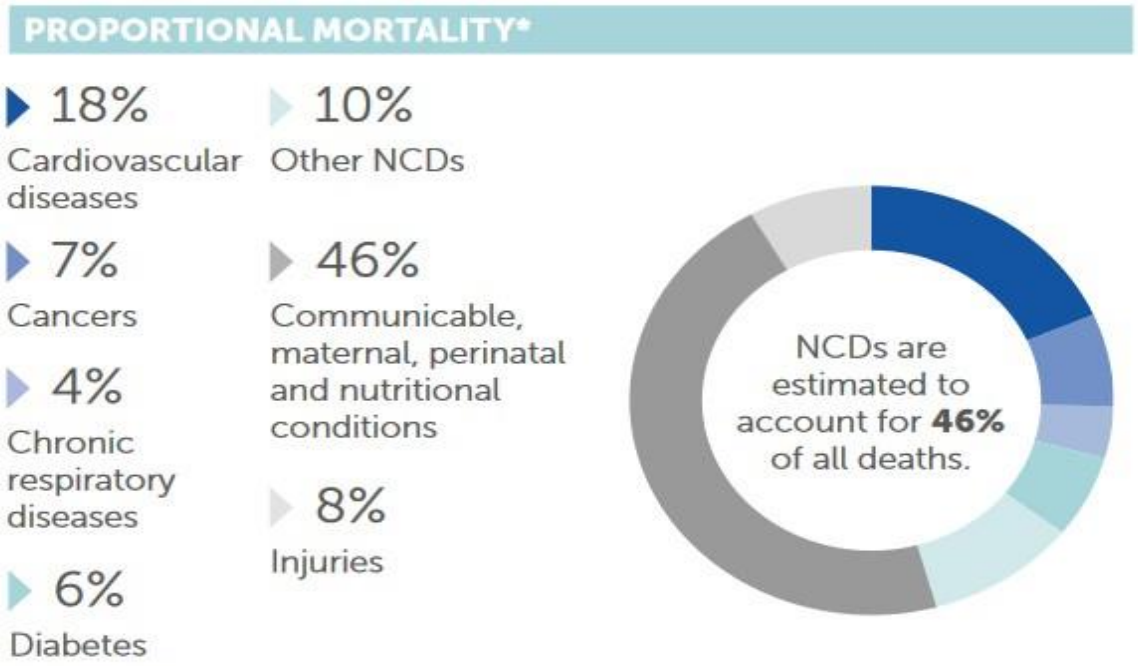

Figure 2.4 Causes of death in Botswana

Source: WHO (2018)

The rapid increase in non-communicable diseases results from unhealthy lifestyles adopted due to rapid urbanisation (Juma, Juma, Shumba et al, 2019), poverty (Keetile, Navaneetham, Letamo et al, 2019), and the use of ART which prolongs lives resulting in the emergence of ART-related NCDs (Coetzee, Bogler, De Neve et al, 2019; Haacker, Bärnighausen & Atun et al, 2019). Multimorbidity of NCDs is high among people of low economic status due to common unhealthy lifestyles including poor fruit and vegetable consumption (82.5%); poor physical activity (48.9%); overweight/obesity (41.3%); alcohol consumption (17.3%) and smoking (11.6%) (Keetile, Navaneetham & Letamo 2020). Among the common unhealthy lifestyles, cigarette smoking was highly linked to co-morbidity (Keetile et al, 2020).

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In Botswana, the infant mortality rate (IMR) and under-5 mortality rate (U5MR) remain high at 22 and 44.8 per 1,000 live births, respectively (UNICEF 2021; WHO, 2022). These statistics are better than the average in the sub-Saharan region and neighbouring countries. Most children die from preventable causes such as birth complications and communicable diseases, with diarrhoea and pneumonia being the two leading killers and neonatal sepsis (UNICEF, 2021). Neonatal disorders are the most common causes of deaths among children and increased by 14.5% between 2009 and 2019, making them the top six causes of death in the country (UNICEF, 2021). Therefore, the probability of a child dying during the first 30 days of life is very high and there is a need for cost-effective interventions targeted at reducing factors predisposing children to neonatal death.

Maternal deaths are of concern because they reflect the performance of national health systems as well as the sociocultural, political, and economic development of a country. In addition, maternal health also influences child health outcomes, and therefore contributes to child survival (El Rafei, Abbas, Charafeddine et al, 2016). Maternal mortalities are a serious health concern because they are preventable and when coupled with communicable diseases and nutritional deficiencies are responsible for over 46% of mortalities in Botswana (**see Figure 2.3**; (WHO, 2018)) and over 50% of mortalities in LMICs (WHO, 2022).

Although maternal health remains a concern, Botswana has improved maternal health outcomes and significantly reduced maternal deaths by 45% between 2000 and 2017 (WHO et al, 2019). The MMR between 2000 and 2020 declined from a ratio of 262 to 130.5 maternal deaths per birth per 100,000 (Sinvula & Insua, 2015; Statistics Botswana, 2022a). Nevertheless, the number of cases remains close to double the 70 maternal deaths per 100,000 live births target set by the Sustainable Development Goals (SDGs) (Sachs et al, 2022). The downward trend has not remained constant because at times Botswana has experienced sudden increases. The most recent fluctuation was observed between 2015 and 2019, where there was a sudden increase in

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cases from 127.0 in 2015 to 156.6 per 100,000 live births in 2016 followed by another upward fluctuation from 133.7 per 100,000 live births in 2018 to 166.3 per 100,000 live births in 2019 (Statistics Botswana, 2022a). However, a significant decrease in the number of cases was reported in 2020, from 166.3 in 2019 to 130.5 per 100, 000 live births (see Table 2.2).

Table 2.2 Botswana maternal mortality ratio between 2014 and 2020

	2014	2015	2016	2017	2018	2019	2020
Institutional live births	47,273	57,290	54,159	52,242	52,999	52,206	58,146
Non-Institutional live-births	205	190	108	116	117	98	98
Total live-births	**47,478**	**57,480**	**54,267**	**52,358**	**53,115**	**52,304**	**58,244**
Maternal Deaths	72	73	85	75	71	87	76
Maternal Morality Ratio (per 100,000 live-births)	151.6	127.0	156.6	143.2	133.7	166.3	130.5

Source: Statistics Botswana (2022a)

What was notable in the country's high MMR was that most of the deaths were mothers who were in direct HCP care (Statistics Botswana, 2022a). Of the high MMR of women under the care of HCPs, more than 99.8 deliveries (**see Table 2.3**) were facility-based (Statistics Botswana, 2022a; Statistics Botswana, 2018; Sinvula & Insua, 2015).

Consequently, the high percentage of hospital-based deliveries put Botswana close to realising its strategy of having 100% of deliveries conducted in health facilities. The non-institutional live births (**Table 2.3**) constitute 0.2 per cent of the total births (Statistics Botswana, 2022a). Table 2.3 presents live births by place of delivery between 2017 and 2020.

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Table 2.3 Live births by place of delivery between 2017 and 2020

	2017		2018		2019		2020	
Place of Birth	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
General Hospital	33,442	63.9	34,071	64.1	33,013	63.1	35,656	61.2
Primary Hospital	11,285	21.5	11,689	22	11,321	21.6	11,720	20.1
Clinics	7,515	14.4	7,239	13.6	7,872	15.1	10,770	18.5
Non - Institutional	116	0.2	116*	0.2	98	0.2	98	0.2
Total Live Births	**52,358**	**100**	**53,115**	**100**	**52,304**	**100.0**	**58,244**	**100.0**

Source: Statistics Botswana (2022a)

The high institutional deaths mean that healthcare facilities are failing to provide an enabling environment needed to eliminate preventable maternal and newborn deaths despite access to skilled health personnel and medical resources. The leading causes of maternal mortality include post-partum haemorrhage, genital tract and pelvic infection following abortion and hypertensive disorders of pregnancy (Statistics Botswana, 2019; 2022a). These conditions are preventable if they are diagnosed early and appropriate interventions instituted early. In their study, Kershaw, Williams, M., Kilaru et al. (2019) argue that hospital-based mortalities are *unwarranted* because they are associated with systems and management problems that could be prevented or modified through quality improvement initiatives. In their root cause analysis of deaths in general wards, Kershaw et al (2019) found that deficiency in knowledge and skills contributed to 95% of deaths; communication and teamwork failures were associated with 67% of deaths; poor maintenance and shortage of resources caused 63% of adverse cases, and lack of availability of protocols in 59% of patients and deficient coordination of care in 56% of cases. Therefore, quality improvement initiatives focusing on reducing preventable causes of death are paramount in improving outcomes since costly investments in healthcare infrastructure and resources are unattainable.

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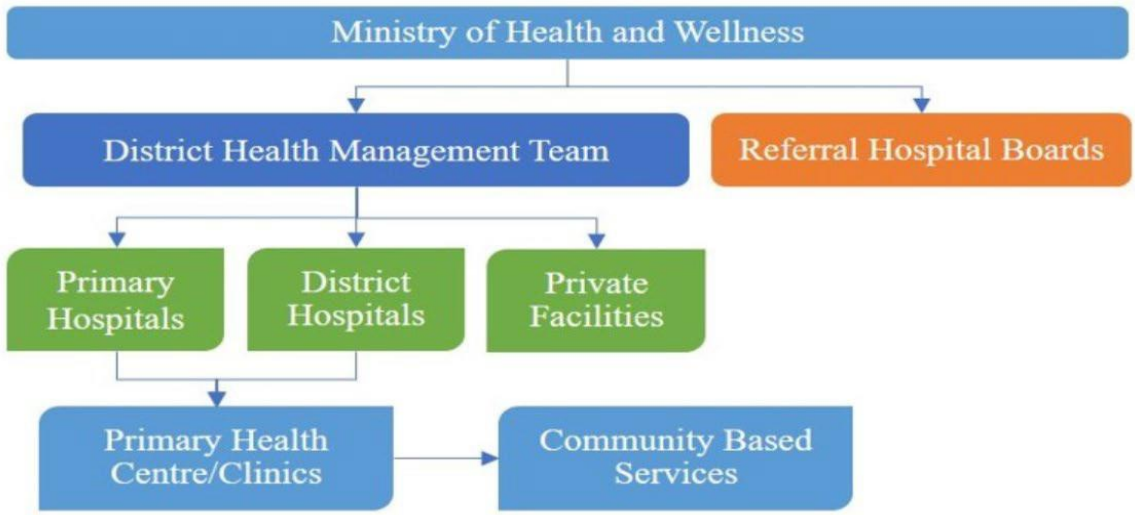
2.3.2 Health service delivery

In Botswana, the Ministry of Health and Wellness (MOHW), former Ministry of Health (MOH), is responsible for the health sector's stewardship. The ministry coordinates the provision of health services by formulating policies, regulations and norms, standards, and guidelines, monitoring and evaluating healthcare services, and generating resources (MOH-Botswana, 2012). Healthcare services are delivered through the public sector, which is the primary service provider and includes the Ministry of Health and Wellness, the Defence Force, Prisons and Police Services. The public health services are delivered using a primary health care (PHC) approach which ensures that the three levels of care, namely primary, secondary, and tertiary services, are integrated across all levels of care, including hospital-based care. The private sector is another service provider, which includes private for-profit, private non-profit and traditional medicine practices (MOH-Botswana, 2012). Figure 2.5 depicts the organisation of health service delivery in Botswana.



Source: MOHW, National Health Policy: Towards a Healthier Botswana, 2011, p22.

Figure 2.5 Structure of health service delivery in Botswana

Source: MOH-Botswana (2011:22)

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The types of healthcare services in Botswana are discussed next.

Traditional and complementary medicine (T&CM) is widely used in Botswana for various reasons, including to seek protection, for diagnosis and treatment or healing especially treating diseases for which a cure has not been found (Letlhogile, Kaelo & Sabone, 2020). However, to date, Botswana does not have a policy or regulations on T&CM. Although the World Health Organization (WHO, 2002, 2005, 2013) recommends that T&CM be regulated and integrated with modern medicines, Botswana has not implemented the recommendations. Accordingly, there is no data available on a legal framework, regulations, programmes and utilisation of T&CM in the country (Letlhogile et al, 2020; MOH-Botswana, 2012). According to the WHO (2013), 80% of people in developing countries consult traditional doctors and herbalists to meet their healthcare needs even though the safety, efficiency and quality of T&CM have not been established. The lack of quality assurance measures results in an improper use of T &CM, thereby exposing users to undesirable health outcomes (Letlhogile et al, 2020). Given the high use of T&CM to meet healthcare needs globally, regulating T&CM is essential particularly in LMICs.

The private sector (modern and profit-making) is another source of general and specialised care in Botswana. The private sector is small but continues to grow, mainly in urban areas and big villages. Most private healthcare services, including clinics, hospitals and laboratories, are found in urban areas where more than 70% of the population resides (Statistics Botswana, 2022). The private health sector covers 17% of the population (Ogunseye, 2020; SHOPS Project 2014), providing care primarily through outpatient clinics (Statistics Botswana, 2022). The private hospitals, including the mining hospitals, are only found in 5 towns or villages in the country. Therefore, the general population does not have adequate access to private practice, especially acute and specialist care. Currently, Gaborone is the only area with three private hospitals. The other four localities have one facility each. This limited number of private hospitals has implications for healthcare services because it prevents patients in most regions having access

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to care of their choice and deciding on services that best suit them and their families. The affordability of private practices also limits access to services, especially for patients not referred by the government to receive care and not medically insured if patients cannot afford to pay for their medical care. Therefore, private practice cost of medical care limits healthcare access.

Even though receiving care through private health facilities is costly, Mosadeghrad (2014:154) argues that having a choice of setting or provider "reduces inequities in access to care; promotes competition among health care providers; increases providers' responsiveness to the patient's needs; increases the efficiency of healthcare organisations and enhances the quality of the service provided". In Botswana, where the public sector is experiencing challenges of shortage of health workforce and resources, increasing private facilities in some parts of the country would relieve government facilities from high patient load and provide more health workforce to regions. People are benefiting from the government's nationwide public-private partnerships (PPP) initiative by having access to private facilities within their reach.

The government has introduced a nationwide PPP policy to allow communities to receive needed services from private practice at government's cost. The PPP policy aims to provide equitable, accessible, socially inclusive care and achieve universal health coverage through partnership and collaboration between the public and private sectors in delivering services in the country. The PPP started in 2000 when Botswana partnered with companies like the Bill and Melinda Gates Foundation and Merck Co. Inc./the Merck Company Foundation to fight the HIV/AIDS pandemic (Botlhale, 2016).

Accordingly, entering into public-private partnerships has helped expand services to the entire population and introduced innovative medical resources/technologies where the public health sector has limitations in financial, managerial, professional and technical expertise (Botlhale, 2016). However, the geographic distance of private facilities between regions and high cost of

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medical care limits some of the population to have seamless access to private facilities (Mosadeghrad, 2014).

The public health sector is the leading provider of care, with more than 80% of services accessed through a public health facility network (Statistics Botswana, 2013). Regarding health coverage and accessibility, more than 95% of the population live within 8kms of the health care facility in the country (Central Statistics Office Botswana, 2015). However, 89% of people living in rural areas live within an 8km radius of health centres, while more than 96% of urban dwellers reside within an 8km radius of health facilities. Therefore, rural areas still face the challenge of access to health care service. Furthermore, health care service is free to all Batswana because patients only pay P5 (equivalent of $0.45 USD) per new consultation, with free subsequent follow-up care. However, maternal and child health care services are exempted from paying this minimum fee of P5,00 (Central Statistics Office Botswana, 2015).

The Ministry of Health and Wellness is responsible for developing and enforcing the country's health policies, processes, and legal frameworks. It is also accountable for the management and coordination of the implementation of health services in the public health sector. The public health services are decentralised to the 27 health districts. Therefore, the ministry of health's authority is transferred to Referral Hospital Boards to manage referral hospitals and District Health Management teams to oversee the provision of care at the district level (Strizrep, 2018). The public healthcare service section operates through an extensive network of health service delivery structured into six (6) levels. These levels as presented in **Figure 2.5**, include national referral hospitals, district hospitals, primary healthcare hospitals, clinics with maternity, clinics, health posts and mobile stops (Statistics Botswana, 2021; Nkomazana, Peersman, Willcox et al, 2014).

In order of the complexity of health facilities in Botswana, the public health facilities comprise three national Referral Hospitals (2 general and one psychiatric hospital), one teaching hospital, 15 District Hospitals and 17 Primary Hospitals. The hospitals provide primary, secondary, and

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tertiary health care services (Ministry of Health and Wellness, no date) including obstetric care. The district hospitals are designed to provide basic and emergency care and a few selected specialist services. They also serve as regional referral centres for primary hospitals and clinics. Primary healthcare hospitals provide curative and preventive services and serve as clinic referral centres. The primary care clinics include 105 clinics with beds, 206 clinics without beds, 351 health posts and 931 mobile stops (Ministry of Health and Wellness, no date).

The clinics provide curative and preventive care and are manned mainly by nurses. The clinics and health posts make up 95% of public health facilities (USAID & PEPFAR, 2016). Therefore, the country is always operating under pressure to ensure that its population receives care even in the remote area where there is no doctor and health facilities are manned by registered nurses. The health posts are clinics found in remote and small populated villages. They provide the lowest level of curative care, health promotion, and disease prevention services. The hospitals, clinics with maternity beds and a few clinics in towns operate 24 hours, while clinics and health posts operate from 07:30-16:30 during the day and at night only when there is an emergency.

The mobile stop is a clinic programme providing much-needed health and medical service to people living in rural and remote areas of the country who cannot access medical facilities (Ministry of Health and Wellness (MOHW, no date). Usually, a team of HCP is chauffeured in a vehicle to attend to patients on scheduled visits by the head of the district health office. This service ensures that all citizens have access to medical care. The other public health service sectors include services for special populations, such as the Botswana Defence force, police, and incarcerated population.

In the southern part of Botswana, where the study was conducted, there are two public referral hospitals, three district hospitals, and other levels of health care services (Nkomazana et al, 2014), a university teaching hospital, and three private hospitals. The obstetric cases in the study site include the standard patients and those referred from lower-level facilities for specialised care.

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Therefore, given the type and level of health facilities in Botswana, the most pressing issue is shortage of resources, including health workforce. In their study at a district level hospital, Kershaw et al (2019) accredited the preventable causes of morbidity and mortality to shortage of skilled health workforce, unavailability of resources, including equipment and medicines, and failure to follow treatment protocols for poor health outcomes.

2.3.3. Health financing

Since independence, the government has been committed to ensuring that all citizens have access to accessible, equitable, and high-quality healthcare services. This is evidenced by the government regularly allocating a bigger share of its budget (Cali & Avila, 2016) and hence a sustained improvement in population health outcomes. The government has increased the proportion of government expenditure allocated to health to reach the Abuja target of 15% of the total budget at times. In 2009, the government allocated 17.7% of the annual budget to health (Cali & Avilla, 2016). In 2021 and 2022, health was allocated 15.6% and 18.7% of the proposed Ministerial Recurrent Budget, respectively. For that reason, Botswana is among the few countries that met Abuja's target of 15% of total government expenditure on health in 2009 and subsequently in 2021 and 2022 (Matsheka, 2021; Serame, 2022).

Botswana’s government is committed to health and eager to channel its natural resources to health is because of its outstanding political stability and good governance (USAID & PEPFAR 2016). The government's priority for health is evidenced by the nationwide healthcare services that are subsidised and financed through government taxes. Currently, 57% of healthcare expenditures are government-funded (Gutierrez & Avila, 2016). The current tax-financed healthcare services have been helpful in "pooling risks, contributing to the reduction of catastrophic spending and promotion of equity in health" (USAID & PEPFAR, 2016). The benefits

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of allocating more funds to health expenditure to the country's small population are noticeable in a significant decrease in mortality rates and an increase in life expectancy at birth (Statistics Botswana, 2020)

In addition, the country's health financing has been boosted by the growth of private health insurance. The private medical aid schemes currently contribute 39% of health expenditure, while the remaining 7% comes from donors and out-of-pocket budget support (USAID & PEPFAR, 2016). The medical aid schemes cover about 17% of the population, but joining the health insurance schemes is not compulsory (Oguseye, 2020). Therefore, medical aid schemes are less inclusive of the poor and vulnerable populations.

However, a comparison of Botswana's health financing quota and the country's health outcomes indicated that it continued to report worse health outcomes than other countries (Cali & Avilla, 2016). One indicator that the country is not performing well is the high morbidity and mortality ratios that remain consistently above acceptable levels. The country's adult mortality rate and health indicators of MMR and child mortality are unacceptably high (World Bank, 2022c). In 2007, the adult mortality rate was 507 per 10,000 population, which dropped to 246 deaths per 10,000 population in 2020 (Ogunseye, 2020). Although lower, it is still higher than many LMICs at 176 deaths/per 10,000 lives or the world mortality rate of 172 deaths/per 10000 lives (World Bank, 2022c). These population health outcomes are not consistent with higher total health expenditure in Botswana compared to sub-Saharan African and upper-middle-income countries (Gutierrez & Avila, 2016).

There are several reasons why Botswana is not performing well on health outcomes (Cali & Avila, 2016; Ogunseye, 2020). Cali and Avila (2020) found low productivity and insufficient (22%) allocation of resources to primary and preventive care were the primary factors responsible for poor health outcomes. Consequently, allocating a large portion of resources to tertiary institutions compromised care in primary care settings, where attention is needed to prevent and control

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diseases early (Carli & Avila, 2016). Ogunseye (2020) found that the budget allocated to health might be higher than for other departments but was still insufficient to close the existing gaps in healthcare resources. For example, the country's total expenditure on health per capita (International $, 2018) of 482 US dollars (1.089 million US dollars) in 2018 was only a fraction (6%) of the country's GDP share, and therefore insufficient to respond to the existing gaps and needs in the healthcare system (Ogunseye, 2020). Lastly, the sustained decline in government spending on health, while private insurance expenditure was increasing also contributed to the poorly performing healthcare system (Ogunseye, 2020).

However, even though Botswana has consistently allocated a large share to health, the budget is only a fraction of the country's GDP. For example, the 17.7% health budget in 2009 was only 6% of GDP (USAID & PEPFAR, 2016; Cali & Avila, 2016). Furthermore, despite health taking a large share of the budget, records show fluctuation and a sustained reduction in national expenditure as per GDP between 2014 and 2021. Over the same period, health expenditure was reduced to 11% and 12% between 2013 and 2019 (**see Figure 2.6**), thereby putting Botswana below the Abuja target of 15% (UNICEF, 2018). Figure 2.6 depicts government budget allocation according to functional areas between 2013 and 2019.

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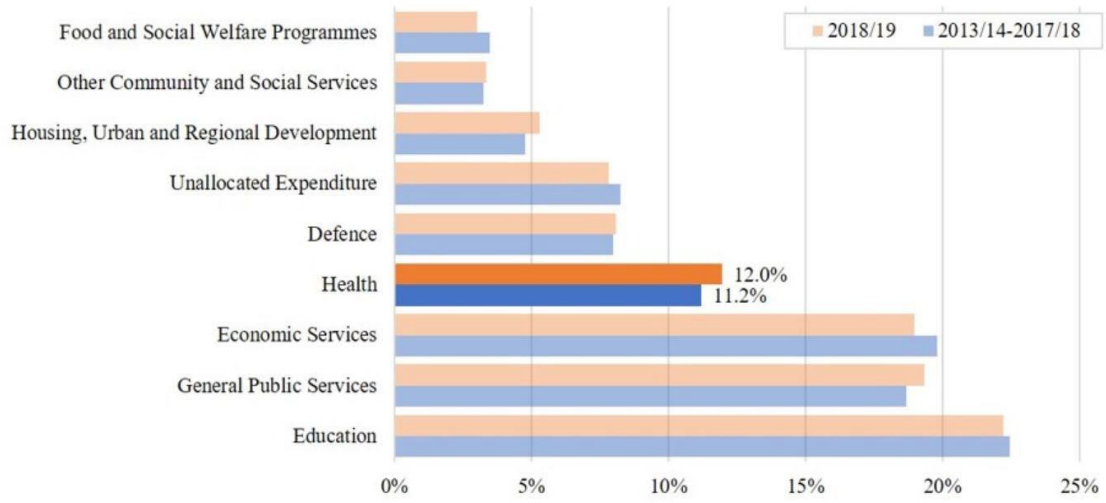

Source: MFED, Financial Statements, Tables and Estimates of Expenditure from the Consolidated and Development Funds: 2013/14 to 2016/17 (actual), 2017/18 (revised) and 2018/19 (planned).

Figure 2.6. Botswana- Composition of Botswana's National Budget by functional areas

Private insurance only benefits people who can afford to subscribe to the insurance, and only 17% of the population in Botswana can do so. Therefore, the issue of health financing is a grave concern that needs political attention in order to achieve quality healthcare outcomes.

2.3.4. Health workforce

The health workforce is an essential component of a well-functioning healthcare system and, therefore, a top priority in achieving universal health coverage and the SDGs (WHO, 2016a). According to the WHO (2016b) global strategy on human resources for health, there is a need for sufficient, well-trained, motivated workers and an equitable distribution of the health workforce in performing health systems. Having a sufficient, competent health workforce requires the provision of adequate pre-service and continuous in-service training programmes for all disciplines

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(Okoroafor, Ahmat, Asamani et al, 2022). In addition, there is a need for strategies that facilitate adequate distribution, retention, and performance of the health workforce (Okoroafor et al, 2022; WHO, 2016b). A survey of 47 countries in the WHO African Region indicated that the shortage and maldistribution of health workers remain a big challenge to the attainment of universal access to health services (Ahmat, Okoroafor, Kazanga et al, 2022). African countries have the lowest number and density of health workers and the highest global burden of diseases. In Botswana, a shortage of skilled health workers is a significant barrier and challenge to ensuring that quality cost-effective care is available and accessible in the country (Nkomazana et al, 2014). Accordingly, the country needs to channel more resources to improve training outputs and recruitment to meet health workforce targets.

2.3.5. Health education and training

Human resource development is crucial in any country because it determines the healthcare outcomes of any community (Tshukudu, 2021). Therefore, to achieve universal health coverage countries need to have well-functioning and resilient health systems (Okoroafor et al, 2022). To address acute shortages and maldistribution of health workers, countries need to match competencies with population needs as well as increase capacities for health worker production to align with demands (numbers and skill-mix) for improved service delivery (Okoroafor et al, 2022).

To curb shortages of the health workforce, countries should introduce policies and strategies that motivate for public and private sectors to put in place the needed infrastructure for quality training and thereby contribute to increasing the production capacity in the region (Okoroafor et al, 2022). Another approach would be to provide funding to increase students' enrolment in tertiary institutions.

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In Botswana, a strategic tool that oversees human resource development is the Human Resource Development Council (HRDC) of Botswana, which was established by the HRDC Act, 17 of 2013 and became effective on 8 November 2013 (Statistics Botswana, 2015). The HRDC is responsible for all matters regarding human resource development and skills in demand in the country, and policy on strategic approaches to human capital development. It monitors industry trends in relation to skills demands and needs skills in the country.

Accordingly, it is responsible for development and implementation of financial systems in the tertiary education sector to close the skills gaps in the country. It also oversees the accreditation of non-credit bearing short courses (Statistics Botswana, 2015). In 2019, the HRDC conducted a skills demand analysis and established two distinct categories of skills demand: technical and non-technical (soft or critical skills). There is a huge and growing demand for skilled professionals because of the existing technical and non-technical skills gaps across various disciplines. The health industry is among the institutions with acute shortages of employees with diverse technical and non-technical skills (Human Resource Development Council (HRDC), 2020/21).

The health sector has human resource gaps affecting both general practitioners and specialists across the 30 health disciplines (HRDC, 2020/2021). In order to develop and increase Botswana's health workforce and minimise the dominance of foreign-trained HCPs, the country needs to strengthen education and training institutions. Despite the country's strong economic standing, Botswana only has 12 health training institutions and over 50% (7 out of 12) of them are government funded institutions offering training for nurses and midwives, and allied health workers at diploma levels. The other three are health science institutions offering diploma and degree programmes in allied health and only two are medical institutions (Okoroafor et al, 2022). To date, the University of Botswana is the only institution offering speciality programmes at Master's and PHD levels. The existing training institutions are not able to produce adequately prepared healthcare practitioners.

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Increasing training institutions and diversifying training programmes is a costly, time-consuming initiative that cannot be achieved immediately. Therefore, in view of the skills gaps identified by HRDC in 2019 and skills' training constraints in the country, a pragmatic approach would be to introduce an innovative approach that harmonizes practitioners' experiences and equips them with the required non-technical skills. Therefore, while still waiting for institutions to expand and diversify their programmes or review and integrate non-technical skills in their curricular, introducing short courses would be essential.

A comprehensive but flexible short course that employed teaching strategies corresponding to the learning needs of diverse HCP, harmonized experiences, accommodated those in practice and education to create understanding and synergy, and supported HCP from their preferred location is recommended. Accordingly, this study wished to develop an eLearning training content to equip HCPs with non-technical and technical skills like those highlighted by the HRDC and validated by the needs assessment conducted in phase 1 of the study.

2.3.6. Regulatory service and policies

Botswana is among the African countries with accreditation frameworks for practice and education of the health workforce (Okoroafor et al, 2022). Health service delivery is controlled by the Public Health Act, 2013 (Chapter 63:01) while the health workforce and health professions' education are regulated by Health Professions Act (Chapter 61.02) and Nurse and Midwives Act, 1995.

The Public Health Act is the primary tool regulating all health-related interventions. The main purpose of the Act is to ensure that Botswana's public health is protected by setting rules, regulations, and policies related to the prevention of introduction, and control of diseases, diagnosis and management of all kinds of diseases, disorders, injuries subject to international

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health regulations (Blackhall's Laws of Botswana, 2021a). Since it is responsible for regulating all healthcare issues in the country, it is therefore responsible for regulation of activities in other sectors that may predispose the public to some form of illness.

These activities include but are not limited to regulation of sanitation and housing, environmental health, port health**,** national public health laboratories, medicines, and medical equipment. It also plays a role in setting rules that monitor occupational and environmental activities, insects and vector control and control of movement of animals, population movement and transportation of some goods and merchandise (Blackhall's Laws of Botswana, 2021a). In addition, the National Health Policy was introduced in 1995 to guide the development of the health sector (Ministry of Health, 2012). The policy was later revised in 2011 to restructure the Ministry of Health and address the major changes in the health status of the population.

The changes in population health status resulted from changes in disease burden, population demographics, determinants of health and the socio-economic determinants of health as well as the evolving complexities of the healthcare system (Ministry of Health, 2012). The main purpose of the policy is to guide the health sector, public, private, non-profit making, and traditional and complementary medicine (T&CM) in attaining a high health status of people living in Botswana. In 2012, the Ministry of Health introduced *The Revised National Health Policy: Towards a Healthier Botswana*.

In Botswana, the health workforce and health professions education are accredited and regulated by two health professions councils. The medical practitioners, dental pharmacists and other allied health professionals are regulated by Health Professions Act (Chapter 63.2) and therefore required to register with the Botswana Health Professions Council (BHPC) before they can practice in Botswana (Blackhall's Laws of Botswana, 2021b). To ascertain quality of health training institutions, the Health Professions Act is also a national accreditation mechanism for health training institutions.

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The practice of nurses and midwives in Botswana is regulated by the Nurse and Midwives Act, 1995. The Act makes provision for "the regulation of the practice of nursing and midwifery in Botswana, for the establishment of the Nursing and Midwifery Council of Botswana, for the training of and the conduct of examinations for nurses and midwives, for the registering of nurses and midwives and the keeping of registers, and for matters incidental thereto" (Blackhall's Laws of Botswana, 2021c). Therefore, in order to practise in Botswana, nurses and midwives are required to register with Nurses and Midwifery Council of Botswana.

The Nurses and Midwifery Council of Botswana (NMCB) and Botswana Health Professions Council (BHPC), as regulatory bodies responsible for ensuring that the public receives high quality care from the health sector, are entrusted with setting the education and practice standards of the country. Therefore, to ensure that health professionals are fit to provide high standards of care through competent practice, the two councils established quality assurance policies. These policies dictate that in order for HCPs to keep up to date with the ever-changing needs in healthcare and remain licensed to practise, they should engage in training/continuous professional development (CPD).

However, the requirement to engagement in CPD between the two councils differs because it is mandatory for NMCB (Baloyi & Javis, 2020), but voluntary for BHPC (Ministry of Health, 2013, unpublished). Currently, many nurses and midwives are engaged in CPD as a way to gain extra skills and higher levels of competencies and meet the requirement for the annual of licence to practise. According to the Commonwealth of Learning (COL) newsletter (2021), almost 11,000 nurses and midwives in Botswana had enrolled in online continuing professional development courses that were designed and offered online under the COL management. The nurses and midwives' response to online short courses demonstrates HCPs' eagerness to learn and provide better care to patients.

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Regarding the general policies on human resources development, higher education in Botswana is approved and accredited by Botswana Qualification Authority (BQA). Therefore, for any tertiary-level training programme to be implemented, it must be approved and accredited by the BQA. The BQA is a parastatal established by the Botswana Qualifications Authority Act, 24 of 2013. This institution ensures that learners acquire quality assured awards by coordinating education, training and skills development from early childhood to tertiary level. Therefore, all health science training programmes are not only regulated by the Health Professions Council but regulated by the BQA.

Not only are the policies or laws on manpower development focused on long-term training, non-credit bearing short courses are also regulated to ensure that their quality and address the skills needs of the country. The non-credit bearing courses are therefore regulated by the Human Resource Development Council of Botswana (HRDC). For example, the HRDC's market survey on skills needs in the country helped the country, training institutions and the community to understand what kind of skills are on demand in the country, and the competency gaps among diverse groups of healthcare professionals.

2.4. WORKPLACE OR ORGANISATION CONTEXT

The workplace setting includes the conditions and environment in which employees work. These conditions or environments include workplace culture and climate, employee characteristics, and leadership styles, among other things. (Cheung, Rozhkov, Wang et al, 2015). In research, it refers to the physical location and conditions in which data are collected (Polit & Beck, 2021). Understanding the workplace context is vital because overlooking the conditions and physical

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location can influence the data collection and findings (El Rafei et al, 2016). Therefore, this section discusses the data-collection site and rationale for selecting it.

The quality of healthcare outcomes in Botswana is a nationwide concern, especially the high maternal mortality rate (MMR) despite the country's effort to make care accessible and affordable (Statistics Botswana, 2018; WHO, UNICEF, UNFPA et al, 2019). The major hospitals, including referral hospitals, care for 60% of cases (**see figure 2.5**), yet over 50% of deaths occur in major hospitals and 99% occur in healthcare settings (Statistics Botswana, 2021). Referral hospitals account for 46% of the deaths, district hospitals account for 25%, and primary care hospitals account for 17% of the cases (Sinvula & Insua, 2015).

The high MMR in referral hospitals motivated the researcher to focus on the selected hospital, located in the southern region of Botswana. The hospital sees the country's highest number of patients, particularly obstetric cases (Statistics Botswana, 2018). The selected hospital was one of those referred to as a critical area of interest by Nkhwalume and Mashalla (2019) because of the high maternal mortality cases despite being a highly specialized area and being used as a training site for Emergency Obstetric Care (EMOC). In addition, Ramatiti (2018) emphasised a high MMR, serious overcrowding, and a shortage of healthcare personnel and resources. Overcrowding is a primary barrier to the delivery of quality care because the bed occupancy rate in ante-natal and post-natal units is always above 100%.

Therefore, the already limited health workforce finds it difficult to provide timely, comprehensive patient-centred care (Ramatati, 2018). The rate of overcrowding in ward occupancy was over double the set number. For example, although the post-natal ward had a 52-bed capacity, 22 additional beds and 18 floor-beds had been added, thus increasing the ward capacity to 92. Overcrowding automatically widens the HCP ratio, making additional demands on the already limited human resources which often affect efficient service delivery. The midwife-patient ratio was 1:12 for antenatal care, 1:4 for labour care and 1:23 for post-natal care (Ramatiti, 2018).

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Accordingly, the additional patients put more strain and demand on the already limited human resources. Consequently, overcrowding, shortage of resources and patients needing specialised care emphasise the need for equipping healthcare professionals with competencies that enable them to collaborate well (HRDC, 2019).

Nkhwalume and Mashalla (2019) recommend comprehensive interventions that address professionals' competencies. This motivated the researcher to conduct the study in this setting to establish interprofessional collaborative practice in maternity care settings and develop a work-based interprofessional training programme aimed at facilitating collaborative practice. The training programme is aligned with the HRDC 2019 skills gap report where non-technical skills such as teamwork, communication, collaboration, critical thinking, and coordination were found to be deficient among healthcare professionals.

2.5 SUMMARY

This chapter discussed the context of the study, including the national, health sector, health regulatory services and policies, organisational, and workplace contexts.

Chapter 3 discusses the research design and methodology.

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CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the research design and methodology, including the Design Based Research (DBR) methodological framework and methods used to achieve the research aim and objectives. The chapter describes the research methods, rigour and ethical considerations for each objective, and validity and reliability of the study.

3.2 METHODOLOGICAL FRAMEWORK

Design-based research (DBR) is defined as a "systematic, but flexible intervention design aimed at improving educational practices through iterative cycles of analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually sensitive design principles and theories" (Wang & Hannafin 2005:6). DBR is a new emerging methodological framework that originated from the applied design science disciplines such as engineering and applied physics, whose research methods are aimed at producing and evaluating innovative artefacts for specific purposes and in an authentic environment (Kelly, Lesh & Baek, 2014; McKenney & Reeves, 2021; Middleton, Gorard, Taylor et al 2014). The applied design science then led to the emergence of design science research (DSR) in the field of information systems and design-based research in fields of educational technology and e-learning (van Wyk, 2015) and is currently adapted in various disciplines (DBRC, 2003; McKenney & Reeves, 2021; Tinoca, Piedade, Santos et al, 2022; Zheng, 2015).

In this study, the researcher used Design-Based Research (DBR) as a methodological framework (Kennedy-Clark, 2013. The Design-based Research Collective (DBRC), 2003) for designing and developing a work-based interprofessional education programme for the maternity care setting in Botswana. The researcher considered DBR suitable because it combines empirical research with theory-driven approaches and works in real-world context to improve teaching practices by

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developing innovative interventions, particularly technology-enhanced learning environments (McKenney & Reeves, 2021; Rossi, 2021). Moreover, DBR is not purely a research methodology, but rather a collaborative approach aimed at bringing together researchers and stakeholders to engage in an iterative process of systematically engaging in the assessment, design, development, implementation, and evaluation of educational interventions to solve complex education problems in real-world contexts (Anderson & Shattuck, 2012; The Design-Based Research Collective DBRC, 2003; McKenney & Reeves, 2021). DBR is therefore appropriate for informing the design and implementation of interprofessional collaboration activities.

As IPC/E are inherently complex interventions, developing an IPC education programme would be difficult to implement especially in an area where there are no guidelines to inform the development and support of the implementation of the intervention (Reeves, 2016; Patel, Begum & Kayyali, 2016). Therefore, the success of IPC intervention is dependent upon a supportive environment including IPC guidelines and strategies, adequate resources, an environment that is conducive to learning and practising IPC (Grimonprez, 2016; Patel et al, 2016) and development of an intervention that is context specific and designed to address real-world issues (McKenney & Reeves, 2021; Wang & Hannafin, 2005). The DBR would attempt to address the complexities of IPC interventions and of the maternity care setting for which the intervention was co-created. Importantly, DBR is pragmatic in nature, therefore, emphasis is placed on working collaboratively with various stakeholders to produce useful and actionable knowledge, solve complex problems in real-world settings and re-determine uncertain situations (Kelly & Cordeiro, 2020).

The key characteristics that distinguish DBR from other research methodological approaches are that (1) DBR is grounded on real-world contexts and working collaboratively with various stakeholders throughout the process of analysis, design, development, implementation and evaluation of an intervention; (2) the research problem should address real life issues in a particular context; (3) it focuses on the development of a practical solution/intervention, which should be tested early in a realistic environment through an iterative process of stakeholder feedback and modified until an authentic intervention is reached, and (4) DBR interventions are designed for a particular context, therefore, they are only applicable to the context of the study and are not generalizable to other groups (McKenney & Reeves, 2021; Reeves, 2006; Reeves & Lin, 2020; Vaezi, Moonaghi & Golbaf, 2019; Wang & Hannafin, 2005; Momand, Hamidi, Sacuevo & Dubrowski, 2022) (5) generates transferable design principles that can be used to advance theory and practice by informing future development of solutions for similar issues addressed with similar pedagogical goals (Havenga & van Wyk, 2017; Vaezi et al, 2019; Wang & Hannafin,

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2005;). In this study, however, the research output was expected to generate an intervention (Work-based interprofessional education programme) that addresses interprofessional collaborative issues as they exist in a maternity care setting.

Accordingly, employing DBR as a methodological framework enabled the researcher to close the gap between theory and practice through collaborative engagement with researchers, an instructional designer, healthcare professionals with various expertise and other stakeholders in the systematic and iterative analysis, design, development, implementation, and evaluation of the IPC education programme (McKenny& Reeves, 2021; Wang & Hannafin, 2005). The iterative nature of DBR in the design and testing of context-specific educational interventions (Anderson & Shattuck, 2012; Vaezi et al, 2019; Wang & Hannafin, 2005) led to the design and development of a work-based interprofessional education programme that is customized for maternity care settings.

DBR is perceived as a combination of action research and ordinary instructional methods like the ADDIE model which stands for Analyze, Design, Develop, Implement and Evaluate (Edutech Wiki, 2022), therefore it provided a methodological framework for the research process as well as instructional design process for the work-based interprofessional e-learning programme (Reeves & Lin, 2020; Sinfield & Cochrane, 2020). The DBR as a methodological framework for complex settings including health care organisations, was therefore considered appropriate for developing a short-term online IPC training programme for the maternity care setting (Crippen & Brown 2016; Wang & Hannafin, 2005).

The DBR consists of four iterative cycles, starting with an analysis of the practical problem moving through the phase of design and development of solutions in practice, iterative circles of testing and refinement of solutions and reflection to produce design principles. In this study, the researcher used Reeves (2006) Design-Based Research framework (Reeves, 2006; McKenney & Reeves, 2021) as depicted in **Figure 3.1**. The researcher adapted and modified Reeves (2006) DCR framework to achieve the study aim and objectives.

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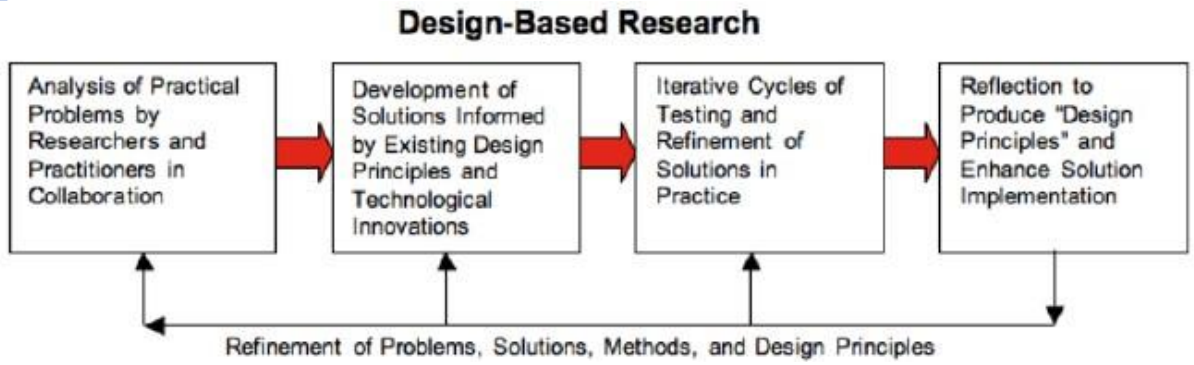

Figure 3.1 Design-Based Research

Adapted from: Reeves (2006)

The four phases as applied in this study are discussed next.

3.2.1 Phase 1: Analysis of practical problems

Phase 1 consists of researchers, practitioners and stakeholders collaborating in the analysis of a practical problem. This phase involves identifying and defining an authentic, practical problem and its causes as they present in a complex environment and a particular context (Reeves, 2006; Wang & Hannafin, 2005). In this study, Phase 1 included a scoping review (**Objective 1; Section 3.3.1**), the identification and involvement of stakeholders to explore existing IPC practices (**Objectives 2a and 2b; Section 3.3.2.1**), and stakeholders' perceptions of the development of an IPC programme (**Objective 2c; Section 3.3.3**).

3.2.2 Phase 2: Development of solutions

Phase 2 consists of the development of solutions informed by existing design principles and technological approaches that may address both the theoretical and practical issues identified in phase 1 (Scott, Wenderoth & Doherty, 2020; Wang & Hannafin, 2005), while taking into consideration the wishes, needs and contextual constraints of the research project (Scott et al,

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2020; van Wyk & de Villiers, 2019). For the purpose of this study, an IPE programme was co-created (**Objective 3; Section 3.3.4**) based on the findings from Phase 1.

3.2.3 Phase 3: Iterative cycles of testing and refinement

Phase 3 involves iterative cycles of testing the training programme in a real-world environment and redesigning it to achieve a suitable authentic programme (Wan & Hannafin, 2005; Scott et al, 2020). The goal of iterative testing and refinement cycles is to continuously improve the produced intervention until it is fit for purpose (Reeves & Lin, 2020; Wang & Hannafin, 2005). Various stakeholders, including learners, educators, e-learning specialists, and other experts, are invited to review the programme and online learning technology in order to provide comments on acceptability, practicality, and usability (Momand et al, 2022).

For the purposes of this study, once the IPE programme was designed, experts were invited to validate it and offer improvements (Objective 4; Section 3.3.5). The feedback gathered during this phase was used to refine the training programme and eLearning framework early in the research and development process, prior to the final implementation phase (Momand et al, 2022). However, due to time constraints, the IPE training course was not tested in a naturalist environment. Since DBR studies require numerous steps of repetition and redesign and consequently take a long time to complete (Vaezi et al, 2019), testing of the training programme on healthcare professionals in the maternity care setting will be done as part of a post-doctoral project (**see Section 1.6**).

3.2.4 Phase 4: Reflection to produce design principles

Phase 4 involves conducting a retrospective analysis to evaluate how the training programme supported participants' learning, and to generate and validate the design principles and processes through iterative refinement of the problem, solutions and methods (Kennedy-Clark, 2015; Momand et al, 2022;). The generated design principles and processes are usually transferrable and used broadly to advance theory and practice by informing future development of similar interventions (Havenga & Van Wyk, 2017; Scott et al, 2020; Vaezi, et al, 2019). DBR recognises the importance of ongoing evaluation in research. Therefore, since time constraints hindered

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completion of the testing and refinement phase (Vaezi et al, 2019), this phase of the DBR is also envisioned being done as part of the post-doctoral study (**see Section 1.6**).

3.3 RESEARCH DESIGN AND METHODS

Research Design

The DBR methodological framework is considered a messy complex undertaking, therefore, studying complex phenomena in practice requires a mixture of methodologies that are aligned with the questions and anticipated outcomes (Vaezi et al, 2019; Wolcott, Lobczowski, Lyons et al, 2019). In this study the researcher selected cross-stage mixed methods using variety of research tools and techniques. The mixing took place across the different phases of the research process (Anderson & Shattuck, 2012; Johnson & Onwuegbuzie, 2004). The purpose of using different approaches and methods across different phases of the study are to get a new perspective of a phenomena at that time and address the research question for that particular phase (Johnson & Onwuegbuzie 2004). The multimethod approach was used for the purpose of triangulating findings in Phase 1, where a scoping review and qualitative interviews were conducted to inform the development of work-based interprofessional education programme. Furthermore, in Phase 2 and Phase 3, multi-methods were used for the purpose of development, using findings from the previous methods to inform the development of another method to address subsequent research objectives (Driessnack, Sousa & Mendes, 2007)**.** In this study, collaborative programme development and content validation of the IPE programme (Section 3.3.4; 3.3.5) were conducted to answer the research questions in subsequent phases. Finally, the researcher used a combination of research methodologies to address the research objectives.

Research approach and methods

A research approach refers to the plans and procedures that researchers follow to conduct research on a specific issue. These plans and procedures encompass broad assumptions as well as comprehensive descriptions of a variety of instruments, strategies, processes, or procedures utilised in data gathering, analysis, and interpretation (Creswell & Creswell, 2018). Research methods describe the actual process of performing research, including data collection and analysis, and strategies taken into consideration for conducting research (Creswell & Creswell, 2018). The research approach and methods are discussed next.

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3.3.1 Phase 1: Analysis of practical problems

3.3.1.1 Objective 1: Scoping Review

Objective 1: To explore the considerations for promoting the implementation of interprofessional education programmes.

3.3.1.2 Stage 1: Identify research question

The researcher ensured that the research question was clearly defined and broad in scope to provide widespread coverage of the research area (Arksey & O'Malley, 2005; Sirimsi, de Loof, van den Broeck et al, 2021). The aim of the research question was to examine existing evidence on the IPC/E strategies and interventions and identify the scope of coverage of IPC and how it addresses and informs practice (Peters et al, 2015). The research question was refined as: What are the considerations for promoting the implementation of work-based interprofessional education programmes?

3.3.1.3 Stage 2: Identify relevant studies

An information specialist collaborated with the researcher to search for relevant reports. Purposive sampling was used to select the reports (see the eligibility criteria in Table 3.1). Broad inclusion and exclusion criteria were employed to ensure that the most comprehensive range of evidence informed programme development (Peters et al, 2015). The basic framework for scoping review inclusion criteria were followed to ensure transparency, and included population (P), concept (C) and context (C) (**Table 3.1**). The search was limited to reports and articles published between 2000 and 2020 as inter-professional collaboration and education only gained popularity in the mid-nineties (Blue, Brandt & Schmitt, 2010; Fransworth et al, 2015;). Articles or reports were also included if they addressed interprofessional collaboration and/or education maternity care settings.

The exclusion criteria were also broad (Arksey & O'Malley 2005; Peters, Godfrey, Khalil et al, 2015). Reports published before 2000 were excluded. Non-English published studies were excluded from the study because of limited resources (funding and time) for translating to English

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as well as limited professional translators in Botswana. According to Neimann Rasmussen and Montgomery (2018), ignoring non-English published reports could affect the generalisability of results because it risks overlooking key data and introduces bias in otherwise high-quality reviews.

Table 3.1 PCC inclusion and exclusion 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	Studies published in English and addressing healthcare professionals and/or students in maternity care settings	Non-English published studies, non-healthcare professionals, healthcare professionals involved in primary care
Concept	Interprofessional education (IPE) or collaborative learning or inter-professional collaboration (IPC)	Work-based or workplace- based Articles on IPC/E published between 2000 and 2020	IPC/E that is presented as part of preservice curriculum and is facilitated in a classroom or university skills lab environment IPC/E articles published before 2000
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

The searches were conducted between January and June 2020 in collaboration with an information specialist and included the following online databases: Academic Search Complete, Africa Wide Information, CINAHL, ERIC, Health Source: Nursing/Academic Edition, and Medline. The reference lists of identified articles were also examined to identify additional studies. To develop a search strategy we identified standardised keywords, and developed terms which were centred on the following key concepts: interprofessional collaboration; interprofessional education; interprofessional collaborative practice; interdisciplinary collaboration. Once key words were identified, we then combined the keywords with key terms (PCC) derived from literature. The Boolenterms 'OR', 'AND', or 'NOT' were used to combine the key words and MeSH terms to search for reports. The key words and terms are presented in Table 3.2 and Annexure 4.1.

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Table 3.2 Key words and MeSH terms used to identify relevant articles

KEY WORDS	KEY TERMS	KEY WORDS AND TERMS – COMBINATION
1. Interprofessional Collaboration 2. Interprofessional Education Interprofessional collaborative practice 3. Interdisciplinary collaboration 4. Collaborative practice 5. Interprofessional teamwork 6. Interprofessional communication 7. interprofessional collaborative competencies	**Population** i. healthcare professionals ii. midwife iii. midwives iv. midwifery v. doctors vi. medical doctors vii. obstetricians viii. health or social care professionals ix. antenatal care patients/women x. prenatal care women/patients xi. post-natal care women/patients xii. patients/women **Concepts** a. maternity care b. maternal health c. interprofessional communication d. teamwork e. quality care f. patient-centred care g. work-based. h. in-service i. post qualification IPE or continuous professional development j. short course k. self-care management **Context** a) hospital b) inpatient ward c) hospital ward d) hospital room e) Obstetrics f) Maternal Health services	Interprofessional education or inter-professional education or collaborative learning or interprofessional collaboration) 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)

Multiple search systems were employed to ensure rigour in identification and synthesis of evidence (Gusenbauer & Haddaway, 2020). The search was done between January and June, 2020 and a total of 234 reports were identified.

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3.3.1.4 Stage 3: Select the studies

The articles were collated, screened, and 97 duplicated articles were removed from the list of articles. Two authors (research supervisors) further screened the titles and abstracts of 137 articles and excluded 107 articles based on exclusion criteria. The remaining 30 full articles were then screened for eligibility by three reviewers. A further 15 articles were excluded (**see Figure 1 in Madisa et al, 2023**) including newsletters (n = 2) and IPC training focusing only on clinical skill(s) (n = 13). Using ancestry and snowball sampling, a further 22 articles were identified for possible inclusion. Further review of 22 articles resulted in the exclusion of nine articles including five which were excluded due to wrong publication type and four which did not meet inclusion criteria. Therefore, only 13 of the 22 articles met the inclusion criteria. A total of 28 articles were included in the scoping review.

The PRISMA Flow Diagram for the scoping review process (see Annexure 4.3 and Madisa et al, 2023) was used to document the search decision process and ensure that reviews were reported fully and transparently thereby minimizing biases when selecting literature (Peters et al., 2015). A clear, systematic report selection process also provided an audit trail or blueprint to allow other researchers to engage in reference checking and verification of reports (Page, Moher, Bossuyt et al., 2021). According to Peters et al (2015), the PRISMA Flow diagram for scoping reviews provides the results from the search, evidence of removed duplicated citations from databases, study selection, articles added from another search and total number of articles selected. Consequently, the selection process template was also used by the research supervisors to validate that the articles selected were aligned with the initial inclusion and exclusion criteria.

3.3.1.5 Stage 4: Chart the data

Stage 4 assisted with the analysis and synthesis of data. The data was extracted using a Google Form, which enhanced the transparency of the research process (Peter et al., 2015). The data extraction chart (see Annexure 4.2) was designed to extract relevant data address the research question and objectives (Peters et al, 2015). The data extraction form provided an audit trail for research supervisors and readers to cross-check the collated data and ensure accuracy (Page, Moher, Bossuyt et al, 2021). The collated data points included: title, publication year, country

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where study was conducted, research setting, participant demographics, research methods, interventions, and key findings.

3.3.1.6 Stage 5: Collate, summarise and report results

Content analysis was used to collate the considerations for successful implementation of work-based IPE programmes in health care. Four themes emerged, namely mobilization of resources; helpful learning environment; healthcare professionals' valuation, and barriers to the implementation of IPC/E (Madisa et al, 2023).

3.3.1.7 Stage 6: Expert consultation

The researcher engaged in ongoing consultation of experts in research. For this review, the research supervisors were instrumental in the development of the research questions, consenting on inclusion and exclusion criteria, validating search strategy and search terms and data extraction process. The supervisors also provided guidance in the interpretation of results and writing the report (**see Chapter 4**).

3.3.1.8 Rigour

Credibility, transferability, confirmability, and dependability increase the rigour of scoping reviews (DeJonckheere & Vaughn, 2019). To ensure that the synthesis review collected what was intended, the researcher employed systematic searches using the PRISMA extension for *scoping reviews* which guided the selection of relevant reports (Tricco et al, 2018; Peters et al, 2015). The search strategy template (**see Annexure 4.1**), scoping review data extraction form (**see Annexure 4.2**) and PRISMA diagram for scoping reviews (**see Annexure 4.3**) offered an audit trail to allow other researchers to trace the course of the scoping review step by step and establish how the research process was conducted and conclusions reached thereby setting confirmability (Peters et al, 2015; Tricco et al, 2018). Demonstrating clear stages in the research process minimised researcher bias in conclusions and recommendations.

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Secondly, to establish credibility and transferability, the researcher provided ongoing consultation with research supervisors (peer debriefing) to allow the research team to critique the methodological rigour used in the scoping review and cross-check findings (Boyce & Neale, 2006; Creswell & Creswell, 2018; Peters et al 2015; Shenton, 2004). To ensure the research was transferable, the researcher produced a precise cross-cutting, reproducible inclusion criterion to apply the findings and conclusions to other populations (Peters et al, 2015; Shenton, 2004). Lastly, a thorough, systematic report of the process, guided by the PRISMA extension for scoping reviews (PRISMA-ScR) checklist and explanation ensured that the study was transferable (Tricco et al, 2018).

3.3.2 Objective 2: Stakeholder involvement

Objective 2: **To involve stakeholders in the co-creation of the work-based interprofessional education programme**

Three sub-objectives were used to address Objective 2, namely:

- Sub-objective 2a: To conduct a stakeholder analysis
- Sub-objective 2b: To describe stakeholders' perceptions of the development of an interprofessional collaborative programme for healthcare professionals in maternity care setting
- Sub-objective 2c: To explore healthcare professionals and women's perceptions of interprofessional collaboration in maternity care setting

The objectives are discussed in terms of the approach and design used.

3.3.2.1 Sub-*objective 2a and 2b: Stakeholder analysis workshop*

Sub-objective 2a and 2b were addressed during a workshop with primary key stakeholders.

One of the key drivers for failure of approximately 75% of change initiatives is inadequate engagement and involvement of critical stakeholders (Center for Creative Leadership, 2023). The researcher considered proactive stakeholder identification an important first step in the co-

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construction of a work-based interprofessional education programme in a maternity care setting in Botswana (Freeman, 2013). Not involving stakeholders could jeopardise the programme's implementation, monitoring, and evaluation in future. The researcher based the stakeholder analysis on the approaches of Varvasovszky and Brugha (2000) and Reed et al (2009).

3.3.2.2 Step 1: Identify key primary stakeholders

The researcher purposively selected healthcare professionals (HCPs) at management level of the selected hospital where the study was conducted to identify key primary stakeholders to participate in the stakeholder analysis workshop (Reed et al, 2009). The researcher had an informal discussion with Head of Department (medical doctor), unit manager (Midwife) and midwife in a maternity care setting to identify key informants to involve in the stakeholder analysis workshop (see **chapter 5,** section 5.3).

Consensus was reached to invite 10 key primary stakeholders to be involved in the workshop, which included a midwife, medical doctor, nurse educators, policy advisor, registered nurse or midwife from primary care, social worker and psychologist.

3.3.2.3 Step 2: Preparation for workshop

A stakeholder-led stakeholder analysis was conducted because having stakeholders take part in the mapping exercise helped in defining and refining the scope of the issues under consideration (Reed et al, 2009). The stakeholders also provided more comprehensive information about who might have a stake in those issues and helped in identifying additional stakeholders (Reed & Curzon, 2015; Reed et al, 2009). Although Reed et al (2009) recommended face-face interviews when conducting 'stakeholder-led stakeholder' analysis, the researcher opted for a workshop. The workshop provided an opportunity to gather participants' views, opinions, experiences and thoughts while at the same time allowing them in open discussions and explore each other's views during the discussion (Omgreen & Levinsen, 2017). In addition, during the workshop, participants were able to reach consensus quickly, unlike in individual face-to-face interviews. Consequently, the data-collection process was less costly and time consuming.

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A workshop refers to “an arrangement whereby a group of people learn, acquire new knowledge, perform creative problem solving or innovate in relation to a specific issue” (Orngreen & Levinsen 2017:71). Workshops are crucial for success in research because they foster engagement, negotiation and mutual understanding of each other’s roles through collaborative discussions between participants and facilitators (Gregg et al, 2020; Lain, 2017; Orngreen & Levinsen, 2017; Ahmed & Asraf, 2018). In addition, the workshop provided the participants with an opportunity to collaborate in learning about and participating in co-creating the proposed IPC programme for maternity care in Botswana.

The researcher, who facilitated the workshop, contacted the identified key primary stakeholders personally to solicit their participation in the workshop. Each participant was informed of the study, the importance thereof, as well as their role and time required for participation (see Annexure 5.1). Once the participants agreed to participate, the researcher negotiated the day, time and space for conducting the workshop.

The workshop consisted of three main activities:

3. Activity 1: Develop a shared understanding of interprofessional collaboration and education
4. Activity 2: Explore participants’ views on content and delivery of an IPE programme to be implemented in a maternity care setting
5. Activity 3: Conduct a stakeholder analysis aimed at identifying and describing stakeholders with a vested interest in driving the success of the design, implementation, and evaluation of work-based interprofessional education programme.

Step 3: Stakeholder workshop

The stakeholder workshop was conducted and involved three activities (**see Figure 3.2**).

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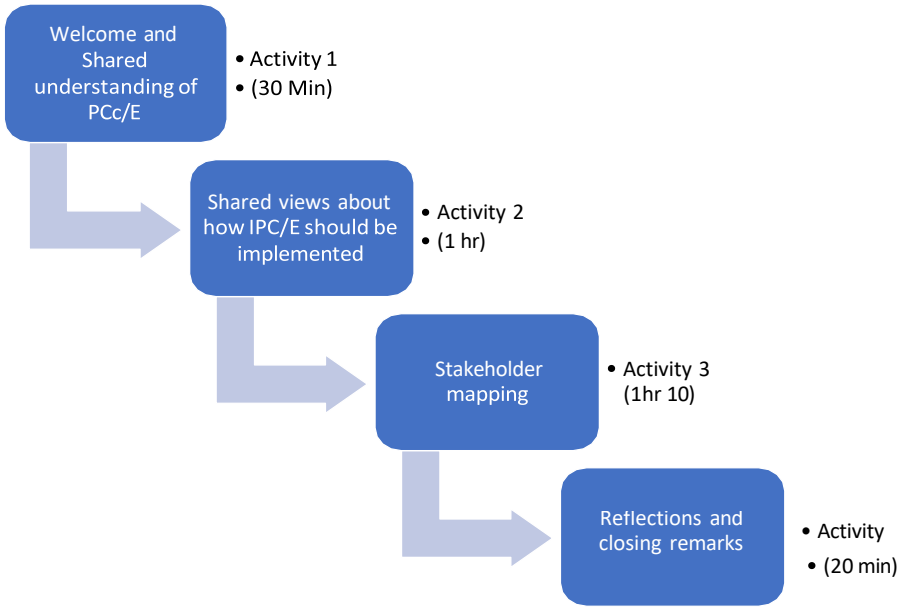

Figure 3.2 Structure of the stakeholder workshop

Workshop Activity 1: Shared understanding

A didactic Power Point presentation was made to brief participants on the background of the study, what interprofessional collaboration and education was and its benefit in healthcare systems and how other countries have benefited from it (see Annexure 5.2). To facilitate discussion on IPC/E, the participants were asked to write what they understood about the topic on paper. The participants were then asked to read the brief overview of IPC/E provided by the World Health Professions Alliance (2019) and then discuss their understanding in small groups of two to three participants. The small groups then shared their understanding with the entire group. The facilitator then added evidence of the benefits in healthcare systems and how other countries have benefited from it, specifically in a maternity care setting. The presentation and discussions that followed were used to make participants feel comfortable, prompt them to share ideas and establish a common ground of understanding of IPC/E prior to starting the stakeholder engagement (Franco-Trigo, Hossain, Durks et al, 2017) and analysis (see Annexure 5.2).

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Workshop Activity 2: Views on IPC/E programme

The second activity addressed Objective 2b: to describe stakeholders' perceptions of the development of an interprofessional collaborative programme for healthcare professionals in a maternity care setting. The second activity focused on stakeholder engagement. The facilitator indicated that a programme aimed to address IPC in a maternity care setting in Botswana. The focus of the discussion helped elicit new insight and understanding of IPC/E and participants' perceptions of the proposed training programme. In addition, the engagement elicited discussion and allowed participants to engage in dialogue, exchange ideas and build on each other's learning to generate novel understandings (Crewell & Creswell, 2018). The question posed to the participants was: Based on your practice wisdom, what should the IPE programme entail and how should it be delivered? With permission from the participants, the facilitator recorded the discussions. The key findings were documented on a flip chart and participants were asked whether the findings were true to their ideas (member checking).

Workshop Activity 3: Stakeholder analysis

The researcher followed Haberlein, Monig and Hovel's (2021) steps in stakeholder analysis. The participants were asked to engage in a brainstorming exercise to generate a list of primary and secondary stakeholders to create a wider group to be included in the project. During the brainstorming exercise participants were asked to justify their selection by highlighting how they view the stakeholders may influence the success of the research activity and other attributes that they perceived would have an impact on the design process of the work-based IPE programme. To facilitate discussion, the facilitator first provided a brief definition of stakeholders, the importance of stakeholder analysis and engagement, and the process of stakeholder analysis (Hyder et al, 2010; Reed et al, 2009). The participants were also provided with a generic list of stakeholders in healthcare and partners in Interprofessional Education and Collaborative Practice Research.

The documents were accessed from two websites:

https://www.stakeholdermap.com/examples-stakeholders-healthcare.html%20and%202, and https://interprofessionalresearch.global/.

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The participants were advised to go through the list of stakeholders and identify stakeholders that could have direct influence on the research project and group them into categories. The participants were also encouraged to brainstorm and add stakeholders that did not appear on the list provided. The researcher interacted with the participants in a way that indicated that they were valued and heard, to motivate them to participate freely in generating a list that they viewed was relevant for the design, implementation and evaluation of the proposed work-based IPE programme.

The participants were then asked to profile stakeholders so that they could be appropriately allocated to the activities or phases of the research project where they would be needed most. Analysing stakeholders created an opportunity to acquire an in-depth understanding of each stakeholder and the level to which they would have an influence on the outcome of the proposed project (Haberlein et al, 2021). The participants were asked to brainstorm on the mission, roles, interests of stakeholders, stakeholders anticipated desired outcome of the project and stakeholders' capacity to influence the implementation of the project (Reed et al, 2009). The participants were also asked to indicate whether the identified stakeholders had the capacity to engage in the design and implementation of the research project, and whether they would be supportive, or would oppose the implementation process.

A matrix was provided to guide participants on the critical areas of interest to consider when categorising stakeholders in order to facilitate stakeholder identification. Consequently, stakeholders were categorised according to the following areas: expertise or role in the project, location (local or international), willingness to participate, impact or influence on the outcome of the project, and legitimacy in involving them. Table 3.3 presents the stakeholder matrix used to identify and analyse stakeholders. The section requesting participants to indicate the stakeholders' roles or expertise required them to categorise stakeholders according to the following key roles: 1) healthcare service delivery (implementers or beneficiaries), 2) training or curriculum development, 3) IPC/IPE content experts or champions or mentors, 4) quality assurance; 5) strategists/policy makers or advocacy, or 6) others.

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Table 3.3 Stakeholder analysis matrix and abridged mapping matrix

Stakeholder	Stakeholder analysis matrix											Mapping matrix	
	Location		Roles / Expertise									Level of importance	
	Local	International	Health care delivery	Training	Curriculum development	IPC/E champion	Quality assurance	Strategist	Policy	Advocacy	Other	High	Low
1.													
2.													
3.													

Adapted from: Belita et al, 2020; Reed et al, 2009

3.3.2.3.1 Trustworthiness

Table 3.4 summarises the strategies used to address trustworthiness.

Table 3.4 Objective 2a: Strategies implemented to enhance trustworthiness

Credibility	Followed a systematic approach to stakeholder engagement process
	Probing allowed for rich data collected
	Prolonged engagement during workshop
Transferability	Clear description of stakeholder's roles
	Use of stakeholder analysis tools
	Member checking to confirm data
Dependability	In-depth methodological description of stakeholder analysis will enable future researchers to replicate the stakeholder analysis
Confirmability	Use of stakeholder analysis template provide an audit trial which assist researchers and consumers of research to establish how the process was conducted and conclusions reached

Adapted from: Ahmed & Asraf, 2018; Guba & Lincoln, 1982

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3.3.2.3.2 Ethical considerations

All the participants who volunteered to participate signed informed consent (**see Annexes 5.1**).

3.3.3 Sub-objective 2c: Healthcare and women's involvement

Sub-objective 2c: To explore healthcare professionals and women's perceptions of interprofessional collaboration in a maternity care setting

3.3.3.1 Approach

Selecting an appropriate approach to answer research questions is one of the most critical stages of the research process because it is a roadmap for completing a research project (Doyle, Brady & Byrne, 2020). Therefore, to get an in-depth understanding of participants' experiences and perceptions of existing interprofessional Collaboration (IPC) in a maternity healthcare facility in Botswana, the researcher considered a qualitative descriptive (QD) design suitable for this study (Creswell & Creswell, 2018; Kim, Sefcik & Bradway, 2017). Qualitative descriptive designs are appropriate for research questions focused on discovering the who, what, and where of events or experiences and gaining insights from informants regarding a poorly understood phenomenon (Kim et al, 2017). In-depth interviews and focus group discussions are often considered the primary data collection approaches, which typically involve individual and/or focus group interviews with minimal to semi-structured interview guides to get an in-depth, diverse perspective of the research topic (Neergaard, Olesen, Andersen et al, 2009). Furthermore, QD provides straightforward descriptions of experiences and perceptions of the less researched areas (Sandelowiski, 2010). Accordingly, the researcher considered a QD design suitable for exploring IPC practices as a new phenomenon in Botswana healthcare settings. In QD studies, research is often conducted in a natural state and a unique context. As a result, flexible research processes are recommended that are inductive and, therefore, not restricted by the theoretical framework (Doyle et al, 2020; Sandelowiski, 2010). Consequently, in this study, the researcher chose not to employ the theoretical framework at the beginning of the study but instead during the data analysis and report writing phases. Data was collected during in-depth interviews of healthcare

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professionals and pregnant and postnatal women in a maternity care setting. Consequently, the data collected informed the development of the IPC/E programme (Creswell & Creswell, 2018).

3.3.3.2 Setting

The study was conducted in the antenatal, delivery and post-natal maternity wards of a referral hospital in Botswana that provides basic and specialist care. Botswana is a middle-income country in southern Africa. The selected hospital, situated in the southern part of the country, is one of the referral hospitals admitting the largest number of patients in the country, particularly obstetric cases.

Currently, the hospital is rated as one of the top eight (8) hospitals with the highest maternal morbidity and mortality cases in the country (Statistics-Botswana, 2019). It should be noted that this facility recorded the highest number of maternal mortality cases even though it has highly specialised personnel and a training site for Emergency Obstetric Care (EMOC) (Nkhwalume & Mashalla, 2019). The facility sees large volumes of patients referred from all health facilities in the southern region of the country.

As a result, the facility faces overcrowding over and above the prevalent shortage of healthcare personnel and other resources (Ramatiti, 2018; Statistics-Botswana, 2019). In 2018, Ramatiti (2018) found a bed occupancy rate in ante-natal and post-natal units above 100%, evidenced by 18 floor-beds, which put more demand on the already limited human resources.

Approximately 116 women are attended to daily in the maternity wards. Care is provided by a team of HCPs (N=140) which includes midwives (n=82), healthcare auxiliaries (n=18), medical doctors (n=23) and medical students (n=4), psychologists (n=6), social workers (n=4) and dieticians (n=3). Consequently, the HCP-Women (patients) ratio is disproportionate. The midwives-women ratio is 1: 12 for antenatal care, 1:4 for labour care and 1:23 for post-natal care (Ramatiti, 2018). The overcrowding, shortage of resources and seeing many patients (including women) who need specialised care require prioritising and equipping healthcare professionals with competencies that enable them to collaborate well.

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3.3.3.3 Methods

Data was collected in face-to-face in-depth interviews to explore participants' perceptions or experience of ideas, situations, or interventions (Boyce & Neale, 2006). Interviews are a valuable means of collecting rich data especially for complex situations or concepts that have not been well researched (Creswell & Creswell, 2018; Kim et al 2017; Neergaard et al, 2009). Since IPC/E is a new concept in the region, in-depth interviews provided an in-depth understanding of IPC/E in terms of the participants' perception of implementation, knowledge, and skills gaps, awareness level of IPC/E and their readiness to implement IPC/E.

3.3.3.4 Population

The target population for Objective 2 were healthcare professionals and women (pregnant and post-partum). The healthcare providers included medical doctors (specialized and general doctors), midwives and all other nurses working in maternity wards (antenatal, delivery and post-natal), nutritionist, psychologist and social workers and healthcare assistants (healthcare auxiliaries). Women were considered as they are beneficiaries of collaborative care and have experience in receiving care in maternal health services.

3.3.3.5 Sampling and sample size

A purposive sampling approach was employed to allow identifying and selecting participants who could provide rich information related to the phenomenon of interest (Creswell & Creswell, 2018; Palinkas, Horwitz, Green et al, 2015). Therefore, to ensure adequate sample composition, maximum variation (heterogeneous) sampling was employed to ensure representativeness of healthcare professionals from diverse disciplines (Shaheen & Pradhan 2019; Palinkas et al, 2015). Selecting participants based on maximum variation (Shaheen & Pradhan, 2019; Palinkas et al, 2015) in terms of professional disciplines helped understand IPC/E as experienced by diverse groups of HCPs in a natural and unique context (Doyle et al, 2020). The inclusion criteria necessitated the selection of participants who had considerable experience working or receiving care in maternity care settings.

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Regarding the inclusion criteria for both HCPs and women, participants were selected who were fluent in English or Setswana to ease communication and allow them to communicate their experiences and opinions freely and in a clear, expressive, and reflective manner (Palinkas, Horwitz, Green et al, 2015). The participants had to be willing to participate.

To be included in the study, HCPs had to have worked in a maternity ward for six months or more. A minimum of six months' experience working in a maternity ward was assumed sufficient to provide a coherent group. Furthermore, the researcher chose to interview HCPs who were employed fulltime by the hospital and willing and available to participate.

Furthermore, the researcher selected women admitted in the antenatal, delivery and post-natal ward for a period of 24 hours or more because they would have enough time to experienced care in the ward. Engaging women in in-depth interviews encouraged them to share their experiences of how they felt they were being engaged in their care and give meaningful input to the development of the training programme. In-depth interviews also enabled the women to highlight the cultural and spiritual practices that they considered barriers to receiving woman-centred care. Lastly, only women aged 18 years and older were selected because that is the minimum age at which individuals are allowed to independently give informed consent in Botswana.

3.3.3.6 Sample size

Specific sample size is not essential in qualitative studies. The appropriateness of sample composition and sample size sufficiency are important for addressing research questions, aims and objectives (Kumar, Kumar & Prabhu, 2020; Mocanasu, 2020; Sarfo, Debraha, Gbordzoea et al, 2021; Vasileiou, Barnett, Thorpe & Young, 2018). Therefore, the researcher's emphasis was ensuring that all the sub-groups (disciplines) that could provide rich information were included and that there was data saturation by conducting ongoing sampling until no new information was acquired from participants (Sarfo et al, 2021; Mocanasu, 2020).The required sample size for qualitative studies is contextual and varies according to research paradigm selected, and type and goal of study (Sarfo et al, 2021; Vasileiou et al, 2018; Kumar et al, 2020). However, data saturation for phenomelogical studies is more like to occur when sample size ranges (Sarfo et al, 2021; Kumar et al, 2020).

Accordingly, in this study it was assumed that a sample size sufficient to give rich data for each subgroup of women or HCPs would be a minimum of 15 participants. However,

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the group size varied depending on the total number of HCPs per discipline. For instance, because the population sizes for nurses and midwives (N=82) and as well as for women (N=116) were larger than other groups, a minimum size 5 candidates per ward was set while a minimum of 3 participants per ward was considered for healthcare auxiliaries (N-18) and medical practitioners (N=23). Lastly, a total population sampling was considered for small, populated disciplines (N= between 3 and 6) for psychology, social work, and dietician departments. However, the sample size did not remain constant as data saturation threshold was the main factor influencing the sampling approach (Kumar et al, 2020). All participants were recruited based on their availability and willingness to participate in the study.

3.3.3.7 Data collection

The researcher developed an interview guide that helped with the interview questions and the flow of the interview. Two pilot interviews with HCPs and women were done to determine difficulties with wording and identify questions that made participants feel uncomfortable. The interview responses were not included in data analysis.

Face-to-face semi-structured interviews were conducted to allow participants to share their experiences and perceptions freely (Sarfo et al, 2021; Creswell & Creswell, 2018). An interview schedule was prepared to assist the researcher with the structure and flow of the interview (**see Annexures 5.4 and 5.6**). The interviews were audio-recorded with permission from the participants. HCPs and women were contacted and if they agreed to participate (**see Annexure 5.3**), suitable times and dates to conduct the interviews were arranged. The interviews took place in office rooms in the hospital. HCPs were asked to share their experiences of current IPC in the maternity wards. The unit managers identified women who met the inclusion criteria and then informed them about the study and its importance (**see Annexure 5.5**). Once women volunteered to participate, the researcher contacted them to ask for permission to interview them. The women were interviewed at a time that suited them, whilst at the bedside, using a privacy screen. The women were asked to share how HCPs worked together to ensure good care to women in the maternity wards.

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3.3.3.8 Data analysis

The data analysis phase was informed by Braun and Clarke's (2012; 2006) six-phase approach to thematic analysis. Thematic analysis (TA) is a systematic method of reporting the researcher's "analytical observations" by engaging in the process of transcribing data to familiarise oneself with data; generate codes; search for emerging themes; identify themes aligned to research questions and objectives; define and name themes, and produce a report or story based on thematic areas (Braun & Clarke 2012; 2006). In this study, data analysis was conducted manually and data were transcribed verbatim (Creswell & Creswell, 2018; Braun & Clarke, 2012). Transcribing data entailed repeatedly listening to audios and reading the interviews to reflect on the overall meaning of information by interrogating the tone of voice and words used during interviews, examining the credibility of information as well as the overall impression of depth of information (Creswell & Creswell, 2018). Reading and re-reading and listening to audios helped the researcher to familiarize herself with data.

Once the data was fully transcribed, the researcher developed a spreadsheet in Google Sheets to record the interview questions and participant responses (see code book - Annexures 5.7 and 5.8). Each participant was given a pseudonym to ensure confidentiality and for simple tracking of responses. The researcher then engaged in data coding and recoding to immerse herself in the data to identify and categorise the key words considered an essential part of the study. Immersing herself in the data allowed the researcher to conduct unbiased inductive analysis based on the participants' voices (Saldana, 2021) while data recoding was done to ensure rigour. The key words were analysed and categorised into themes (see code book - Annexures 5.7 and 5.8). According to Braun and Clarke (2006:82), a theme "captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set". Therefore, the coded data is reviewed to identify areas that are similar or where there is an overlap, then areas that seem to share a meaning or unifying feature are collapsed or clustered together, so that they reflect and describe a coherent and meaningful pattern in the data (Braun & Clarke, 2012). The clustered codes are termed themes or subthemes.

The next stages involved data interpretation whereby the researchers undertook second reviewing of themes to identify whether the themes captured the most relevant and important elements of the data, in relation to the research question. The research team discussed the data and reached consensus on the themes in this study. The data were deductively matched to the

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Canadian Interprofessional Health Collaborative (CIHCF) framework (CIHC, 2010) (see Annexure 1.1). The CNICF presents six IPC "competency domains that focus on the development and integration of attitudes, behaviours, values, and judgments necessary for collaborative practice" (CIHC, 2010). The IPC competence domains include patient/client/family/community-centred care; interprofessional communication; role clarification; team functioning; interprofessional conflict resolution, and collaborative leadership. This framework was instrumental in helping the researchers understand and interpret the data in relation to the theory of IPC practice, which, in turn, enhanced the rigour of the findings.

3.3.3.9 Trustworthiness

The credibility and authenticity of the data was established by providing quotes from participants throughout the data analysis process to support the findings (Stahl & King, 2020; Creswell & Creswell, 2018). Interviews were also audio-recorded and transcribed to allow for further analysis and interpretation (Stahl & King, 2020). Furthermore, there was ongoing consultation with the research supervisors to cross-check the data and findings and hence establish transferability of the research findings (Stahl & King, 2020; Creswell & Creswell, 2018).

Triangulation of data sources (healthcare professionals and women) ensured that the data was transferable, dependable, robust, rich, and comprehensive (Creswell & Creswell, 2018). In addition, total and purposive sampling was adopted to identify women and engage information-rich cases and for an in-depth understanding of their experiences relating to IPCC in maternal health services (Creswell & Creswell, 2018). Providing evidence of a systematic report of the process and the findings through adoption of the consolidated criteria for reporting qualitative studies (COREQ) also enhanced transparency in reporting and consequently trustworthiness of the findings (Booth et al, 2014). Lastly, confirmability was achieved through member checking (ongoing consultation with research supervisors) to ensure that there was checking and rechecking the data throughout the study.

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3.3.3.10 Ethical considerations

The researcher obtained written ethical approval and permission to conduct the study from the Research Ethics Committee of the Faculty of Health Sciences, University of Pretoria (122/2020-Line 3), (**Annexure 1.2**) and approval from the Ministry of Health Research and Development Committee in Botswana (HPRD: 6/14/1), (**Annexure 1.3**). The following ethical issues regarding participants (Beauchamp, 2008) were upheld: written consent was obtained from participants; participation was voluntary; personal information and names were not mentioned in the report, and participants were assured of no harm since data collection was through an online survey.

3.3.4 Phase 2: Development of solutions (Co-create the programme)

3.3.4.1 Objective 3: Co-create programme

Objective 3: **To combine results from Phase 1 to co-create a work-based inter-professional education programme for collaboration in maternity care settings**

3.3.4.2 Approach

During the second phase of the design-based research process, a team of professionals from diverse disciplines co-created the work-based interprofessional education programme that will be referred to as *Mabogo-Dinku* (“together we can”). The *design-based research approach* guided the development and design of the programme. Like the ADDIE model, the DBR is an instructional design process describing a systematic programme development (Sinfield & Cochrane, 2020) with major emphasis on iterative phases of design, development, testing and refinement to achieve authentic intervention, and design principles that can be transferrable to other settings (Havenga & van Wyk, 2017; Scott et al, 2020). It follows four phases: analysis, design, and development, testing and refinement and evaluation (Anderson & Shattuck, 2012; Wang & Hannafin, 2005).

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The four phases work in a constant feedback loop and can be worked on simultaneously (Wang & Hannafin, 2005). Using the DBR allows for collaborative involvement of the researcher, curriculum development specialists, and many stakeholders to engage in an iterative process of engaging in systematic assessment, design and development, testing, revision and validation and evaluation of developed interventions (Edutech Wiki, 2022; Wolcott et al, 2019; Wang & Hannafin, 2005). The professionals, therefore, relied on DBR to structure the design of *Mabogo-Dinku*, while critically reflecting on the learning design process systematically and pragmatically. The analysis phase was conducted during phase 1 of the study.

This section discusses the design and development of *Mabogo-Dinku* work-based IPE programme with reference to the principles of the Design-Based Research (DBR) (Wang & Hannafin, 2005; Reeves, 2006). Consequently, the training programme was developed collaboratively by a team of experts from various disciplines. Collaborative development of training programmes ensures the cross-fertilisation of ideas, which is crucial for the success of training programmes (Farmer & Usher, 2018). When people with diverse areas of expertise and experience come together to develop a training programme, they will ensure that the programme structure is well developed, allows for interprofessional interaction, and that it addresses all the components required to ensure that learners achieve the desired outcome.

To design and develop the *Mabogo-Dinku* programme, the researchers formed an interdisciplinary team of healthcare professionals and researchers, educational researchers, and e-learning technologists. The *Mabogo-Dinku* programme was co-constructed based on the research findings from Phase 1. The team co-created the programme using an online learning platform, Google Classroom, and integrated a variety of free resources, such as Edpuzzle and YouTube. Data, cost efficiency and material bandwidth were considered. Google Classroom as a virtual environment and online platform was determined to be cost-effective based on its dependence on cloud storage to share content and media (Alajmi, Nuaimy, Arul Jose et al., 2019). Additionally, it is free and easy to access from a desktop computer and a mobile phone.

The design phase utilizes all the information gathered in the analysis to create an outline of the programme as well as a roadmap indicating how it will evolve in praxis (Anderson & Shattuck, 2012; Ustun & Tracey, 2020). The quality of the instructional design determines whether learning experiences would be meaningful, interesting, or meaningless (Durak & Ataiz, 2016; McArdle,

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2015; O'Neill, 2015; Thomas, Kern, Hughes et al, 2022). Therefore, to ensure that we developed an impactful, interactive and context-based programme, we addressed the components of instructional design discussed in **Sections 3.3.4.2.1.**

3.3.4.2.1 Development of learning objectives and programme outcomes

A team of instructional designers met to determine programme outcomes and learning objectives of the training programme. A statement that conveyed the expected outcomes was developed. Specifically, programme outcomes refer to what a student should know or be able to do at the end of a programme (Ayadat, Ahmed, Chowdhury et al, 2020).

Subsequently, the authors specified an extensive list of learning objectives (unit learning outcomes for each topic). The unit learning outcomes provide the direction that students needed to take to acquire new knowledge, skills and attitudes required to address the programme learning outcomes or close the practice gap identified during needs assessment (Ayadat, 2020; O'Neill, 2018). The researchers ensured that learning objectives (unit learning outcomes) and programme level outcomes were aligned to the IPC core competencies presented in CIHC framework (CIHC 2010).

3.3.4.2.2 Activity design

The authors determined during the analysis phase that Mabogo-Dinku should focus on active learning, workplace application, and self-assessment. Accordingly, the author and activity designers searched for and investigated a variety of instructional approaches and activities that could be applied in group settings to promote engagement, foster peer feedback, encourage self-assessment, and accelerate the learning and acquisition of the various IPC skill sets.

Then, during a collaborative discussion session, teaching strategies and activities were reviewed to ensure that they effectively addressed the learning outcomes and could be delivered online successfully.

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3.3.4.2.3 Designing the training content

In line with the learning outcomes developed, the instructional designers worked collaboratively to identify what the learners needed to do to achieve the learning objectives or outcomes, and what resources they would need to achieve the learning outcomes. Once instructional activities were identified and aligned to the learning objectives and programme outcomes, the instructional designers then organised the learning content in logical steps (O'Neill, 2015; Thomas et al, 2022). The content was logically organised into smaller, manageable, and easy to navigate subtopics focused on IP skill sets covered in CIHCF (CIHC, 2010).

Although the goal was to develop a work-based IPE programme, that was predominantly interactive and practice-based, the authors wanted to maintain a thorough theoretical basis for the content discussed in each section. Therefore, instructional designers consulted theoretical resources (journal articles, books, scholarly web sources) to ensure that decisions and programme development was scientifically sound and evidence based. Evidenced-based interventions add rigour to the instructional designer's decision process thereby increasing credibility of the training programme (Hase, Matos & Styer, 2014). The summaries of consulted resources were shared, discussed, and incorporated in the design of resources and activities.

3.3.4.2.4 Technological substructure and tool design

Online learning is now considered the most reliable and effective pedagogical approach because it has become more robust and interactive than ever before (McArdle, 2015). Therefore, an asynchronous online training programme was developed to allow learners to study the course at their own pace and at a convenient time for them to learn. Furthermore, online learning provides just-in-time learning and continuous learning over time (McArdle, 2015). However, online leaning comes with eLearning implementation challenges.

Therefore, to ensure that learners utilize technology effectively, it is critical to have a technological substructure that is user-friendly and cost effective (Durak & Atiaz, 2016). Therefore, in line with this study, an eLearning specialist (technology designer) was engaged to arrange the training programme, resources, and pedagogical activities in a user-friendly digital platform. The role of the technology designer is similar to a learning technologist in that they aim to develop

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technologies to support and structure a blended learning environment (Ellaway, Begg, Dewhurst et al, 2006). In designing a virtual learning environment the authors considered Aballay, Aciar and Collazos's (2021:216) characteristics to determine an effective learning tool.

These include:

- Support and documentation should be available and easy to follow.
- A clear user interface that is uncomplicated and straightforward to use.
- Error handling should be visible and easy to recover.
- Able to integrate various tools and media items.
- Flexibility in how the user and system can exchange information.
- Provides a standard and engaging design and user experience (Aballay et al, 2021).

Additionally, the authors wanted to ensure that the online space of the programme provided a human or person-centred experience. In other words, the human should not get lost in the content and digital environment. This is especially important to match the content of the programme that emphasises woman-centred care.

As a result, based on their adherence to the determined characteristics, the technology designer chose the following tools to create the programme's virtual learning environment:

1. **Google Classroom:** A free service-learning hybrid platform for anyone with a personal Google account. It can be accessed through computers and mobile phones and is designed to simplify creation, distribution and assessment of tasks (Ni, 2020).
2. **Canva:** A free graphic design tool with templates and graphics, focused on both education and the working environment. It allows users to intuitively create engaging and unique and content (Gehred, 2020).
3. **YouTube:** A free video sharing and social media application that is often used in higher education to share information and connect learners. The platform is considered an effective tool in learning experience and has advantages for teaching and learning (Moghavvemi et al, 2018).
4. **EdPuzzle:** An e-learning platform that integrates into Google Classroom and allows users to edit and embed quizzes to any YouTube video and make them interactive and assess students' performances (Kuckian, Adams & Anil, 2022; Ware, 2021). Multiple-choice,

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open-ended, and short-answered questions can be added to videos. Moreover, the instructor can view the answers and grade them if need be. EdPuzzle adds an engaging and human element to watching online content (Kuckian, Adams & Anil, 2022; Shelby & Fralish, 2021; Ware, 2021).

To organize and compile all the various design aspects, the programme collaborators met weekly between the last quarter of 2022 and the first quarter of 2023 to share their ideas and sourced findings. Ideas were discussed and adapted until a final design for the programme was established. It should be noted that the different design roles interacted in a non-linear manner, extending, and building on one another, while remaining situated in the established learning outcomes.

3.3.4.2.5 Designing the Support Services

One of the problems with online learning is that sometimes participants may feel isolated and limited skill in use of e-technologies, and this may hinder learning (Durak & Ataiz, 2016). Therefore, to ensure continuity in learning, discussion forums and chats were included in the training programme to enable facilitators and learners to interact throughout the study period.

A facilitator email has also been provided to enable the learner to reach out the facilitator for support on learning and navigation of the course. Moreover, since the program was developed with a limited budget and had to be presented in an easily accessible manner to participants, the instructors provided resources, lecture materials and media that were readily available and attainable. The resource designer sourced and created media items, such as lecture videos (Dymond & Bentz, 2006), TED Talks (López-Carril, Añó & González-Serrano, 2020) and infographics (Dunlap & Lowenthal, 2016; Ozdamli & Ozal, 2017) that explained ideas clearly and efficiently. These resources could be integrated into the program and presented online for participants to access.

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3.3.4.2.6 Developing assessment system

There was no end training examination or assessment. However, a formative assessment was provided at the end interactive videos and end of the course. The formative assessment is in the form of individual activity or group activity.

3.3.4.2.7 Designing training plan of the course

This course content covers seven units; therefore, each unit is supposed to take 3 days to 1 week to complete. Therefore, the instructional designers agreed that the course should take 5 to 8 weeks to complete. Since the course is purely online and is asynchronous, it can be accessible anywhere and at a time convenient for the learner. As a result, there are no restrictions on how and when the course and for whom the course would be offered.

3.3.4.2.8 Development of training programme

This phase entailed preparation of all activities that were developed in the design phase in preparation for delivery of training.

3.3.4.2.9 Designing the support services including the technological sub-structures

This phase entailed securing all the resources required to implement the training programme. Technology instructors ensured that the eLearning system was functioning and piloted for user-friendliness.

3.3.4.2.10 Content development

The instructional designers worked collaboratively to develop course content. The programme intentionally combined work-based activities and various academic resources to develop, implement and integrate IPC in a maternity setting.

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Furthermore, the programme structure facilitated reflection on the potential of using IPC in the workplace, mainly concerning personal development. Therefore, the pedagogy was based on the blended learning approach and principles of adult learning, with critical emphasis on skill development and engagement within the workplace (Hege et al, 2020; Leinster et al., 2021; Ni 2010). The blended learning approach that includes adult learning principles allows students flexibility, easily accessible content, and the ability to apply activities in their working environment (Hege et al, 2020; Leinster et al, 2021). In doing so, participants do not have to break away from their everyday work to learn about IPC. Instead, they can seamlessly integrate the programme content and acquired IPC skills into their working practices (Chen et al, 2017).

Furthermore, the scope and content of the programme are based on the Canadian Interprofessional Health Collaborative framework (CIHCF) (CIHC, 2010). The framework comprises six core competencies of IPC, including role clarification, woman-centred care, team functioning, collaborative leadership, interprofessional communication and conflict resolution (CIHC, 2010).

The framework has been effectively employed in various programmes (Prast et al, 2016; Rozensky et al, 2018; Tick et al, 2015; Zabar, Adams, Kurland et al, 2016). Thus, the *Mabogo-Dinku* content was structured according to the learning objectives and six core principles of IPC. The team divided the program into six learning units based on the core principles. Each learning unit has outcomes related to the other units and the overall objectives of the learning programme. Students can access all the content and materials throughout training and in their own time.

The content is predominantly work-based and focuses on active learning through work-based activities and reflective discussions. However, it was also essential to maintain a thorough theoretical basis for the content provided. Additional academic resources (journal articles, books, scholarly web sources) and summaries of each IPC competency are also incorporated into the available resources and activities on the learning platform. Finally, assessment content focused on measures and attitudes towards other healthcare professionals and collaborative practices. Students also evaluate their personal growth and abilities using self-reflective strategies that require them to discuss their development, skills and lessons learnt online and in groups.

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A summary outlining the programme structure and content is outlined in Annexures 6.1

In conclusion, a DBR was employed to collaboratively develop a short-term online-based training programme titled "*MabogoDinku work-based interprofessional education training programme*". The instructional designers developed an online, asynchronous training programme that is expected to take four to seven weeks of self-paced and self-directed learning.

3.3.5 Phase 3: Iterative cycles of testing and refinement (Validation of programme)

3.3.5.1 Objective 4: Validation of programme

Objective 4: To validate the developed work-based interprofessional education programme for relevance and appropriateness in maternity care settings

3.3.5.2 Research design

An online expert judgment/review survey technique was used to content validate the *Mabogo-Dinku work-based interprofessional education programme*. Content validity requires expert opinion. Accordingly, expert judgment is defined as "an informed opinion from individuals with a track record in the field, who are regarded by others as qualified experts in the field, and who can provide information, evidence, judgments, and assessments" (Escobar-Pérez & Cuervo-Martínez, 2008 as cited in Fernandez-Gomez et al, 2020:2). Benini et al (2017) maintain that expert judgement can be better, faster, or cheaper than other sources and methods.

More importantly, expert judgement emphasises independent assessment of the situation or instrument using both qualitative and quantitative data-collection approaches (Luque-Vara, Linares-Manrique, Fernández-Gómez et al, 2020; Benini et al, 2017). Accordingly, when validating tools, it is essential to incorporate both the qualitative synthesis and quantitative aggregation of data to allow for in-depth assessment of the instrument and informed decision making (Luque-Vara et al, 2020).

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The role of experts during content validation is to seek clarification on unclear constructs, suggest addition or modification of the instrument (Luque-Vara et al, 2020; Brink et al, 2017). Expert feedback can be solicited individually, in groups or using the Delphi method (Fernandez-Gomez et al, 2020; Benini et al, 2017)

In this study, expert judgement was collected individually because it was faster than the Delphi technique and cheaper than interactive group technique (Benini et al, 2017). Even though individual expert judgement is considered time consuming, it is the best method for obtaining detailed data and reducing bias from group dynamics (Benini et al, 2017).

3.3.5.3 Research methods

The research methods are discussed in terms of the population, sampling, data collection and data analysis (Creswell & Creswell, 2018).

3.3.5.4 Population

The population included international experts in interprofessional collaboration and education, curriculum development, instructional design, and eLearning. Engaging a panel of experts in the validation of the training programme creates an opportunity to obtain evidenced based informed feedback to improve the training programme (Fernández-Gómez et al, 2020; Brink et al, 2017; Hovardas, Tsivitanidou & Zacharia, 2014).

The inclusion criteria were to select participants who acquired experience through academic training or work experience, which included a minimum of a masters' degree; a minimum of 1 year's working experience in one of the following areas: curriculum or training programme development and evaluation; IPC/E interventions and online or digital training programme development, and evaluation in health science related disciplines.

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3.3.5.5 Sampling

A purposive and snowball sampling approach was employed to identify IPC/E experts (Creswell & Creswell, 2018). Sampling of experts and sample size is influenced by the availability of experts and type and quality of data required to address the research question (Naderifar et al, 2017). Therefore, purposive, and snowballing techniques were appropriate when sampling experts. Snowball sampling was instrumental in identifying IPC/E experts globally (Naderifar et al, 2017). The researchers contacted the African Inter-Professional Education Network (AfrIPEN)-(https://afripen.org/) (Bothma& Snyman, 2019) to ask for assistance in identifying IPC/E experts to content validate the programme. In addition, scholars who published on IPC/E were also recruited to participate in the research.

There is no consensus on the number of experts needed to content validate tools to obtain more accurate and reliable results (Gunawan, Marzilli & Aungsuroch, 2021; Rubio et al, 2003; Yusoff, 2019). The recommended sample sizes ranged from 2 to 50 experts (Gunawan et al, 2021; Rubio et al, 2003; Yussof, 2019). Accordingly, a panel of 12 experts was invited to participate in content validation of the *Mabogo-Dinku work-based IPE programme* for appropriateness and relevance. Of these, six (6) agreed to participate in the study. The researchers considered a sample size of 6 participants appropriate for sufficient control over consensus agreement (Polit & Beck, 2006; Yusoff, 2019).

3.3.5.6 Data-collection instrument

Two instruments were used to compile the validation instrument for content validity namely the Criteria for Describing and Evaluating Training Interventions in Healthcare Professionals (CRE-DEPTH) developed by Van Hecke et al (2019) and the Criteria for Programme Accreditation (Council of Higher Education (CHE, 2012). The Criteria for Programme Accreditation in RSA were evaluated because they were publicly available at the time the study was carried out. The CRe-DEPTH instrument is a blueprint for developing, evaluating, and reporting complex training interventions (Van Hecke et al, 2020). The CRE-DEPTH instrument comprises 12 items categorised into four areas: (1) development of the training, (2) characteristics of the training, (3) characteristics of the providers, and (4) assessment of the training outcomes (Van Hecke, et al,

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2020). The Criteria for Programme Accreditation was considered because it provided guidance on the content, standards, and criteria for registration of qualification and the development of training programmes before making submissions for programme accreditation in the South African educational system.

The data collection tool (**see Annexure 7.2**) was divided into four sections:

Section A: Demographic information: Contained information about the participants' characteristics, including qualifications, areas of expertise, place of work, years of experience in IPC/E, and countries of origin. The demographic information was collected to confirm that participants had prior experience in interprofessional collaboration and education (IPC/E), and training program development and evaluation

Section B Content validation of training programme (35 items): Explored participants' impressions of the topic areas (content) against the set criteria, namely clarity, simplicity, consistency, logical flow, and layout. Experts assessed content validity of this section using a 4-point Likert scale to establish whether they felt the item was exemplary or clear; proficient, marginal, or unsatisfactory.

Section C: Validation of curriculum development process: Comprised 37 items covering the 12 criteria for evaluating the training programme. The 12 criteria included (1) aims and objectives; (2) theoretical framework; (3) development process; (4) target population and setting of training; (5) educational resources; (6) programme content; (7) format of the training programme; (8) training methods; (9) tailoring of training; (10) programme facilitator'; (11) expected outcomes, and (12) assessment methods (Van Hecke et al, 2019). Each item was evaluated, using a 4-point Likert scale and the rubrics for the strength of reporting included (1) not reported, (2) weak reporting, meaning incomplete and vague description, (3) moderate reporting, meaning complete, but no detailed description, and (4) strong reporting, meaning complete and detailed description ranging. A space for comments was provided at the end of each test item. The last section (Section D) allowed participants to provide additional comments.

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3.3.5.7 Data collection

The questionnaire was sent to participants independently using Google Forms so that they could validate the training programme provided on the Google-classroom platform (Brittz, et al, 2023). Experts were provided access to the *Mabogo-Dinku* Google Classroom-platform (https://docs.google.com/forms/d/117FKW_fRiaV1dkJrfMYl67_fMfXqNw3EBZC6M-zTNu0/edit) and a content syllabus (**Annexure 6.2**), which incorporated the six domains of interprofessional collaboration embedded in the Canadian Interprofessional Health Collaborative (CIHC) framework (CIHC, 2010): interprofessional communication, role clarification, patient/client/family/community-centred care, team functioning, interprofessional conflict resolution and collaborative leadership (CIHC, 2010).

3.3.5.8 Data analysis

Basic descriptive statistics were employed to compute the content validation index (CVI). The CVI was calculated by collapsing the experts' feedback into two categories, giving each category a numerical value of one (1) or zero (0) (Yusoff, 2019). A category for experts in agreement that the item is relevant is awarded one (1), while experts' agreement that item is not relevant is awarded a zero (0) point. Therefore, CVI is always between zero and one, in which one symbolises experts' agreement on the appropriateness and relevance of each item. At the same time, zero represents a consensus that the item is irrelevant and requires significant changes.

To identify the degree to which there is agreement between the experts on the items evaluated, a content validation index is computed by first summing up the relevant rating (1) provided by each expert under each item. Then an item-level content validity index (I-CVI) is computed by dividing the total number of experts in agreement for each item by the total number of experts (Yusoff, 2019), also referred to as scale-level content validity index method (Yusoff, 2019). According to Yusoff (2019), for an evaluation conducted by 6 six experts, an index of 0.83 or higher is required for an item to be accepted as relevant or appropriate. The CVI is always between 1 and 0 (Yusoff, 2019). Therefore, for this study, items with a CVI value below 0.83 were modified based on experts' opinions.

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3.3.5.9 Rigour

Tool validity and reliability: To ensure quality and transparency in the validation process, the researchers used data-collection instruments which were adapted from the Criteria for Describing and Evaluating Training Interventions in Healthcare Professionals (CRE-DEPTH) developed by Van Hecke et al (2019). The tool was also pilot tested among clinicians to determine the clarity and meaningfulness of the questions and whether the tool examined the topics under investigation.

Quality and transferability of study: Engaging experts in content validation enhanced the credibility of the study. Furthermore, another quality assurance approach was that the data collection tool was standardised, enabling findings and conclusions to be applicable to other populations. Lastly, engaging IPE/IPC experts in programme evaluation and soliciting their input through a Likert scale questionnaire with optional comment/feedback box ensured quality in the evaluation process (Polit & Beck, 2021).

3.3.5.10 Ethical considerations

The researcher obtained written ethical approval and permission to conduct the study from the Research Ethics Committee of the Faculty of Health Sciences, University of Pretoria (122/2020-Line 3), (**Annexure 1.2**) and approval from the Ministry of Health Research and Development Committee in Botswana (HPRD: 6/14/1), (**Annexure 1.3**).

The researcher upheld the following ethical principles (Beauchamp, 2008): (1) Written consent was obtained from participants; (2) participation was voluntary; (3) personal information and names were not mentioned in the report; (4) participants were assured of no harm since data collection was through an online survey; (5) participants were informed that they could withdraw from the study at any time should they feel uncomfortable without penalty.

3.4 SUMMARY

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The research methodology was formulated according to the three phases of the study, namely the needs assessment, co-development of the proposed training programme, and validation of the developed training programme. Consequently, each phase focused on the specific research objective of the study and various research methods were employed to answer the research question.

Detailed descriptions of the study findings in each phase are provided in the next four chapters (Chapter 4, 5, 6 and 7), which present the scientific research papers in the context of the thesis project.

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CHAPTER 4: PHASE 1: ANALYSIS OF PRACITCAL PROBLEMS (OBJECTIVE 1: SCOPING REVIEW)

Reach high, for stars lie hidden in your soul. Dream deep, for every dream precedes the goal.

Ralph Vaull Starr

OBJECTIVE 1

To explore the considerations for promoting the implementation of work-based interprofessional education programmes.

4.1 INTRODUCTION AND ORIENTATION

Chapter 3 discussed the research methodological framework, design, approaches and methods used to address the aim of the study in-depth. In this chapter, the author presents the results of Phase 1, Objective 1, aimed at exploring the considerations for promoting the implementation of work-based interprofessional education programmes.

A scoping review was undertaken to address Objective 1. An in-depth description and discussion of the research approach and methods are provided in Chapter 3 **(Section 3.3.1).**

The author provided an in-depth description and discussion of the research design and methodology in Chapter 3

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4.2 OUTCOMES

Manuscript published in a peer reviewed journal:

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4.3 SUMMARY

This chapter offered insight into the issues related to developing and delivering interprofessional collaboration and education (IPC/E). The findings from Objective 1 (Chapter 4) and the results from Objective 2 (Chapter 5) informed the co-creation of the work-based interprofessional education programme for collaboration in maternity care settings. Having reviewed relevant literature on interprofessional collaboration and education, key issues were identified to consider when developing and delivering IPC interventions. Chapter 5 presents the results of Objective 2 where a qualitative approach was used to explore the perceptions of healthcare professionals and patients regarding interprofessional collaboration in a maternity care setting in Botswana.

The results of the two objectives in Phase 1 of the design-based research (DBR) process, were combined to inform the development of a work-based interprofessional education programme for collaboration in the maternity care setting **(Chapter 6)**.

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Review

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

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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) mobilization 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.

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

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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 Arskey 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?

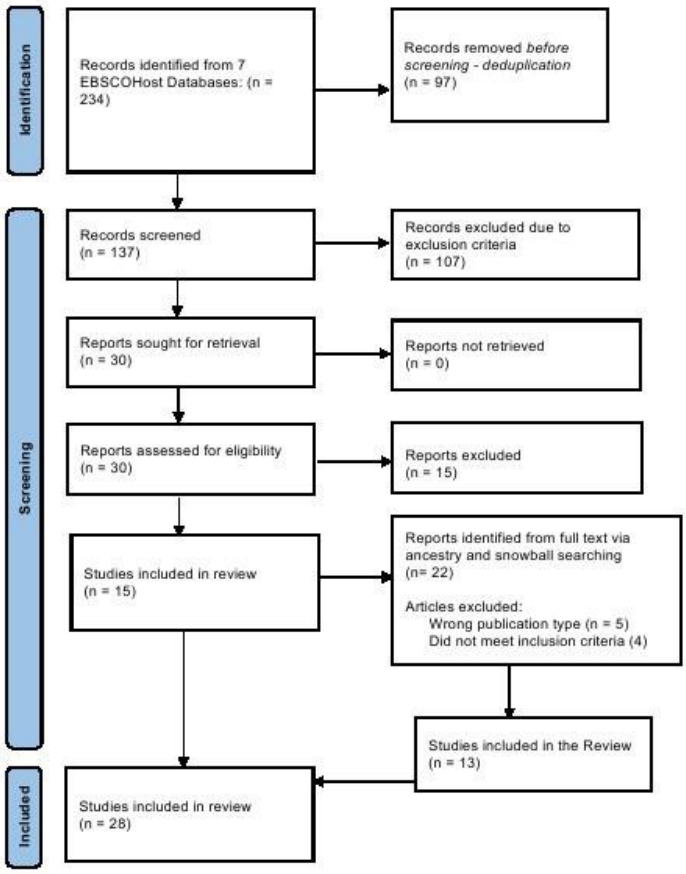

Fig. 1. PRISMA flow diagram.

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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).

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).

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.

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

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; Sørenson 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 simulations 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.,

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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).

Successful IPC/E interventions depend on successful interprofessional 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; Sørenson et al., 2009; Steinhardt, 2015). Sørenson 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; Sørenson 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 (Sørenson 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.

Author	Contribution
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	

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Author	Contribution
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Tanya Heyns	

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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	Tenessee, 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. E-learning 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 ≥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	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-

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Table 2 (continued)

Authors	Setting	Study participants	Study design/type and training models	Type/purpose of intervention
			intervention and 8 control hospitals	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 practitioners (GPs) in the case of a low-risk pregnancy	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-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. Sørenson 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

(continued)

Author	Contribution
	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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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.nedt.2022.105617.

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CHAPTER 5: PHASE 1: ANALYSIS OF PRACTICAL PROBLEMS

A journey of a thousand miles begins with a single step

- Sun Tzu

Objective 2: To involve stakeholders in the co-creation of the work-based IPE programme

5.1 INTRODUCTION AND ORIENTATION

In Chapter 4, a scoping review was conducted to review literature related to developing and delivering interprofessional collaboration in hospital-based maternity care settings. Chapter 5 describes the findings derived from Objective 2 of Phase 1.

5.2 OBJECTIVE AND SUB-OBJECTIVE

Objective 2 was: To involve stakeholders in the co-creation of the work-based interprofessional education programme and comprised of three sub-objectives:

- Sub-objective 2a: To conduct a stakeholder analysis
- Sub-objective 2b: To describe stakeholders' perceptions on the development of an interprofessional collaborative programme for healthcare professionals in a maternity care setting
- Sub-objective 2c: To explore healthcare professionals and women's perceptions of interprofessional collaboration in a maternity care setting

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The findings of Objective 2a and 2b (**Section 5.3**) are discussed and the outcomes of Objectives 2c (**Section 5.4**) are presented.

5.3 FINDINGS: OBJECTIVES 2A AND 2B

A stakeholder analysis was conducted to address Objective 2a. Freeman (2013), the father of stakeholder analysis, indicate that stakeholder collaboration has been proven to 'shape a project in its early stages, improving the quality of a project' and assist 'winning resources than make a project likely successful' (2013:14). A stakeholder analysis refers to the systematic process of identifying and assessing the individual, group or organisations that have vested interest or can have an influence of the success of a project (Franco-Trigo et al., 2017), which in this case was IPC/E. Stakeholder analysis helps provide a deeper understanding of the roles of each stakeholder in a project, and thereby enabling the researchers to identify stakeholders that are critical and crucial for the success of the planned project (Sabater-Hernández et al., 2016).

A stakeholder analysis also provides researchers an opportunity to assess if their (researchers') vision, needs, and wants were aligned to that of stakeholders and the context in which the project will be implemented. In addition, multilevel stakeholder engagement within the healthcare setting is essential for addressing complexities of the healthcare system in which the programme will be implemented (Belita et al, 2020; Franco-Trigo et al., 2017; Reed & Curzon, 2015, Sabater-Hernández et al., 2016). Given the benefits of stakeholder analysis, the identification of stakeholders and engagement with the stakeholders in the co-creation of a work-based interprofessional collaboration education programme was regarded as a crucial step prior to development and envisioned implementation of the proposed programme in a complex maternity care setting in Botswana.

Freeman (2004) defines stakeholders as 'any group or individual who can affect or is affected by the achievement of the organisation's objectives' (2004: 229). Clarkson (1995) and Freeman (2010) describe two types of stakeholders: primary and secondary. Primary stakeholders include a person or group that is essential to the survival and well-being of the organisation and include for example employees, shareholders, customers and regulators who have power over the

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organisation. Secondary stakeholders are persons or groups who are not essential to the organisation's survival.

The primary key stakeholders to be involved in the stakeholder analysis workshop were identified during the informal discussion with the Head of Department (medical doctor), unit manager (registered nurse) and midwife in a maternity care setting **(Section 3.3.2.1**). The approach of engaging stakeholders in stakeholder analysis is referred to as '*stakeholder-led stakeholder categorisation*' (Reed et al., 2009; Reed & Curzon, 2015). The approach is beneficial in stakeholder analysis because it creates an opportunity for the researcher to observe how stakeholders interact, their interests and concerns and how engaging them in research is going to affect the focus of the research project (Reed et al, 2009; Reed & Curzon, 2015). Consensus was reached to include at least middle level management, which should comprise of a midwife, medical doctor, nurse educator, policy advisor, registered nurse from primary care, social worker and psychologist who are working in the maternity care setting should be invited to participate. Names of specific primary key stakeholders were suggested by the group during the informal discussion.

The researcher invited 10 key primary stakeholders to attend the workshop at one of the training rooms at the Botswana Open University. The workshop took place on the 18th November, 2020 between 08:30 am and 12 Noon. (**Figure 3.2**). Three participants indicated at the last minute that they were unable to attend due to their busy work schedule. Seven participants, of whom five were female and two were male attended. The majority of the participants were clinicians (n=4) and had a master's degree (n=4). The demographic information of the participants is summarised in **Table 5.1**

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Table 5.1: Participants' demographic Information (N=7)

ITEMS	COUNT (%)
Discipline	
Midwife	4 (57.1)
Social worker	2 (28.6)
Sexual and reproductive health programme specialist	1 (14.3)
Occupation	
Clinician	4 (57.1)
Lecturers	2 (28.6)
Policy maker/Strategist *(Minister of Health)*	1 (14.3)
Type of organisation/place of work	
Health care service: Hospital	2 (28.6)
Healthcare service: Clinics	2 (28.6)
Policy development and strategic management *(Minister of Health)*	1 (14.3)
Training Institution	2 (28.6)
Highest Levels of qualification	
Advanced Diploma (Midwifery)	1 (14.3)
Bachelor's degree	2 (28.6)
Master's Degree	4 (57.1)

The researcher, who acted as the facilitator of the workshop, welcomed the participants to the workshop and solicited self-introduction to allow participants to get to know each other and understand each other's areas of expertise, work experience, place of work and the role they think they will be playing in the curriculum development for healthcare disciplines. The value of the participants contributions, issues of data privacy, confidentiality and how information will be protected by the researcher were discussed. Once all the participants signed informed consent (**Annexure 5.1)** and completed the demographic information questionnaire, the researcher, who facilitated the workshop, briefed the participants about the activities that will follow (**Figure 3.2**).

Once consent forms were signed (**Annexure 5.1**), the facilitator shared the stakeholder engagement and analysis plan with the key primary stakeholders and requested feedback and adoption of the agenda (**Annexure 5.2**). The facilitator together with the participants agreed on working boundaries for the workshop.

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Workshop Activity 1: Shared understanding

Through open discussions during Activity 1, the key primary stakeholder group generated a shared understanding of IPC/E and the value thereof in a maternity care setting. The participants supported the inclusion of stakeholders as evident in the following quote:

'…I think it's a great idea to have stakeholders in the design, execution and evaluation of the IPE programme…' (Social worker 1)

In addition, the stakeholders voiced an appreciation and valuation of the initiative to co-create a work-based IPE programme by stating:

'…*we support the idea of introducing IPC interventions in a maternity care setting, but also throughout the country [Botswana]…*' (Midwife 1)

'…*I can see that through such an IPE programme [work-based IPE programme] that we will improve teamwork practices and customer care……'* (Sexual and reproductive health coordinator)

Some of the stakeholders raised concerns about the implementation of IPC in a maternity care setting:

'…I appreciate the benefits of IPC in clinical care...but that's not something that we engage in on daily basis …' (Midwife 3)

'…*collaboration is also very difficult because of lack of resources…' (social worker 2)*

'…collaboration is a perfect initiative but because of what is on the ground with severe shortage of staff, I am concerned about the take up…' (social worker 1)

Workshop Activity 2: Views on IPC/E programme

The participants were asked to express their views about an IPC/E programme for maternity care setting in Botswana. Consensus was reached within the group that '*interprofessional collaboration is not realised in a maternity care setting*', which was congruent with the views of healthcare professionals and pregnant and post-natal women's perceptions (Madisa, Filmalter & Heyns, 2023). **Table 5.2** provides a summary of the suggestions made by stakeholders on the delivery

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of an interprofessional education (IPE) educational programme and how these suggestions were incorporated during the co-creation of the IPE programme.

Table 5.2 Summary of key findings and applications thereof in co-creating the work-based IPE programme

Themes	Supportive quotes	Application
Competency gaps	*…there should be a focus on collaboration…* (midwife 1) *…the training program should focus on communication skills and conflict management because they are the key to working effectively with others...* (midwife 2) *…training also should build on interpersonal relationships, teamwork, role understanding, respect and how management can coordinate our activities…* (midwife 1) *…we need a programme that addresses issues like customer care, teamwork, communication, effective counselling skills…* (midwife 3)	Suggestions added to the programme: • Collaboration (Topic 1) • Teamwork (Topic 2) • Women-centred (Unit x) • interpersonal relationships (Topics: 2, 3, 5) • Role understanding (Topic 2), • Respect (Topic 3) • Communication (Topic 3) • Customer care (Topic 3, 5) • Leadership and coordination (Topic 1, 4)
Delivery mode	*…People can be encouraged to use their smart phones would help address issue of poor connectivity and the acute shortage of computers in the hospital…* (midwife 2)	• Programme can be accessed from smart phones
Blended approach	*…job training which is facilitated through both face to face and online learning mode… (midwife 2…)* *…training should include both theory and practice because engaging in practical's will also help reinforce understanding of each other's role… (midwife 1)* *…training program should be interactive, flexible, inclusive of all healthcare workers …(Social worker 1)* *…e-Learning can be used to trigger interest especially for those interested in technology, however, there will still be a question of internet connectivity*…(social worker 1) *…please consider benchmarking with other institutions so that you can adopt a program that may be interesting and of value to all disciplines…* (SRH coordinator)	• All healthcare workers can enroll for programme • Blended and interactive approach • Theoretical component included • Activities include work-based learning

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Timeframe	*…to attract staff and accommodate all those want to learn more about IPC and collaboration, we need to stagger training throughout the year…* (social worker) *…the programme should take more than a day to incorporate even the practice component…* (midwife 2)	• Programme is flexible • Participants can complete programme at own pace • Two-month period (5 to 8 weeks)

Workshop Activity 3: Stakeholder analysis

Participants identified 25 stakeholders (locally and internationally) as having the potential to influence the delivery of IPC/E in a maternity care setting in Botswana. The participants listed the stakeholder groups and prioritised them according to the level of interest (willingness to participate and level of importance in the study). A detailed stakeholder list categorised according to their roles and responsibilities and their levels of importance and interest in presented in **Table 5.3.**

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Table 5.3: Stakeholder list categorised according to their roles and responsibilities

STEP 1 LIST OF STAKEHOLDERS	STEP 2: ANALYSE STAKEHOLDERS							STEP 3 INTEREST /IMPORTANCE MATRIX	
Stakeholders	**Stakeholder Analysis Matrix**							**Mapping matrix** **Rate Level of importance (enablers) and interest/willingness to participate.**	
	Location **Local/abroad**	**Roles/expertise**						**High** **(Importance and Interest)**	**Low**
		Health Care delivery (beneficiaries or Implementers)	**Curriculum Development and Training**	**IPC/E champions**	**Quality assurance** **/Evaluation**	**Strategist/ Policy/** **advocacy**	**Other**	**(High/Low)**	
HCP in Maternity wards	Local	x			X			X	
Patients	Local	x						X	
Ministry of Health	Local					X		X	
District Health Management team and Clinics	Local	X			X	X		X	
Health Training Institutions	Local	X	X		X			X	

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University of Botswana	Local		X		X				X
Boitekanelo College	Local		X		X				X
Peace Corps Volunteers	Local						X		X
CDC-Botswana	Local		x	X	X	X			X
National AIDS and Health Promotion agency	Local		x			X			X
FHI 360	Local		x	x		X			X
Private Hospitals and clinics	Local	X							X
Botswana Family Welfare Association	Local	X	x		x				X
Health professions Council	Local				X	X		X	
Nurses and Midwifery council of Botswana	Local				X	X		X	
Botswana Nurses Union	Local				X	X			X
United States Agency for International Development (USAID)	Local						X		X
WHO	Local		x	X	x	X		X	
Botswana Examination council	Local		X		X				X

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Women's Shelter	Local	X							X
Interprofessional collaboration networks (AFRIPEN, cihc-cpis.com; etc)	International		X	x	X	X		X	
IPC/E champions	Both		X		X			X	
eLearning specialists (individuals)	Both		X		X			X	
Curriculum development specialists	Both		X		X			X	
Quality assurance specialists	Both				X			X	

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Stakeholder mapping refers to a stage whereby stakeholders assess the interest of stakeholders over the level of influence on the projects' success (Kennon et al, 2009). An interest-influence matrix is usually used to visualize stakeholders that are considered most useful to work with (Association of European Border Regions, 2019; Kennon et al., 2009).

Stakeholder interests refer to the stakeholder's level of willingness to engage in the project (Association of European Border Regions, 2019), while stakeholder influence describes the level at which a stakeholder can influence the outcome of the project (Association of European Border Regions, 2019; Kennon et al, 2009). However, in this study an interest-enabler/important matrix was used to identify stakeholders that were viewed as useful to collaborate with.

Enablers or important stakeholders refers to those stakeholders *who can influence the delivery of the project and its outcomes* (Kennon et al., 2009). These stakeholders may include opinion leaders (perhaps in the target population for the project), critical knowledge resources (e.g., scientific experts), and providers of enabling resources (e.g., mapping technology) or those critical in delivery of innovations produced by the project (Kennon et al., 2009).

Table 5.3 above provided a combination of stakeholder analysis matrix and abridged version of stakeholder mapping matrix. As a result, during 'Analyse Stakeholder phase' participants were also asked to do stakeholder mapping by categorising stakeholders into their level of willingness to participate in the study and level of importance's (enablers).

The rating scale used was *high level* or *low-level* interest and importance. Stakeholders rated as having high level of importance and influence were considered for the different phases of the study and as presented in **figure 5.1** below

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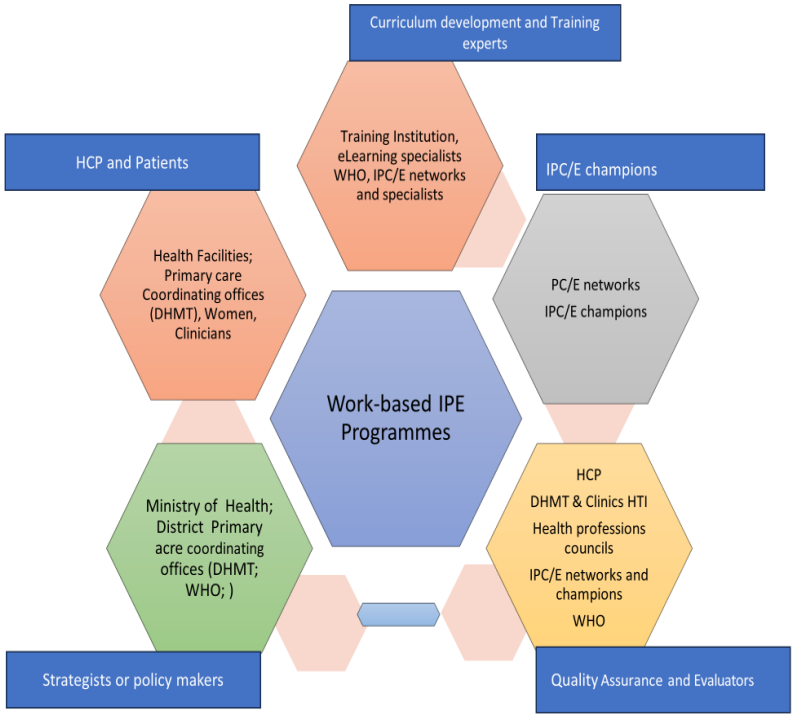

Figure 5.1: Key stakeholder for the different phases of the study

Key words: **MOH**-Ministry of Health, **DHMT**-District Health Management Team, **HTI**- Health Training Institutions, **IPC/E**-Interprofessional Collaboration/Education, WHO-World Health Organisation

5.4 OUTCOMES: OBJECTIVE 2c

Objective 2c: To explore healthcare professionals and patients' perceptions of interprofessional collaboration in amaternity care setting

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Manuscript published:

Madisa, M., Filmalter, C.J. and Heyns, T., 2023. Healthcare professionals and pregnant and post-natal women's perceptions of interprofessional collaboration in a maternity care facility: A qualitative study from Botswana. *Midwifery*, *125*, p.103768.

The author provided an in-depth description and discussion of the research design and methodology in Chapter 3.

5.5 SUMMARY

This chapter presents healthcare professionals and women's perceptions of interprofessional collaboration in a maternity care setting. This study reveals mixed feelings regarding the quality of interprofessional collaboration in a maternity care setting. Most importantly, it showed the turbulent situations under which maternity care is provided. Participants expressed dissatisfaction with interprofessional collaborative care practices, specifically regarding team functioning, respectful behaviours, communication, woman-centredness, role clarification, conflict resolution, resource availability, workload, and leadership. Person-centred collaborative practice ensures that women receive respectful care and are involved in informed decision-making, ultimately minimising adverse health outcomes.

The findings from Objective 1 and the results from Objective 2 informed the co-creation of the work-based interprofessional collaboration training programme for maternity care settings. Therefore, the next chapter presents phase 2 of the study, where the author engaged various stakeholders to participate in the co-development of a work-based IPC training programme as informed by the results of phase 1.

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Healthcare professionals and pregnant and post-natal women's perceptions of interprofessional collaboration in a maternity care facility: A qualitative study from Botswana

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ABSTRACT

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!lcli,!',11: A Jtocripti\'r qu:iiotivt Jtois'n uine in-J,ptb inti:n,itw, with for1y p:u-ticij:anc, incl•dine hullhc:i.n proftooion::lo ::w.i ,YOmu, in 1n:ir-,rni1y w:irJ,. 0:i.t:i. wrtt o::i.nocribtJ :inJ duau.tic:ily :a:i) tJ.

Serrin$ Anr-,n.:i.t:11.,Jtlivny ::mJ poot-n:i.t:d 1n3r-,mity W¥do in :i.ctftrr:d ho:pibl th:itproviJn hoic:.oJ pu i:di:t CXt in Botri-!I.

l'orcidpo11u.· Wt inr-,r\•i,wt.i 13 pr,sn:i.1H:anJ po t-u.:i.t:i.l wormn :anJ ':.7h,:idtcxt proftQoion::loa tht au,r-,mity C!ll't w::irJ:i.

Pindfff!tJ(P:,rticip:atri puuiwJ Q\'tr-:J inr-,rnbr-,,i fxtoro th.:it inffunuJ the JtlA""ry of i;ir-,rproft oion:il colb\)or:iti\'f *C::ltt.* lnti:rptr on:J b(tor uch pooc comm•uic:ition, Ji:tt:f)tC tf•I bth:iviou, :ind in:i.dcqu:ir-, n::unworft pr.:,,ctictо prtVli:nnJ innrprofuQio1ul colbbor:i.tion. Otha 1.:-.irriu to colbbor:i.tion incluJt.i belt of u.nJtcU!lnJineof ,xh olhu· roltQ :x,.J U:f)On:ibtitwQ, iudkcriw coorJin::ition ofttoouruo, hitr:vchic:d pown oo:u u :w.J poor colbbor:i.tiv, l,:Jtrobip.

Key condu:.ionJ.: EfftctiVll:innprofotoQion.:d. colb\)or:ition rtauino tl11oiVll: in chill m:inruif)' c::act -:.utins. Ht:dch· ext oyoti:lnO in low•to-miJJl,-i:icocrn cou.no: m:iy btndit f.roin inr-,n'tntion: for bt::ll.lhc::1r, proh ion:ib to lt::irn :i.nJ pr:uric, inr-,rprok:.:ion:d coll::i.boc::aM·t c:irt.

Introduction

M:ltern:il :lnd neon.J.UI lllOC'tllity renuins a ctulle e ill low :llld middle-income co uotries (LMICs),nicuL:lrly in Sub...S:1tur.1n Afric (ll:iltwey:1, :OJ9; WorW Health 01'g:ioiz.1tion et :ll :0:?3). lo 2020,:lll estim:i.ted 800 women died from pre!n:tncy 3od childbinh-rebted tlc·• toesdaily, of which 70%of glob3lde3ths occurred ioSub-Sab.J.r:io Afric3 (*'No* rtJ He:iltb0(!:lni::3tion et 31, 2023). In LMJCs, million: of dnths *b.J.ve* beetl :ittcibuted to pooc-qu:ility C':ll'e in bcilitie: (Kecsh:iw u al, :?019; M:lpbumulo ;.1,nd Sheogu, Z019; lfatioool Ac.:ademie of Science:-, Engineering, and MeJicine, 2018). M:uem:11 morality !us spe,cilk31ly been3Sc0oci:ited with hum:in-reL:lted preveocble factors, including poor te:1mwock :ind colL:lborative practices (BlonJon, :lad Cheo:iuJ, :?022; Ro:en et :ll, 2018); poor coordin:ttioo of resource: (l\ot3d:imb:lmuto et :11, 2014; Ro:eo u .:al, 2013), iruppro pri:lte pl:looing, limited 3cce:s to he:iltbc:1re service: (M:lhmood et :ii :?013; \li'ol'lJ. He:iltbOC!:lniz:i-tion et :ii, :0:?3) :lnd shortage of resources including :killed per:oooel (Lu di :inJ M:1tl:lb., :?019; Sinun3oJ Brito, :017; Worb..lHe:ilth Or• gani::ltio net :ll :O:S).

lotern:ttiоn.11ly, lll.lny he:iltb systenu :1re crying to :lddrr tbe hum:in-reb.ted pre,;•eot:ible b.ctors ocbced with high 1DOrbidity :lnd momlity. loterprofession:tl colL:lbootion (IPC) i: :10 innovative :ippro:lch. to :iddress poor he:11ttic:1re outcomes, including lll.ltecn.31:lnd oeo n:tt:il du tbs (Scho t et ,,:O:O;S:l11g-:1teti et :ii, 2017;Wo rid Hutth 0(!:llliz:ition, :010). (oterprofession:tl colL:lboration h.3ppeos wben multiple be:1lfbc3re pcofes:ion.31s (HCP:) from different b:lckg-counds meet, interact, work:indfe:icn together, :1odco lL:lbo rate witbclieots :lnd their b.1nilies to delivucompcehewive Vi'OmlO<entred c:1re b:ised on

• Corn ponJine :i.uthoc.
B·moil oddl'Cll: 1rnn:.Ji.: offt.ou x llw (M. l,b.li::i).

ht1p:.;//Joi.ore/lO 1016/jmiJw :X, IO.S76C
ui d llo\·tinbu ':.O':. ;ctiwJ inrtviwJ form 11 M:iy :!O ; AcupttJ 25'J.11t *2S*
Av:ibMt onlin, 7 J•ly :x,
0':.6613C/lQ :!O Eluviu LtJ. All riefH: n:tr\·r.i.

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the be::t 3V3iL1ble evideace (Reeve: et :it, :016, :017;WockJ Hultb 0 rg:ini:.::ation, :010). lnterprofessio n:il coll.3bor:itio n h:is m:iny beneflts, including improved wo1n:in'':: s-:ifety, coocdin:ition:ind utili:;ition of re• ::ources 3nd he:iltbc3re selVice:, reduced he3ltbc:ire co:c:::ind improved ::3tisflction (Lutdyy:i et :ii, :019; Mahmood et al :013; Will et -1.t, :019). Successful upolte of intecprofe::::ioool colbbo ratioD:ind educ:i-rion CTPC/E) in clinic:il re settiO!:: is often tumpered by ineffective bcilit.1tioo :ind poor ::upport for IPC/E iniri:irive:: (D:ivies et :it, :?016; Grymoupre et 31, 2021). Studie:: recommend tb.:lt HCPs receive inter• profes::ioD.:ll educ;ition (IPB) to g:iin IPC competencies (Ruve et ;it, :016;WoclJ He:iltbOcg:iniction, 2010), ::ucb :is impro\•iug communi• C3tioD-1.nd te:imwock (Reeves et :it, :017).

Manyhigh-inco wecountries b.:lve embraced lPC/8:is:i practic:il tool for deliveriO! qU.J.lity wonuo ntced c:ire:ind ::uengtbening Of!:inis:i-rion:il perform:ince (Lutflyy:i et 31. 2019; l>ibbmood et ;ii, :OW). Despite the benefit of interprofe:sioool coll3boration 3nd educ:ition CTPC/E), onty ::owe LMJC:: h.l.ve focnul policie:: ::uppottiO! IPC/E (Ree\·e:: et :it, 2016, :017).One such LMIC is Botrnr.aoo in Sub-S;ituran Afcic3, which needs betteMtructured interventions to bcititlte ;ind ::upport lPC/8. In Botsw:ioo, 99.89'0 of women give birth in be;ilth t.i-cilities, where most de;ittu occur (Botw:ioa, St:1ti:tics, :0:?1; Sin\•u :mJlo:u.:t, :?015). A possible solution to reducing llUtern.J.I momlicy i11 LMJC::, Botsw:im in p;inicubr, nuy be de\•eloping 3nd implementing IPC/E interventions tlut ;ire contextu:ilty :ind culturally ::uit.lble (Ree\'e:: et :it, 2016;Wol'lJ He:ilrh Org:iuiz.1tion, :010). Before <level• oping:in IPC/E interventio11, policy1n:it(er.;;ind m.1n1ger::should explore the existing IPC/E practices in :ispecil:lc ::etri11g. In this3rticie, we report on the percepriom of HCPs ;ind pregn:int :ind po::t-n:ic::it women reg3rding exi:ting IPC pr3crices in Botsw3ru's bospiul-b,ued lll3ternity c3re facility.

Theoretlc:.J fr:i.mework

This study ,v.i.s guided by the C3n:idi311 tf:itionzit lnterprofe::ion.J.I Competeocy Fc:imework (CNICF) (CIHC, :010), whicb l'equire:; the est.1bli::bwent of positive lPC rel:irio o:bips to -1.chieve :;:ife, wo1n:in;ind family<entred c3re 3nd qoolity he;ilth ouo:-ome:; (Scbot et :it, ::!O:?O; S3ug31eti et ;ii., :017;\'li'o rb.JHe:iltb Org:ini:;itioo, 2010). We cho::e the CNICF (CIHC, 2010) to guide our ::tudy during the dzttl :in.J.IY3i:: ;i11d discus::ion pluse. The fr;imework describes the e::csenti:ll compeceacies for effective interprofeszion:il coll:iborati\•e practice (Smibl,i 3n.J P:ir• rot :019). Tbe six essentizil lPC competency dom.1i1u (CJHC, :010; Smil::ki :ind P3Hot, :019) include (l) te3m functioning, (2) interpro• fe:::ion:il communic;ition, (3) role cbriflc;ition, (4) wolll3n/client/bmity/co mmunity-centred c-1.ce, (5) interprofec:ion.J.I contlict resolution 3nd (6) colL1bor3tive lndership. The frameworlt provide::co mpeteacystltements :ind descriptoc:; th.l.ure decilspeciJ:lc 3nd we.l.Sure beluvioural indic,;itors used to determine the presence or 3bGence of competency. These beh.3viour:il indiczitors include knowl• edge, zittitude::, ;ibilities, \f;lfue:, beh:i.vioure, ;ind judgement

Thi:: inductive :ind deductive descriptive rese3rch employed CNICF (CIHC, :010) component: during <btl 3tuly::i:: to provide common lPC L10!U.J.ge found in literature 3nd help::umlll3rise :ind reduce the cb.tl by 3iding in identifying tbe concepts3nddztt.l ttut m.1y be U:$efut (Singh.l.m et 3I, :o:?:). In conclu::io n, employing the fowework in deductive 3031}<--si: eo:ured tb.:lt ftnding: were3tulytic;illy sound, rigorous, ;ind presented in ;in o rg3ni::ed form (6 iugb:im et ;it, :o::).

Rese3rch methodology

Thi::design w3:; zi quzitiutive descriptive study tb.:lt explored p:ir• ricip;inc' perceptioos of exi::ting IPC in3 nuternity be;iltbc,;ire f:lcilityin 6oew;in:i (Creswel13niJCreswell, :?017; Kim et-1.I, :017).0ur;in:ily::i.s W3C underpinned by tile CNICF (CIHC, :010). Theconsolicbted criteri3. for reportiO! zi q uzititltive (COREQ) studyguided our reporring (Booth et :ii, 2014).

We co11ducted th.i: study in the ;interutll, delivery3ocJ post-n:ict 1n:iteroity W3rds of3 referral hospitll in Botsw:ioo tb.:lt provides b3::ic :ind specbli.st eire. Bot::W31l3is3 middle-income country in soutbern AfriC3. Approxi1n:itely 116 women3re3ttended to Wily in the::e m:i• temity w:irds. C3re i: provided by :i te;im of HCPs (N = 140) wbich iaclude:: 1nidwives (n = 82), he:iltbc3re3uxili.3ries (n = 18), medic:it doctor:: (n = 23)3ncl medic3l ::tudeoc (n = 4), psycholo!ists (n =6), soci:it worker::(n = 4) :inddietici:io: (n = 3).

Parricip:mts

Tbe crget popul.3tion included HCPs working full-time in nuteroity w:uds for3t lezi::tsix moDths. We recruited 3S he3ltbc3re professio n:ils, of which 27 consented to p,3rticip;ite. We purpo::i\•ely included women 18 yur::3nd older wllo ;ire the beoeflcizirie::of colb.bocrive c,;ire, b.l.ve experieace receiving c3re in the nutemity W3rd:, ;incl were3dmitted to the3Dten:ict or po::t-n:it.11w3rds for 3t le.l.St 48 h. We excluded women inbbour. Twenty-one (n = 21) women were recruited, :ind 133!reed to be interviewed.

Ethit:al coruidcratiom

Tbe Rlcult)• of Hulth Science Rese:irch Ethics Committee 3pproved the study, Uoi\•ersity of Pcetori:i (122/2020). The Mini::uy of He.11th, He:iltb Rese3«h3ncf Development Committee in 6ocw3n:i :ind tbe tielected ho::pit.ll permitted the study-:ill HCPs ;ind women who vol• unteered to p:irticip;ite ::igned informed coo:ent.

Dato: collection

Tbe :iutbor:: de\.--eloped tM intelView que::cioo:, iacluding: 'Ple3:e tell me :ibout the current inter-profe::siotul colbbor:iti\.·e practices in your unit?' followed by probing gue::riom. TM interview question for women w:is, 'Tell we bow he:iltbc3re profe:sioQ;).I: worlt rogetber to en:ure you receive !OOd c;ire?'. This question ,v.i.s ;ilso followed by probi11gquestions.

TM 6m 3Uthor (MM) collected the cbu through flee-co-face in• terview::, -1.llowing p:irticip.1nts to freely ::b.:lre their experieoce:;3nd perception: (Cre::well 3nJ Cre well, 2017). The interview-:; were :iudio-recocded with permi:::ion from the p;irticip,3n . Pilot ioterview-s with tv.-o HCP:: :ind three women were conducted to determine if p;ir• ticip.311ts understood the gue::tions. The interview:: bsted 20 to 60 min :ind took pbce between tbe end of October 2020 ;ind mid-FebrU.J.ry 2021. The3Utbor: repho:ed interview que:tio ns for wowen forcbrity.

After tn:iking mioor 3mendments to tbe interview guide, HCPs3nd womenwere3ppro-1.ched, ;i11d if tbey 3greed to p;inicip:ite, we3rra11ged :i ::uitlble rime 3ndcbte to conduct tbe intet\tiew::. The interview-:; took pbce in offtce rootm in the bo::pic::it. We zi:ked HCP:: to sh3re their ex-periences of current IPC in the 1n:iternity w;icds.

Tbe unit nu1Ugers ideotifled women who met the iaclu:ion criteri:i :ind tben informed them ;ibout tbe study31Jd its impomace. Once womenvolunteered to p;irticip;ite, we contlcted tbem fot penni:::ion to interview them. Using zi priv3cy screen :it the women's bedside, we conducted interview::3t3 time th.l.tsuited them. Women were ;i::t(ed to ::b.:lre how HCPs worlted together to ensure goodc3re for women in tbe 1n:iteroity w:icds.

Dato: analysis

We u:ed 3n inductive followed by ;i deductive <btl 3tuly::is :ippro3ch. Ac 6 ingh:im et ;ii (:?022) ::ug!eaed, we sorted the theme::

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deductively :::i.ccording to the lPC competeacy donuio: described io the CNICF (CIHC 2010). We :t:trt.ed with a six tep process using 61-;iun aod Cbrke': ◖ ◗ :i.x-pluse theantic .:tll.:llysis framework. In plllse 1, we ensured :a deeper underounding of the tr.Inscription :::i.od m.:ildng me:::i.oing of the d.:it:t by re:::i.diog .:ind re-re:iding tbe transcript: to identify emeC2iog codes (6iogb.:tm et :al, 2022; Cre:well .:inJ Cre:well, :!017;). Duriog ph.l.::e 2, we generated tbemes by org:::i.oising :::i.od grouping emeC2iQ! codes according to p,3nems. The second (CF) :and third (TH) :::i.utbors re-coded the cbtl to entunce rigour. After generating the themes, plnse *3* followed, where we clu::tered the theme: tlut commuoicated somethiog :peciflc about the rese-3rcb question into bro.:ider tbemes (Biogb.:im et::i.l, '.X>22; Br.tun .:inJCbrke, :!006). During the fourth ptu:e, we reviewed and cnodifted the themes to ex:unioe if *they* nude :ense,.:indsubtbemes were generated ifcbtl :uppocted such extemioli.. (ntbe tlfth ptu::e.,*the*:authors discus:ed the d.:it:1.:ind reached :aconseo:us on the theme::of thi::study. The fliul ph.:i::e entlited 1'eflning the themes to nuke sense of me identifled theme::. We critic.:ilty ex.:im• ined tbemes .:indsubtbemes to :::i.ppreci:ne how they interacted aod bow the ::ubtheme rebted to the central *theme.* Througb.out tbe :::i.ooly::is, we immer::ed ours.el\•e: in the <btl :and extracted direct quotes from the tr.Inscribed audio recording: to point to d.:it:1tint i:: repre::ent:tfr••eof the tlodin..,as (Bingh.lm *et* :::i.l, :?'022). Consequeotly, supporting theme:: with direct quote:: allowed u:: to co Dduct :::i.n unbfased ioductive :::i.iuly:is (Bingham *et* .:it, 2022; S.:ikbn.:i, 2021) and .:idded depth ro the reported Jiodin.., (Bingh.J.m et .:ii, :!022).

After re:::i.cbing .:i comewus, we wed .:i deducti\, :::i.ppro:::i.cb to reor• g:::i.niseour flndiog: into the CNlCF (CIHC, 2010). Deductively, ltutching d:::i.t.l/theme: ro the CtuCP fr.imework helped us uoderstind flndiog: io rel:::i.rion ro existing literature :and tbeory of IPC practice, thereby enh.l.ocing our flllding::' rigour. We then concluded our :all.:ltysi:: by producing:::i.d.::tt:t-31l.:lfysi:: report guided by the CHICFframewo rlt (CIHC, 2010).

Flndlngs

We interviewed 27 HCPs .111d 13 women. Some HCP:: chose n.ot to p:::i.rticip,3te, citiog he-3VY WOrklo.:td. Bigbt WOlllell cb.o e not to p.:tctici• p:::i.te bec:::i.use tbey felt too tired or fe.:ired beiog victimised by HCPs. Particip.:int::' demogr:::i.phic inforautioD is summ.J.ri::ed in T-3ble 1.

The emerging themes were org:::i.nised .:icco rding ro the :ix IPC com• peteacy do1tuim described in the CNICF fr.imework (CIHC :!010) .111d .:ice presented in Table 2.

The flndiogs :are prese11ted .:ind supported by quot.es from me p.:ir• ricip:::i.nc. E.:icb quote is identifted by tbe p:::i.cticipant': discipline .:ind the 11umbecalloc:::i.ted to the HCP or W'Om.J.ll during the interview.

Domain 1: roamfuncrioninE

Te:::i.m functioning refers to the collective ability of te-3m members to respect .:ind \'..1.lue effecti\fe te:::i.mwork to develop :::i.11d m.J.iotlin be.:iltby

T::iblc 1
Dtmo :pbic flform::itionof du p::u-tU: ::intl(N=41).

Jl.trtid nu	Coun1( )	Gender	
		rount (Yk,)	F'cmalc count(%)
Hcahhun- profc,,dnnah1	*21* (68)	▮ (	10
>,lidwifc	▮▮	▮	10
>,ftdk.tl doctor			▮
hychologin	<		
Slldal l\'lltkcr	▮	0	▮
Dirtidan	I		I
Hcahht.an- auxiliary	3	I	▮
Wom«i	13(:32)	0	13
P'fcgnant	<	0	<
Pou,natal	●	0	●
	Sub▪IOlill: Count( )	t(20)	31(80)

T::itle 2
Dom::iim :.nd nb.uJ cbun .

C?(ICF hamcworir.domain.,	
Tum functioning	• Dti:irc and ,;;1.lur cffoe.tivc tr11mwork..and colllbGtatimi • V;irird lcvelJ of tt.amcohrAvcncMI • AUitudes infiucndng tffrcth▪r inttrpmf«.iimial colbbGtatimi. • Jtel.alion11I in1ct11cdmis • Shon;i,gt of tcSUUrv.cs
lntcrprofC'$lon.al cammunkarion	• Pa.1u▪mJ of intcrnc.tfo,n • tr.effecrivc inform.;ition Jh.llrin.g
Wamrn, f.amily, an.cl cammunity c«1t«ednec.s	• F'r;igmcntrd he.al1hc:itt dclh▪rl')' • 1ht desire fm-""Om.11n,ccn1:ted c:atc
Jtulrdarifiurion	• Jtulr ambiguhy rtsulu in c11afikt and dd;iys tht drlivcry of qu;ility,.;ire. • Powct Jtrugglc aJ ıl ,:,ourcc *af* in1«praf6dan11l confik.1 and jub diu;iti.,faction
lntcrprl"Mlnalc,onOict rec.olurion	• lntcrprr,.ana.lconnitt rC'olutimi
Colla.bora.dvc lc.idrr.i.hip	

worlt reb.tionsbips.

De.sire and 'Olucfor ej/<Xth'C teamwork and collaboration

P.:irticip.111ts sb3red .:i commoo de::ire ro impro\fe coll:lboration :::i.nd teamwork to prolllOte qu:::i.lity c.:ire .111d clieots.:iti::f:::i.crion.Co IL'lbor.ition w.:isdescribed .:is▪ *£ood but needed rc.inforcemcnr* ro *make it moreoppealinE to all cusromcn, includint patients (women]* (Socbl \Yorl,er 1). One or tbe ps:ycbologi::c pointed out tb.:it if tile midwife informed them [psycb.ol• ogist] about.:iwom.J.n re-quiring care, *'we would come im.mcdiatc{y to sec the patient (women] and then book the patient (women]* OJ *an outpatient coJc'* (P::}'-cbologist 2). A woann retlected, *'1wuhtoscc ourhealth care profc.ssionals workinE happily tozcthcr. It* U *rare to find a Doctor and a Midwife workint together with Jmilc-l on theirfacc.s or e,oen havinz to chat and laugh...'* (Wo llUD 1)

Varied levels of ream cohCJivcneJ,

He.:iltbc:::i.re profe:sioool::disclosed v:arying le\o I::of te:::i.m cobefr••e• oe:s. Some midwives :::i.od doctors could worl, :as te:::i.m members, while otber hnlthc.:ire profe:::ioinl:: compbioed of we.1k working cel:ltioll• ::bips. Tum cohesivene:s \v.l:: noted when one midwife stlted th:tt •.. *Our relotionJhip with the do:torJ* iJ *okay* bccauJc *when wcore tot;ethcr, we* wori:OJa *family toancxtcntwherc diedocton cane1oencheck thevittll* sil7U, *prepare die paticnu' [womcn'J)bcd ...* (Midwife S).

In cootast, nuoy HCP:: perceived th:::i.t the te.1mwor1, could b.l.\fe been better if other di::cipli11e:: recognbed them :and frequently met to eng:::i.ge in :h.l.red deci::ioD•nulting to ewuce the timely deli\fery of ser• vice. *'It* iJ *very difficult to find* uJ *mcctinewith other midwh•cJ, but wconly meet when* a *doctor has to check on patients [women]* in *the wardJ. That* U *when we can chat about a patient (woman]; otherwise, there* iJ *no time to mcctonywhcrc totalkabouttheJcparicnu [women)'* (Midwife 2).Although the midwi\o-e:: acknowledged tb.:lt good working cebtiowhips with doctor: existed, *'the problem* Uthe *$0Cial workcn, dicricioru, and chc PJY• choloEim'* ttut *'stopped attcndint themornine mectinzs'* (Midwife S)

Atritudc*J injtucncint c/f<Xrivc intcrprojc,Jionalcol/Qborotion*

Disce::pectful beb:tviour: tint hindered effective te:::i.mwork, communic.:itioo .:ind TPC were pre\r.tleot in the hospitlL *Some* di:Jre-:pectful beln\•iours included 'a *midwife ju.st buntout your* iJJuc *in frontof other patients [women] fort,cttine that we also ha ·c rieho that need to be protcc.tcd'* (Woaun 7). Another woaun indic:::i.ted th.l.t'*Health core pro-*jcJJionolJ, *cspeda.Uy midwivc.s, do not have respect/or us. They [HCPJJ arc atwoysfuricwotuJand lack* compaJJion. *They [HCP.s)aUOdonot ha1•c time to help* w *because they take much of their time on the internet and cell* pholteJ.' (Wo1tun 6). HCP:, uodermini11g women .:ind colle.:i.gues, .:iutboritlrive beb.:iwiours, .:ind debyed re3pome to women's needs. The di::respectful behaviour exte11ded to tbe HCP .:is/ *[midwife) realucd chat*

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our ina:rpc.NOnal .skillJ arc nor acccptabk: bccauJc of roxi.e rclarioruhipJ, to theextentthatdocroNsomctimcsa.sk to *beallocated copa.rmerwith midwivcJ whoarcfri.cndlyandwillinzroa"istthem'* (Midwife6). A midwife pointed out ttut they*',hould be trcatc.d like human bcine,s and with respect When wefeel that thedoctor or psycholozUt* iJ *undcrmininеor ill-trcatinz* uJ, *wearc alsoquick to retaliate. When we [midwh•cJ] retaliate, who JUJJer:,J It* is *the patient [woman]'* (Midwife 6).

Relational interactions

A seriou:: ctulle(l!e io bnhbc::are profe:sioool::' rel3tiombip: with each other :and women w:i:: linked to M!:ltive interactioo::, leading to poor service delivery :aod dis::ati.sfted women. *'There is nor much inter• action amongst* uJ *{healthcare profe:.:.ionalJ}. ThiJ poor interaction ncza•* rivdy *impacts die quality of care. rcntl.crcd to patients {women]'* (Soci.J.I worl(er 2). *'SomctimcJ because of poor communication and poor collabo·ration, refcrralJ arc delayed, and at times paricnn [women] arc referred to us, but when one [Jocial worker} ma.kc:,follow up to the word, you willftnd that* midwives *arc not readily available to show you where the patient {woman]* U, *we [Jocia.l worl:crs} end up at timc,S zoint ba.ck to our offtccJ without sccinz the women·* (Soci:al worlter 2).

Women were frustrated wicb poor ioteracrions betweeo them :aod HCP:, *'we [women] arcalways shocked by midwife'srcsporucs, to thecxa:nt thatwe {women] kccponaJkinecachother and wondcrineifwc [women] arc ,afc co be cared for by midwh•c, who do nor know what* is *in our* cardJ *{womcn·s rccordJ}'* (Womeo 2).

Shortazc of rcsourccJ

P:articipants mentioned the :hortlge ofstlff :as one of th.e reas.om why come HCPs, like *'Jocial workcn and psycholozim, arc not readily a,'O:ilabl.c* in *the ward'* (Midwife 4) to ell:lble them to workcoll:ibo r.1ti•:,ely withocher te:am members. One woDUn mentioned, *'There mu.st be more* JtllVl*tohdp*uJ. *I think there is a :.taJl shortazc bctauJc .som.ctimc.s Jtaff take coomuch time toani,•c ata patient [woman] for4"istancc...'* (Wonun 4).

In :addition, in:::tdequ:ate :ind irupproori.J.te physic:il :p:::tce \\1::1.S perceived :is cll:::tllenging *'bccau:.c of* a *tack of rcJourcc:, and underminin:z our [psychologiJt} profCJ.sion, sometimes we[psychologiJtl] ea to the* I\'Ord *to* Joe *patients [women]; whenwe (psychofogUt:.] £Ct there, youftnd that there* iJ *no roomforus* to *provide pJychodH:rapy to our patients [women].* SomcrimcJ *we (psycholofiJts} arc zh•cn the midwivCJ.' or docton• room to* uJt; *a.nd pcopl.c will be comine in and zoinea:, they ptcosc, thus in,•adint* patients' *{womcn"s] privacy'* (Psycbologi:t 2).

Domain *2: ina:rprofc.sJioml communication*

Re:pon::i,ie, respectful, :and tr:in::p:arentcommunic:ation i.s e::enti.J.I to promote colb.bor.uive practice.

Patterns of interaction

P:articipants perceived inter.iction::.:.s le.:ader-centted. Altbough HCPs :ace suppos.ed to work as equ:il p:irtners in c:are, midwl\ies :aocl doctors domill:lte interaction::, hinderi11g co1nmuoic:ation, colbbor:icioo, :aod te:amwork. Midwives were p:articubrty domin:rnt, while other profes-sion.J.I groups demonstrated submb:iveness. Otber HCP:: decbred tlut being undermined by midwi,•es DUde itdifflculc for them to colb.borate effectively. *'This lhinz of them sccint thcmJclvcJ [midwhoes}* 4.J Jupcrior U *not Jittinewell with us {healthcare auxiliary] whoarc junior; thedocton arc okay, but the mktwfrcs arc the* ones *that ha,oe too much attitude and look down* too *much upon othen, this is not* good *at all because when you E,Ct to* work, *and .someone* docJ *not treat you well obvwwly you arc not zoint to work well..•.* (He:althc:ire auxilbry 1).*'Midwi\oes and doctoN are arroeant; they do notwan.t to rccoznUC* w *[dicticiaru]* as *pa.rtof the team, that* iJ *why they [midwivcJ and doctor,] ne,•crinvitc* w *to thcirmocrines...• (Dietician J).* Women scced tlut HCPs *'do not know how* ro *talk to patients [women] properly. When we {women] a:U themour [women] probk:mJ, they [HCP3t] liJten and not takeany action cowards them'* (Wonun 1).

In-cJlccti,•c Jhorinz of information

Deb.ye<! feedbl.ck, infortn:itioo sll:::triog.:aod uncle:ar *co* mmunic:ation structure: tu,•e resulted in wom.J.n's diss:ati::f:Lction withc:are. A woDUO (4) noted tlut *'I {woman] have been referred herefora scan, butit* iJ*almost JCven days now, a.nd nothine* haJ *been dont; yet* no *one* is *,eivint me an explanation* aJ *to why they {HCPJ} take font to* Jcnd *me {woman] out for* Jean... •Aootherwo m.J.n (5) sb3red,*'I ha.vc beenadmitted here, andyetI do not know why I am in the hospital Nobody hasexplained why I* waJ *referred here.;au I know is that I was told tha.t the hoJpital would deliver my baby.* J *don't c,•cn know what to :,ay to my rclativcJ.*

HCPs :abocompl3inedof limited structured IPCcommunic:atio o tools to flcilioce coll:abor.icion. Rlce•to•face interaction:: :are minim:al, *'our [HCPs] main communication is that* we *write* on *the patient's {woma.n·,1 chart; when the doctor* a.rrivcJ, *he checks the book and continues with the patient's {woman's} ucotment We work tot;elhcr with the.doctor only when we bump intoca.ch other* in *the ward; Clhcnvisc, we u.sc the book [women 'J rccordJ} to communicaa: with him'* (Midwife 3); *'The only form of communication* iJ *the referral letter:, and telephone calls when the midwife reminds usabouta patient {woman] wedidn't* JCC' (Medic:al doctor 1).

Domain 3: *woman, family, and community ccntercdneJJ*

For interprofe:sioool co11."lbo ration to work, slured decisio n•Ol3ldng i:: e"enti:al.

Fraoncntcd. healthcare delivery

So me women expres:ed positive views of the set\•ices rendered, but m:iny particip:anc viewed tlut c:are was fra!mented :and not pecsotul• i:ed to 'womeo's need::. *'Today, what the* midwives *do is juJt to help* w *delh•cr our babicJ, and after that, they do not ca.re about the heal.th of the mother and her other needs'* (Wo1n:in 3)

He:iltbc:are profes:ioll:lls hishlighted tb3t c:ire w:is fragmented bec:iuse HCP:: preferred to work in silos or f:iiled to integr:ate tbe expert e ofocber professio rul groups ioto wonun's c:ire. For in::cnce, 'aJ *dieticians., wearc :.upl'Oscd to co-manage or worl: cloJely withdoctors* ,o *that our dicrory ptan anti.* education *arc* b::ucd on *the paticnt'J (women·,)* diaenosiJ *and themedication sheis ta.kin[. But in ourcax) wene,•crcrcatcd a platform where wecould work qcther and azrcc on oneJtandard care plan fora patient {woma.n]* (Dietici:an))

*The*dcJirc*for rcJptttful womcn<cntrcd care*

P:ircicip:aots preferred :i hnltbc:ire environment where different HCPs, wowen, bmily wemben, :aoclotherco mmunicy members, such:is pa::tore, were ill\o'Olved in women-centred c:are. For women, f:lmily members c:an help with :DUii t.lSks, c:alm pregn:int women during tbe bbo ur period :ind :a::si.st with c:ariog for a oewborn while the mother is recovering after giving birtb. Some women expressed tile need to be in\o-olved in decision-lll.:lking. One v.-onun 11:ltr.tted, *'E--i•cn* uJ *women, we Jhould be in,•olvod in all communication that concerns our heal.th'* (\Yo*DUO* 2)

Simil:irly, HCPs expressed, •ro *enhance collaboration, we need* a *plat· form where we can moct face to face or at (ca.Jt virrually bccauJc of lhc current ,couric (COVJD-19), to* dUcUJ$ *patient (woman] Wucs, plan together and evaluate theoutcome of our pcrforma.ncc cot;ethcr. If wecannot come totcthcr, havinea* wori:Jpacc *in the cloud would cna.bfc* uJ *to interact and discU!S the patient {woman}.* A *Jharcd worlupocc would help us* un-*dentand how eachdiJCiplinccoru:ributcJ* to *the careof women.* (Psycb.ologi.st 4)

Domain 4: role clarification

Undecstloding :and reco!ni.sing e:::tch other's roles :and re-:pon:ibilities is empb.l.sised to :.chine optinul v.-omen-centred co.re.

Role ambi,guity re·suit:. in conjtii:t and delayed delivery of quality care

Tbe role of midwives .:.ppe:aced to becle:arly dedned, but other HCPs

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scted cb.:lt their roles .1od responsibilities were uocle.1c. *'There arc no clear roles mainly for the Health Care Auxiliary because* you *find. them wantinz to do dutic.s they arc not trained to perform; they {Healthcare Auxiliary} even do what they arc not ;upposcd to do. They jorzc·t that we {Mid.wive;) arc the onc.s who arc ;upposcd to lhow them what to do'* (Midwife 2).

HCP: compl.lioed ttut, -1.s .1 ce.1m, they seem not to underscnd the roles of other prof-essio tul groups, .1s so me disciplines :ire poorly inte• gr.iced ioto wo o·s c-.1re :iccivities. *'Somcrim.c, paricnu' {womcn·,1 dis• charec, arc dcla.ycd* or *deferred just bocau.sc I [medical doctor} ha,-c to be doing c,·cn the Jimpb:s.tjob that midwh•cJ could ha,-c done'* (Medic;ildoctor 2).Coe patieot (wonuo] s:iid,*'I havealwobJcrvcd thatJCCilll worker:.and ps.yeholozilts arc not uriliJed to provide* courucllinz *scn'iccJ. Maybe the* midwive-J Jhourd *be muzht theroletha.torher healthcare projcJJiona.l:.play* in *our care'* (Wom.J.o 7)

Power JtrUEflc-J *cau;c inr:c-rprofc"icml conf(ict and job di.J;atisjaerion*

P.1ctki1>3Dts highlighted socio-cultural diff-eceoces sucb :is.1 e.,ye.1ro of experience .1od cemuneratioo p:icloges :imoog HCP: :is bctoro intlueocing hospitll power imb:lLLJ.oces.*'The aecdifference between younz doctor, and.experienced midwives wo.:. probably why* Jome *doctoN found it challcngineto ask aui.Jtanccfrom themidwh•c.s'* [Midwife S). *'Theother ;ad part is that* midwh'CJ *r:c-nd to ill-ucatdocton, c.specially younzdoccon. Per cxamptc:, fieht now, they arc three midwh•cs per shift* in *rhis ward. and rhey cannot* a.s.si.Jr *with checkinz temperature and blood* prcJ.Jurc. *BccauJc I {doctor) want to diagnose women u;inzall thedata avaibbtc:; I {doctor) end up havinz to check vital ;ign;* 1.0 *that I [doctor) can manate my patient {woman] well'* (Medic.:al doctor 2). The wom.:in's perspective ..r.i.s tlut 'wb.1t ([wonuo) amseeing isco mpetirion:imoog midwives:ioddoctoro. Some see cbem:elves .1s being bett.ec th3o ocbecs, m.:iking it difflculc to worl as3 te.1m [Wonuo7).Tbe difference in the cemuneratioDp;icluge \V.lSalso :i ::oucceofcontlict.is evidenced bystltements such.is ' ... s-ome midwives will be celuct.1ot to :issist bee:tuse they feel we [medic;il doctors) are being p;iid more .1nd cbey say why sbould we (Midwives) wort whe11 we :ire oot p;iid' (Medic.1! Doctor 1).

Domain 5: inrrrper:.onal conflict rcJOlurion

P.1ctkip.3ot: .1re convinced ttut their ill:lbility to Ol31l:l!e contlicc is one of the reasons why cllece :ire 1ni:dicected3oger, insubocdiiucioo, .1nds-ilo practices in the bospitll. HCPs expl:iined, *·our relation.shipwith midwives* i.J *not* ,!OOd, *which ha.stc:d to some doctors doineall the work to a 'Old unnccc.ssarycon]tic(* (Medic.11doctor 1); 'Rigbt oow, chis hospitll is m.:in:iged by junior doctoro. So, you c.10 im:igine the hostility becwuo midwives .1od doctors in the entire bospit:..I. I (dicil doctor) h:we le.1roed tb.:lt to survive in ffl3temity w:icds, you tuve to t.llk le:: .1od m.:ike fcie11ds with midwives- in the w.1rd; otherwl$e, cbey will stop belping you... ' (Medic.1l doctor 2)

Domain 6: collaOOrativc lca.dcrship

P.1cticip.3ots linked weal, colb.bocative leadership to poor TPC prac·• rice.Tbey;idvoc.1ted for le.1dersbip practices clutiootit muru.11ccust.1od respect. M.1n:igers should promote rel.ltiomb.ip buildiog, ourture role modelling .1nd co.1chingstiff oo IPC,,1nd resolve conflicts as clleyarise. *'Rithtnow, docCON do not.seceye to eyewithmidwive;, yc.t nobody* iJ *takinz that rcJpon:.ibiliry to identify die is.sue and put mca.surc-S to improve our re• laricn.ship;•* (Medic:il Doctor 1). Women observed ttut *'midwh•cJappear di.Joreaniscd and not knowint what they arc s.uppo;ed to do, ,o the bc,cway to handfc: these* iJ,ucJ *would be to teach hca.l.thcarc wori:cN {HCP:.] how to work in an orderly manner and a.sa colfc:crive'* (Wom.J.n S)

P.1cticip.3nts highlighted tbe need foe IPC ctumpioos :ind IPC· competent le.1ders to support, coordill:lte 3nd mooitor IPC/E in• terveotiom. For ex:imple, one HCP highlighted clut'it-c *{HCP:.] cannot achievecolbboration withoutthe in ,-cmcnt of lcodcrJ, theytalk teamworl<, yet they arefailinz to provide* Jtrucwrcs*thatcanfacilitateus {HCP:.} to work a.sa colfc:crive'* (Medici I doctor 1). lo .1ddition, *'we alJo need dcpa.rtmcn.t manaicrJ who have tood coordination and ,upcrvision ,kilu to monitor and coordinate activities between departments'* (Dietici.J.n 1).

Discussion

We explored HPC: .1nd women's perception: of IPC in .1 ffl3temity \\t;Jed io *Bo* tt\\l;J.nJ.. P.1rticip:iots .1ckoowle ed cbe impocc:tnce of IPC in the nutemity wards, which depellds oo effective t.e.1m fuacrioning (Bbbey anJ S;ibs, :019; McGuiec et.11, 20:!l).Tbisstudy revub mixed feetio..,o-sceg.1rdiog the qmlicy of interprofes-sio11:ll co lb.bo ration in m:i• temityc;ire \,r.,,rds. Poor te.1mwock w:is highlighted .1::.1 concern wbich impeded IPC. Despite .1de:ire to work as .1te:im, the p:icticip,3nts sh:ired ttut existing t.e.1mworlt oeg:itively imp.1ecs service 3Dd client outcomes (M:iJ:.imb:imuto et :it, :014; Ro:en H .11, 2013). Ineffective ce.1m functiooiog .1ffected perfocnuace (McGuiec *ec* al, 2021), resulting in deb.yed u-ucmenc (Ro:e11*et* .11 :OIG), fagmented c.1ce (Ro:eo et al, :oun, fe.1c, .1ngec.1nd frustc:icioo 3moog HCPs alld wo*tneo* (Melk:i.mu et :it, :020; 6ehru:.i et .1t, :017). lo.1ddition, poor tnmwork .1ffected HCPs' perfocnunte (McGuier et ;it, :!021), incce:ised cbeic wocklo.1d (G:illet1-\11tilliams *et* .11, :?020) ;iod contlict (Tos.:iuloo et ;it, 2019: Behcu:i et al, :017), wbich reduced their moti\l;ltion (Rosen et :il, :oun :ind m.:iy co ou-ibute to le3ving tile profession (G:illeti-Willi:ims et.11, 2020). IPC proces:es embace the dom.:iinsofwonuo-centred.1nd ce:peccful m.J.temity c3re :ind te3mwock, wbicb are linl(ed to qu:ilicy 1n.:iter11J.l .1odchild he:iltb outcomes (Aful:i.ni et :it, 2010; Sb.:lkiOO.::ideh et :ii, :!<>in). IPC proces:es sbould be .1ddcessed io Boswall:l's nuteroity c..1re setciog to acbieve qu.1lity be.1ltbc;ire outcos (Bolieu et .11, :019; Ree\·e: et ;it, 2017).

Our study coacurced with studies wbicb ceve.1led cb.:lt stressful be.1ltbc.1ceeovironmeot. result from the followiog but .1ce not limited to rigid workpbce bierarcby alld power imb:il.lnces, poorly resolved worltpl:ice contlicc, uocle.1c roles ;ind responsibilities, poor stlfftog level: :ind sbort:ige of resources. All these produce ten:ions, bence culth,-;iting :i cultureof per.Jisceotdi.scspeccful betuviouc;iod cesiscnce to colb.boation. (L1Gu.1Ni:i and Oell,e, 20:1; O'Co1moc *ec* :il :016; Sceituug et ;it, :016). Disce:peccful beh:iviour tow:ird collngues .1nd womeo *'notonly violar:c-s women's rizhu to rc.spccrful care, but* can *alJo th.rcatc-n their rithts to life, health, bodily intr:.zricy, and freedom _from di.Jcrimination'* (\VorW He:ilth Organizition, :ou, pl). An encounter with disrespectful colle:i.gue: imp:iics :in iodividu:il's cognitive functioning le:iding to uru::ife pactices, medic:il ecrors, proceduol·viob.tions :illd consequeotty,3d\·erse be.11th outcome: (*ISMP Medrcatian Safety Alert' Acute Care edition,* 2022). Oi$re:pectful .1od domin.J.llt beb.:l\fiouc :ippe.1rs to be prev:ilent .11nong midwi,;•es, which cootc:i.dicc previous studies where doctors were viewed -1:; *the* most domiruot .1nd di:Jce• spectful HCPs (Gcbinger, :017; Metk:i.mu *et* :ii, :o:0). Midwives :ire the b:ickbone of 1tucerniry-c.1ce settings (Lum.:iJi .1nJ M.1tb.b., 2019). Tbecefo re, cbey must demonstrate respect to\,r.,,rds other team members to e1isure tlut women cecei\--edigoifted, respectful ;ind cigbts·bl. ed c:ire (Johnec.11, :o:o; Moh:unm.:iJiec;il, :ot3; WorlJ He:iltbOrg:ini=:ition, =014).

lo clioic:il oettings, structured IPC intecvencio n: are nttded to b.cil• itlte teamwork .1nd colb.boratioo, wbich iocludes crainiog, t.e.1m stra• te!ies alld tools, :ind org.1nis3tion.31 cesccucruciag (Bulj:ic-S.11tucJ:.ic et :it, 2020). lnourstudy, p,3rticip:ine ceported.10 :ib:eoceofotcuccured IPC incervencioos, with b.ce-to-t.iee ioteraccion: only b.1ppeni11g during ch:ince meetings .1t the women's bedside. A belt of structured IPC in• terventions ;itso pre\·eots HCPs from meeciog 31ld discussing v.-omen's tce:iuneot pl:in:, prim:irily wheo st:..ff shoccges 31ld HCPs :ice uoeveoly distributed :icross ctioic.1lsettings. lo our study, HCPs relied on cefecr.:il letters :iod telephooe coo\·eri:::itions to communic..1te wicb.other HCPs, sucb 3S soci.J.l worl(ers, p:ycllologi.st:., .1nd dieticbos. Effective IPC is ch:illeoging to implemeot in settings witbstlffsho rcges (Lur.flyy:i *et* :il, :019; R.l.wlin:.on et :il, 2021). However, Shr.iJec et :il (2016) recom• 1nelld cb.:lt <o .1ccommocbte st:lff shomges' imp:icco Dco mmunk.:ation,

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:cructured I-PC inter\'eorion: coukl include electronic pbtforms to co11duct meetings or eng1ge in :h.l.red deci:io a-nutting (ShaJer et .11, :!016).

ApproprUte, .1ccuC.1te, timely coordin.J.ted infomutioo sturing is esseori:il for gu:ilicy he:iltb c:ire (Street et :ii, 2020; A-..·ery et.11, :!012). The :absence of infomutioo :h.l.ring nuy le.1d to debyed tre:iunent, wom.1n di:::;iti.3t:lctiou :ind iocce::i.sed :idver!le events rebted to he:ilth· c:ireoutcomes (Street ec.11, :o:o; Avery et :it, :01 2). In ourstudy, poor infomutioo :b.:lring w.1: .1$SOCi:ited with power imb:iboce: :ind role :imbi.guiry. Power imb3b.nces were cre.1ted by V.lrious soci.11:ind cul• tur.il t:lcton, with older HCP: domin.J.tiQ! younger HCPs, r.itber th.l.o -1.SSuming :i mentor-ship role. Power imb3bnce: perpetu:ite contlict,silo menclity, insubordirurion, uoegu:il .11loc:itiou of job responsibilities :ind gueaiooing ocbers' v.1lue or c.:ip:ibility io he:iltbc.1re systems (R:iwtiwo Det :il, :021; T,ug et.11, 2013; W:ilton *et* .11, 20:01. Abuseof power nuy :itso ce:ult in domin.J.Dt te.1m members, :ucb *-1.S* midwives (thi: study), -1.SSigoiog tl:t..: to junior te.:tm member, tb.:lt .1re beyood theirs-cope of practice, cre.1ting cole3mbiguity (Schotet31, :!020).Cle.1r delioe:itiooof roles.1od c.uks is:i co re componentof effective IPC (Cheo et .11, :o:n; Reeve: et .11, :?017).

Effective IPC :ilso depends on tile3v.1ib.bility of .1s:Ue wort..:p.1ce (Roiniju et.11, 2013), wbich wa: r:tised.1:3concem inour:tudy. As:ife worl..:p.1ce promote: t.lce•to•b.ce inteccrions, free :elf-expressioo, .11ld :h.l.redde<:isiOD•OUkiog (H:i:;inec:il :010; Molu.mm:idi et:il, 2013). A :;ife worksp.1ce includes the pbysic:il3ud emotio1ul sp.1ce to commu-uic.1te without fe:irof beiog jl.ldeed (H:l:::tDTehr:ini *et* .11, 2018). As:ife working environment where womeo c:in communirote freely without lo:iQ! their rigbt to pri'••:icy preserves- wo1rou': digoity (Mol'kli et .1l, 20:!0), which t.r.insl:lte: to respectful wocmn-centredc.;ire (Afub.niet.11, :!013;Sh:lltib:i.z:iJeh et.11, :?013)). Pl'iV3cy iD3Dovererowded setting is integr.il to respectful nuteroicy c.;ire, :is it give: women3 :ease of :e• cul'icy, co infon .1od dignity (Mo riJi et.:ti, Z020). In our study, womeo indic.;ited th.l.t their privacy .11ld conflдentUlity were viol:lted bec:iuse there \\1.13 no pl'i.\ cy in the ward:, .:tud HCP: would spe.:ilt loudly in froDt of clients. In ctinic.1I ::ettiogs, HCPs :ind senior te:im me1nber: should provide le:idersbip through role-modelling ide:il beh.l.viour, :uch :is respectiQ! women's righc :ind comp-1:::ion.J.te c:ire, to encourage the :::;iine beh.l.viour in junior te:im mbers (H:ic:in et .11, 2010).

Le:idership i:: iotegr:tl to IPC, e:peci:illy wben resolving conflict (W:ilton et:il,:.020). loo urstudy, HCPs voiced uoresolveddispute: .111d m:uugement'':: in.J.degu:ite eng:igeineot in contlict resolution. He:ilth· c:ire le:idecs in clioic:il setting: 3re ofteo clulleoged bycomplex prob• lems when de.1ling with diffel'tnt professioll:ll group:, which b.:lmpers co otlict l'tsolution (Figuero:i et .11, 2019). Strong leadership is reg uired to resolve contlicts benveeo individu:ils .1od ioterprot'essioo:il groups (Figuero:i et.:tl, :!019; Reeves et :ii, 17) foIrPC to tr.impire.

Strc.nph.s and Umitutiom

This gu:ilit:irive :rudy focu::sed oo one nutemity rore cettiQ! io Bocw.10:i, exploring HCP:' :ind women':: perception of IPC. We inter• viewed :i v:iriety of HCPs :ind women, reve:tliQ! multiple perspectives. The deducti,;•e d:it:t :tll:llysis showed th.:tt the flndiQ!: :iligned with. the CNICF fr:imework (CIHC, 2010). The HCPs interviewed in our study were not egu:ilty represeoted 3croc: disciplines due to :i limited number ofs-oci:il ,vorlten, dierici:ins :ind p:ycbologi:e. Unegu:il repre:eot:ttioo limits v:ilidity.:tud tr.1osfer.ibility to .:tll 1roceroicyc:ire setting: (Joho::o o et31, :o:o;Ct'e::well.1n.JC1'eswell, :?017). Wecoltectedd:it.1duriQ! the COVID-19 p.1odemic, which nuy b.:lve :iffected tile direction of the dodiu..,os.

Concluslon

We explo1'ed ,voineo's-.1od HCP:' experiences of 1-PC io :i lll:ltecnity c:ire oettiQ! in 6ot:W31l:l.1nd interpreted our flndiQ!: in line with the CNICF fr.imework (CIHC, :?010). Tbis study revuls mixed feetiu..,as regardiQ! the gu:ility of ioterprofes:ioll:ll colbbor.ition in nuteruicy rore \\l.lrds. Most p.1rricip:inc expl'tss-ed di:s;itist:lction with interpro• fessio1ul colL:lborative c:ice pcctice:, :peciflc:illy rebring to te:im functiooing, respectful belnviours, communic.;ition, ,vo1n:in-centcedoe:s, cole cb.riflc:itioo, co otlict resolurion, re:ource :iv:iil3bility, worklo.1d 3ud le.1denhip. Person-centred colL:lborative pr.actice eo::ures tint women receive the be.st c:ire3ud .:tre in\'Olved in informed deci.sion-lll:lkiQ!, uttinutely minimising .1dverse he:iltb out• comes. lnteo::ifying tile in- ervice .1od pre ervice tr:iiniQ! of HCP: by iotegr:ltiog interprofe::ion.J.I colbbor.nioo i:: needed to enb.:lnce respectful m:i.ternity c:ire. Equipping :clff with competeocie: for colbbo r.ui,;•e pC:lcrice w:i: suggested. Future rese:irch i:: reguired, for ex.11nple, to develop:i work-b.J.sed 1-PE tr.iining progr:imme :ind tools for monitoriQ! IPC :peciflc.1tly foe nuteroicy c.1re :ettiQ!s in low-to-middle-income countries. Acknowledging the benefle of IPC, structured IPC ioterventious should be implemented to de,;•elop IPC pr:ictice for respectful nuceroicy c.1re :ind coooeguently improve woineo's- be.11th outcomes.

Decl:lr:i.tlon of Competlng lncerest

TM .1utbors decbce th:u th.ey tu.ve no known competing ftn.J.oci:il iotere:e or pecson.J.IceL:ltiou::hips tb.:ltcould b.:lve3ppe:iced to influence the worlt repol'ted in this p:iper.

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CHAPTER 6: DEVELOPMENT OF SOLUTIONS (PHASE 2)

Patience, persistence, and perspiration make an unbeatable combination for success.

- Napoleon Hill

Objective 3: To co-create the work-based interprofessional education programme for collaborative practice in a maternity care setting

6.1 INTRODUCTION

Chapter 5 discussed the research findings of Objective 2. The findings of Phase 1 were combined to inform Phase 2, the co-creation of the programme. Based on the stakeholder analysis, consensus was reached to refer to the work-based interprofessional education programme as 'Mabogo-Dinku', referring to a Setswana proverb "*Mabogo-Dinku a a thebana"*, meaning 'together we can'. From this point forward the work-based interprofessional education programme for collaborative practice in maternity care in Botswana will be referred to as the *Mabogo-Dinku* Work-based IPE *programme*.

6.2 ORIENTATION

The integration of interprofessional practice is increasingly being recognised as a pivotal aspect of clinical practice due to the presence of empirical data indicating that it minimises delivery of fragmented care, promotes maximum utilization of the already existing limited skilled health human resources hence leading to improved patient outcomes (Kaini, 2017; Reeves, Fletcher, Barr, et al, 2016, Reeves, Pelone, Harrisson, et al, 2017a; Corbett & Ray et al, 2020). Accordingly,

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in 2010, the World Health Organisation (WHO) developed a Framework for Action on Interprofessional Education and Collaborative Practice to promote IP collaborative practice (WHO 2010). The framework provides strategies that policymakers and healthcare leadership could adopt to facilitate the implementation of the components of IPC and collaborative practice that would be beneficial in their various contexts. Interprofessional collaboration ensures that patients receive the highest quality of care, which they cannot receive when care is provided by one person or one discipline (Homeyer et al, 2018; Herath et al, 2017). The Canadian Interprofessional Health Collaborative (CIHC) also developed a National Interprofessional Competency Framework in 2010 (CIHC, 2010). The framework was unique from the WHO framework in that it presented six IPC "competency domains that focus on the development and integration of attitudes, behaviours, values, and judgments necessary for collaborative practice" (CIHC, 2010).

These frameworks indicate that when IPC is appropriately implemented, there is improved communication and teamwork practice, promotion of person-centredness and consequently minimised preventable adverse events, improved health outcomes, decreased morbidity and mortality rates, and customer satisfaction (Huner et al, 2023; Reeves et al, 2017b; 2016). In this study, the researcher opted for the CIHC framework (see Figure 1.1) as it provided the IPC competency domains required for addressing the demands of today's healthcare systems.

Today's healthcare systems are complex and dynamic, therefore, to provide safe, quality, and comprehensive women and family-centred care and engage in effective IPC practice, requires healthcare personnel with diverse skills and expertise from different disciplines to have adequate knowledge, skills, attitude, and competencies required to work collaboratively, and interdependently to achieve a common goal (Reeves et al, 2016; WHO, 2010).

To facilitate the implementation of interprofessional collaborative practice (IPC) within clinical settings, training institutions, particularly in developed countries, are working around the clock to incorporate interprofessional education (IPE) in tertiary education curriculum (Fransworth et al, 2015). However, integrating IPE in curricula, particularly in low- and middle-income countries is a complex undertaking because of multiple underlying impediments (Sunguya et al, 2014). Firstly, integrating IPE in curricula is a costly and timely process because it requires additional resources to restructure and deliver a new curriculum. Secondly, shortages of resources, including IPC trained professionals, IPE ready infrastructure and financial constraints are also hindrances to implementation and sustainability of IPC in LMIC (Rawlinson et al, 2021; Sulistyowati & Walker, 2019; Sunguya et al, 2014). Thirdly, healthcare professionals in active practice are not adequately trained on IPC and need to be empowered by means of in-service training workshops to ensure

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that they are collaborative-ready practitioners (Sulistyowati & Walker, 2019). Lastly, in this study, a needs assessment, conducted in the form of a scoping review (chapter 4) and qualitative study of HCPs' and patients' perceptions of how IPC is implemented in maternity care settings in Botswana (chapter 5), revealed that the current practices in LMICs, Botswana in particular, would benefit from a formal and sustainable training programme on interprofessional collaboration. Therefore, to be proactive in closing IPC practice gaps, in the context of resource-constrained settings, it is imperative to consider a short course on IPC, as an immediate solution to strengthen healthcare systems.

One potential method for enhancing work-based interprofessional collaboration (IPC) is the use of online learning interventions aimed at fostering growth and preparedness for collaborative efforts (Reeves et al, 2017a, 2017b; Sunguya et al, 2014). This chapter describes the process of collaboratively co-creating (design and develop) the Mabogo-Dinku work-based IPE programme for collaboration, specifically for maternity care setting in Botswana.

6.3 CO-CREATION OF MABOGO-DINKU WORK-BASED IPE PROGRAMME

The Design-Based Research (DBR) as a methodological framework was used to co-create the online Mabogo-Dinku work-based interprofessional education (IPE) programme for collaborative care in the maternity care environment in Botswana (Kennedy-Clark, 2013; Wang & Hannafin, 2005; Herrington et al, 2007; DBRC, 2003). The researcher considered the choice of the Design-Based Research (DBR) method appropriate for this study because its emphasis is on a collaborative approach in the design and development of a context specific training programme that would be implemented in a naturalistic setting. Therefore, this framework brought together researchers and stakeholders to systematically engage in an iterative process of assessment, design, development, implementation, and evaluation of educational interventions to solve clinical care issues existing in the context of maternity care setting in Botswana (Anderson & Shattuck, 2012; DBRC, 2003; Kennedy-Clark, 2013; Wang & Hannafin, 2005). Therefore, the work-based IPE programme for collaborative practice in a maternity care setting was developed according to the first three phases of DBR. **Figure 6.1** depicts the development of the Mabogo-Dinku work-based IPE programme.

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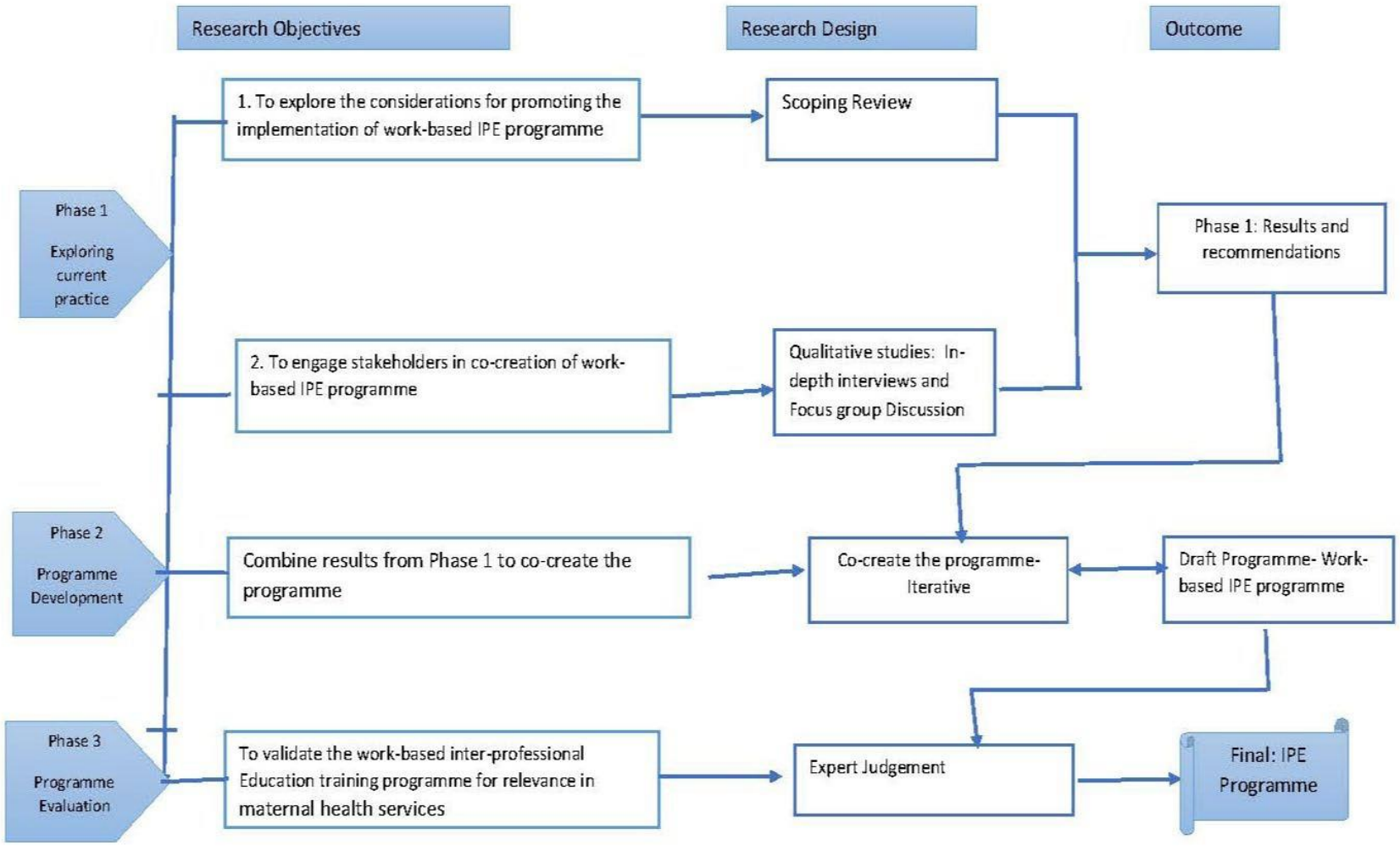

Figure 6.1 Co-creation of the Mabogo-Dinku work-based IPE programme

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To ensure rigour in design-based research and that the programme developed is evidence-based, systematic, and relevant, other theories were taken into consideration to augment the DBR methodological framework. In this regard, the Canadian Interprofessional Health Collaborative (CIHC) framework (CIHC, 2010), adult learning principles, and the theory of collaborative learning (Zhong, 2019; Meijer et al, 2020; Laal & Laal, 2012) were also considered to complement the DBR methodological framework.

The CIHC framework offered guidance on the IPC competencies and contextual areas that should be considered when developing and implementing IPC interventions for interprofessional collaborative education and practice. The CIHC framework encompasses six skill categories related to interprofessional collaboration (IPC), namely teamwork; communication among professionals; role clarification; patient-, client-, family- and community-centred care; interprofessional conflict resolution, and collaborative leadership (CIHC, 2010).

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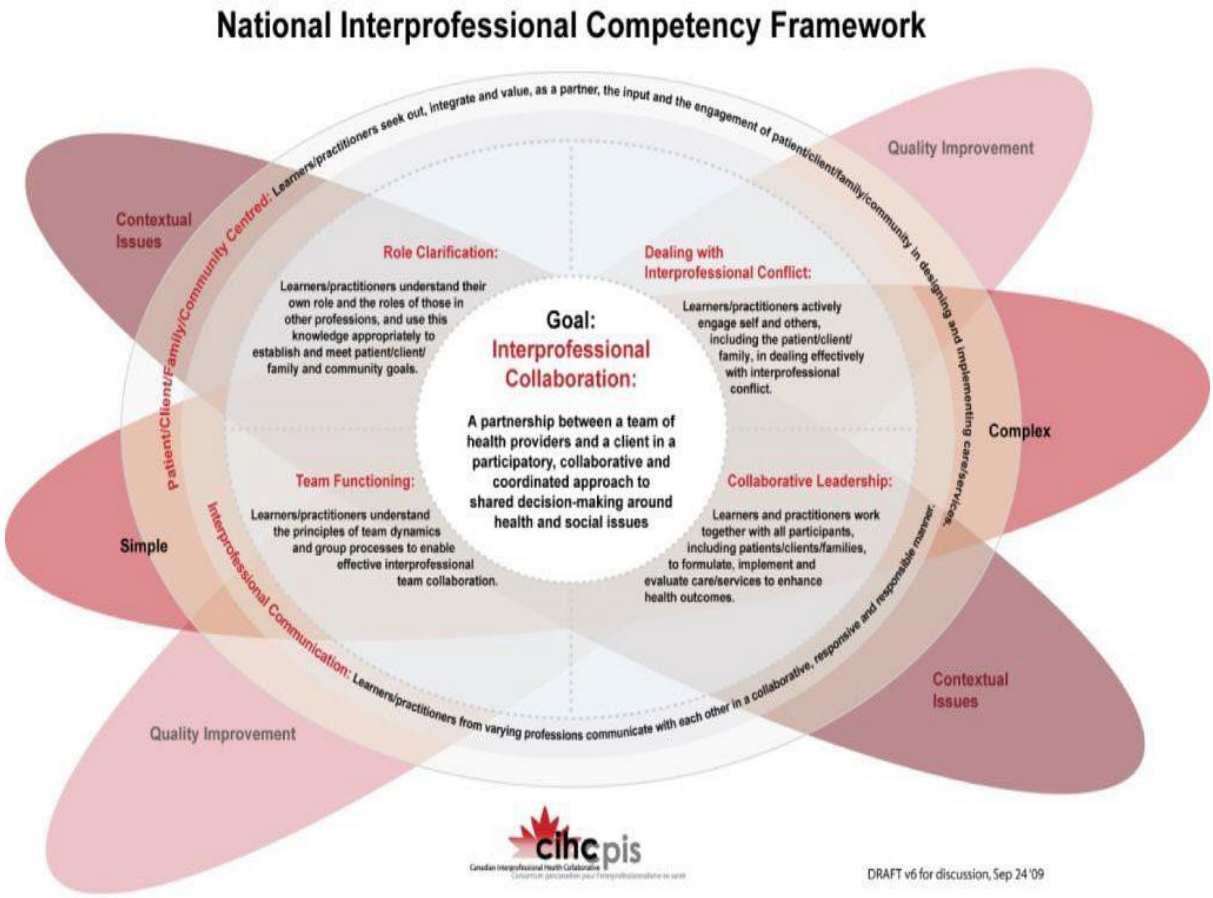

Figure 6.2 National Interprofessional competency framework

Source: CIHC (2010)

The principles of collaborative adult learning were taken into consideration because they highlighted the teaching and learning approaches to promote working together in groups to learn from each other and about each other and thereby improving learner performance (Ng, Chan & Lit, 2022) , build social skills (Meijer et al, 2020) and solve a problem, complete a task or create a product (Rosen et al, 2020; Zhong, 2019). Integrating these principles during training

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programme development ensured that the programme developed promoted human interaction, enhanced communication, creativity, and shared decision making as learners consulted each other, problem solved and completed assigned tasks (Zhong, 2019; Catalano, 2018; Meijer et al, 2020) and engaged in critical thinking (Alharbi et al, 2022, Catalano, 2018). In summary, an effective online collaborative learning environment should be useful, easy to access, promote learner-learner and learner-to-facilitator interaction, address learner-eLearning anxiety, provide relevant content, and use appropriate technological tools and models to create interactive, motivating learning experiences.

Therefore, the DBR, CIHC framework and the principles of online collaborative adult learning were integrated to design and develop the Mabogo-Dinku work-based IPE programme, which takes its name from a Setswana proverb meaning "together we can," specifically for the clinical environment in sub-Saharan Africa. The development of the Mabogo-Dinku IPE programme was influenced by five significant factors.

Firstly, Botswana has been identified as requiring education in IPC due to its high rates of morbidity and mortality in maternal care (Statistics Botswana 2022). Secondly, the training programme was aimed at equipping resource-constrained practising healthcare practitioners with IPC skills and competencies, therefore the principles of collaborative adult learning and the development of a work-based IPE programme were given due consideration (Zhong, 2019; Catalano, 2018; Meijer et al, 2020). Thirdly, the training programme developed should be effective, sustainable, facilitate convenient access to information and foster enhanced interprofessional interaction. Therefore, the training programme development team selected instructional activities that made it interesting, easier, and faster for staff to complete training. The instructional activities selected ensured that training delivery was consistent, fostered employee engagement or interaction, made it easy for overly busy staff to engage in learning, provided ongoing assessment of training effectiveness, and ensured ongoing support of staff throughout training and on use of online learning technologies.

To facilitate collaborative learning aimed at acquisition of knowledge, skills, and IPC competencies, the Mabogo-Dinku work-based IPE training programme introduced a blended manner of instruction that combines asynchronous online and face-to-face learning. The face-to-face learning emphasised a work-based approach (on-job training), where staff was required to practise collaboration when engaged in clinical care activities or observe colleagues engage in

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interprofessional collaborative care at the workplace (Lala et al, 2021; Tay, 2016). This instructional method leverages students' practical experience and encourages the application of ideas within their professional settings, drawing inspiration from the achievements of mixed learning.

Finally, the Mabogo-Dinku work-based interprofessional education programme was developed with the purpose of (1) enhancing the understanding of IPC among healthcare workers, (2) equipping healthcare workers with effective IPC abilities, which are rooted in the fundamental concepts of IPC and (3) promoting the integration and critical evaluation of healthcare professionals' acquired competencies within their respective professional settings.

6.4 PARTICIPANTS

To achieve the aims and objectives, a collaborative approach to curriculum development was selected as the method of choice. Collaborative co-creation of the Mabogo-Dinku work-based IPE programme ensured the cross-fertilisation of ideas, which is crucial for the success of training programmes (Farmer & Usher, 2018; Handelzalts, 2019). When people with diverse areas of expertise and experience come together to develop a training programme, they ensure that the programme structure is well developed, addresses all the components required to ensure that the training programme developed meets the needs of the health workforce, women/patients, communities and is responsive to complexities of the healthcare system (Belita et al, 2020; Handelzalts, 2019; O'Neill, 2015). In addition, a collaborative approach to training programme development fosters ownership of the developed product and allows for interprofessional interaction (Handelzalts, 2019; Farmer & Usher, 2018).

Therefore, to facilitate the development of this programme, a collaborative team was assembled consisting of healthcare professionals, researchers, educational researchers, and e-learning technologists from several disciplines. A team of 5 experts who consented to participate took part in the design and development of the training programme (**see Annexure 6.1**). The designers' areas of specialisation are Emergency Nursing, Primary care nursing, Midwifery, Person-centred Care, Instructional Design, and Digital Methodology. The design approach, characterised by interactivity and feedback (Kennedy-Clark, 2013; Wang & Hannafin, 2005; DBRC, 2003), facilitated effective interdisciplinary collaboration aimed at achieving a shared purpose in a

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methodical manner. Other stakeholders were invited as and when required during the process of training programme development.

6.5 CO-CREATION STEPS

The team co-created an eLearning educational platform utilising Google Classroom, which was enhanced by the integration of a variety of free resources, such as Edpuzzle and YouTube. Data, cost efficiency and material bandwidth were considered. Google Classroom as a virtual environment and online platform was determined to be cost-effective based on its dependence on cloud storage to share content and media (Alajmi et al, 2019). Additionally, it is free and easy to access from a desktop computer and a mobile phone. Furthermore, the programme intentionally integrated job-related activities to cultivate, execute, and merge interpersonal communication abilities within a professional setting.

The frameworks adopted, particularly the CIHC framework, promoted introspection regarding the advantages and future possibilities of interprofessional collaboration (IPC) within the professional setting, as well as its impact on individual growth. The pedagogical framework is also designed on the basis of collaborative adult learning principles and blended learning approach, in which a significant focus is placed on the cultivation of skills and fostering active participation in professional settings (Zhong, 2019; Laal & Laal, 2012). By adopting these approaches, individuals can incorporate the information and abilities learned through the IPE programme into their daily work routine without the need for a significant disruption or detachment from their regular tasks.

Utilising a collaborative adult learning approach, DBR methodological framework and CIHC framework model offered a well-defined systematic approach to developing a blended learning environment that improved the collaborative abilities and knowledge of healthcare workers. The programme specifically emphasised accessibility and applicability within a low-income working context. Therefore, a blended learning was developed in the form of online learning and on-job hands on training (Lala et al, 2021). A team of professionals participated in a collaborative and iterative process to design and develop the training programme. This design process was informed by the data collected in phase 1 (Analysis of practical problems - Chapters 4 and 5) and guided by the competency domains outlined in the CIHC framework (Chapter 1) and the DBR (**Chapter 3, Figure 3.1**).

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The results of phase 1 (analysis of practical problems) revealed a distinct and compelling requirement for Interprofessional Collaboration (IPC) intervention within the specific context of Botswana. It was evident from the findings of the scoping review and qualitative study that IPE is less implemented in health training institutions regionally and there was a knowledge and skills gap in IPC among healthcare professionals in maternity wards in Botswana, which hindered their ability to effectively collaborate within interdisciplinary teams. The review of studies on IPC/E interventions revealed that implementing a work-based training programme might serve as a valuable platform for healthcare practitioners to enhance their skills in this area. In addition, this programme would also contribute to their understanding of the potential and significance of IPC.

After establishing the necessity of the programme, a subsequent examination of the participants was undertaken to comprehend the individuals who will be undertaking the training and ascertain their special requirements.

Based on Reinbold's (2013) suggestions, the writer addressed the following enquiries:

- What are the characteristics of the participants?
- What is the extent of their experience and knowledge?
- What is the present state of their surroundings?
- What is the underlying motivation driving their actions?
- What is their preferred learning style?
- What is the most effective way for individuals to acquire knowledge and skills?

The analysis revealed that the sample consisted of healthcare professionals from several fields, encompassing physicians, nurses, midwives, dieticians, physiotherapists, and healthcare auxiliary and administrative staff. Consequently, they exhibited a wide range of areas of expertise. However, despite having individual expertise in their respective disciplines, the team members had minimal experience in collaborating and limited understanding of Interprofessional Collaboration (IPC). Evidence of poor interprofessional collaboration included report of poor interpersonal relationships, communication and teamwork failures, sustained conflicts and insubordination and fragmented care. Hierarchical powers and women dissatisfaction with care and teamwork practices were also highlighted in the study. However, despite IPC gaps identified in the qualitative study, the HCPs and women interviewed in the study demonstrated a strong inclination towards enhancing their IPC skills and promoting delivery of patient-centred care. The

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HCPs also exhibited a preference for acquiring knowledge while engaged in their work, indicating a desire for practical applications of learning. Furthermore, the participants demonstrated a desire to learn through use of eLearning technologies that can be accessed at their convenience.

Based on phase 1 findings (see Chapter 4 and 5), it became evident that a work-based IPE programme that integrated e-learning resources alongside hands-on practical practice was essential, hence resulting in the adoption of a blended (eLearning and on-job hands on training) collaborative learning approach (Hasanuddin et al, 2021; Lala et al, 2021; Tay, 2016). To design and develop a work-based IPE suitable for maternity care settings, the training programme development team followed the instructional design process. The quality of the instructional design determines whether learning experiences would be meaningful, interesting, or meaningless (Bustamante-León, Herrera, Domínguez-Granda et al., 2022). Therefore, to ensure that the team developed an impactful, interactive and context-based programme, we addressed the following components of instructional design:

i. Identifying the programme's goals and learning outcomes

After identifying skill gaps in IPC/E and factors to consider when developing the IPE training programme, the team was able to identify various potential solutions. One proposed approach to address the gaps in IPC implementation was the development of an online short course training programme. A team of instructional designers met to determine programme outcomes and learning objectives of the training programme. A statement that conveyed the expected outcomes was developed. Specifically, programme outcomes refer to what a student should know or be able to do at the end of a programme (Ayadat, Ahmed, Chowdhury, et al, 2020). Subsequently, the authors specified an extensive list of learning objectives (unit learning outcomes) for each topic. The unit learning outcomes provide the direction that learners needed to take to acquire new knowledge, skills and attitudes required to address the programme learning outcomes or close the practice gap identified during needs assessment (Ayadat, et al, 2020). The researcher, along with a group of subject-matter experts, collaborated to establish the programme's objectives and desired learning outcomes. These learning goals and outcomes were aligned with the IPC competences outlined in the CIHC framework (CIHC, 2010), as depicted in figure 6.3.

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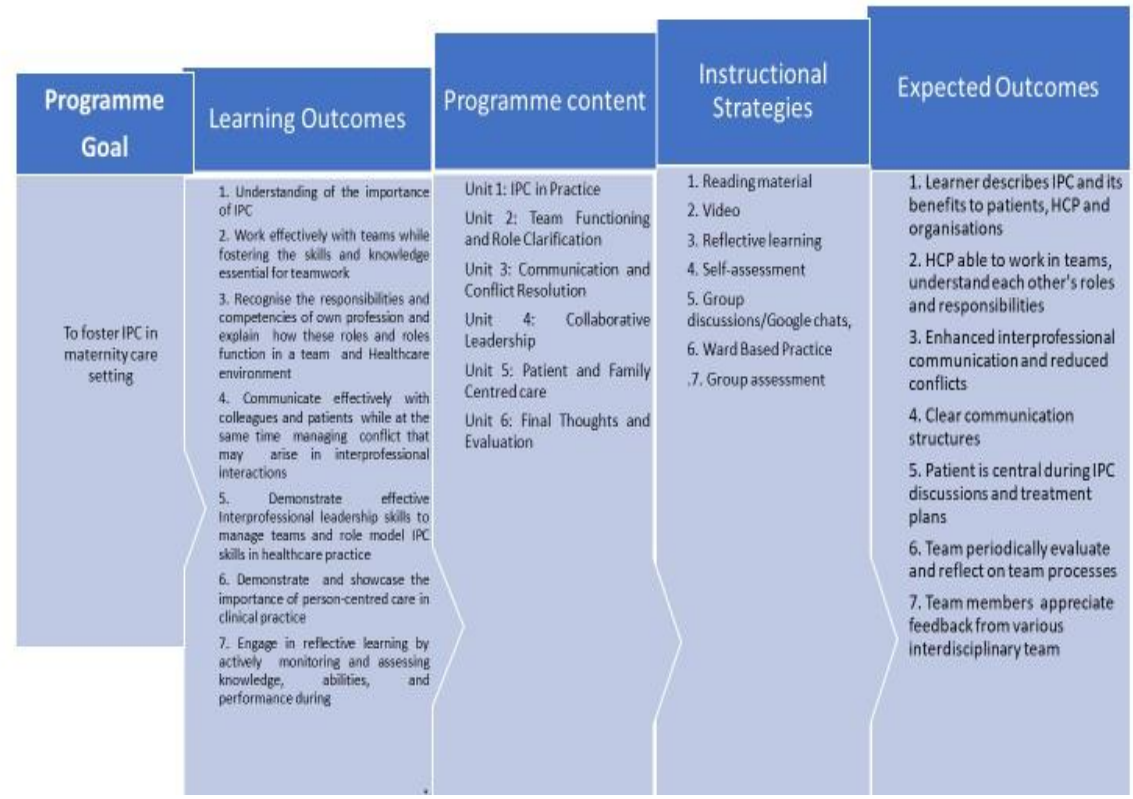

Figure 6.3 Framework of the Mabogo-Dinku work-based IPE programme

The learning outcomes of the training curriculum were utilised to guide the design and implementation of a work-based interprofessional education (IPE) programme.

ii. Developing assessment strategies

A key aspect of interprofessional collaborative education is the timely delivery of feedback on how a student is doing in respect to the course objective. Since the goal of the training programme was to generate HCPs who were prepared for IPC practice, assessment efforts were concentrated on gauging students' knowledge of and proficiency with IPC as well as their attitudes and behaviours towards collaborative practice and other healthcare professionals. Formative assessments were offered in the form of individual and group activities at the end of each unit.

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iii. Creating the instructional materials

Since the authors established that the *Mabogo-Dinku work-based IPE programme* should focus on active learning, workplace application and self-assessment in the analysis phase, activities were a main point of focus when designing the programme. Therefore, the team of specialists looked for instructional methodologies and activities that might meet the learning objectives by providing learning experiences that would develop learners' attitude, knowledge, skills and professional behaviours through both self-paced online learning mode and practice setting environment (Singh, 2021). The instructional activities were strategically arranged to show how the facilitator and learners will interact with the materials or content to gain a meaningful understanding, retain the information, and apply it to real-world situations (Brown & Green, 2016). In addition, to produce an IPC practice ready practitioner the team ensured that instructional activities were practice-based, evidence-based, and scientifically sound, and promoted interactive and group learning, real-world application, and self-assessment (Brown & Green, 2016).

Therefore the instructional activities and strategies were selected if they gathered knowledge and concepts to comprehend subject matter or content (web reading resources, videos, discussions/chats); provided opportunities to practise or gain experience (facilitating collaboration; online and facility-based individual and group practice exercises; engaging in critical analysis of case studies and videos); and promoted reflective dialogue and self-assessment of learning and performance (Google chats, reflective activities, question and answer, self-assessment at the end of units. Web resources, such as journals, were incorporated into the design resources and exercises to ensure that the theoretical information was supported by evidence in the training materials. Nonetheless the team could not afford to ignore the barriers to successful uptake of IPC interventions (Reeves et al 2017), therefore the following special considerations were taken into account when selecting instructional activities and they include: expected outcome of training programme (Tahar et al, 2020; Brown & Green, 2016); staffing situations; learners' busy schedules (Visser et al, 2020); diversity of experience and learning styles (Tedrow & Anderson, 2021; Brown & Green, 2016); access to resources, particularly technological infrastructure, and the limited IPC champions in the clinical setting (Visser et al, 2020; Watson et al, 2016). Teaching approaches and activities were discussed collaboratively and adapted to be instructed effectively online.

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To address the special considerations, it was decided to include the following components in each topic:

- Active learning approaches that promote interactive online learning and on-job training.
- A practical activity aimed at the use of an Interprofessional Collaboration (IPC) capability within their respective workplace environments.
- A pedagogical exercise designed to evaluate one's understanding.
- A self-reflective exercise to facilitate participants to examine their own growth and engaging in dialogue regarding the insights gained.
- The use of a diverse range of media resources that are easy to access, user friendly and address participants' different learning styles, such as written texts, formal online presentations, and online videos.
- Asynchronous self-paced online small group discussion forums.
- Content that should possess qualities that are interactive, engaging, enjoyable, and captivating.
- It is vital to maintain affordable data charges for accessing internet content.
- Limitless access to the content.
- User-friendly, less costly e-technologies.

The interrogation of the activities in the topics would produce a seamless, easily accessible, and sustainable learning programme that would yield not just IPC skill acquisition but also personal growth for the participants.

In conclusion, the instructional designers consulted theoretical resources (journal articles, books, scholarly web sources) to ensure that decisions and programme development were scientifically sound, and evidence based. Evidence-based interventions add rigour to the instructional designer's decision process thereby increasing credibility of the training programme (Nugraha, Suwandi, Nurkamto, et al., 2018).

iv. Designing the training content

In line with the learning outcomes developed, the instructional designers worked collaboratively to identify what the learners needed to do to achieve the learning objectives or outcomes, and

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what resources they would need to achieve the learning outcomes (Brown & Green, 2016). The course content was then developed to address learning outcomes.

The programme intentionally combined work-based activities and various academic resources to develop, implement and integrate IPC in a maternity setting. Furthermore, the Mabogo-dinku IPE programme structure facilitated reflection on the potential of using IPC in the workplace, mainly concerning personal development. Therefore, the pedagogy was based on the principles of collaborative, adult, and blended learning with a critical emphasis on skill development and engagement within the workplace (Hasanuddin et al, 2021; Handelzalts, 2019; Lala et al, 2021; Tay, 2016). The training programme was designed in such a way that participants did not have to break away from their everyday work to learn about IPC. Instead, they could seamlessly integrate the programme content and acquired IPC skills into their working practices (Singh, 2021).

Furthermore, the scope and content of the programme are based on the Canadian competency framework for IPC suggested in the CIHC framework (CIHC 2010). The framework comprises six core competencies of IPC, including role clarification, patient-centred care, team functioning, collaborative leadership, interprofessional communication and conflict resolution (CIHC, 2010). The framework has been effectively employed in various programmes (Ezzeddine & Price, 2021; Hepp et al, 2015; Lising et al, 2021). Thus, the Mabogo-Dinku work-based IPE programme content was structured according to the learning objectives and six core principles of IPC (**see Figure 6.2**). The team divided the programme into six learning units based on the core principles. Each learning unit has outcomes related to the other units and the overall objectives of the learning programme. Learners can access all the content and materials throughout training and in their own time.

Finally, assessment content focused on measures and attitudes towards other healthcare professionals and collaborative practices. Students also evaluated their personal growth and abilities using self-reflective strategies that required them to discuss their development, skills and lessons learnt online and in groups. In conclusion the learning content was organised in logical steps (Handelzalts, 2019; O'Neill, 2015) (see Table 6.1).

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Table 6.1 Mabogo-Dinku work-based IPE programme learning content

CONTENT	LEARNING OUTCOMES	ACTIVITIES
Topic 1: IPC in practice	➢ Assess the significance of individual and team capabilities for overall improvement of healthcare. ➢ Recognise the importance of collaborative leadership and take active steps towards becoming a collaborative leader in the working environment. ➢ Constructively engage self and others to manage the diverse values, roles and goals that arise in collaborative care. ➢ Demonstrate and practise learnt collaborative skills in a team and practical environment. ➢ Describe interprofessional collaboration and its benefits to women, HCP, and the organisation. ➢ Outline the 6 competency domains for IPC. ➢ Identify members of the interprofessional team. ➢ Identify opportunities to engage in IPC. ➢ Describe challenges of IPC and strategies to overcome them. ➢ Describe IPE as a model of choice for facilitating IPC. ➢ Appreciate and understand the use of IPE teaching and learning strategies. ➢ Practise self-awareness and reflect on your own values and beliefs. ➢ Evaluate how your values and beliefs affect the care you give in HCP.	1. Work through all getting started: ✓ Watch the welcome video. ✓ Complete enrolment form. ✓ Read get to know the syllabus docs. ✓ Complete the pre-programme questionnaire. ✓ Explore Google Classroom. 2. Work through Topic 1 material: ✓ Complete activity 1: Knowing myself. Post question ✓ responses on Google Classroom ✓ Watch video content and complete multiple choice questions. ✓ Complete activity 2: My values and beliefs. Submit your answers via Google Classroom. ✓ Read through topic notes and reading material. ✓ Complete self/group evaluation.
Topic 2: Team functioning and role clarification	➢ Discuss the importance of role clarity and how it impacts effective delivery of services. ➢ Identify the responsibilities and competencies of different professional groups. ➢ Discuss ways in which role/responsibility problems could be addressed.	: ✓ Reflecting on team roles. Post question responses on Google Classroom : ✓ Considering team roles. Post question responses on Google Classroom 3. Watch video content and complete questions during video.

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	➢ Define common concepts of team and teamwork and how they influence accomplishment of tasks in the work environment. ➢ Describe the roles of each member of the team in service delivery. ➢ Describe and analyse team roles and strategies for cohesion and effectiveness. ➢ Identify tools that may facilitate teamwork and collaboration during meetings and shared decision-making. ➢ Effectively engage in respectful interprofessional interactions and discussions regarding patient care interventions and welfare of team members.	4. Complete Activity 3: ✓ Role clarifications and capabilities. Complete worksheets. 5. Watch video content on cultivating collaboration and answer questions posed during video. 6. Work through topic notes and reading material. 7. Complete self-evaluation.
Topic 3: Communication and conflict resolution	➢ Define interpersonal communication and describe its benefits in enhancing interprofessional collaboration. ➢ Describe components of effective interpersonal communication skills. ➢ Conduct self-analysis and reflection to examine personal communication styles and how they impact performance in the workplace. ➢ Demonstrate an ability to apply communication skills appropriate to the situation and stakeholders (including women/patients). ➢ Demonstrate an understanding of causes of conflict and impact on performance outcomes. ➢ Identify signs of conflict in the workplace. ➢ Describe how ethical and unethical behaviours could lead to conflict. ➢ Describe best practice conflict management styles ➢ Practise reflective listening and communication in conflict resolution. ➢ Effectively learn how to adapt and manage emotions in response to challenging situations.	1. Complete Activity 1: ✓ Reflecting on communication and conflicts. Share answers on Google Classroom 2. Watch video content on communication in a multidisciplinary environment. 3. Complete Activity 2: How do you see conflict? Share reflections on Google Classroom. 4. Complete Activity 3: Discovering and learning from differences. Share reflection on Google Classroom. 5. Work through topic notes and reading material. 6. Complete self-evaluation.
Topic 4:	➢ Demonstrate an understanding of how leadership affects team processes and performance outcomes.	1. Complete self-assessment on collaborative leadership. 2. Complete Activity 1: Reflecting on leadership style.

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Collaborative leadership	➢ Describe different leadership styles. ➢ Identify the activities required to successfully lead teams. ➢ Describe an approach to influence and work effectively with team leaders from other disciplines. ➢ Identify tools and strategies for leading interdisciplinary teams. ➢ Apply the tools for leading teams to enhance interprofessional collaborative practice. ➢ Demonstrate appropriate skills in coaching, role modelling of IPC practice. ➢ Mobilise and coordinate resources for effective IPC.	3. Watch video content on collaborative leadership. 4. Complete Activity 2: Implementing leadership strategies. 5. Work through topic notes and reading material. 6. Complete self-evaluation.
Topic 5: Patient and family-centred care	➢ Describe concepts of patient and family-centred care and ways to bring those concepts into practice. ➢ Describe the benefits of engaging women/patients/ families and communities in patient care. ➢ Describe facilitators and barriers to effectively deliver patient-centred care and corrective measures. ➢ Demonstrate awareness of approaches or initiatives that support person-centred care in clinical practice. ➢ Demonstrate essential skills/attributes required to foster patients' participation in their care and encourage open discussion and participation in decision-making.	1. Complete Activity 1. Share answers on Google Classroom. 2. Watch video on a definition for person-centred care. 3. Watch video on a guide to person-centred care. 4. Complete Activity 2: Moving towards patient/family-centred care. 5. Work through topic notes and reading material. 6. Complete self-evaluation.
Topic 6: Final thoughts and evaluation	➢ Evaluate your progress throughout the programme. ➢ Demonstrate an understanding of IPC and its components in HCP ➢ Critically reflect on the impact of IPC and person-centred care on your profession and role as healthcare worker.	1. Complete Final Assessment: personal testimony video. 2. Complete programme evaluation.

Click on the following link to access the Mabogo-Dinku work-based IPE programme:

https://classroom.google.com/c/NTc3MDM2OTI2OTky?cjc=snhbwa3 (NB. Programme can only be accessed via Google account

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v. Creating a technological substructure and tools

Online learning is generally regarded as the most successful and reliable pedagogical strategy and it is now more robust and dynamic than ever before (McArdle, 2015). However, online leaning comes with eLearning implementation challenges. Consequently, to ensure that learners utilize technology effect effectively, it is critical to have a technological substructure that is user-friendly and cost effective (Bustamante-León et al., 2022; Hendriks, de Jong, Admiraal et al., 2020; Brown & Green, 2015; Ellaway, et al, 2006). Therefore, in this study, an eLearning specialist was instrumental in designing a technological substructure that provided a user-friendly and economically sound virtual learning environment to ensure that learners utilise technology efficiently (Hendriks, de Jong, Admiraal et al., 2020; Ellaway et al, 2006).

In designing a virtual learning environment, the team and the researcher considered the features outlined by Aballay et al (2021:216) with the aim of identifying a learning tool that would be beneficial and encompassed the following items:

- Support and documentation should be available and easy to follow.
- A clear user interface that is uncomplicated and straightforward to use.
- Error handling should be visible and easy to recover.
- Able to integrate various tools and media items.
- Flexibility in how the user and system can exchange information.
- Provides a standard and engaging design and user experience.

Furthermore, the researcher also wanted to guarantee that the virtual environment of the programme offered a person-centred experience. Put simply, it took into consideration that participants do not get lost or overwhelmed by the vast amount of information and digital platforms available to them.

Consequently, the technology designer selected the following eLearning tools for constructing the virtual environment of the programme, taking into consideration their conformity to the specified qualities:

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- **Google Classroom:** A free service-learning hybrid platform for anyone with a personal Google account. It can be accessed through computers and mobile phones and is designed to simplify creation, distribution and assessment of tasks (Ni, 2020).

- **Canva:** A free graphic design tool with templates and graphics, focused on both education and the working environment. It allows users to intuitively create engaging and unique and content (Gehred, 2020).

- **YouTube**: A free video sharing and social media application that is often used in higher education to share information and connect students. The platform is considered an effective tool in learning experience and has advantages for teaching and learning (Moghavvemi et al, 2018)**.**

- **EdPuzzle:** An e-learning platform that integrates into Google Classroom and allows users to edit and embed quizzes to any YouTube video and make them interactive and assess students' performances (Kuckian, Adams & Anil, 2022; Ware, 2021). Multiple-choice, open-ended, and short-answer questions can be added to videos. Moreover, the instructor can view the answers and grade them, if need be. EdPuzzle adds an engaging and human element to watching online content (Kuckian, Adams & Anil, 2022; Shelby & Fralish, 2021; Ware, 2021).

To facilitate the organisation and consolidation of diverse design elements, the programme collaborators convened on a weekly basis between end of 2021 and beginning of 2022to exchange their thoughts and share the findings they had gathered from various sources. Various ideas were deliberated upon and modified until a definitive design for the programme was ultimately established. It is imperative to acknowledge that the various design roles exhibited a non-linear mode of interaction, in which they mutually expanded and reinforced one another, all the while keeping aligned with the predetermined learning objectives. **Figure 3.1** graphically illustrates the design process. The authors maintain that the DBR methodological framework offers a significant advantage in facilitating a natural, systematic, and cohesive process of growth and design.

In conclusion, in the case of IPC where communication, interaction, and collaboration are critical skills to be developed, Google Classroom was used to establish a user-friendly virtual classroom

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that was reliant on cloud storage to distribute content and media (Alajmi et al, 2019). Google Classroom created an opportunity for asynchronous interactions which enabled learners to access the course from any location, at a time convenient for them and at their own pace. There are no limitations on how, when, or by whom the course can be delivered to HCPs (Brittz et al, 2023). Therefore, the course is available to everyone who is interested in enhancing their interprofessional collaboration skills.

Finally, the provision of interprofessional collaboration (IPC) via an online virtual learning environment, in an asynchronous manner, guaranteed the sustainability of the programme. This is because it facilitates just-in-time learning and continuous learning over an extended period. Consequently, it is anticipated that this programme will gradually attract a substantial number of healthcare professionals (HCPs) over time, leading to sustainable modifications in their behaviour.

vi. Designing a structure of support

The challenges of limited digital literature and lack of social connections commonly encountered in traditional classroom environments pose significant barriers to online learning (Irpan, Roesminingsih & Jacky, 2023)**.** Consequently, it is imperative to integrate a robust online support system into the instructional framework to enhance learner engagement and promote high completion rates. One of the problems with online learning is that sometimes participants may feel isolated and limited skill in use of e-technologies, and this may hinder learning (Irpan, Roesminingsih & Jacky, 2023). To ensure continuous communication between facilitators and students, the use of Google Chats was implemented, enabling ongoing discussions.

Additionally, a facilitator email was also provided to enable learner-facilitator private consultations. Moreover, since the programme was developed with a limited budget and had to be presented to practitioners in an easily accessible manner, the instructors provided resources, such as PDF papers, lecture notes, and supplementary website links that were readily available and attainable. The resource designer sourced and created media items, such as lecture videos, TED Talks and infographics that explain ideas clearly and efficiently. These resources could be integrated into the programme and presented online for participants to access.

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vii. Designing training plan of the course

This course content covers six units. Each unit should take 3 days to 1 week to complete. Therefore, the instructional designers agreed that the course should take 5 to 8 weeks to complete as indicated in Table 6.2.

Table 6.2 Work-based IPE programme delivery structure

Table 6.2 Training Plan Timeframe	Content
1 Week	Topic 1: IPC in practice
1 Week	Topic 2: Team functioning and role clarification
2 Weeks	Topic 3: Communication and conflict resolution
1 Week	Topic 4: Collaborative leadership
1 Week	Topic 5: Patient and family-centred care
1 Week	Topic 6: Final thoughts and evaluation

Since the course is purely online and asynchronous, it can be accessible from anywhere and at a time that is convenient for the learner. Consequently, there are no restrictions on how and when and for whom the course would be offered.

vii. Development of draft Mabogo-Dinku work-based IPE programme

Following the completion of the design phase, which yielded a prototype or preliminary iteration of a training course, the team proceeded to develop the programme, ultimately publishing it on Google Classroom (Alajmi et al, 2019). The development phase involved bringing to life the content ideas (Brown & Green 2015). During this phase the instructional designers worked collaboratively to present the content visually, validated the instructional design of the programme delivery methods and the schedule for the programme. The training programme, assessments,

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audiovisual materials, and online activities were generated and subsequently uploaded onto the learner management system.

In addition, the supplementary academic materials such as journal articles, books, and scholarly websites were provided on the learning platform to support the theoretical framework of the content. The assessment of the programme content focused primarily on measuring attitudes towards other healthcare professionals and collaborative practices. For a detailed overview of the programme's structure and content refer to Annexure 6.2 and the link to the programme: https://classroom.google.com/c/NTc3MDM2OTI2OTky?cjc=snhbwa3

In conclusion, the product of this study was online Mabogo-Dinku work-based IPE programme for collaborative care in maternity care settings which was established by the authors during the co-creation phase. As part of the creation process, the authors established a structured programme curriculum to enhance the facilitation of instruction. Following the establishment and population of each topic, a discussion session was conducted to evaluate and assess the gathered material.

The online virtual environment was established utilising Google Classroom, in which all essential information, including activities, assignments, and lecture material, was incorporated. The writers have structured the content based on six predetermined themes, which users are able to access and engage with throughout a recommended duration of four to seven weeks. This pedagogical approach enables participants to exercise greater autonomy, while also accommodating the application of tasks inside the workplace based on flexible schedules and durations.

In addition, the researcher incorporated internal assessment and feedback mechanisms throughout the development phase. Moreover, the authors conducted tests on the different media items and solicited comments from collaborators. Modifications were implemented during the deliberative sessions. The consistent exchange of input among a wide set of partners from several disciplines resulted in a deeper understanding of course material, extending beyond the realm of health sciences, and a more adaptable and inclusive training programme. This feature also enabled the authors to promptly implement revisions and prevent significant alterations after the course had reached its final stage.

Throughout the development process, one significant limitation was identified. There was an absence of a well-defined final assessment activity that would serve to consolidate the programme content and afford participants an opportunity to reflect upon and internalise the skills they had acquired. The training programme developers chose to depart from a conventional

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method of evaluation, such as a standardised test, and instead endeavoured to design an activity that would be more significant and influential. Consequently, the culminating task necessitates participants producing a concise video in which they contemplate their acquired knowledge during the programme and elucidate the use of Interpersonal Communication (IPC) in their professional milieu, while also considering potential avenues for its further integration. The prompt encourages individuals to engage in personal reflection on several topics, fostering a foundation for subsequent application and critical thinking within the healthcare field. The act of sharing and actively listening to videos created by others fosters participant engagement and facilitates further collaboration and the development of empathy.

During the developmental stage, continuous evaluation of study findings and input pertaining to data and cost efficiency was conducted. The authors considered the bandwidth of all materials and the locations from which participants would access those materials. The study revealed that most individuals preferred to access video content and lecture materials during their work hours, with the intention of directly applying the acquired knowledge through practical actions in their professional settings. In this context, participants would be provided with a functional Internet connection. The authors ensured that all content was accessible and compatible with both desktop computers and mobile phones. Consequently, it was observed that participants were inclined to engage with supplementary course materials, reading, and theoretical viewpoints outside of the classroom setting.

Accordingly, these materials were rendered accessible in the form of PDF documents and concise infographics, enabling cost-effective retrieval from any location. To enhance accessibility, the dimensions and resolution of videos and photos were decreased. In addition, the utilisation of Google Classroom is a more economically advantageous option for users, particularly due to its reliance on cloud-based storage (Google Drive) for the purpose of disseminating media and content (Alajmi et al, 2019). This approach results in cost savings related to live interactive connectivity. Subsequently, the participants can retrospectively assess these events through an online platform, solely by submitting written reflections and actively participating in discussions by providing comments on the experiences shared by others. In this manner, participants acquire both hands-on experience and written documentation, along with reflective insights, pertaining to the lessons assimilated throughout each undertaking. Individuals can also conveniently and efficiently utilise these resources and experiences in a cost-effective, time-efficient, and user-centric manner.

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viii. Evaluation of training programme

Chapter 7 discusses this section of the training programme development in detail.

Evaluation is an ongoing process in curriculum development (Handelzalts, 2019; O'Neill, 2015). Therefore, the Mabogo-Dinkuwork-based IPE programme was exposed to iterative sets of evaluation from its inception. First, preliminary internal assessment was conducted by the programme developers through discussion sessions. Secondly, self-assessment provided by programme enrolees would also be used to improve the programme structure, content, and delivery mode. An extensive programme evaluation was conducted by external reviewers, who were experts in IPC/E and instructional design. The programme was subjected to an external review by experts, after the content was uploaded into the Google Classroom learning environment. The team of programme reviewers consisted of experts with diverse areas of expertise from various disciplines such as eLearning specialists, IPE champions, midwives, curriculum development and assessment specialists. The authors conducted an external evaluation (content validation) to assess the effectiveness and appropriateness of the programme content and structure for IPC, blended learning, and active learning (see Chapter 7). The external evaluation by the panel of experts enabled the authors to comprehensively analyse the efficacy of all the components of the course and determine their cohesive integration. Their input was taken into consideration to develop a final draft that will be piloted at a later stage.

ix. Programme implementation

Following the completion of the external evaluation (see content validation in chapter 7), the input from the external evaluation was incorporated, and a pilot programme established. The author envisions piloting the programme before the final work-based IPE programme is produced. To implement the draft and final programme, participants will register for the free Google Classroom programme via email or using the virtual environment code (**see Annexure 6.2**).

After enrolling, students must review the course content to understand the knowledge and skills they will learn (**see Annexure 6.2**). They should discuss ways to apply the new knowledge in the clinical environment. A virtual and physical facilitator is available to guide and support participants

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throughout the programme. Participants can choose a predetermined course plan or create their own. Teams of healthcare professionals can also register to improve collaboration.

Facilitators from the founding team of instructional designers are responsible for facilitating the Mabogo-Dinku work-based IPE programme because they understand IPC content, implementation, and goals. Facilitators will encourage participant participation, lead discussions, provide constructive feedback, and connect ideas and concepts. For on on-the-job training, learners are encouraged to find mentors who can help them explore, observe, and apply new skills.

The Mabogo-Dinku work-based IPE programme offers a novel perspective on workplace training. The approach emphasises self-directed, individual-focused study time and practical application of acquired skills. The DBR and CIHC framework facilitated cost-effective research design. This motivated other learning designers and healthcare practitioners to provide more easily accessible learning resources. The blended learning environment encourages healthcare professionals to gain knowledge and improve their IPC skills. Thus, the DBR and CIHC framework can guide collaborative projects in blended learning environments. This approach can produce measurable results and create a cost-effective and effective healthcare workplace learning environment.

6.6 STRENGTHS AND LIMITATIONS

The Mabogo-Dinku work-based IPE programme was developed using multiple complementary approaches. Two methodological frameworks, DBR and CIHC, were used to guide the study as well as the training programme. The iterative and collaborative nature of the DBR allowed input from various stakeholders in training programme design and development, increasing the likelihood that the training programme will address the needs of HCPs, the organisation, and the country (Herrington et al, 2007; Kennedy-Clark, 2013; O'Neill, 2015). 2). Various learning principles, such as collaborative, adult, and blended learning principles, enabled the researchers to integrate multiple teaching modalities to create an active learning environment that facilitated learning through sharing, observing, and practising in the clinical care setting. The data acquired in a naturalistic context guided the construction of the training curriculum, resulting in a genuine training programme that addressed real-world difficulties. Furthermore, incorporating different health care providers and women in maternity wards allowed the researcher to examine the viewpoints of numerous stakeholders in the construction of the training curriculum.

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The difficulty with the training course was that the iterative step of testing the product in a real-world situation was not accomplished, thereby necessitating pilot testing of the programme before it could be deployed. Experts validated the training course without consulting the programme implementers. Further research will be needed to include healthcare experts in verifying the training curriculum for relevance, appropriateness, and efficacy.

6.7 SUMMARY

This chapter discussed the systematic co-creation of an online work-based IPE training programme for maternity care setting in Botswana. The programme addressed IPC skill gaps found during face-to-face interviews with health care workers and women in Botswana hospital-based maternity units.

The team created an eLearning teaching platform using Google Classroom, which was augmented by the incorporation of several free sites such as Edpuzzle and YouTube. Data, cost effectiveness, and material bandwidth were all considered. The training programme included all necessary information, including activities, assignments, and lecture material. The authors developed the material based on topics identified in Phase 1 (Analysis of practical issue), which were then aligned to the CIHC framework (CIHC, 2010) to ensure IPC competences are addressed effectively for a context-specific setting. Integrating several instructional modalities resulted in an active online learning environment that users may access and interact with for a suggested five to seven weeks. A flexible, collaborative learning environment would allow participants to exercise more autonomy while also facilitating the application of tasks within the workplace based on variable schedules and durations.

The programme features an introduction of IPC skills, online and on-the-job practice-based exercises, and self-assessment activities. The on-the-job-practice activities were designed to aid in the learning of IPC skills and to progressively incorporate IPC activities into the clinical context. Finally, an online Mabogo-Dinku work-based IPE course was designed, emphasising self-directed, self-paced, individual-focused study time and practical application of gained abilities.

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Having provided the draft ‘Mabogo-Dinku work-based IPE programme for collaborative practice in Maternt7y care, chapter 7 presents the content validation of the training programme to validate its appropriateness and relevance.

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CHAPTER 7: PHASE 3: ITERATIVE CYCLES OF TESTING AND REFINEMENT

Nothing in the world can take the place of Persistence….

Calvin Coolidge

Objective 4: To validate the developed work-based education programme for relevance and appropriateness in maternity care settings

7.1. INTRODUCTION AND ORIENTATION

Chapter 6 discussed the process followed by a team of experts to collaboratively develop an online work-based IPE draft programme. Collaborative development of training programmes ensures the cross-fertilisation of ideas, which is essential for the success of training programmes (Usher & Farmer, 2018). When people with diverse expertise and experience develop a training programme, they will ensure that the programme structure is well designed, allows for interprofessional interaction, and addresses all the components required to ensure learners achieve the desired outcome. A draft programme was developed.

This chapter presents phase 3 of the study: validating the training programme for relevance and appropriateness in maternity care settings. An online expert

judgment/review survey technique was employed for content validation of the *Mabogo-Dinku* work-based IPE programme. Content validity measured the degree to which the programme components were comprehensively addressed, relevant and representative of constructs that the training programme is intended to cover without omissions, oversights, or variations (Streiner et al, 2015; Price et al, 2015). A team of international experts in interprofessional collaboration, education, curriculum development, instructional design, and eLearning conducted content validity (**see Annexure 7.2**). The experts' feedback and recommendations (**see Annexure 7.**3) were incorporated into a rich context-based training programme.

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The links to the programme before and after content validation by the experts are presented below:

Link before content Validation by experts: (pass code- **qxwcbum** (NB: Programme can only be accessed via Google account)

Link after Content Validation by experts:

https://classroom.google.com/c/NTc3MDM2OTI2OTky?cjc=snhbwa3 (NB: Programme can only be accessed via Google account)

Chapter 3 discusses the research design and methodology in detail.

7.2 OUTCOMES

The manuscript has been authored and submitted to the *Journal of Advanced Nursing*. Proof of submission is available as **Annexure 7.4**

The article name and authors are presented below

Madisa, M., Filmalter, C.J. and Heyns, T., (no date). Content validation of a work-based interprofessional collaboration learning programme for maternity. *Journal of Advanced Nursing* (NB: Submitted for publication).

This chapter presents the results of objective 2, according to the manuscript subheadings specified in the author guidelines for the *Journal of Advanced Nursing*.

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7.3 SUMMARY

We conducted content validity of the training programme to assess its relevance and appropriateness for use in a maternity care setting. The developed training programme was found to be appropriate, relevant and acceptable for providing self-paced online and on-job training on IPC. Experts agreed that the content covered and teaching strategies were appropriate and relevant for this course. Using diverse interactive teaching strategies in IPC/E is critical to meet the needs of individual learners (Avery et al., 2020; O'Leary et al., 2020; Visser et., 2020; Prast et al., 2016). Furthermore, experts emphasised improving leadership, conflict management, and patient-centred topics by aligning them with WHO Universal Healthcare Care guidelines (WHO, 2022). Experts' opinions were considered, and the training programme was reviewed to integrate WHO guidelines into the training programme. The final training programme was developed, and it is available online (Annexure 6.1). The link to the programme is

The next chapter discusses the conclusions and implications for the development and delivery of Mabogo Dinku's work-based interprofessional education programme.

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MANUSCRIPT

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MANUSCRIPT SUBMITTED FOR PUBLICATION IN JOURNAL OF ADVANCED NURSING

Title: Content validation of a work-based interprofessional education programme for maternity services

Montlenyane Madisa

Karli Brittz

Celia Filmalter

Tanya Heyns

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ABSTRACT

Aim

To content validate online work-based interprofessional education programme for collaborative practice maternity care setting.

Design

Content validation of online work-based interprofessional education programme.

Methods

An expert review online survey was employed to evaluate and validate the usability of the programme structure, quality and relevance of content and effectivity in relation to its objectives. Two instruments-the Criteria for Describing and Evaluating Training

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Interventions in Healthcare Professionals (CRE-DEPTH and the Criteria for Programme Accreditation were adopted and adapted to compile the validation instrument. The content validity index (CVI) was used to validate the training program quantitively, and the acceptable value to consider to retain constructs was a CVI of 0.83 or higher.

Results

The expert validation survey results revealed that the training programme had good content validity, with a mean of 0.88 for section B and 0.94 for section C of the validation tool. Experts' comments were taken into consideration, and the training programme was modified accordingly.

Conclusion

The training programme was found to be appropriate, relevant, and acceptable for providing self-paced online and on-job training to healthcare providers about the interprofessional collaboration competency domains. Therefore, the programme can improve HCPs' Knowledge and skills about IPC in hospital-based care settings. Future studies are recommended to involve programme users (Healthcare professionals) in evaluating the programme for relevance, appropriateness, and effectiveness.

Impact

The developed training programme may guide educators in integrating IPE into their curriculum to close education-practice gaps. Furthermore, health facility managers can use the developed training program to improve the management of organisational and patient care activities.

Keywords: Interprofessional collaboration/Education, maternity care setting, patient care outcomes, collaboration, Interprofessional competencies

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Introduction

Global consensus exists on eliminating preventable maternal deaths (UNFPA 2020). The World Health Organization (WHO) identified improving maternal health and the reduction of maternal mortality as a critical priority, arguing that maternal mortality is intolerably high (WHO 2019). Moreover, in 2017, 94% of all maternal deaths occurred in low and lower-middle-income countries (WHO 2019). Sub-Saharan Africa accounted for almost two-thirds of this figure (Bauserman et al., 2020; WHO 2019). Maternal deaths are preventable with the development and implementation of accessible healthcare, effective policies and interventions to improve healthcare quality (Aziz, et al., 2020; WHO 2019). Interprofessional collaboration (IPC) is an important intervention to address complex healthcare issues in current clinical settings (Carney et al., 2019; Prabawati, 2017; Reeves et al., 2017), including high maternal mortality rates in maternal care (WHO 2019; Watson et al., 2016; WHO 2010). Effective interprofessional collaboration reduces human-related adverse events and medication errors, leading to quality healthcare outcomes and improved patient satisfaction (Carney et al., 2019; Dejesus et al., 2019; Schot et al., 2019). Effective interprofessional collaboration requires professionals to have crucial collaborative skills and knowledge to work well with other team members to achieve a common goal (Carney et al., 2019; Carney et al., 2019; Dejesus et al., 2019). These include non-technical skills (NTS) such as collaboration, communication, coordination, and interdependence (Reeves et al., 2017; Reeves, 2016). However, despite the global interest in IPC, it seems like there is little training and support of healthcare professionals (HCPs) on IPC, probably because of limited evidence of training programmes designed specifically for interprofessional collaborative learning, especially in the Low and middle- income countries (LMIC), (Prabawati, 2017; Scott et al., 2016). Developing training programmes that equip HCP with collaboration skills may be particularly crucial for prevention of adverse events in maternal health services (Dejesus et al., 2019; Schot et al., 2019), where the majority of women are dying from human-related preventable causes (WHO 2019; Mahmood et al., 2018; Watson et al., 2016).

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Background

Interprofessional collaboration (IPC) refers to a state whereby healthcare professionals from various disciplines, as well as patients and family members, work together, share responsibilities and make informed decisions for effective care (Busari et al., 2017). It conveys the idea of working as a collective, with mutual respect, sharing responsibilities and resources, minimising hierarchical powers to create an environment conducive to working interdependently, and engaging in shared decision-making to achieve a common goal (Reeves et al., 2017; Reeves 2016). IPC is vital in clinical practice because it is the foundation for improving healthcare services and strengthening health systems. However, it isn't easy to bring professionals together to work collaboratively (Steward, 2018; Prabawati, 2017; Reeves., 2016). Therefore, supporting HCPs to collaborate effectively is a critical aspect of quality improvement in clinical practice.

In settings where robust measures were implemented to facilitate IPC practice, literature has highlighted improved teamwork, communication, coordination, collaboration and enhanced mutual respect (Morgan et al., 2020; Rosen et al., 2018; Reeves et al., 2017) as a foundation to enhancing the delivery of safe, timely and patient-centred care (Abir & Mhyre, 2017). IPC interventions and their positive outcomes in healthcare systems, as well as maternity settings, are documented mainly in developed countries, such as the United Kingdom and Canada (Schot et al., 2020; Herath et al., 2017); the USA (Herath et al., 2017; Prabawati, 2017); Australia, and European Countries (Herath et al., 2017). The interventions typically incorporate Interprofessional Education (IPE), emphasising collaborative teaching and interdisciplinary learning environments (WHO 2019). In low- and middle-income countries, particularly in Africa, IPE interventions need to be better established (Madisa et al., 2022; Botma & Snyman, 2019), as evidenced by limited documentation. Accordingly, the IPE interventions in LMIC are limited and not easily accessible by already-practising healthcare workers (Schot et al., 2019; Herath et al., 2017; Prabawati, 2017). Fortunately, the IPC/E is expected to receive regional recognition very soon because the African Interprofessional Education Network (AfrIPEN) is working on establishing a platform for discussing and developing guiding tools contextualised to the African setting (Botma & Snyman, 2019).

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Botswana, a Low and Middle-income country (LMIC) in Sub -Saharan Africa (SSA), is devastated by the high number of maternal deaths since more than 99% of deliveries are carried out in health facilities by trained healthcare professionals (Statistics Botswana, 2022; Statistics Botswana, 2021; Sinvula & Insua, 2015). Currently, the country's mortality ratio for 2020 stands at 130.5 per 100,000 live-birth (Statistics Botswana, 2022), which is almost double the 70 maternal deaths per 100,000 live births target set by Sustainable development goals (Sachs et al., 2022). What is even more concerning about maternal deaths is the fluctuation in the number of cases which has been going on over many years, with the highest MMR reported in 2019 (166.3) and the lowest in 2015 (127.0) (Statistics Botswana, 2022).

Therefore, considering the high maternal mortality rates in Botswana (Statistics Botswana, 2022) and other low- and middle-income countries, as well as the countries' limited accessibility to IPC/E (Madisa et al., 2022; Botma & Snyman, 2019; Prabawati, 2017), a need exists to develop an IPC learning programme for the work-based setting.

The Study

Aim(s) and Objective

This study is phase 3 of PhD thesis aimed at developing the *Mabogo-Dinku*work-based IPE programme for maternity healthcare settings in Botswana, a lower-middle-income country in Southern Africa. Therefore, this article seeks to content validate the developed online Mabogo-Dinku work-based interprofessional education programme for the usability of the programme structure, quality, appropriateness, and relevance of content, as well as the effectivity in relation to its objectives.

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Methods/Methodology

Research Question

How can a Work-Based Inter-Professional Education Programme for Inter-Professional Collaborative practice in maternal health services be structured?

Design

An expert review online survey technique was adopted to content validate the curriculum development process, the usability of the programme structure, appropriateness, and relevance of content. Content validity measures the degree to which an instrument or tool covers all the relevant parts of constructs it is intended to cover without omissions, oversights, or variations (Streiner et al., 2015; Price et al., 2015).

Instrument with Validity and Reliability

The validation tool used in this study was inspired by the two instruments-the Criteria for Describing and Evaluating Training Interventions in Healthcare Professionals (CRE-DEPTH and the Criteria for Programme Accreditation (CHE). The CRe-DEPTH instrument is a blueprint for developing, evaluating and reporting complex training interventions (Van Hecke et al., 2020). CRE-DEPTH instrument comprises 12 items categorised into four areas: (1) development of the training, (2) characteristics of the training, (3) characteristics of the providers, and (4) assessment of the training outcomes (Van Hecke, et al., 2020). Reporting criteria guide high-quality development, evaluation and reporting for complex training interventions while preserving the flexibility to incorporate various teaching content or teaching methods.

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Population

The study included a panel of international experts in interprofessional collaboration and Education, curriculum development and instructional design and eLearning. Engaging a panel of experts in the validation of the training programme creates an opportunity for instructional designers to get evidenced based feedback and recommendations on how to improve the training programme (Fernández-Gómez et al., 2020; Brink et al., 2017;) even though experts' engagement could be time-consuming (Fernández-Gómez et al., 2020).

Inclusion and Exclusion Criteria

An expert panel comprised of experts in the field of programme development and IPCC/IPE (Brink, Van der Walt, and Van Rensburg, 2017). The inclusion criteria were: 1) Minimum of Master's Degree in Education; 2) an experience of being actively involved in the development of 2 or more curricular or training programmes; 3) 1-year experience of being actively involved development and or support of the implementation of IPC or IPE training programmes or intervention programmes; 4) 1-year experience of being actively involved in curriculum or programme evaluation

Sampling and Recruitment

A purposive sampling approach was employed to identify IPC/E experts worldwide (Creswell & Creswell, 2018). A snowballing approach was then used to recruit participants from around the world. The snowballing approach was appropriate for this study because it helped identify IPC/E experts who were challenging to access (Naderifar et al., 2017). First, the researchers contacted the African Inter-Professional Education Network (AfrIPEN) to ask for assistance in identifying IPE experts to content validate the programme. Then a snowballing approach was employed to identify relevant experts from various IPC/E networks/organisations and training institutions. Some experts were identified from articles reviewed during the scoping review, and a panel of 12 experts was

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invited to participate in content validation of the programme's content. According to the literature, a minimum of 6 participants is required for experts to have sufficient control over consensus agreement (Gunawan et al., 2021; Polit & Beck, 2006; Yusoff, 2019;).

Data Collection Instrument

Two instruments were used to compile the validation instrument for content validity. These instruments were The Criteria for Describing and Evaluating Training Interventions in Healthcare Professionals (CRE-DEPTH) developed by Van Hecke et al. (2019) and the Criteria for Programme Accreditation (CHE, 2012).

A 4-point Likert scale questionnaire with spaces to record comments and recommendations was used for this study.

The data collection tool was divided into four sections. Section A (Demographic information) contained information about the participants' characteristics, including qualifications, areas of expertise, place of work, years of experience in IPC/E, and countries of origin.

Section B (Content Validation of training content) explored participants' impressions of Mabogo-Dinku and the topic areas (content) against the set criteria. This section consisted of 7 sets of questions. Each set of questions was evaluated for five (5) items (clarity, simplicity, consistency, logical flow and layout). Therefore, section B consisted of 35 items and a space for comments was provided for each item.

The experts evaluated each of the 35 items using a 4-Likert scale ranging from exemplary, proficient, marginal and unsatisfactory.

Section C: Validation of curriculum development process

Section C comprised 37 items covering the 12 criteria for evaluating the training programme. The twelve criteria or components include aims and objectives; Theoretical Framework; Development process; Target population and setting of training; Educational

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resources; Programme content; Format of the training programme; Training methods; Tailoring of training; Programme Facilitator'; Expected outcomes; Assessment methods (Van Hecke et al., 2019). Each item was evaluated on a 4-point Likert scale. The rubrics for the strength of reporting on a 4-point Likert scale include 1) Not reported; 2) Weak reporting, meaning incomplete and vague description; 3) Moderate reporting, meaning complete but no detailed description and; 4) Robust reporting, meaning complete and detailed description. A space for comments was provided at the end of each test item. The last section (Section D) allowed participants to provide additional comments.

Quality appraisal

Tools Validity and Reality

To ensure quality and transparency in the validation process, the researchers used data collection instruments which were adapted from The Criteria for Describing and Evaluating Training Interventions in Healthcare Professionals (CRE-DEPTH) developed by Van Hecke et al., (2019) and the Criteria for Programme Accreditation (CHE, 2012). To establish the content validity of the tool, the researchers solicited feedback from clinicians to establish the clarity and meaningfulness of the questions and whether the tool examines the topics under investigation.

Quality and transferability of Study

Engaging experts in content validation ensured the credibility of the study. Furthermore, another quality assurance approach was that the data collection tool was standardised, enabling findings and conclusions to be applicable to other populations. Lastly, engaging IPE/IPC experts in programme evaluation and soliciting their input through a Likert scale questionnaire with spaces to provide comments ensured quality in the evaluation process (Polit & Beck, 2021).

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Method of Data collection

The questionnaire was sent to participants independently using Google Forms so that they could evaluate the training programme provided in google-classroom platform. Therefore, the experts were also provided access to the Mabogo-Dinku Google Classroom platform and a content syllabus incorporating all the six domains of interprofessional collaboration described in the Canadian Interprofessional Health Collaborative (CIHC) framework (CIHC 2010). The training programme comprised six topic areas. Topic 1 was an overview of Interprofessional collaboration in clinical practice, and topics two to six covered six competency domains of IPC.

Ethical Considerations

The researchers obtained approval from the Faculty of Health Science Research Ethics Committee- at the University of Pretoria and the Ministry of Health (MOH) Botswana – Health Research and Development Committee in Botswana. The following ethical issues regarding participants, as described in the Belmont report (1979), were addressed, 1) Written consent was obtained from participants, 2) participation was voluntary, 3) personal information and names were not mentioned in the report, 4) participants were assured of no harm since data collection was through an online survey.

4.10. Statistical analysis

Basic descriptive statistics were employed to compute the content Validation index. According to the literature (Yusoff, 2019; Polit & Beck, 2006), to compute the content validity index (CVI), the expert's opinions must be collapsed into two categories and be given a numerical value of one (1) or Zero (0). A category for experts in agreement that the item is relevant is awarded one (1), while experts' agreement that item is not relevant is awarded a zero (0) point. Therefore, CVI is always between zero and one, whereby one symbolises experts' agreement on the appropriateness and relevance of each item. At the same time, zero represents a consensus that the item is irrelevant and requires

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significant changes. Accordingly, the expert scores were recategorised to compute the CVI, as Yusoff (2019) specified.

To identify the degree to which there is an agreement between the experts on the items evaluated (Yusoff, 2019; Polit & Beck, 2006), a content validation index is computed by first summing up the relevant rating (1) provided by each expert under each item. Then an item-level content validity index (I-CVI) is computed by dividing the total number of experts in agreement for each item by the total number of experts. For example, if six experts participated in validating an item, and 5 of the experts reached a consensus that an item was relevant. I-CVI would be five divided by six, which translates to 0.83. The content validity index for all items would then be computed by computing the average proportion relevance judged by all experts. This is called the scale-level content validity index based on the average (S-CVI/Ave) method (Yusoff, 2019; Polit & Beck, 2006). According to Yusoff (2019), for an evaluation conducted by 6 six experts, an index of 0.83 or higher is required for an item to be accepted as relevant or appropriate. Therefore, for this study, items with a CVI value below 0.83 were modified based on experts' opinions.

Section B: Content Validation of training content (topic areas)

As specified by Yusoff (2019), to calculate content validity for section B, the Likert scale ratings were given numerical values: 4 points for an exemplary response, 3 for proficient, 2 for marginal and 1 for an unsatisfactory response. All expert responses awarded a 3 or 4 point were considered a consensus for relevance, appropriateness, and user-friendliness of the content and programme structure and were therefore collapsed and recategorised as 1 point. Similarly, responses of 1 or 2 were also collapsed into 1 item and recategorised as zero (0) points. Therefore, all participants' responses within one mark category signified the experts' agreement on the training programme's relevance, appropriateness, simplicity, clarity and layout. A consensus between experts of "not relevant" was denoted by a zero mark, which required the items to be reexamined and improved as per experts' recommendations. The CVI is always between 1 and 0 (Yusoff, 2019).

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After converting the expert's responses to numerical values and recategorising scores, the researchers transferred the experts' responses to the excel spreadsheet to calculate the item-level and scale-level face validity indexes. Table 1 below presents Item analysis data captured on a spreadsheet and section B's computed Content Validity Index.

Table 1: Item-Level Content Validity Index Programme: Training Content

	Section B: Content Validity (Expert in agreement/I-CVI)					
Topic Areas	Clarity	Simplicity	Consistency	Logical Flow	Layout	Sum of Item-Level Cotent Validity Index/Number of Items
Getting Started: Programme Overview	6 (I-CVI-1)	6 (I-CVI-1)	5 (I-CVI-0.83)	6 (I-CVI-1)	6 (I-CVI-1)	0.97
IPC in practice	6 (I-CVI-1)	5 (I-CVI-0.83	6 (I-CVI-1)	5 (I-CVI-0.83	6 (I-CVI-1)	0.93
Team Functioning & Role Clarification	6 (I-CVI-1)	4 (I-CVI-0.67)	6 (I-CVI-1)	5 (I-CVI-0.83	6 (I-CVI-1)	0.90
Communication & Conflict Resolution	6 (I-CVI-1)	5 (I-CVI-0.83	6 (I-CVI-1)	5 (I-CVI-0.83)	6 (I-CVI-1)	0.93
Collaborative Leadership	5 (I-CVI-0.83	5 (I-CVI-0.83)	6 (I-CVI-1)	5 (I- CVI-0.83)	6 (I-CVI-1)	0.90
: Patient and Family Centred Care	5 (I- CVI-0.83	3 (I- CVI-0.5)	4 (I-CVI-0.67)	3 (I-CVI-0.5)	5 (I-CVI-0.83)	0.67
Final Thoughts and Evaluation	5 (I-CVI-0.83	5 (I-CVI-0.83	5 (I-CVI-0.83	5 (I-CVI-0.83)	6 (I-CVI-1)	0.87
Scale-Level Content Validity Index -Average (S-CVI/Ave)						0.88

To establish the content validity index, we calculated the CVI for each item (clarity, simplicity, consistency, logical flow, and layout). We then computed the average of the item levels for each topic area rated "satisfactory, clear or exemplary' by experts by summing them and dividing them by the total number of items (S-CVI/Ave).

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For example, in table 1 above, CVI for items on the first row (Getting Started-Programme Overview) was computed by summing relevant responses provided by experts, which are: 6 for clarity, 6-simplicity, 5- for consistency, 6- for logical flow and 6-lay. Then the I-CVI for each item was computed by dividing the relevant responses by experts by the total number of experts. This translated to 1 for clarity; 1 for simplicity; 0.83 for consistency; 1 for logical flow, and 1 for layout. Then the average relevance rating of items under topic 1 (Getting Started-Programme Overview) is 0.97.

According to the literature (Yusoff 2019), the cut-off points for an item to be considered relevant and appropriate is 0.83 or higher for content validation conducted by 6 six experts. Therefore, for this section, items with a CVI value below 0.83 were modified based on experts' opinions.

Section C: Validation of curriculum development process

Similarly, a content validity index for section C was computed by collapsing the expert's opinions into two categories- 1 for moderate and robust reporting and zero for weak reporting or no reporting (Yusoff, 2019). The numerical values for the Likert scale for this section include 1) Not reported, 2) Weak reporting, 3) Moderate reporting and; 4) Robust reporting. Therefore, the experts' responses were collapsed into two categories and ratings and were then transferred to the excel spreadsheet to calculate the item-level and scale-level content validity indexes. Table 2 below presents the item analysis for computing the content validity index (CVI).

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Table 2: Content validation of the curriculum development process

	Section Content Vadilidattion of training programme				
Criterion	Item 1	Item2	Item 3	Item 4	CVI
Criterion 1: Description of the aim and objectives of the programme	The aim of the programme is clearly described	The objectives are clearly defined and specific to each section	The objectives of the programme inform the content and assessment of this programme	The objectives of the programme consider the intended context in which the participant will have to perform the trained competencies	Sum of Item Content Validity Index/Number of Items
	6	6	6	6	1.00
Criterion 2: Description of the underlying theoretical framework	A link between the (components of the) training programme and its underlying theoretical foundation provides clarity on why and how the training programme works	The theoretical framework clearly defined specific competencies required for effective interprofessional practice			
	6	6			1.00
Criterion 3: Description of the developmental process	The training programme contains information on the developmental process of the content of the programme	The training programme was informed by analysis of current practice with regard to interprofessional collaboration	The training programme was developed by professionals with expertise in interprofessional collaboration	The training programme will be pilot tested and refined after a process of evaluation	
	5	5	6	6	0.92
Criterion 4: Description of target population and setting of the training	The training programme contains a clear statement describing the target population and setting	Training programme was informed by analysis of current practice with regards to interprofessional collaboration	Rationale for the selection of the target population for the training programme is clearly described		
	6	6	5		0.94
Criterion 5: Description of the educational resources	Clear description of the estimated costs required to complete the programme	Clear descriptions of the educational resources required to complete the programme	The programme gives access to guidelines and instruction on using the chosen learning environment	The online learning environment supports learning and the outcomes of the programme	
	6	6	6	6	1.00
Criterion 6: Description of the content of the programme	A clear overview of topics and subtopics is indicated	There is a clear description of the importance of each topic in the programme	Content is aligned to the competencies as described in the theoretical framework		
	6	6	6		1.00
Criterion 7: Description of the format	Structure of training programme is clearly described	Clear description of the sequence of sessions, the duration and frequency of sessions is indicated	Programme structure takes into consideration the delivery mode, learning activities and target population		
	6	6	6		1.00
Criterion 8: Description of the didactic methods of training	Teaching and learning strategies are clearly described	Rationale for selection of teaching strategy is well articulated	Participant centred delivery mode, which takes into consideration the audience and resources availability is indicated	Programme describes how participants' performance will be enhanced through feedback in the assessment and learning process	
	6	6	6	6	1.00
Criterion 9: Description of tailoring of the training (individual or group)	Training is adapted to participant's starting competencies, training needs and motivation	Content and delivery mode are tailored to the needs of participants	Reasons for tailoring the programme to participants needs are described in the curriculum	Learning methods, modes of delivery, learning materials and expected completion time cater for the learning needs of the target population	
	5	5	5	5	0.67
Criterion 10: Description of the programme facilitators	Information on the number of facilitators, their educational background, expertise, and competence is provided				
	5				0.83
Criterion 11: Description of the measured outcomes	Expected outcomes of the programme is clear	Different levels at which effectiveness of training programme would be evaluated to establish if the participants learned what they needed to learn is evident			
	6	6			1.00
Criterion 12: Description of the applied assessment method	Evaluators involved in the assessment is described	Curriculum development experts are considered in evaluation of relevance and quality of training programmes			
	6	6			1.00
	Average (CVI)				**0.94**

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The content validity index for each item was computed by dividing the relevant responses provided by experts by the total number of experts. Generally, the experts' ratings for relevant items ranged between 5 and 6, which signified CVI levels for each item in the range of 1.00 and 0.83 (Table 2). The average of the item-level content validity index for each component of curriculum development was computed to get the degree to which there was an agreement between the experts on each component of curriculum development (Yusoff, 2019; Polit & Beck, 2006). The overall CVI of the curriculum development process was 0.94.

Since the literature (Yusoff 2019) recommends a cut-off point of 0.83 for an item to be considered relevant and appropriate for content validation conducted by 6 six experts, the item validation indexes of 0.83 and above demonstrated an excellent level of agreement between experts.

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Results

Section A: Demographic Information

A panel of 12 experts from different countries was invited to participate in content validation of the programme's content. Six experts agreed to participate, which adheres to a recommended minimum number of experts for sufficient control over consensus agreement (Yusoff, 2019; Polit & Beck, 2006). The characteristics of the experts are presented in Table 1.

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Table1: Summary of the demographic characteristics

Area of expertise	**Count (%)**
Interprofessional Collaborative Practice	1 (17)
Interprofessional Collaborative Education	3 (50)
Curriculum development	4 (67)
Programme evaluation	3 (50)
Online/digital programme development	4 (67)
Years of Experience in areas of expertise	
1 to 2 years	1 (17)
3 to 5 years	1 (17)
5 to 10 years	2 (33)
> 10 years	2 (33)
Highest Qualification	
Master's Degree	1 (17)
PhD	4 (67)
Post Graduate Diploma in Open Distance Learning	1 (17)

Four participants were from South Africa, one from the Philippines, and one did not state his/her country of origin. Furthermore, the summary of experts' positions at their place of work included lecturer, senior lecturer, associate professor, professor and senior researcher. Their work experiences entailed curriculum development, instructional designing, online instructional design, training of health professionals, Education and occupational therapy, scholar and advocacy for IPC/E and research on IPE.

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Section B: Content Validation of training content (topic areas)

Likert Scale Responses

Based on the predetermined CVI acceptable level of 0.83, the average scale item level of 0.88 (table 1) for this section represented high-level face validity, denoting that the training content was clear, simple, easy to follow and very consistent in terms of how concepts were structured. Similarly, item-by-item analysis of the seven (7) topic areas revealed that the item-level CVI (I-CVI) for 6 of the seven units ranged between 0.87 and 0.97, showing a solid agreement and positive feedback from the expert panel. The topic areas with high CVI were: Getting Started: Programme Overview; IPC in practice; Team Functioning and Role Clarification; Communication and Conflict Resolution; Collaborative Leadership; Final Thoughts and Evaluation (Table 1)

However, a low CVI of 0.67 was obtained on a unit on “Patient and Family Centred Care". Experts suggested that other videos and case studies be incorporated to enhance understanding of the topic areas. Literature indicates that using case studies and videos would energise learners to engage in interactive learning and provides real-life learning (O’Leary et al., 2020; FyFiled et al., 2019; Dymond & Bentz, 2006). Although a low rating was obtained in one topic area (Patient and Family Centred Care), the experts' comments were also considered for other items that exceeded a threshold of 0.83. As such, some areas were modified as suggested.

Section: B Open-ended Responses from Experts

Experts provided comments which helped improve the training programme.

Experts advocated that the training programme be aligned with the WHO competency framework for Universal Health Coverage, a document published in 2022. One expert indicated that the instructional design should be tabulated per topic to help to simplify the layout for learners. Some experts recommended improvements to be made to topics on

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collaborative leadership, communication and conflict resolution, and patient and family-centred care. Recommendations included: distinguishing between communication and conflict resolution, embedding leadership concepts across other domains such as communication, conflict resolution and shared decision-making to improve understanding of leadership in enhancing IPC and using more interactive videos to improve knowledge of the patient and family-centred care.

All the comments and recommendations made by experts were considered during the revision and refinement of the work-based interprofessional Education programme. Some of the addressed recommendations included adding extra videos on patient-centred care, conflict management, communication and interprofessional leadership. The topics on leadership and communication were integrated into other IPC competency unit areas. The WHO competency framework for Universal Health Coverage (WHO, 2022) was consulted while revising the training programme. It was used as a reference document when amending the unit on Interprofessional collaborative leadership.

Section C: Validation of curriculum development process

Likert Scale Responses

The six experts examined the 12 criteria or components of the curriculum or training programme to evaluate whether each criterion was clearly described. Section C obtained an overall average content validity index (I-CVI/Ave) of 0.94, which was higher than the predetermined cut-off point of 0.83 (Yusoff, 2019). The overall CVI of 0.94 indicated a high level of agreement between experts in the curriculum development process, structure and content, teaching, learning and assessment strategies.

The validity level for each of the 12 criteria was also very high, ranging between 0.83 and 1.00 for all 12 criteria examined. The content validation of the curriculum development process required minor corrections or amendments, such as ensuring that training intervention addresses participants' preexisting competencies, training needs and

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motivation. The other recommendations included minor amendments to wording, grammar and a video introducing the training programme. The experts' opinions were examined, and corrective measures to improve the criterion were implemented. Experts' opinions and recommendations were considered for all criteria with low and high validity levels.

Section C: Open-ended Responses from Experts

As already stated, the section evaluated 12 criteria or components of the curriculum—there were very few suggestions in this section. The recommendations showed that the experts wanted the WHO competency framework for Universal Health Coverage. Some participants recommended clarifying the target population and how training will be conducted. One expert expressed concern that it was not clear whether the training targeted individuals or groups and which mechanisms would be used to attract more participants. As already stated in section B, expert opinions and suggestions were considered.

Section D: Additional comments and Open-ended responses from section Experts.

A space was provided in section D for experts to provide additional information. There were no significant recommendations in this section except that experts recommended improvements in assessment approaches by replacing the images used with AV material such as blogs, vlogs, Youtube videos, TedTalks etc., to enhance student engagement. Another recommendation was to base some assessments on the academic reading materials since the training programme provided some reading material for training. Lastly, one expert recommended improving the introductory video as the presenter appeared slightly nervous.

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Discussion

The present study validates Mabogo-Dinku work-based interprofessional education programme for collaborative practice in a maternity care setting. The developed training programme was found to be appropriate, relevant and acceptable for providing self-paced online and on-job training to healthcare providers on IPC. The experts' rating of this programme shows that the components of the training programme were congruent with various articles on curriculum development (Thomas et al., 2022; Lim et al., 2020; Rozensky et al., 2018; Prast et al., 2016; MCP, 2006). Experts agreed that the content covered and teaching strategies were appropriate and relevant for this course. Using diverse interactive teaching strategies in IPC/E is critical to meet the needs of individual learners (Avery et al., 2020; O'Leary et al., 2020; Visser et., 2020; Prast et al., 2016). Experts' input to develop a training programme designed specifically for the LMIC is a welcome development since such programs are non-existent in the region (Nyoni et al., 2021)

Furthermore, experts emphasised improving leadership, conflict management, and patient-centred topics by aligning them to WHO guidelines for Universal Healthcare Care (WHO, 2022). Experts' opinions were considered, and the training programme was reviewed to integrate WHO guidelines into the training programme. Consequently, those that scored above the threshold have been reviewed and adjusted to add shared decision-making and improve the unit on collaborative leadership and patient-centred care.

Strengths and Limitations of the Work

Our study had several strengths. The validation instrument developed covered in detail all the components of the curriculum development process. Therefore, the most relevant aspects for determining the appropriateness and relevance of the training programme were validated. However, since the instrument covered detailed components of curriculum development, the tool was slightly overly large and, therefore, time-consuming. Nevertheless, participants were given up to a month to complete the tool. Furthermore,

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since quality feedback is warranted in validating curriculum documents, a careful selection of experts was ensured by employing a purposive and snowballing approach specifying inclusion criteria. Engaging experts in IPC/E was instrumental in validating the programme because experts provided objective, comprehensive quality feedback and suggestions for changes supported by literature (Horvadas et al., 2017).

This study is not without limitations. The major limitations to the generalisation of the study are that HCPs who are beneficiaries of the training programme were not included in the study. Therefore, their judgement of the training programme should have been taken into consideration. Content validation would benefit diverse groups of stakeholders, especially users of the programme, because they would provide insight into how the program can be arranged from the users' perspective (Fernández-Gómez et al., 2020; Horvadas et al., 2017; Zamanzadeh et al., 2015). However, Horvadas et al.'s (2017) emphasis is on quality feedback, and therefore recommend that whoever is involved in giving feedback should be provided with knowledge and skill to provide valuable and scientifically accurate feedback that is consistent and accompanied by suggestions for improvement.

Another limitation was that the sample size was limited. Even though a minimum number required for experts to have sufficient control over consensus agreement was achieved, a sufficient number of participants would add more value to the document (Yusoff, 2019; Polit & Beck, 2006). Therefore, the need for a similar study involving a larger sample size and different stakeholders is imperative. Lastly, the fact that the study was conducted in one setting (referral hospital), which has its unique characteristics and context, limits the generalisation of the results to other settings.

Recommendations for Further Research

Since the validation study did not include users of the programme, ongoing evaluation during the implementation phase is welcome to provide insight into how the program can be arranged in a manner that can make it favourable. Connell et al., (2018) argued that engaging service users in content and face validation would increase the instrument's

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validity and sensitivity. Furthermore, service users also can establish whether a tool captured measures favourably (Wiering et al., 2017).

Another recommendation is that conducting a similar study in other departments or healthcare settings should be of interest to ensure that the developed programme also caters for other settings.

Conclusion

In conclusion, the results of this paper demonstrate that expert involvement in the design of IPC/E training interventions is of paramount importance in ensuring that training the training program is acceptable, relevant and of high quality to all stakeholders who would benefit from it.

Declaration of interest

The authors report no conflicts of interest.

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SUMMARY

We conducted content validity of the training programme to assess its relevance and appropriateness for use in a maternity care setting. The developed training programme

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was found to be appropriate, relevant and acceptable for providing self-paced online and on-job training on IPC. Experts agreed that the content covered and teaching strategies were appropriate and relevant for this course. Using diverse interactive teaching strategies in IPC/E is critical to meet the needs of individual learners (Avery et al., 2020; O'Leary et al., 2020; Visser et., 2020; Prast et al., 2016). Furthermore, experts emphasised improving leadership, conflict management, and patient-centred topics by aligning them with WHO Universal Healthcare Care guidelines (WHO, 2022). Experts' opinions were considered, and the training programme was reviewed to integrate WHO guidelines into the training programme. The final training programme was developed, and it is available online (Annexure 6.1). The link to the programme is

The next chapter discusses the conclusions and implications for the development and delivery of Mabogo Dinku's work-based interprofessional education programme.

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CHAPTER 8: CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

8.1 INTRODUCTION

Chapter 7 discussed phase 3, which encompassed the implementation of an online expert judgement survey. The survey assessed and validated the usefulness, structure, content relevance, and effectiveness of the work-based IPE programme in respect to its objectives.

This chapter concludes the study, briefly describes the conclusions, contributions, implications, and limitations, and makes recommendations for management, clinical practice, education, and further research.

8.2. AIM AND OBJECTIVES

The aim of the study was to co-create a work-based interprofessional education training programme to enhance collaborative patient care in the context of hospital-based maternal health services in Botswana. To achieve the aim, the objectives as aligned to the design-based research approach (see Chapter 3, Section 3.2) for programme development were:

Phase 1: Analysis of practical problems

Objective 1: To explore the considerations for promoting the implementation of work-based interprofessional education programmes (Chapter 4)

Objective 2: To involve stakeholders in the co-creation of the work-based interprofessional programme (Chapter 5)

1. Sub-objective 2a: To conduct a stakeholder analysis
2. Sub-objective 2b: To describe stakeholders' perceptions on the development of an interprofessional collaborative programme for healthcare professionals in a maternity care setting
3. Sub-objective 2c: To explore healthcare professionals and patients' perceptions of interprofessional collaboration in a maternity care setting

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Phase 2: Development of solutions (Step 2: DBR) (Chapter 6)

Objective 3: To combine results from Phase 1 to co-create the programme

Phase 3: Iterative cycles of testing and refinement (Step 3: DBR) (Chapter 7: Article)

Objective 4: To validate the work-based inter-professional education training programme for relevance in maternal health services

To achieve the aim, the study wished to answer the following question:

How can a work-based interprofessional education programme for inter-professional collaborative practice in maternal health services be structured?

8.3 OVERVIEW OF THE STUDY

The study was conducted in three phases, employing the design-based research (DBR) approach as the methodological framework for the study. The DBR outlines a structured set of procedures to be adhered to when undertaking research with the objective of creating an educational intervention. The stages of Design-Based Research (DBR) are characterised by their iterative and flexible nature, involving the active participation of multiple stakeholders in collaborative cycles of design, development, and evaluation of an educational intervention. This approach aims to address the issues faced by stakeholders, including practitioners and women (patients), within a real-world clinical care setting (Belita, Carter & Bryant-Lukosius, 2020; Reeves & Lin, 2020; Reeves, 2006; Rossi, 2021).

Using Multiple frameworks or models in research helps in minimising the limitations of using one framework. Therefore, to overcome the limitations of using the DBR framework alone, the study incorporated the Canadian Interprofessional Health Collaborative (CIHC) National Interprofessional Competency Framework (CIHC, 2010). This addition was made to enhance the DBR framework by offering a comprehensive understanding of interprofessional collaborative concepts and competencies. Furthermore, the CIHC framework provided valuable insights into the development of interprofessional collaborative interventions and the contextual factors that influence the implementation of such initiatives. Hence, the utilisation of the CIHC framework facilitated the researcher in formulating a comprehensive training programme that encompassed all six areas of IPC competency (**see Chapter 3**). This programme may be effectively executed

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across teams of varied sizes, ranging from small groups consisting of two individuals to larger, more diverse groups.

The DBR outlined the methodology for addressing the research issue, specifically detailing the collaborative development of a training programme tailored to the unique situation. The programme was subsequently tested and deployed in a real-world environment. The CIHC framework (2010) served as a valuable tool for conceptualising matters related to interprofessional collaboration and the development of competencies.

A total of four studies were undertaken throughout the second and third rounds of the study. The purpose of conducting the four studies was to address the research question: What is the optimal structure for a work-based interprofessional education (IPE) programme aimed at promoting interprofessional collaborative practice within maternal health services? The main objective of the study was to collectively design an worked-based interprofessional education (IPE) programme that emphasises interprofessional collaboration in the context of maternity care environments.

The first two studies were done in phase 1 to address the research questions intended to acquire a fuller understanding of interprofessional collaboration challenges as they occur in maternity care settings locally and internationally (see chapters 4 and 5). Chapter 4 encompassed the execution of a scoping review, which aimed to discern factors that contribute to the advancement of interprofessional collaboration. Chapter 5 involved the execution of a following investigation aimed at thoroughly exploring the views of participants on the application of Interprofessional Collaboration (IPC) in maternity wards. The investigation concentrated on the perspectives of healthcare professionals and women in maternity wards. The integration of the findings from chapters 4 and 5, as well as the insights gained from stakeholder engagement and analysis, were utilised in chapter 6 to facilitate the collaborative development of the "Mabogo-Dinku" Work-based Interprofessional Education (IPE) Training Programme specifically tailored to maternity care settings.

In Chapter 7, an online expert judgement poll was implemented to assess and validate the Mabogo-Dinku work-based IPE curriculum. The primary objective of the survey was to evaluate the extent to which the programme aligns with and meets the intended learning objectives. The feedback offered by the experts was utilised to enhance and complete the training curriculum, which is thoroughly detailed in this chapter. The key findings related to the aims and objectives for each phase are concisely summarised in the following sections and listed in Table 8.1.

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Table 8.1 Aims and objectives of the study

Phase 1: Analysis of practical problems	Objective 1: To explore the considerations for promoting the implementation of work-based interprofessional education programmes Objective 2 To involve stakeholders in the co-creation of the work-based interprofessional programme .1. Objective 2a: To conduct a stakeholder analysis. .2. Objective 2b: To describe stakeholders' perceptions on the development of an interprofessional collaborative programme for healthcare professionals in maternity care setting .3. Objective 2c: To explore healthcare professionals and patients' perceptions of interprofessional collaboration in maternity care.	Chapter 4, Chapter 5
Phase 2: Development of solutions (Co-create training programme)	Objective 3: To combine results from Phase 1 to create the programme.	Chapter 6
Phase 3: Iterative cycles of testing and refinement (Validation of training programme)	Objective 4: To validate the work-based inter-professional education training programme for relevance in maternal health services.	Chapter 7

This chapter concludes the study by summarising the implications of the findings, discussing the limitations and making recommendations.

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8.4. SUMMARY OF FINDINGS

8.4.1. Phase 1: Analysis of practical problems

This phase focused on identifying the characteristics that facilitate interprofessional collaborative care (IPC) and analysing the current practices of IPC implementation within the domain of maternity care setting in Botswana. In order to tackle this stage, two distinct aims were pursued, namely the utilisation of a scoping review and the implementation of qualitative investigations. The second aim was then broken into three sub-objectives.

The primary aim of the first objective was to perform a scoping review with the purpose of identifying key considerations for promoting advancement of interprofessional collaboration (IPC) within maternity care settings. Furthermore, the study wished to accomplish a second objective, which encompassed three subordinate objectives. The sub-objectives encompassed the following: (1) conducting a stakeholder analysis to identify relevant stakeholders who would be involved in the analysis, development, and evaluation of the work-based IPE programme; (2) exploring the perceptions of healthcare providers (HCPs) and women (patients) regarding the implementation of IPC practices within the context of a maternity care setting in a specific hospital in Botswana, and (3) engaging stakeholders in a workshop format to gather information pertaining to the structure, delivery method, and course material of the proposed IPC training programme

The results of the phase 1 studies are provided next.

Objective 1: To explore the considerations for promoting the implementation of work-based interprofessional education programmes

This section provides an overview of the results from a scoping study of 28 literature sources related to IPC/E. The review specifically focused on literature produced between 2010 and 2020 (see chapter 4). The researcher used Arksey and O'Malley's (2005) six-stage framework for the scoping review, which yielded significant findings regarding the factors to be considered prior to the creation and implementation of an interprofessional education (IPE) programme in clinical

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settings. The analysis of the articles indicated that the implementation of IPC within the realm of maternity care services is predominantly observed in developed countries. Notably, of the 28 articles examined, only one study offered empirical evidence about the implementation of IPC/E issues in African nations. The researcher found this surprising considering the extensively established advantages of IPC in enhancing patient care outcomes. Moreover, there was no universally standardised methodology for instructing interprofessional collaboration. As a result, IPC competencies, which are non-technical skills, were mostly incorporated into technical skills (disease-specific) training programmes using different training models designed to equip HCPs with clinical skills for a particular clinical condition. Consequently, there was less emphasis on teaching IPC skills, and the evaluation of IPC competencies received little attention.

The review provided detailed insights into the factors that should be considered when encouraging the adoption of a work-based interprofessional education (IPE) programme in a maternity care context. While these issues were initially discussed in the context of developed countries, they might be thoughtfully taken into account while planning and creating an IPE programme for LMICs. These particular factors were grouped into four themes (Madisa et al, 2022). First, the study emphasised the significance of having sufficient and varied resources to ensure the successful implementation of IPC/E treatments, highlighting the subject of resource mobilisation. The support needed encompassed a range of factors, including leadership support at both national and institutional levels, policies and legislation that promote IPC, sufficient human resources, and suitable physical infrastructure.

The second theme, referred to as the "helpful learning environment" focused on the creation of a setting that fosters and facilitates the successful development and implementation of IPC/E interventions. A conducive educational setting would cultivate and enable collaboration, mutual learning, and understanding of individual roles and responsibilities, while promoting collective decision-making and synergy. The third theme elucidated the influence of healthcare professionals' adherence to interprofessional collaboration (IPC) on the efficacy of IPC/E therapies. The consideration of the needs and values of healthcare professionals (HCPs) was also highlighted as critical in ensuring effective engagement of HCP in interprofessional (IP) collaborative practice. The fourth theme involved the obstacles encountered in the implementation of Interprofessional Education/Interprofessional Collaboration (IPE/IPC).

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To summarise, the notion of IPC/E is still relatively new in low- and middle-income countries, particularly in Sub-Saharan African countries (Prabawati, 2018; Sulistyowati & Walker, 2019). Hence, it is imperative to give additional attention to the fundamental categories of factors that can determine the efficacy of IPE) programmes when strategizing, conceptualising, and executing such initiatives specifically tailored for African nations. Consequently, the lack of IPC intervention programmes that are customised for maternity care settings at the local and regional levels, motivated the researcher to create a collaborative online work-based (short course) IPC training programme that is specifically tailored for maternity care settings in Botswana.

Objective 2: To involve stakeholders in the co-creation of the work-based interprofessional programme

Objective 2 examined the views of stakeholders on interprofessional collaboration within a hospital-based maternity care setting in Botswana. Objective 2 was subdivided into three distinct and achievable sub-objectives.

Objective 2 a: Conduct a stakeholder analysis

The incorporation of the Design-Based Research (DBR) methodology in this study, in conjunction with the insights of specialists in training programme development, underscored the imperative nature of utilising participatory or collaborative techniques in the creation of training programmes. Hence, a stakeholder analysis (Reed, Graves, Dandy et al, 2009) was conducted in a workshop setting to generate a comprehensive list of organisations and individuals of significance and interest in the design, development, implementation, and evaluation of the IPC training course. Ten (10) stakeholders were invited and seven (7) attended the workshop.

Stakeholders from numerous organisations, both locally and worldwide, with varying degrees of influence in accordance with the categories, were identified. The implementers and consumers of healthcare (patients and HCPs), professionals in curriculum development, training, and assessment, IPC/E specialists and champions, quality assurance, monitoring, and evaluation, and policymakers or strategists were included.

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The study focused on doing a stakeholder analysis to collect data on the stakeholders who have both the capability and willingness to contribute to the creation of an interprofessional collaboration (IPC) training course designed specifically for the workplace setting of Botswana's maternity care sector. The stakeholder list was applied to inform objective 2c, which sought to investigate the views of women and healthcare professionals on interprofessional collaboration in the context of maternity care setting.

Objective 2b: To describe stakeholders' perceptions on the development of an interprofessional collaborative programme for healthcare professionals in maternity care

During the stakeholder analysis, participants were invited to actively engage in discourse and articulate their perspectives on the optimal implementation of IPC/E intervention within the context of maternity care in Botswana. The workshop revealed a notable connection between several elements, including but not limited to the identification of distinct gaps in IPC competencies, the determination of the most effective delivery modality for IPC training programmes, the implementation of a blended self-paced learning strategy, and the recommendation of staggered short-term yet thorough training. The participants suggested implementing a capacity development intervention that would consist of a flexible self-paced online work-based workshop. This workshop would focus on addressing gaps in IPC competencies. The intervention would utilise a blended learning strategy, combining online learning with practice-based learning activities. The researcher's conclusions on the suggested structure for a work-based Interprofessional Education (IPE) course were based on the feedback provided by this particular subgroup. The input received from stakeholders emphasised the significance of engaging a wide array of stakeholders in order to successfully tackle the complex challenges that affect the provision of healthcare in maternity facilities.

Objective 2c: To explore healthcare professionals and patients' perceptions of interprofessional collaboration in a maternity care setting

A qualitative descriptive study was conducted to gain insight into the perceptions of participants on the implementation of IPC in a maternity healthcare facility in Botswana (Madisa et al, 2023).

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The study focused on examining the experiences of women and healthcare providers (HCPs) about interprofessional collaboration (IPC) within a maternity care context in Botswana. The findings were analysed and interpreted using the Collaborative Interprofessional Collaborative Framework (CIHC, 2010). The themes that were developed were categorised based on the six IPC competency categories outlined in the CNICF framework (CIHC, 2010).

The findings of the study indicated a variety of perspectives on the extent and calibre of interprofessional collaboration within maternity care units. While a number of participants voiced discontent with interprofessional collaborative practices, the majority acknowledged the importance of interprofessional collaboration in the provision of patient-centred care for women. The study participants conveyed dissatisfaction with the implementation of interprofessional collaborative care practices. The attribution of inadequate IPC practices can be attributed to deficiencies in interprofessional leadership, teamwork, and communication, as well as a scarcity of resources and inadequate coordination and allocation of resources. Additionally, the presence of disrespectful behaviours, the provision of fragmented care, overlapping roles, and ineffective conflict resolution contributed to this issue. Interprofessional collaboration was also reported to be implemented occasionally.

The participants stressed the need for a carefully designed intervention strategy or protocol in interprofessional collaboration (IPC) to improve the provision of women-centred collaborative practice. This strategy aims to ensure that healthcare professionals (HCPs) and women are actively engaged in informed and timely shared decision-making, addressing the specific needs of women, and ultimately reducing the occurrence of negative health outcomes. Moreover, there is evidence indicating that a subset of healthcare workers had reported perceiving themselves as being subjected to unfair treatment, marginalised, and experiencing dissatisfaction. This perception stemmed from a perceived lack of regard for their emotions and views by colleagues during interpersonal exchanges.

The observed occurrence could be ascribed to power dynamics, encompassing discrepancies in remuneration, age, and tenure. Significantly, this perspective was more commonly observed among midwives when interacting with physicians and other healthcare practitioners. The potential consequences of inequitable treatment of healthcare professionals (HCPs) encompass various aspects of their well-being, including self-esteem, self-confidence, psychological functioning, and social cohesion. These negative effects can manifest in the form of undesirable behaviours. In the context of interprofessional collaboration, which prioritises the delivery of

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customer-centric services, healthcare professionals who are unable to embrace diversity will inevitably fall short of delivering women-centered care.

In brief, this study discerned multiple variables that exert an influence on the outcomes of interprofessional collaboration (IPC). The researchers propose the implementation of a meticulously designed training regimen for IPC that is specifically customised to the healthcare setting. The proposed curriculum is predicated on the assumption that it would provide healthcare workers with the requisite competencies in IPC, foster the implementation of IPC within the framework of respectful maternity care, and ultimately enhance women's health outcomes. Moreover, it is imperative to conduct additional research in order to develop methodologies for monitoring IPC, particularly in maternity care facilities located in low- to middle-income countries. This is crucial due to the scarcity of studies focusing on tools for monitoring and evaluating IPC intervention programmes in such settings. Acknowledging the benefits of interprofessional collaboration (IPC) (Reeves, Pelone, Harrison et al, 2017), it is imperative to implement systematic IPC treatments in practical settings.

8.4.2: Phase 2: Development of solutions (Co-create training programme)

Objective 3: To combine results from Phase 1 to create the programme

The findings from the initial phase (see Chapters 4 and 5) were employed as a guiding framework for the design and implementation of an online work-based IPE curriculum specifically tailored for maternity care settings. The current phase was informed by the established principles of Design-Based Research (DBR), pertinent theories of pedagogy and adult learning, and technical methodologies that could effectively tackle the theoretical and practical challenges outlined in the previous phase (Reeves & Lin, 2020). Moreover, careful consideration was given to the objectives, requirements, and contextual limitations of the study.

In order to facilitate the exchange of ideas and secure the necessary resources for cultivating proficient learners and attaining the intended objectives of training programmes, a collective of experts (referred to as the programme development team) with varied areas of proficiency spanning multiple disciplines engaged in a collaborative and iterative endeavour to create an instructional instrument, namely a work-based IPE training programme (Farmer & Usher, 2018).

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The team responsible for developing the training programme adhered to Thomas, Kern, Hughes et al's (2022) instructional design method in order to provide a work-based training course with specific emphasis on IPC. During the process of developing the training curriculum, the researchers cooperated with a panel of subject matter experts to identify the objectives and desired learning outcomes of the programme. The learning goals and outcomes highlight the development of capacity building in relation to IPC competences, as delineated in the Canadian Interprofessional Health Collaborative (CIHC) framework. The design and implementation of a work-based interprofessional communication (IPC) training curriculum was guided by the learning outcomes of the training programme.

The formative evaluations were designed to evaluate students' understanding and competence in IPC, as well as their attitudes and behaviours towards collaborative practices and other healthcare professionals. These assessments took the form of individual and group activities conducted at the conclusion of each unit. The central focus of the training programme revolved around the creation of instructional activities with the objective of cultivating learners' attitude, knowledge, skills, and professional behaviours. This was achieved through the utilisation of self-paced online learning and practise environments (Thomas et al, 2022). The arrangement of the educational materials was intentionally designed to promote meaningful interaction, enhance retention, and facilitate the application of knowledge to real-world contexts. In order to cultivate a practitioner who is prepared for practice in the field of interprofessional collaboration (IPC), the team took measures to ensure that the activities undertaken were grounded in evidence-based practices, adhered to scientific principles, and incorporated a combination of online and practice-based methodologies.

The obstacles to the effective implementation of IPC interventions were examined, encompassing factors such as staffing conditions, the demanding schedules of learners, the presence of diverse experiences and learning styles, restricted access to resources, notably in terms of technological infrastructure, and a scarcity of IPC advocates within clinical settings. Consequently, the organisation enlisted the services of an eLearning expert to concentrate on constructing a technology framework that provided a user-friendly, self-paced, and cost-effective asynchronous virtual learning environment. This environment aimed to facilitate interactive, collaborative, and experiential learning (Brittz, Madisa, Hugo-Van Dyk et al., 2023). The importance of communication, interaction, and collaboration abilities was underscored in the instance of IPC's establishment.

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Additionally, a support framework was established to facilitate ongoing communication between instructors and students. The support system encompassed many components, such as the provision of Google Chat capabilities, private consultations via email addresses, and the dissemination of online supplemental academic materials. These resources were intended to reinforce the theoretical underpinning underlying the content.

Subsequently, after concluding the design phase and producing a prototype or initial version of a training course, the team proceeded with the creation of a concise, web-based training programme called the "Mabogo Dinku work-based interprofessional collaborative training programme." This programme was ultimately made available on the Google Classroom platform. The training curriculum that was established placed significant emphasis and value on several educational approaches, including reflective and self-directed learning, interactive and collaborative learning, experiential learning through workplace application, and self-evaluation (Alajmi, Al-Nuaimy, Arul Jose et al., 2019).

The work-based Interprofessional Education (IPE) course consisted of a total of seven units, with each unit expected to require a time commitment ranging from three days to one week for completion. The anticipated duration of the course was projected to range from 5 to 8 weeks. Assessments, audiovisual materials, and online activities were generated and subsequently uploaded onto the learner management system. The Mabogo-Dinku work-based IPE programme can be accessed from: https://classroom.google.com/c/NTc3MDM2OTI2OTky?cjc=snhbwa3

8.4.3. Phase 3: Iterative cycles of testing and refinement (Validation of training programme)

Objective 4: To validate the work-based inter-professional education training programme for relevance in maternal health services

Experts from various disciplines, including interprofessional collaboration, curriculum development, instructional design, eLearning, teaching and learning, and assessment, conducted the content validation of the work-based IPE programme during Phase 3. The programme's usability, content quality, relevance, and effectiveness in achieving its goals were assessed and validated using an online expert review survey. In order to create the validation instrument, two

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instruments —the Criteria for Describing and Evaluating Training Interventions in Healthcare Professionals (CRe-DEPTH) (Van Hecke, Duprez, Pype et al., 2020) and the Criteria for Course Accreditation — were accepted and modified for use in expert survey.

Overall, the experts' feedback revealed that the work-based IPE programme was appropriate, relevant, and acceptable for delivering self-paced online and on-the-job training in IPC to healthcare professionals in a maternity care setting. The experts also valued the fact that teaching and learning strategies integrated in the training programme allowed for participants to learn and practise IPC skills through a self-paced learning approach. In addition, the experts appreciated the fact that the training programme addressed IPC domains as presented in the CIHC framework, while some experts recommended delivering self-paced online and on-the-job training in IPC to HCPs.

The experts emphasised the significance of harmonising leadership, conflict resolution, and patient-centred topics with the WHO (2022) Universal Healthcare Care standards. To incorporate the WHO guidelines into the training course, experts' advice was taken into consideration, and the training programme was assessed to incorporate shared decision-making and strengthen the unit's collaborative leadership and patient-centred care.

Furthermore, during the training content validation process, in order to assess the visual appeal, instructional effectiveness, aesthetic appeal, and functional integrity of the eLearning platform, experts were provided with a link to Google Classroom during the content validation process of the training. The recommendations provided by the experts were duly considered to ensure the suitability of the learning management system for the intended participants.

8.5 CONSIDERATIONS

This study possesses inherent strengths and limitations that warrant recognition from readers and practitioners.

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(i) Methodological frameworks

Methodological frameworks serve as essential tools for conducting rigorous academic research. Design-based research (DBR) was used as methodological framework for the study. Even though acquiring sustained collaboration of researchers with stakeholders in carrying out the research process to enhance for support and product ownership is inherent in DBR, getting perfect collaboration was difficult to achieve. However, a small design team consisting of a clinician, educators and eLearning specialist was established to engage in iterative development of the IPC intervention. However, for other stakeholders, the level and frequency of involvement across the phases of research was not consistent, and kept changing depending on the stage of the training programme development process.

The literature review suggested that robust design-based research (DBR) should aim to produce generalizable theories or design principles. However, due to the iterative nature of DBR, which involves highly flexible and complex cycles of testing and refinement, time and limited resources posed obstacles to completing all the phases of DBR. Consequently, the third phase (validation of training programme) was not completed, while the final phase of DBR, which contributes to the development of design principles and theories that can be applied to a larger population, was not implemented. Nevertheless, the researcher intends to carry out the "testing and refinement" stage after completing the study.

At the same time, the iterative and flexible nature of this approach enabled the researcher to carefully condense some of the activities to reduce time and cut down on resources. For example, DBR emphasises iterative testing and refinement of the intervention before finalising the intervention for a particular context, but due to limited resources, the researcher found it difficult to test the programme in a real-life context. Instead, content validation of the training programme by experts was employed as the main activity for testing the programme for relevance, usability and appropriateness. Since evaluation of the training programme was dependent on expert feedback, but not on the consumers of the training programme, to further validate the appropriateness and relevance, further study is recommended to pilot test the training programme on health care professionals working in maternity wards. However, to minimise the threats to validity, the training programme development process was well documented and disseminated in scholarly journals which may stimulate novel conversations and critical review of the quality of the training programme

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Finally, the use of the DBR framework necessitated the application of a combination of methodologies that are congruent with the research questions and expected results. In this study, a mixed-model design spanning multiple stages was utilised to gain a fresh understanding of a phenomenon during that specific period and to address the research query for that particular phase (Anderson & Shattuck, 2012; John & Onwuegbuzie 2004). The next section presents a comprehensive examination of the limitations and contributions associated with each study design and methodology.

While the DBR provided systematic steps to be followed when engaging in research aimed at development of an educational intervention, the Canadian Interprofessional Health Collaborative (CIHC) National Interprofessional competency framework (CIHC, 2010) was also incorporated in the study to provide definition of IPC concepts and competencies to consider when developing IPC interventions, the context in which interprofessional collaborative initiatives could be implemented and the group structures (CIHC, 2010; Smilski & Parrott, 2019).

Therefore, the strength in adopting the CIHC framework is that it enabled the researcher to develop a training programme that incorporated the six IPC competency domains (see chapter 3, Figure 3.1), that can be implemented by varying team compositions ranging from small groups of two people to large diverse groups. Additionally, the IPC training programme developed can be used to address any patient care-related issue in maternity care settings. Literature on IPC implementation reveals that not all IPC domains were included in the learning resources available, therefore adopting this framework was instrumental in the development of training programme that is comprehensive enough to cover all six competency domains.

One disadvantage of this framework is its exclusive design for the Canadian context. Consequently, a framework tailored to the African context would be more suitable to effectively address the contextual disparities between developed and developing countries.

In conclusion, the integration of the DBR and the Canadian Interprofessional Health Collaborative (CIHC) framework emerged as a more appropriate strategy given that it helped address the multiple study purposes, while at the same providing a frame of reference for operationalising concepts (Birken, Powell, Presseau et al., 2017). For example, DBR informed the phases of research while CIHC framework clarified concepts to be addressed and offered a frame of reference for conceptualization of issues concerning interprofessional collaboration and competency development (Smilski & Parrott, 2019). Given the complexity of healthcare education and practice, the combination of these frameworks allowed the researcher to develop an

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Interprofessional Collaboration (IPC) training programme with a heightened degree of sensitivity. Accordingly, the DBR provided the process for answering the research question, particularly the process by which the researcher co-developed a context specific training programme that would be tested and implemented in a naturalistic setting, while the CIHC framework provided a frame of reference for conceptualization of issues concerning interprofessional collaboration and competency development.

(ii)Research design and methods

Phase 1: Phase 1: Analysis of practical problems

Objective 1: To explore the considerations for promoting the implementation of work-based interprofessional education programmes

The purpose of the study was to conduct a scoping review on the factors that should be considered when promoting the implementation of interprofessional collaboration (IPC) in maternity care settings. As IPC is a relatively new concept, a scoping review was deemed appropriate to systematically map the existing literature on IPC and provide a comprehensive summary of the current knowledge in this area (Peters et al., 2020). By including both empirical and non-empirical evidence, the review aimed to draw conclusions about IPC. However, it is important to acknowledge that the inclusion of non-empirical evidence raises concerns about the generalisability and validity of the findings, which should be taken into consideration when making recommendations.

The search methodology employed was intentionally broad and less specific in order to encompass a wide range of literature. Consequently, certain articles may perhaps have been overlooked, which could have been identified through more focused searches typically conducted in systematic reviews However, the researcher mitigated this limitation by seeking input from the research supervisors and an eLearning specialist during the reference checking process. This ensured adherence to the scoping review process and the development of an appropriate search strategy. Given that interprofessional collaboration (IPC) is a relatively new phenomenon in the

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African context, particularly in Botswana, grey literature sources such as policies, speeches, and government documents were not included in the study. Nonetheless, despite these limitations, the findings of the scoping review provided valuable insights into the factors that should be considered prior to implementing an interprofessional education (IPE) programme in clinical settings.

Objective 2: To involve stakeholders in the co-creation of the work-based interprofessional programme

A workshop was used to address objective 2. A qualitative approach was adopted to provide an in-depth understanding of how interprofessional collaboration was implemented in a maternity care setting (Creswell& Creswell, 2018). It also provided a deeper understanding of stakeholders' perceptions of how an IPC training programme should be structured, delivered and what competencies they felt were of special importance in enhancing interprofessional collaborative practice. The methodological framework for this study (the design-based research-DBR), emphasises the development of learning interventions, such as training programmes, that are informed by problems identified in a naturalistic setting. Therefore, qualitative methods, using face-to-face interviews and a workshop, were employed to ensure that data collected was a true reflection of issues as they presented in the clinical practice at that time. Accordingly, three (3) sub-objectives were generated to help achieve the main objective (viz, objective 2). The methodological considerations for the face-to-face interviews and focus group discussions are discussed next under three sub-objectives.

Objective 2a: To conduct a stakeholder analysis

Objective 2b: To describe stakeholders' perceptions of the development of an interprofessional collaborative programme for healthcare professionals in maternity care

Objective 2c: To explore healthcare professionals and women's perceptions of interprofessional collaboration in a maternity care setting

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(Objectives 2a and b were addressed through a workshop to identify relevant stakeholders during training programme development and to explore the stakeholders' perceptions of how the training programme should be developed and structured and the competencies that needed to be addressed during programme development. A workshop environment enabled the participants to engage in constructive dialogue and discussions freely and was cost effective as it took a shorter time to reach consensus compared to individual face-to-face interviews (Orngreen& Levinsen, 2017).

In this study, a small group of professionals were invited to engage in stakeholder analysis and engagement. A limitation of the workshop format is that some participants might appear unwilling to express their honest opinions about sensitive issues. In this study, however, workshop approach was considered to have created a favourable environment to discuss sensitive issues. Addressing issues of confidentiality at the beginning of the workshop led to improved communication. In addition, the workshop made it possible for the researcher to observe participants' reaction to the proposed study and stakeholder engagement.

The researcher conducted a single workshop discussion to investigate participants' perceptions of the development of an IPC training programme. The 4-hour workshop allowed for a prolonged and in-depth discussion of key topics until consensus was reached. The data collected was then subjected to qualitative content analysis, which facilitated the systematic organisation of the data into themes, thereby enhancing the reliability and validity of the findings.

Objective 2c involved the utilisation of qualitative face-to-face individual interviews to gather comprehensive data on the implementation of interprofessional collaboration (IPC) in a maternity care setting, as well as participants' perceptions regarding its promotion in such a setting. It should be noted that the findings of this study cannot be generalised to other settings characterised by complex therapeutic protocols and advanced technology, such as theatre and accident and emergency departments Qualitative studies are designed to provide rich data for context-specific settings but not to provide data that is representative of the general population. Therefore, for departments considering the adoption of interventions informed by this qualitative study, it is advisable to conduct similar studies in order to tailor the intervention to their specific contexts.

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Phase 2: Development of solutions (Co-create training programme)

Objective 3: To combine results from Phase 1 to create the programme.

The development of the work-based IPE programme was undertaken in partnership with multiple stakeholders (see chapter 4). As a result, the ownership of the course was strengthened, thereby fostering a sense of motivation among team members to actively participate in the advancement of the training programme. Moreover, the researcher utilised a cyclic iterative approach in the methodological framework, which allowed them to create a training course that effectively tackled contextual challenges as they arose within maternity wards. A primary limitation associated with the development of the training plan was the absence of testing the training programme in a naturalistic context. Hence, it is advisable to conduct a trial implementation of the training course inside a hospital setting, in order to involve the perspectives and expertise of healthcare professionals (HCPs) in the process of validating the training programme.

Phase 3: Iterative cycles of testing and refinement (Validation of training programme)

Objective 4: To validate the work-based inter-professional education training programme for relevance in maternal health services

A survey completed by experts was undertaken in order to validate the training programme. A primary constraint on the generalisability of this study is the exclusion of healthcare professionals (HCPs) who would benefit from the training programme. Hence, it is imperative to examine their evaluation of the training programme. The implementation of content validation would provide advantages for a wide range of stakeholders, particularly programme users, as it would offer valuable insights into the organisation and arrangement of the programme from their unique perspective. Although quality feedback is important and anyone involved in providing feedback should possess the necessary knowledge and skills to offer relevant and scientifically accurate feedback. This feedback should be consistent and accompanied by constructive ideas for development.

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Another limitation was that the sample size was limited. Even though a minimum number required for experts to have sufficient control over consensus agreement was achieved, enough participants would add more value to the document. Hence, it is critical to conduct a study with a larger sample size and diverse stakeholders in order to address this requirement. Finally, it should be noted that the study was only done within the confines of a single location, namely a referral hospital. This particular site possessed distinct characteristics and contextual factors that might restrict the applicability of the findings to other settings. Nevertheless, the findings of the scoping review concurred with bigger qualitative studies. Hence, the researcher is of the opinion that the findings of this study can be generalised with caution to other settings with similar contexts.

Furthermore, a significant amount of time and effort was required to evaluate the items, thereby preventing the replication of the validation process subsequent to the initial feedback received from experts. It is important to conduct a comparable exercise in order to authenticate the findings.

8.6 CONTRIBUTIONS

The primary objective of interprofessional collaboration is to guarantee the provision of safe, cost-effective, and high-quality patient-centred care to individuals, families, and communities, ultimately leading to improved healthcare outcomes for patients. Hence, it is essential to underscore the significant impact of the findings and the development of a work-based interprofessional education programme on healthcare professionals, education, research, and healthcare processes and results. Table 8.2 lists the contributions of the study.

Table 8.2 Contributions of the study

RESEARCH CONTRIBUTION	EVIDENCE
Integration of DBR and CIHC framework to address the limitations of the two frameworks informed the development of authentic, evidence-based work-context specific work-based IPE programme	Chapters 3, 5, 6
The research led to a better understanding of how IPC is implemented in the context of Botswana's health care system consequently leading to new insight into IPC in developing countries.	Chapter 5
The study also identified perceived impact of disrespectful behaviour prevalent among midwives on interpersonal interaction.	Chapter 5
The programme contributed to increased awareness of IPC, communication, and conflict resolution approaches and how to deliver women-centred care	Chapter 7

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This study offered perspective on facilitators and barriers to delivery of IPC and women-centred care in maternity care settings locally and internationally.	Chapter 4, 5
Expert comments and suggestions in content validation of training programme contributed significantly to relevance, quality, clarity of the content, and user-friendliness of the training programme and adaptability to clinical practice.	Chapter 7
Stakeholder engagement is essential in the co-creation of work-based IPE programmes for collaborative practice in a maternity care setting	Chapters 3, 5, 6 and 7

The study made theoretical and methodological contributions to research in interprofessional collaboration and education, as well as to healthcare education and training and clinical practice, research and policy.

8.6.1 Theoretical and methodological

The development of an authentic, evidence-based work-context specific work-based Interprofessional Education (IPE) course was informed by the integration of the DBR) and CIHC frameworks, in order to address the shortcomings of both frameworks. This study contributed to the existing body of knowledge by exploring the application of the DBR and the CIHC framework in the development of a work-based interprofessional training programme. Furthermore, these frameworks have exhibited practical advantages in enhancing healthcare outcomes within an organisational setting. The body of literature has demonstrated that most initiatives in the field of IPC/E are primarily targeted towards pre-service training.

By integrating the two frameworks, the identified shortcomings of each framework were effectively addressed, resulting in a comprehensive approach that guided the systematic development of a training programme for clinical care practice. The involvement of diverse stakeholders in the design of IPC training for service learners is a novel approach in the field of clinical education in Botswana's healthcare system. Consequently, this practice holds the potential for use in the development of additional training programmes. The identification of limitations during the implementation of these frameworks has necessitated further investigation into alternative frameworks that can effectively answer identical research questions in a brief manner.

The utilisation of multiple research approaches in the construction of a work-based IPE programme facilitated the researcher’s acquisition of an extensive range of complete data, hence enabling the provision of a response to the research inquiry. The utilisation of multiple research

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approaches influenced the creation of a training plan tailored to a specific setting. The researcher's incorporation of diverse stakeholders in the study process facilitated the development of a comprehensive training course that encompassed a wide range of perspectives and insights.

Design-based research has identified numerous advantages associated with the collaborative involvement of diverse stakeholders in the development and assessment of training programmes. Hence, the collaborative development of the work-based Interprofessional Education (IPE) programme ensured the creation of a high-quality training plan that is tailored to the specific environment.

Finally, the dissemination of the investigations in this study is anticipated to result in a transformation of clinical practice, as evidenced by the citations from published Manuscripts (Madisa et al, 2022, 2023; Brittz et al, 2023) and subsequent attention given to the papers.

8.6.2 Healthcare professionals

The implementation of a work-based Interprofessional education (IPE) programme offers healthcare professionals (HCPs) the chance to enhance their understanding, abilities, and proficiencies in IPC. This, in turn, enables them to carry out their daily tasks with greater effectiveness, resulting in the delivery of comprehensive, safe, and patient-centred care. Additionally, the programme contributes to improved organisational performance and heightened levels of healthcare professionals and patient/client satisfaction. The training plan aims to enhance communication effectiveness among healthcare professionals, thereby reducing interprofessional conflicts, communication and teamwork failures and fragmented care identified in this study.

8.6.3 Clinical practice

This study is the first of its kind in the country and the region and has led to a better understanding of how IPC is implemented in the context of Botswana’s health care system consequently leading to new insight into IPC in developing countries. Moreover, this study provided insights into the obstacles that hinder the provision of pstient/women-centred care within the context of maternity

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care. We successfully identified the tangible challenges present in the maternity care environment in Botswana. The study revealed that the presence of disrespectful behaviour among midwives has adverse effects on interpersonal communication and collaborative practice, leading to delivery of fragmented care, silo practices and HCP dissatisfaction from unacceptable hierarchical powers among interprofessional groups. Hence, it is imperative to conduct additional research to investigate the root causes and consequences of widespread display of disrespectful conduct among midwives, and its impact on healthcare outcomes.

Moreover, the development and validation of a work-based interprofessional education (IPE) programme specifically designed for maternity care settings has the potential to assist healthcare facilities in successfully implementing the programme. This, in turn, could enhance healthcare professionals' engagement in the learning process, facilitate their acquisition of knowledge, and foster the development of competencies necessary for effective interprofessional collaboration. The collaborative engagement of stakeholders in the development and validation process of a work-based e-learning course facilitated the creation of an authentic and contextually-relevant training curriculum.

This programme was designed to effectively address the issue of interprofessional collaboration within the maternity environment. The training programme has the potential to assist healthcare systems in mitigating clinical errors, addressing hospital-based maternal mortalities and morbidities, lowering healthcare expenditure, and ultimately enhancing the quality of treatment. Hence, our mission was to improve interprofessional collaboration with the aim of reducing maternal outcomes in Botswana.

8.6.4 Health science education

The developed work-based training programme can also provide guidance to educators on how to include IPE into their curriculum, with the aim of addressing disparities between education and practice. Moreover, this study has the potential to make a valuable contribution to the development of a conceptual framework for IPE in contexts with limited resources.

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8.6.5 Healthcare management

The established work-based IPE programme can be utilised by health facility managers to enhance their management of both organisational and patient care activities. Furthermore, the training programme might boost health system functions by offering human resource that hold both clinical and non-technical abilities essential for delivery of safe, cost-effective highest quality patient-centred care. Additionally, this tool could be utilised by leadership to evaluate the collaborative behaviour of healthcare professionals in a clinical setting.

8.6.6 Research

This study introduces a work-based Interprofessional Education (IPE) programme that has not been extensively investigated in low and middle-income countries, particularly in the Sub-Saharan region. Consequently, this study has the potential to inspire further research on IPE and Interprofessional Collaborative Practice.

8.6.7 Regulatory bodies or accrediting agencies

This study has the potential to serve as a framework for the establishment of future standards of practice in IPC/E.

8.6.8 Policy

Policymakers have a critical role in shaping and implementing healthcare policies and practice standards. his study has underscored the importance of policy makers in conducting comprehensive evaluation and incorporation of IPC measures in health policies, strategies and guidelines at national and institutional levels.

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8.7 RECOMMENDATIONS

Based on the findings of the study, the researcher makes the following recommendations for nursing education, clinical practice, health professions regulatory bodies, organisations, healthcare administrators and leaders, and further research.

8.7.1 Nursing education

Healthcare professionals would benefit from integrating IPC in the training programmes to ensure that all graduates of health science training programme are IPC practice ready to work collaboratively in clinical settings. A programme such as the work-based IPE programme can be adopted and contextualised to a credit bearing course that could be offered in health training institutions to enable students to have a holistic experience of IPC before joining the service area.

A helpful learning environment is essential for effective implementation and support of IPC initiatives. Therefore, students would benefit from a learning environment that has adequate resources in terms of IPC prepared educators, deliberately scheduled IPC learning activities, material resources, IPC inclined technologically learning devices and strategies or policies, and IPC informed leadership. Therefore, it is recommended that universities establish services that promote and support uptake of IPC practice.

Tertiary institutions should consider training of educators/lecturers to champion IPC in their institutions and mentor colleagues and students in the university and in clinical practice.

8.7.2 Clinical practice

Based on the findings on HCP and patients' perception of IPC, it is imperative that leadership in healthcare systems in Botswana consider restructuring the healthcare system to introduce processes and structures that improve communication and interprofessional interactions. For example, in-service training programmes and reviving morning handover meetings could enhance interprofessional collaboration leading to respectful shared decision making. Leveraging on technology to establish virtual meetings to discuss treatment plans for women and patients should

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be considered to overcome the shortage of staff, which was highlighted as one of the barriers to engaging in interprofessional collaborative practice.

The work-based IPE programme is a positive development towards promoting IP collaborative practice. However, since a readiness survey was not conducted, ensuring success in the uptake of the programme needs to be discussed to establish champions of the programme and identify stakeholders who could support and enforce uptake of the programme. The researcher is therefore considering consultation with the WHO regional office and Ministry of Health to solicit support for the programme.

8.7.3 Healthcare Professionals Regulatory Bodies

(Nurses and Midwifery Council of Botswana [NMCB] and Botswana Health Profession's Council [BHPC])

The health care system in Botswana would benefit from IPC initiatives if healthcare professional regulatory bodies would consider including IPC competency domains as a minimum expectation for all programmes of studies to be recognised in the country. Making IPC domains a mandatory non-technical skill for all healthcare professionals would make it mandatory for training institutions as well as clinical practice to restructure their systems to implement IPC interventions.

8.7.4 Organisation, healthcare administration and leadership

The study found lack of resources and leadership support as barriers to effective implementation of IPC, therefore health facilities and administration should consider the following:

- The administration should consider intensifying support, providing adequate and the needed resources for IPC interventions and for creating ongoing awareness of the need for respectful interprofessional collaboration.
- Support in the form providing induction programmes on interprofessional collaboration is recommended so that all healthcare professionals joining clinical practice have a holistic experience of IPC.

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- Organisations should consider identifying IPC champions or mentors to support and coach clinicians in delivery IP collaborative activities.

It is also recommended that the Ministry of Health and Wellness should consider:

- Training healthcare care managers on IPC so that they are in a position to role model, coach and mentor staff on IPC interventions depending on their needs and competencies
- Revisiting quality improvement initiatives to integrate IPC in policies, procedures, guidelines, and tools in clinical practice
- Rewarding positive attitudes in the wards to motivate HCPs to commit to teamwork practices, collaborative care and shared decision making

The study found that healthcare professionals raised shortage of staff and work overload as barriers to effective implementation of IPC, therefore the leadership should establish strategies to support individuals enrolled in the programme to ensure that they complete the programme.

8.7.5 Further research

Based on the results of phase 1 of the study, it is evident that there is need for more studies on IPC in Botswana's healthcare setting and regionally to increase awareness of IPC and appreciate the impact of IPC on healthcare outcomes in the country.

Therefore, the researcher recommends that studies be conducted on the following topics:

- A pilot test of the developed training programme to validate its relevance, use and appropriateness
- Healthcare professionals' perceptions and experience of the content and viability of the Mabogo-Dinku work-based IPE programme for maternity care settings
- An investigation into the efficiency and effectiveness of the IPC training programme
- An evaluation of the effectiveness of IPC and IPC competencies in clinical practice
- Healthcare workers' perspectives on barriers to implementation of the IPE programme in maternity care settings

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- The development of an IPC mentorship programme to facilitate and support implementation of IPC interventions

This study presented the key findings, contributions, implications, and limitations of the study along with recommendations for future research, management, clinical practice, and educational institutions.

8.8 CONCLUSION

This study was a journey of discovery and learning during which the researcher learned that implementation IPC is not an easy task because of the many barriers identified (see chapter 5). Therefore, an IPC-friendly environment is crucial to enable healthcare professionals to deliver high quality IPC services and ultimately achieve quality healthcare outcomes and safe, cost-effective women-centred care. Since the ultimate aim of the study was improved maternal healthcare outcomes by enhancing interprofessional collaborative practice in maternity care settings, the development of *Mabogo-Dinku work-based IPE programme for collaborative practice maternity care setting*s is a significant contribution and achievement. The programme fosters theory and IPC hands-on practice, and is flexible, self-paced, free, and offered through blended approach practice. *Mabogo-Dinku work-based IPE programme* that incorporates the six IPC competency domains is available online and can be implemented by varying team composition ranging from small groups of two people to a large diverse group. The programme can be accessed via a Google account from:

https://classroom.google.com/c/NTc3MDM2OTI2OTky?cjc=snhbwa3.

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ANNEXURE 1.1

Canadian Interprofessional Health Collaborative (CIHC) National Interprofessional competency framework (CIHC 2010)

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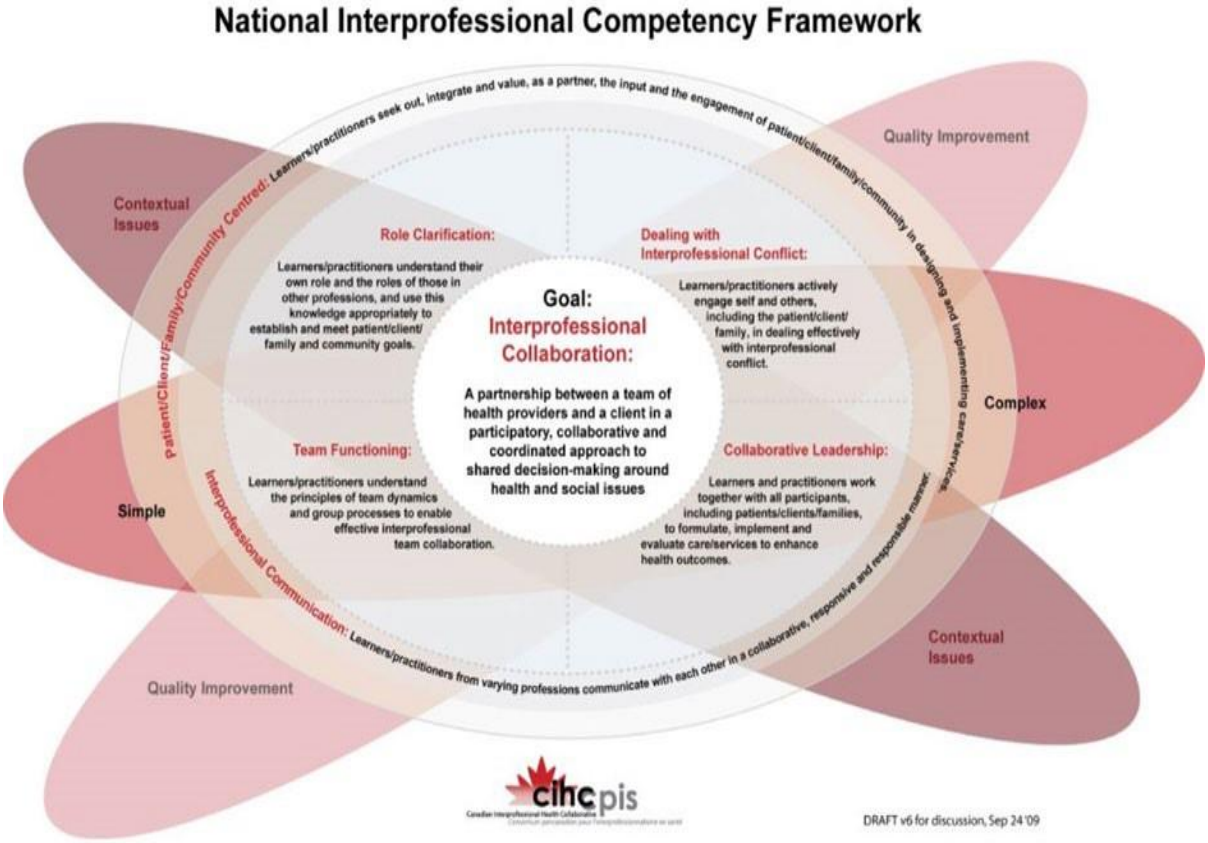
ANNEXURE 1.1

***Canadian Interprofessional Health Collaborative* (*CIHC*) National Interprofessional competency framework (CIHC 2010)**



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ANNEXURE 1.2

University of Pretoria Ethics Approval Certificate

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Institution: The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.

- FWA 00002567, Approved dd 18 March 2022 and Expires 18 March 2027.
- IORG #: IORG0001762 OMB No. 0990-0278 Approved for use through August 31, 2023.

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Faculty of Health Sciences

Faculty of Health Sciences **Research Ethics Committee**

13 April 2023

Approval Certificate
Annual Renewal

Dear Mrs M Madisa,

Ethics Reference No.: 122/2020 – Line 3
Title: Co-Creating Work-Based Inter-Professional Education Programme for Collaborative Practice in Maternity health Services

The **Annual Renewal** as supported by documents received between 2023-03-28 and 2023-04-12 for your research, was approved by the Faculty of Health Sciences Research Ethics Committee on 2023-04-12 as resolved by its quorate meeting.

Please note the following about your ethics approval:

- Renewal of ethics approval is valid for 1 year, subsequent annual renewal will become due on 2024-04-13.
- Please remember to use your protocol number (122/2020) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, monitor the conduct of your research, or suspend or withdraw ethics approval.

Ethics approval is subject to the following:

- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

On behalf of the FHS REC, Dr R Sommers
MBChB, MMed (Int), MPharmMed, PhD
Deputy Chairperson *of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria*

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes, Second Edition 2015 (Department of Health)

Research Ethics Committee
Room 4-60, Level 4, Tswelopele Building
University of Pretoria, Private Bag x323
Gezina 0031, South Africa
Tel +27 (0)12 356 3084
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www.up.ac.za

Fakulteit Gesondheidswetenskappe
Lefapha la Disaense tša Maphelo

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ANNEXURE 1.3

MOH-Botswana-Ethics Approval Certificate

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Republic of Botswana

MINISTRY OF HEALTH
PRIVATE BAG 0038
GABORONE

REfERENC NO: HPRD: 6/14/1 **12th February 2024**

Health Research Development Committee

Principal Investigator: Montlenyane Madisa

Notification of IRB Review: **Continuing Review**

PROTOCOL TITLE: CO-CREATING WORK-BASED INTER-PROFESSIONAL EDUCATION PROGRAMME FOR COLLABORATIVE PATIENT CARE IN MATERNITY SERVICES IN BOTSWANA

Review Type:	**Expedited**
	29th January 2024
ApptOYai il te;	12th February 2024
effective Dai:e;	12 February th 2024
Exp ration Date:	11st February 2025

This ce.tifies tl1at the continuing review request for the protocol above was reviewed under review mcedures. Approval is valid for a period of 1 year.

___ Study is continuing.
__ The study has not been activated.
__ Open to Enrollment.
__ Accrual complete with treatment intervention and /or participant interviews/ surveys continuing.
Open for analysis only
Subject intervention/data collection ended on (date):
includes only collection of data from voice, video, digital, or image recordings made for research purposes.
Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior).
_V_ Open for report writing

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If you have any questions please do not hesitate to contact Mr Abia Sebaka at, asebaka@gov.bw, Tel +267-3632754 and Mr Kgomotso Motlhanka at, kgmmotlhanka@gov.bw, Tel +267-3632751.

Thank you for your cooperation and your commitment to the protection of human participants in research.

Yours Sincerely

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HEALTH POLICY RESEARCH8r JEVEL JH-MENT

Mr Kgomotso Motlhanka
f. ot I P RMAI\JENT SECRETARY

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ANNEXURE 4.1

Key search Terms for scoping review

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ANNEXURE 4.1

KEYWORDS AND MESH TERMS

Table 3.1: Keywords and MeSH terms used to identify relevant articles.

Key words	Key Terms	Key words and terms-Combination
1. Interprofessional Collaboration 2. Interprofessional Education Interprofessional collaborative practice 3. Interdisciplinary collaboration 4. Collaborative practice 5. Interprofessional teamwork 6. Interprofessional communication 7. interprofessional collaborative competencies	**Population** i. healthcare professionals ii. midwife iii. midwives iv. midwifery v. doctors vi. medical doctors vii. obstetricians viii. health or social care professionals ix. antenatal care patients/women x. prenatal care women/patients xi. post-natal care women/patients xii. patients/women **Concepts** a. maternity care b. maternal health c. interprofessional communication d. teamwork e. quality care	Interprofessional education or inter-professional education or collaborative learning or interprofessional collaboration) 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)

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	f. Patient-centred care g. work based. h. Inservice i. post qualification IPE or continuous professional development j. short course k. self-care management **Context** a) hospital b) inpatient ward c) hospital ward d) hospital room e) Obstetrics f) Maternal Health services	

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ANNEXURE 4.2

Scoping Data Extraction Form

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Annexure 4.2: Scoping Review Data Extractor Form

Authors	Setting	Study Participants	Study Design or type of training models	Purpose of an intervention

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ANNEXURE 4.3

PRISMA Flow Diagram for the scoping review

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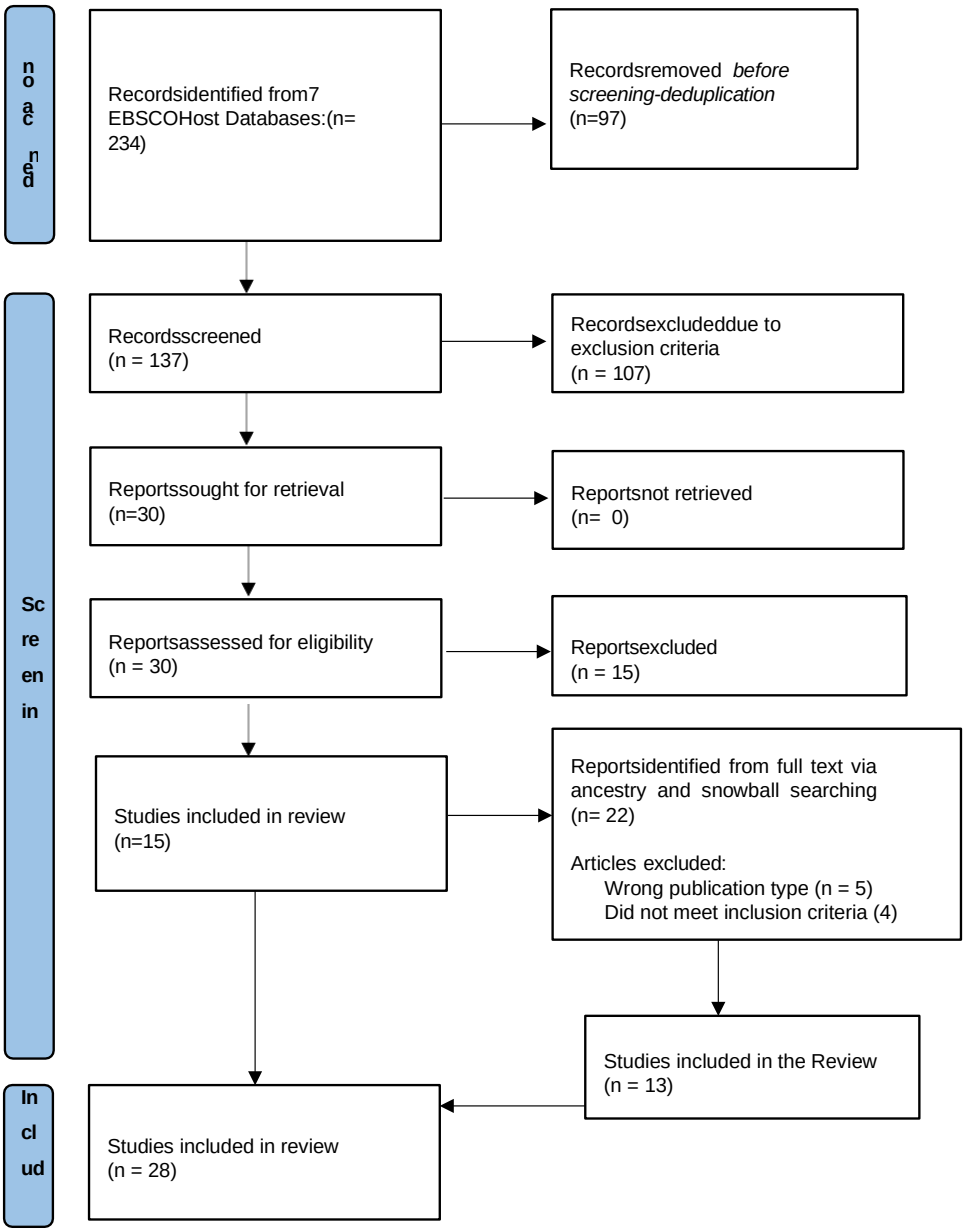
Annexure 4.3. PRISMA extension for *scoping reviews*



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ANNEXURE 5.1

Phase 2 PIL Stakeholder analysis – Interviews Research Team

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Annexure 5.1

PARTICIPANT'S INFORMATION & INFORMED CONSENT DOCUMENT

Research team- For Stakeholder analysis

STUDY TITLE: Designing an inter-professional education programme for work based collaboration between healthcare professionals in maternity wards

Principal Investigators: Montlenyane Madisa

Institution: University of Pretoria, Faculty of Health Sciences

DAYTIME AND AFTER HOURS TELEPHONE NUMBER(S):

Daytime numbers: 0026771398284 / 002673646145

Afterhours: 0026771398284 / 002675770001

DATE AND TIME OF FIRST INFORMED CONSENT DISCUSSION:

			:	
Day	**Month**	**Year**	**Time**	

Dear potential research participant,

1) INTRODUCTION

You are invited to volunteer for a research study. This information leaflet is to help you to decide if you would like to participate. Before you agree to take part in this study you should fully understand what is involved. If you have any questions, which are not fully explained in this leaflet, do not hesitate to ask the investigator. You should not agree to take part unless you are completely happy about all the procedures involved.

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2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of this study is to design a programme for work based inter-professional collaboration in maternity ward aimed at teaching and enhancing inter-professional collaborative behaviours and practices among health care professionals working maternity wards in Botswana

By doing so I wish to learn to get more information about stakeholders that I can engage in the development of training program for IPC and evaluation of the relevance of the training program

You will be interviewed by the researcher in workshop kind of meeting in a place that is private and easy for you to reach.

3) EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPECTED FROM THE PARTICIPANTS

If you agree to participate, you will be asked to participate in an workshop which will take 4 hours. A group interview will be conducted during the workshop to enable you to identify a list of stakeholders that kind be consulted for development and evaluation of training program. This study involves answering some questions such as: (1) **What are the stakeholders can we consider for this study. What would be their role in the study? What would stakeholders benefit from being involved in the study? How does the stakeholder relate with other stakeholders? What is their anticipated level of power/influence in the study and who will be the representatives of the stakeholders?**

4) RISK AND DISCOMFORT INVOLVED.

We do not think that taking part in the study will cause any physical or emotional discomfort or risk. However, the only possible risk and discomfort you might experience is that you might feel frustrated by limited knowledge about stakeholders locally and internationally. Therefore, if you feel uncomfortable discussing stakeholders, you can choose to keep quite in the workshop.

If you need psychological support or counselling during or after the interview, the researcher will be able to refer you to **Department of Clinical Psychology in the hospital so that you could receive counselling.**

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5) POSSIBLE BENEFITS OF THIS STUDY.

You will not benefit directly by being part of this study. But your participation is important for us to better understand **collaborative practices in the ward, to inform the development of training program that enhances competencies for collaborative care among health care professionals**

The information you give may help the researcher improve Patient safety, delivery of quality health care services to women; communication and interpersonal skills in the workplace; and effective utilization of resources (including health human resources

6) COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study.

7) VOLUNTARY PARTICIPATION

The decision to take part in the study is yours and yours alone. You do not have to take part if you do not want to. You can also stop at any time during the interview without giving a reason. If you refuse to take part in the study, this will not affect you in any way. You will still receive standard care and treatment for your illness.

8) HAS THE STUDY RECEIVED ETHICAL APPROVAL?

This Protocol was submitted to the Faculty of Health Sciences Research Ethics Committee, University of Pretoria, telephone numbers 012 356 3084 / 012 356 3085 and written approval has been granted by that committee. The study has been structured in accordance with the Declaration of Helsinki (last update: October 2013), which deals with the recommendations guiding doctors in biomedical research involving human/subjects. A copy of the Declaration may be obtained from the investigator should you wish to review it.

9) INFORMATION

If I have any questions concerning this study, I should contact:

Montlenyane Madisa at 0026771398284

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10) CONFIDENTIALITY

We will not record your name anywhere and no one will be able to connect you to the answers you give. Your answers will be linked to a fictitious code number or a pseudonym (another name) and we will refer to you in this way in the data, any publication, report or other research output.

All records from this study will be regarded as confidential. Therefore, we will not record your name anywhere and no one will be able to connect you to the answers you give. The results will be published in medical journals or presented at conferences in such a way that it will not be possible for people to know that you were part of the study.

All hard copy information will be kept in a locked facility at **Princess Marina Hospital Ethics review office in Botswana, for a minimum of 5 years and only the research team will have access to this information.**

11) CONSENT TO PARTICIPATE IN THIS STUDY.

- I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study.
- I have also received, read and understood the above written information about the study.
- I have had adequate time to ask questions and I have no objections to participate in this study.
- I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results.
- I understand that I will not be penalised in any way should I wish to stop taking part in the study and my withdrawal will not affect my treatment and care.
- If photos are taken it may only be used after I have seen it and agreed that it may be used.
- I am participating willingly.

I have received a signed copy of this informed consent agreement.

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.....	.....
Participant name	Date
.....	.....
Participant signature	Date
.....	.....
Investigator's name	Date
.....	.....
Investigator's signature	Date
.....	.....
Witness name and signature	Date

I understand that the focus group or discussions will be audio-taped. I give consent that it may be audio-taped.

YES / NO

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ANNEXURE 5.2

Stakeholder analysis-workshop-PPT

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Annexure 5.2. Stakeholder analysis-workshop-PPT

Co-Creating Work-Based Inter-Professional Education Porgramme for Inter-professional Collaborative Care In Maternity Services in Botswana

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Outline

- Welcome and Introductions
- Shared understanding of IPC/E
- Background of the study and research approach
- Brief update about Interprofessional collaboration and Education
- Participants views about how IPC/E should be implemented in maternity care setting
- Stakeholder analysis and mapping
- Reflections and closing remarks

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Activity 1: Welcome and Background of the study

- Welcome and Introductions
- Shared understanding of Of IPC? And Background of the study

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Activity 1: Background of stduy

- Health care system is complex
  - shortage of skilled health workforce
  - Advances in medical care
  - Diverse medical health care conditions and poor health care outcomes
  - Pts demand for quality patient centered care
  - All these demand for HCP with expertise and value for effective collaboration, coordination, communication and team synergy to ensure delivery of safe, effective and efficient healthcare
    - Poor IPC is main contributor to poor health care outcomes (RCA studies)
  - Botswana is equally affected- specifically Maternal health care
  - WHO identified : IPE and IPC practice as innovative interventions to address these complex health care issues

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Background of the study/ IPC/E

- What is IPE (WHO, 2010)
- Process whereby two or more healthcare professions are brought together to learn about, from and with each other and complement each other's skills to achieve common health care outcome
  - **To improve interprofessional relationships**
  - **For role clarity**
  - **Close hierarchical gaps**
  - **To foster collaborative practice**
  - **For delivery of Pt centred care**

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Background-IPC/E

- What skills are taught in IPE:
  - How to create a climate of mutual respect and shared values (values/Ethics for IPC)
  - How to effectively use our roles and responsibilities to address health care needs of patients
  - Interprofessional communication
  - How to apply relationship building values and team building dynamic to plan, deliver, and evaluate patient care

- What is IPC
  - State whereby multiple healthcare professionals are brought together to work with patients and significant others to deliver patient

  Question: How do we prepare the environment to ensure that is IPC practice friendly???
- Where are these innovations implemented: First world countries
- Why are these innovations not implemented in Botswana?

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Background: Study objectives

- Proposal: development a work-based inter-professional education training programme to enhance interprofessional collaborative care for professionals' working in maternity services in Botswana
- Study objectives:
- To explore the considerations for promoting the implementation of work-based interprofessional education programmes
- Sub-objective 2a: To conduct a stakeholder analysis
- To combine results from Phase 1 to co-create a **work-based inter-professional training programme** for maternity care settings.
- To validate the developed work-based interprofessional collaboration training programme for relevance and appropriateness in maternity care settings

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Research approach

- **Phase 1:**
  - Workshop:
    - Stakeholder analysis
    - Stakeholder perception of how IPC should be implemented (content and structure of IPC training programme)
  - Scoping review- Special considerations of IPC
  - Qualitative-Face to face interviews – HCP and women's perception of IPC in in maternity ward
- **Phase 2**
  - Co-creation work-based IPC training programme
- Phase 3
  - Content Validation of work-based IPC training programme

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Activity 2: Stakeholder perception of how IPC/E should be implemented

- Share What is your position about interprofessional collaboration and the proposed intervention?
- How do you think IPC/E will fit in the context of maternity care setting?
- How can it be implemented and what skills do you think health care professional need to realise IPC?.

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Activity 3: Stakeholder analysis

- Process of identifying those people who can form programme development team
- Steps:
  - Identifying the key stakeholders and their interests (positive or negative) in the project;
  - Assessing the influence of, importance of, and level of impact upon each stakeholder;
  - Identifying how best to engage stakeholders.

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Stakeholder analysis activities

- Stakeholder identification (generic list of stakeholders in healthcare shared)
- Stakeholder mapping (Grouping stakeholder according to their levels of participation, interest, and influence in the project)
- Identying priority stakeholders (Stakeholders prioritised according to their level of importance and influence over the research project)
- determining how best to involve and communicate each of these stakeholder groups throughout.

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Activity 4: Reflection and closing remark

1. Summary of the outcome of the workshop
2. Asking questions for clarity
3. Closing remark

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ANNEXURE 5.3

Phase 1 PIL Interviews HCP

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Annexure 5.3

PARTICIPANT'S INFORMATION & INFORMED CONSENT DOCUMENT

Healthcare professionals

STUDY TITLE: Designing an work-based inter-professional education programme for collaborative practice in maternity wards

Principal Investigators: Montlenyane Madisa

Institution: University of Pretoria, Faculty of Health Sciences

DAYTIME AND AFTER HOURS TELEPHONE NUMBER(S):

Daytime numbers: 0026771398284 / 002673646145

Afterhours: 0026771398284 / 002675770001

DATE AND TIME OF FIRST INFORMED CONSENT DISCUSSION:

			:	
Day	**Month**	**Year**	**Time**	

Dear potential research participant,

1) INTRODUCTION

You are invited to volunteer for a research study. This information leaflet is to help you to decide if you would like to participate. Before you agree to take part in this study you should fully understand what is involved. If you have any questions, which are not fully explained in this leaflet, do not hesitate to ask the investigator. You should not agree to take part unless you are completely happy about all the procedures involved.

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2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of this study is to design a programme for work based interprofessional collaboration in maternity ward aimed at teaching and enhancing inter-professional collaborative behaviours and practices among health care professionals working maternity wards in Botswana

By doing so I wish to learn more about **the current inter-professional practices in your unit**

You will be interviewed by the researcher in a place that is private and easy for you to reach.

3) EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPECTED FROM THE PARTICIPANTS

If you agree to participate, you will be asked to participate in an individual interview which will take about 30 minutes. The individual interview will be a one-on-one meeting between the two of us. I will ask you several questions about the research topic. This study involves answering some questions such as: (1) **What are the current inter-professional collaborative practices in your unit? (2) How do you and other healthcare professionals work together to promote quality patient care? (3) What do you think about the current teamwork between healthcare providers in your unit?**

With your permission, the interview will be recorded on a recording device to ensure that no information is missed

4) RISK AND DISCOMFORT INVOLVED.

We do not think that taking part in the study will cause any physical or emotional discomfort or risk. However, the only possible risk and discomfort you might experience is that you might feel frustrated by past experiences of working in a poor performing team. Therefore, if questions feel too personal or make you uncomfortable, you do not have to answer them.

If you need psychological support or counselling during or after the interview, the researcher will be able to refer you to **Department of Clinical Psychology in the hospital so that you could receive counselling.**

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5) POSSIBLE BENEFITS OF THIS STUDY.

You will not benefit directly by being part of this study. But your participation is important for us to better understand **collaborative practices in the ward, to inform the development of training program that enhances competencies for collaborative care among health care professionals**

The information you give may help the researcher improve Patient safety, delivery of quality health care services to women; communication and interpersonal skills in the workplace; and effective utilization of resources (including health human resources

6) COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study**.**

7) VOLUNTARY PARTICIPATION

The decision to take part in the study is yours and yours alone. You do not have to take part if you do not want to. You can also stop at any time during the interview without giving a reason. If you refuse to take part in the study, this will not affect you in any way. You will still receive standard care and treatment for your illness.

8) HAS THE STUDY RECEIVED ETHICAL APPROVAL?

This Protocol was submitted to the Faculty of Health Sciences Research Ethics Committee, University of Pretoria, telephone numbers 012 356 3084 / 012 356 3085 and written approval has been granted by that committee. The study has been structured in accordance with the Declaration of Helsinki (last update: October 2013), which deals with the recommendations guiding doctors in biomedical research involving human/subjects. A copy of the Declaration may be obtained from the investigator should you wish to review it.

9) INFORMATION

If I have any questions concerning this study, I should contact:

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Montlenyane Madisa at 0026771398284

10) CONFIDENTIALITY

We will not record your name anywhere and no one will be able to connect you to the answers you give. Your answers will be linked to a fictitious code number or a pseudonym (another name) and we will refer to you in this way in the data, any publication, report or other research output.

All records from this study will be regarded as confidential. Therefore, we will not record your name anywhere and no one will be able to connect you to the answers you give. The results will be published in medical journals or presented at conferences in such a way that it will not be possible for people to know that you were part of the study.

All hard copy information will be kept in a locked facility at **Princess Marina Hospital Ethics review office in Botswana, for a minimum of 5 years and only the research team will have access to this information.**

11) CONSENT TO PARTICIPATE IN THIS STUDY.

- I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study.
- I have also received, read and understood the above written information about the study.
- I have had adequate time to ask questions and I have no objections to participate in this study.
- I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results.
- I understand that I will not be penalised in any way should I wish to stop taking part in the study and my withdrawal will not affect my treatment and care.
- If photos are taken it may only be used after I have seen it and agreed that it may be used.
- I am participating willingly.

I have received a signed copy of this informed consent agreement.

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.....	.....
Participant name	Date
.....	.....
Participant signature	Date
.....	.....
Investigator's name	Date
.....	.....
Investigator's signature	Date
.....	.....
Witness name and signature	Date

I understand that the focus group or discussions will be audio-taped. I give consent that it may be audio-taped.

YES / N

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ANNEXURE 5.4

Phase 1 Interview guide HCP

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Annexure 5.4: Interview guide: Healthcare professionals

Question to research participant:

Please tell me about the current inter-professional collaborative practices in your unit?

Probing questions

How do you and other healthcare professionals work together to promote quality patient care?
What do you think about the current team work between healthcare professionals in your unit?
If health care professionals are to be trained on inter-professional collaborative care what content and structure of a ward-based educational programme would you recommend and why?

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ANNEXURE 5.5

Phase 1 PIL Interviews Patients-Women

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Annexure: 5.5

PARTICIPANT'S INFORMATION & INFORMED CONSENT DOCUMENT

Patients

STUDY TITLE: Designing a work-based inter-professional education programme for collaborative in maternity care wards

Principal Investigators: Montlenyane Madisa

Institution: University of Pretoria, Faculty of Health Sciences

DAYTIME AND AFTER HOURS TELEPHONE NUMBER(S):

Daytime numbers: 0026771398284 / 002673646145

Afterhours: 0026771398284 / 002675770001

DATE AND TIME OF FIRST INFORMED CONSENT DISCUSSION:

Day	**Month**	**Year**

:
Time

Dear potential research participant,

1) INTRODUCTION

You are invited to volunteer for a research study. This information leaflet is to help you to decide if you would like to participate. Before you agree to take part in this study you should fully understand what is involved. If you have any questions, which are not fully explained in this leaflet, do not hesitate to ask the investigator. You should not agree to take part unless you are completely happy about all the procedures involved.

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2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of this study is to design a programme for work based inter-professional collaboration in maternity ward aimed at teaching healthcare professionals on how to work together as a team to improve quality of care to patients admitted in maternity wards in Botswana

By doing so I wish to learn more about: **the current teamwork practices in the ward**

You will be interviewed by the researcher in a place that is private and easy for you to reach.

3) EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPECTED FROM THE PARTICIPANTS

If you agree to participate, you will be asked to participate in an individual interview which will take about 30 minutes. The individual interview will be a one-on-one meeting between the two of us. I will ask you several questions about the research topic. This study involves answering some questions such as: (1) **How do nurses and doctors work together to make sure you receive good care? (2) What do you think about teamwork between doctors and nurses in this ward? (3). Do nurses and doctors involve you as patient when discussing your treatment?**

With your permission, the interview will be recorded on a recording device to ensure that no information is missed.

4) RISK AND DISCOMFORT INVOLVED.

We do not think that taking part in the study will cause any physical or emotional discomfort or risk. However, the only possible risk and discomfort you might experience is that you might feel frustrated by receiving care from healthcare professionals who do not engage you in your care. Therefore, if questions feel too personal or make you uncomfortable, you do not have to answer them.

If you need psychological support or counselling during or after the interview, the researcher will be able to refer you to **Department of Clinical Psychology in the hospital so that you could receive counselling.**

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5) POSSIBLE BENEFITS OF THIS STUDY.

You will not benefit directly by being part of this study. But your participation is important for us to better understand **collaborative practices in the ward, to inform the development of training program that enhances competencies for collaborative care among health care professionals**

The information you give may help the researcher improve Patient safety, delivery of quality health care services to women; communication and interpersonal skills in the workplace; and effective utilization of resources (including health human resources

6) COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study**.**

7) VOLUNTARY PARTICIPATION

The decision to take part in the study is yours and yours alone. You do not have to take part if you do not want to. You can also stop at any time during the interview without giving a reason. If you refuse to take part in the study, this will not affect you in any way. You will still receive standard care and treatment for your illness.

8) HAS THE STUDY RECEIVED ETHICAL APPROVAL?

This Protocol was submitted to the Faculty of Health Sciences Research Ethics Committee, University of Pretoria, telephone numbers 012 356 3084 / 012 356 3085 and written approval has been granted by that committee. The study has been structured in accordance with the Declaration of Helsinki (last update: October 2013), which deals with the recommendations guiding doctors in biomedical research involving human/subjects. A copy of the Declaration may be obtained from the investigator should you wish to review it.

9) INFORMATION

If I have any questions concerning this study, I should contact:

Montlenyane Madisa at 0026771398284

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10) CONFIDENTIALITY

We will not record your name anywhere and no one will be able to connect you to the answers you give. Your answers will be linked to a fictitious code number or a pseudonym (another name) and we will refer to you in this way in the data, any publication, report or other research output.

All records from this study will be regarded as confidential. Therefore, we will not record your name anywhere and no one will be able to connect you to the answers you give. The results will be published in medical journals or presented at conferences in such a way that it will not be possible for people to know that you were part of the study.

All hard copy information will be kept in a locked facility at **Princess Marina Hospital Ethics review office in Botswana, for a minimum of 5 years and only the research team will have access to this information.**

11) CONSENT TO PARTICIPATE IN THIS STUDY.

- I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study.
- I have also received, read and understood the above written information about the study.
- I have had adequate time to ask questions and I have no objections to participate in this study.
- I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results.
- I understand that I will not be penalised in any way should I wish to stop taking part in the study and my withdrawal will not affect my treatment and care.
- If photos are taken it may only be used after I have seen it and agreed that it may be used.
- I am participating willingly.

I have received a signed copy of this informed consent agreement.

_____ _____

Participant's name (Please print) Date

_____ _____

Participant's signature Date

_____ _____

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Researcher's name (Please print) Date

Researcher's signature Date

I understand that the focus group or discussions will be audio-taped. I give consent that it may be audio-taped.

YES / NO

VERBAL PATIENT INFORMED CONSENT (**applicable when participants cannot read or write)**

I, the undersigned, ……..…, have read and have explained fully to the patient, named.....and/or his/her relative, the patient information leaflet, which has indicated the nature and purpose of the study in which I have asked the patient to participate. The explanation I have given has mentioned both the possible risks and benefits of the study and the alternative treatments available for his/her illness. The patient indicated that he/she understands that he/she will be free to withdraw from the study at any time for any reason and without jeopardizing his/her treatment.

I hereby certify that the patient has agreed to participate in this study.

Participants Name _____
(Please print)

Participants Signature _____ Date _____

Investigator's Name _____
(Please print)

Investigator's Signature _____ Date _____

Witness's Name _____ Witness's Signature _____ Date _____
(Please print)

(Witness - sign that he/she has witnessed the process of informed consent)

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ANNEXURE 5.6

Phase 1 Interview guide

Patients-Women

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Annexure 5.6: Interview guide: Patients

Questions to research participant:

Tell me how health care professionals work together to make sure you receive good care?

Tell me how you want the health care professionals to engage you in your care to make sure you receive good care

What skills do you think health care professionals need in order to ensure that you receive good quality care and explain how these skills can be taught

Probing questions

Tell me what do you think about team work between doctors and nurses in this unit?

Tell me about your cultural practices that health care professionals must embrace to ensure that you receive good care

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ANNEXURE 5.7

Codebook HCP Responses

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Annexure: 5.7

Codebook- Healthcare Professionals' Responses (Sampled Responses)

Interview questions (1, 2. 3)

- Please tell me about the current inter-professional collaborative practices in your unit?
    - How do you and other healthcare professionals work together to promote quality patient care?
    - What do you think about the current teamwork between healthcare professionals in your unit?

Participant	Responses
HCP 1-Nurse Assess the level of collaboration ad teamwork competencies required Patient engagement in care Interprofessional dynamics	When I talk about our working relations, it is not pleasing at all mainly between doctors, social workers and dieticians, we don't work with each other properly[M1]. The doctors are sometimes better[M2] but these other groups like social workers and others do not work well. They can just get into the cubicle without informing us, you can just find them busy checking patients in the wards without even consulting or informing us[M3]. They forget that we (nurses) are gatekeepers in any health care setting. It's like they are undermining us[M4]. . Just to take rounds in the wards is very difficult and it has long been suggested that it should be put in place but it seems impossible[M5]. The reason being that we are in short of staff[M6] yet there are too many patients, sometimes we are 3 and you find that a person has to take 2 cubicles alone. So if you take rounds with the doctor you wonder when are you going to your own duties, this means that you take all day doing the doctor's work yet yours is not done, when you are done with the doctor's duties it is already time to knock off[M7]. It will be very helpful that when the doctor arrives he finds the nurse responsible for a particular patient and if he has already checked the patient, he gives the nurse feedback about what he did to the patient[M8]. What I have realised is that the patients are not engaged on their treatment[M9]. You will find that a patient for example has been diagnosed with high blood pressure and the doctor just orders treatment and writes in the patients card without even informing the patient about the diagnosis and treatment[M10]. The patient then refuses the treatment [M11]saying that the doctor did not tell them about the treatment although, the doctor expects the nurse to explain the treatment to the patient and we nurse find it very difficult to explain since[M12] we are not the ones that diagnosed, we believe it is a doctor's duty to explain to the patient about their treatment.

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Shortage of resources	
HCP 2-Nurse	There is good working relationship because everyone knows their duties though there are times when we don't do things accordingly[M13]. There are so many patients in the wards and we know that if patient is supposed to be seen by the doctor then we write down in a book and if the doctor did not do something on the patient we alert him so that he can assist the patient[M14]. Our main communication is that we write on the patient's chart, when the doctor arrives he checks the book and continues with the treatment of the patient. We work together with the doctor only when we are together in ward[M15] otherwise we just use the book to communicate with him. I believe the olden ways of taking rounds are the ones that can help us to work together[M16] but they are very difficult because we are in short of staff[M17]. It has long been suggested that we put back in place the olden rounds and it is very difficult because the number of nurses and the doctors are not the same[M18]. We have been getting a chance to meet during morning meetings but now because of COVID they are no longer held[M19]. It is very difficult to find us meeting with other nurses but we only meet when a doctor has to check on patients in the wards that's when we are able to chat about a patient[M20] otherwise there is no time to meet anywhere to talk about a patient. Drs. are using COVID19 as an excuse for not engaging in patients rounds or morning meetings[M21]. Why is it that we can hold non-patient related meetings? Do you know that we have research going on in the ward and we meet weekly, in an open area, to discuss progress? when one suggests to the team that we should also conduct similar meetings for patient activities, Drs. are always against that claiming that staff meetings would pose risk of spreading COVID19 among us[M22]. However, eeven though we no longer meet but we are all good we don't have arguments or conflicts we talk to each other properly[M23][M24].
HCP 3-Nurse	There is no collaboration here[M25]. I started working at Share, maybe it's because it was a small hospital but there was collaboration, we were working as a team yet there was a shortage of doctors[M26]. I was very impressed when I arrived here because a doctor I always available so that we can work together when there is an emergency[M27]. What I have realised is that some other care takers are not willing to work together[M28], another problem is the laboratory technicians because even if the results of patients are out they take time to give them to us so that we are able to intervene earlier. Even when the results of the patient are not okay they fail to let us know earlier you will just find out on your own that something is not right. We are the ones that end up identifying that the HB and Potassium of the patient are very low[M29]. Where I was working, when the results of a patient are not okay they would call us so that we can assist the patient immediately[M30]. Those at the Pharmacy are also giving us a problem because when we go for collection of medicines they seem not willing or interested in helping us[M31]. The doctors are really trying because whenever we need them they make themselves available, the problem is that they give the labour ward a priority and they do not give our ward the priority it deserves[M32]. The social workers we do not have any problem with them because when we send them a referral letter they[M33] come faster, the people that we have a problem with also are the psychologists

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	because they are in short of staff as they can take 2-3 days without seeing the patient we have referred to them. We used to have the morning meetings where we used to meet with the doctors but nowadays due to COVID 19 they are no longer there, we only meet when there is a general hospital gathering, we never meet to talk about how patients are helped. Sometimes we[M34] use the general meetings to lay down our complaints on how patients are treated and taken care of, we can talk about other workers who take time to assist patients such as the X-ray attendants as sometimes they refuse to take X-ray on patients in the ward[M35]. The other issue we talk about is the improper writings that the nurses do on the cards of patients, lack of collaboration between the nurses and pharmacy department, for example when you order something at the pharmacy like a central line and ask them to assist with the right size they will just say they cannot help you since you are the one who ordered, truly we can't help each other here[M36].
HCP 4-Nurse Assess the level of collaboration competencies required Patient engagement in care Interprofessional dynamics Shortage of resources	Collaboration is okay it's just that there is shortage of staff so you find that the social workers and the psychologists are not readily available because of shortage.[CFD37] You find that the doctor is on duty during weekends but they just cover the maternity wards and other wards, but their focus will be on the labor ward which means he will only come to the wards when there are no cases at the labor wards that needs a doctor, but there will be a first on call, second on call and third on call so that when the first on call is busy at night or during weekend you can call second or third on call to come and help[CFD38]. The issue is that calling a person from home for an emergency is a problem because a patient can just die while the doctor is on the way.[CFD39] Even at night the doctor has to see the patients in the maternity and genie wards, during the week one doctor sees all patients in the wards[CFD40]. About relations, we relate well because we can even call each other on our personal cell phones when[CFD41] we need each other's help, but there is no one who has ever said they don't want to be called on their cell phones[CFD42]. About the meeting, we used to have the morning meetings [CFD43]but since the COVID situation we no longer have them but the meetings were not attended by the social workers, the dieticians and the psychologists[CFD44]. If the morning report did not involve the stable patients but the most critical ones otherwise, with the large number of patients we were not going to be able to present all of them. If you understand, in the morning meetings we were discussing the condition of a patient, asking questions and agree on how they can be helped, having what we call collaborative discussions about the patient.[CFD45] About patient engagement, [CFD46]we are really trying, we do rounds with the nurses sharing how the patients are doing, when we get to the patient we let them [CFD47]know about their diagnosis and treatment and allow them to ask questions, and the patient has the right to know about their treatment. Even when we do the procedure like VE we explain to the patient what we are doing and find out if they agree to that, we also ask how they feel when we conduct the procedure.

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ANNEXURE 5.8

Codebook Women Responses

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Annexure: 5.8

Codebook- women's sampled responses

1.1. Interview questions (1 and 2)

- Tell me how health care professionals work together to make sure you receive good care?
- Tell me what do you think about team work between doctors and nurses in this unit?

Patient's responses

Participant	Responses
Pt-1 · How HCP collaborate (collaboration or teamwork processes) · Pts' perception of collaboration or teamwork	What I have realised concerning how health care professionals work is that they do not work properly with us at all. They do not cooperate at all, they even fail to teach pregnant women n about their health issues[M1], and the other thing is that they don't have respect for patients[M2]. At this moment I have been admitted for 10 days, but my bedding has not been changed since, our food is too small though the nurses know that our parents are not allowed to[M3] bring us some food due to this COVID 19 Disease[M4]
Pt-2 · How HCP collaborate (collaboration or teamwork processes) · Pts' perception of collaboration or teamwork · Assess level of communication and patient engagement	The working relations between the Nurses and the Doctors in this hospital does not impress at all. I wonder if nurses, doctors and other health care professionals ever work together to give quality care to patients[M5]. I almost have a month here, but I have never seen them plan together to help me and my baby, who is in the Prem-Unit. I realised that everyone works on their own, and there is no teamwork. For example, if the doctor comes here and changes my treatment, do you know that the nurse will not know what the Dr. did[M6]. When you ask a nurse what the doctor said, the nurses here have this habit of telling us that they don't know what the doctor has written on our cards[M7]. We are always shocked by nurses responses[M8], to the extent that we keep on asking each other and wondering if we are safe to be cared for by nurses who do not know what is in our cards[M9].
Pt-3	The nurses are really trying because sometimes I see them give each other report when they exchange shifts[M10], although there is good collaboration between the doctors and the social workers. I have never seen them together checking a patient[M11]. Us as patients we are never

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· How HCP collaborate (collaboration or teamwork processes) · Pts' perception of collaboration or teamwork · Assess level of communication and patient engagement	given feedback on our sicknesses[M12], mainly the most suffering group is us the first time mothers[M13]. We need a lot of attention; we need a nurse who will be able to respond faster to us when we need help[M14]. We have a problem of cooperation because when you call a nurse to come and help you to check if the baby is breathing well they just take a lot of time to come and assist you[M15]. What I have decided is that every time I need help with my child I take a video then I WhatsApp it to my mother so that she sees if the child is okay[M16]. The other thing I realised is that the nurses never want to know how we are doing just to understand our lives and where we are coming from, some of us we are here but we live under GBV[M17] relationships. If a nurse could talk to us[M18] or ask a counsellor to help[M19] they will understand the pain, we are living in and the fear we are having on how we are going to live to raise our children under violent relationships[M20]. Another painful issue is that the nurses are now using the COVID situation as an excuse[M21] not to take patients fairly[M22]. When the COVID results are not yet revealed the nurses stand very far from us when they talk to us[M23] and they don't even show a welcoming face[M24] to show that they fear you and that the do not want to help you[M25]. We even no longer have privacy to an extent where other patients wonder what is happening[M26].
Pt-4	I am delighted by the collaboration between the nurses and Drs. They work well with us because they talk to us properly without using vague language and they do not shout at us[M27]. I am pleased by our collaboration because the nurses always give me feedback on how my child is doing[M28][M29].
Pt-5 • How HCP collaborate (collaboration or teamwork processes) • Pts' perception of collaboration or teamwork • Assess level of communication and patient engagement	People are not the same; some of them you can see that they love their job; they do it with too much care. Some are just problems in this hospital. They do not have love[M30], you can see that they do not have good work relations, they cannot work well with others[M31], they do things on their own and not cooperating or collaborating with others[M32]. One good thing though is that they never argue in front of patients[M33]. The biggest problem with nurses is that they do not talk to us properly, they are unfair[M34], and they mistreat foreigners mainly Zimbabweans. They use improper language on them especially, when they find out that they do not have fees to pay for their medication[M35]. Sometimes they even refuse to discharge them saying they must first pay for medical care they received in the hospital. Our nurses are so cruel that sometimes they deny these Zimbabweans the free milk and diapers that are often given to disadvantaged patients. It is very painful to find out that a

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	confined mother is ill- treated by the exact person who is employed to take care of them[M36]. Nurses in this ward can also mistreat us Batswana. They have the tendency no to talk to patient properly just because they a less privileged[M37]. When there comes a better-lived person, an English or an Indian you will see a double standard treatment. For example, our men (spouses) are not allowed to get in the ward when we give birth but the men of English or Indian origin they just walk in and out as they want[M38].
Pt-6	Health care professionals, especially nurses, do not have respect on us. They are always extremely angry at us, and lack compassion[M39]. They also do not have time to help us because they take much of their time on the internet and on their cell phones. I have observed that nurses also do not have enough skill to help patients with other conditions like depression. Nurses in the clinics have taught us about postnatal depression, but it's like the nurses here seem to fail to identify patients undergoing depression[M40]. We have a patient that we are very worried about who is very depressed, we have informed the nurses about her, but they have not yet taken any action[M41]. I believe this patient needs counselling and her parents need to be allowed to check on her regularly so that they help her take care of her child in the Prem-unit[M42].
Pt-7	What I am not happy about is the working relations between nurses[M43]. I am also a nurse a[M44]nd what I observed is that the doctors and the midwives are not cooperating in taking rounds for patients[M45], which has negatively impacted on the care we receive[M46]. There is no teamwork at all, making it difficult for them to discuss a patient's care. What I am seeing is competition among nurses and Drs. Some see themselves as being better than others, which makes it difficult for them to work as a team[M47]. Nurses also do not allow us to talk about our health issues[M48]. us. I am also concerned that health care workers here do not see the urgency in helping This is a referral hospital, and I expect that when patients are referred here, they need to get immediate medical attention[M49], but it is not that way. I have been referred here for scan, but it is almost seven days now, and nothing has been done, yet no one is giving me an explanation as to why they take long to send me out to scan[M50]. I hear in the corridor that there is a long queue waiting for a scan because the scans are not enough in the hospital. So, I am assuming that the shortage of scan in the hospital is also hindering my care[M51]
Pt-5 • How HCP collaborate (collaboration or	There is no collaboration in this ward. Patients are seriously neglected in this ward. I don't know whether it is quality or quantity of care that the hospital is concerned about[M52]. I have been admitted here and yet I don't know why I am in the hospital. Nobody has explained to me why I

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teamwork processes) • Pts' perception of collaboration or teamwork • Assess level of communication and patient engagement	was referred here; all I know is that I was told that the hospital is going to help deliver my baby. I don't even know what to tell my relatives[M53] Nurses here do not care about our comfort[M54], for example, during my admission here in the ward, the nurse gave me a bench to sit on, I took four hours waiting to get a bed[M55]- when I asked for a bed to rest I was told to wait for my bed to be made. I waited and waited and by the time I got a bed my legs were swollen and I was feeling hypoglycemic. I forgot to tell you that I have twin pregnancy and diabetic, so waiting on a bench with the state I am now was very uncomfortable for me. Right now, I have been here for 2 days, and I have not seen the Dr. for over 24 hours[M56]; nurses also have not talked to me over the past 24 hours[M57]. I keep on going into hypoglycemia[M58] and nobody is teaching me how to manage my diabetes[M59]. I am only doing trial and error, by controlling my sugar levels with the snacks I brought from home[M60]. I am also waiting for scan results and nobody is talking to me to explain the results to me or at least to tell me why they are taking long to give the[M61] results. I am sacred that somebody can just die here in the hospital without nurses noticing that the patient needed to be assisted[M62] I am very frustrated[M63], and sometimes I feel I am being ill-treated because I am a foreigner[M64]. I feel like somebody can just abscond from the hospital without nurses noticing. Besides poor patient care, the hospital environment is not conducive for pregnant [M65]mothers. The level of hygiene is very poor; there is no kitchenette to drink water, we drink water from the hand washing taps in the ward. It is also not safe to bath here because the drainage system is very poor[M66]

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ANNEXURE 6.1

Program Co-Designers

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Annexure 6.1

PARTICIPANT'S INFORMATION & INFORMED CONSENT DOCUMENT

Program Development Team- For Program Design and Development

STUDY TITLE: Designing an inter-professional education programme for work based collaboration between healthcare professionals in maternity wards

Principal Investigators: Montlenyane Madisa

Institution: University of Pretoria, Faculty of Health Sciences

DAYTIME AND AFTER HOURS TELEPHONE NUMBER(S):

Daytime numbers: 0026771398284 / 002673646145

Afterhours: 0026771398284 / 002675770001

DATE AND TIME OF FIRST INFORMED CONSENT DISCUSSION:

			:	
Day	**Month**	**Year**	**Time**	

Dear potential research participant,

1) INTRODUCTION

You are invited to volunteer for a research study. This information leaflet is to help you to decide if you would like to participate. Before you agree to take part in this study you should fully understand what is involved. If you have any questions, which are not fully explained in this leaflet, do not hesitate to ask the investigator. You should not agree to take part unless you are completely happy about all the procedures involved.

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2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of this study is to design a programme for work based inter-professional collaboration in maternity ward aimed at teaching and enhancing inter-professional collaborative behaviours and practices among health care professionals working maternity wards in Botswana

By doing so I wish to learn to engage you in the development of training program for IPC

3) EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPECTED FROM THE PARTICIPANTS

If you agree to participate, you will be asked to participate in in the development of a training programme guided through participation in one-day workshop. A person with experience in curriculum or programme development and IPCC will be asked to facilitate the workshop and request for your input in the development of work-based IPE training programme

4) RISK AND DISCOMFORT INVOLVED.

We do not think that taking part in the study will cause any physical or emotional discomfort or risk. However, if you experience some discomfort during the process of curriculum development and feel that you may need psychological support or counselling the researcher will be able to refer you to **Department of Clinical Psychology in the hospital so that you could receive counselling.**

5) POSSIBLE BENEFITS OF THIS STUDY.

You will not benefit directly by being part of this study. But your participation is important for us to develop a high quality training program that is relevant for today's complex health demands

Your contribution to development of training program may help the researcher improve Patient safety, delivery of quality health care services to women; communication and interpersonal skills in the workplace; and effective utilization of resources (including health human resources)

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6) COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study.

7) VOLUNTARY PARTICIPATION

The decision to take part in the study is yours and yours alone. You do not have to take part if you do not want to. You can also stop at any time during the development of training program without giving a reason. If you refuse to take part in the study, this will not affect you in any way. You will still receive standard care and treatment for your illness.

8) HAS THE STUDY RECEIVED ETHICAL APPROVAL?

This Protocol was submitted to the Faculty of Health Sciences Research Ethics Committee, University of Pretoria, telephone numbers 012 356 3084 / 012 356 3085 and written approval has been granted by that committee. The study has been structured in accordance with the Declaration of Helsinki (last update: October 2013), which deals with the recommendations guiding doctors in biomedical research involving human/subjects. A copy of the Declaration may be obtained from the investigator should you wish to review it.

9) INFORMATION

If I have any questions concerning this study, I should contact:

Montlenyane Madisa at 0026771398284

10) CONFIDENTIALITY

We will not record your name anywhere and no one will be able to connect you to the answers you give. Your answers will be linked to a fictitious code number or a pseudonym (another name) and we will refer to you in this way in the data, any publication, report or other research output.

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All records from this study will be regarded as confidential. Therefore, we will not record your name anywhere and no one will be able to connect you to the answers you give. The results will be published in medical journals or presented at conferences in such a way that it will not be possible for people to know that you were part of the study.

All hard copy information will be kept in a locked facility at **Princess Marina Hospital Ethics review office in Botswana, for a minimum of 5 years and only the research team will have access to this information.**

11) CONSENT TO PARTICIPATE IN THIS STUDY.

- I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study.
- I have also received, read and understood the above written information about the study.
- I have had adequate time to ask questions and I have no objections to participate in this study.
- I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results.
- I understand that I will not be penalised in any way should I wish to stop taking part in the study and my withdrawal will not affect my treatment and care.
- If photos are taken it may only be used after I have seen it and agreed that it may be used.
- I am participating willingly.

I have received a signed copy of this informed consent agreement.

....

Participant name Date

....

Participant signature Date

....

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Investigator's name Date

....

Investigator's signature Date

....

Witness name and signature Date

I understand that the workshop discussions will be audio-taped. I give consent that it may be audio-taped.

YES / NO

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ANNEXURE 6.2

Mabogo-Dinku IPC programme outline

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Syllabus and Programme Outline:

Mabogo-Dinku Interprofessional Collaboration Programme

Created in collaboration by
M Madisa, T Heyns, C Filmalter & K Brittz

February 2022

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Dear Evaluator,
to view the Mabogo-Dinku course online please join the Google Classroom

STEP 1: Ensure you have a Gmail (email) account

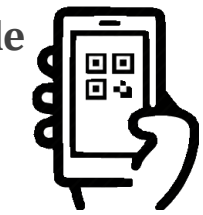
Please note some institutions (e.g. University of Pretoria) do not allow access to Google Classroom via their institutional email – in this case please use a personal Gmail account – you can delete this account immediately once you are done assessing the programme.

To create a Gmail account **CLICK HERE**

STEP 2: Access the Mabogo-Dinku using one of the following options:

OPTION 1

> Scan the following QR code

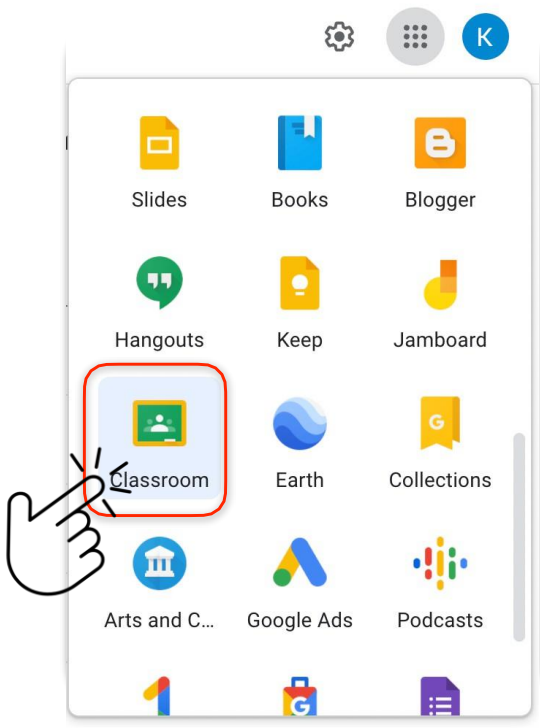


> Enter/Choose your gmail account
> Click 'Join class'

OR

OPTION 2

> In your Google account navigate to Google Classroom



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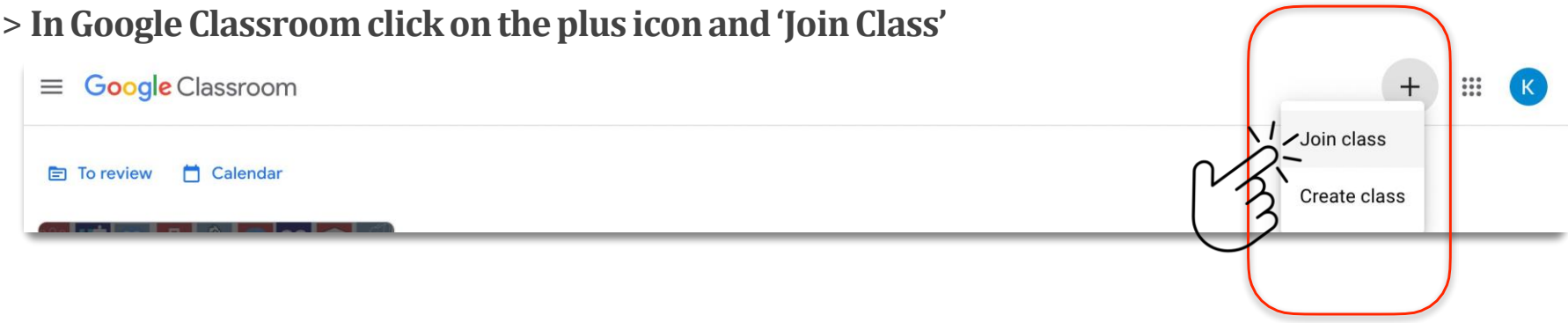
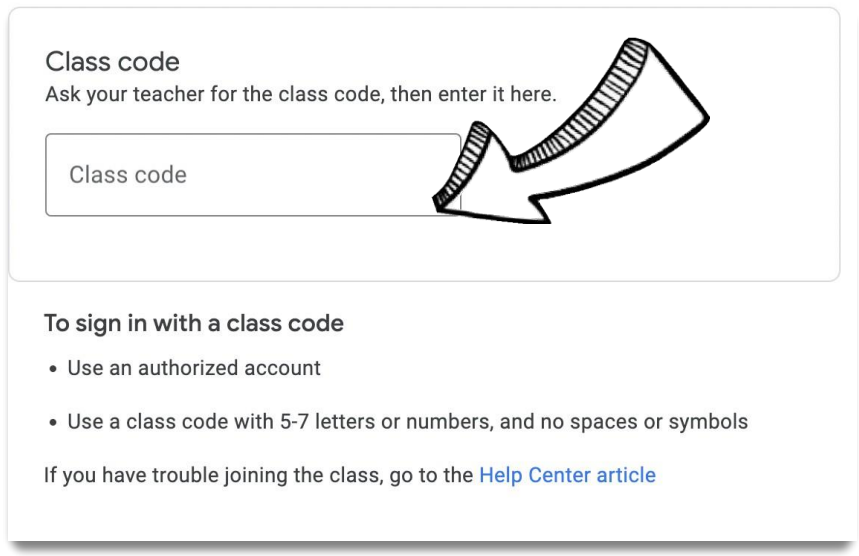
> In Google Classroom click on the plus icon and 'Join Class'



> Enter our unique class code to join: **qxwcbum**



OR

OPTION 3

> Click on the following invite link:

https://classroom.google.com/c/NDA3MTM1MDQyNDQw?cjc=qxwcbum

> **Then click on 'Join Class'**

If you are having trouble joining the classroom please let us know:
karli.brittz@up.ac.za/karlibrittz@gmail.com

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1. INTRODUCTION

1.1 Welcome

This programme is a collaborative effort in creating an easy-access online programme for healthcare practitioners to complete while working. It is aimed at guiding all healthcare practitioners wanting to improve and incorporate interprofessional collaborative care and education in their daily practices. We welcome you to the programme and trust that you will be introduced to new and stimulating ideas that will inspire you to improve and collaborate in your working environment. The Setswana proverb, *Mabogo dinku a thebana*, loosely translated as 'together we can' forms the basis of our programme – consequently named *Mabogo-Dinku IPC Programme.*

Using and promoting interprofessional collaboration (IPC) in healthcare involves approaching patient care from a team-based perspective. However, collaborating with others in this way requires guidance, practice, self-understanding and strategies to overcome challenges. The programme's main objective is to give participants a clear overview of what IPC entails, how it can be implemented and how to overcome challenges that go together with working with others.

1.2 Educational approach

The programme incorporates hybrid and online learning methods. Accordingly, the programme consists of online content – which participants can enrol in and work through in their own time (with suggested timeframes), self-study material, online activities, and activities to be applied and adapted to their own working environment. The programme encourages the participants to be active learners: to be led in independent learning and application of IPC competencies; and to communicate their experiences via online activities and feedback sessions. Since the programme is aimed at participants who are currently working in a healthcare environment, content is geared towards work-based application. With the easily accessible online content, participants are encouraged to work through material in their own time, apply activities in their healthcare practice and reUlect on the impact online. Participation and sharing of experiences in an online community will contribute towards the participant's grasp and command of the content. We do not aim to give participants an in-depth or critical look into the theoretical basis of IPC. Instead, the main objective is to promote active learning and practical application, by equipping participants with several strategies and ideas on navigating and incorporating IPC in their everyday working environment.

1.3 Theoretical foundation

The programme is based on the interprofessional competency domains that have been adopted to inform the development of work-based interprofessional education and training. According to the World Health Organization (2010), interprofessional education (IPE) is a practical strategy that embraces IPC in healthcare practice. It emphasises bringing various professional disciplines together

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to learn from each other and about different professional roles and responsibilities. Additionally, IPE, as a learning model, ensures healthcare workers from different disciplines: learn together and from each other; understand different professional roles and responsibilities; and practice together so as to complement each other's skills and engage in shared decision making (WHO, 2010). Results from similar studies show that countries have beneUitted from IPE interventions, enabling healthcare professionals to collaborate and work interdependently in managing complex cases (Reeves et al., 2017; Schveitzer et al., 2017). In brief, using IPC and IPE as a theoretical foundation for this programme, encompasses outlining content according to the six core competencies of interprofessional collaboration including: communication, team functioning, patient and family centred care, role clariUication, interprofessional conUlict resolution and collaborative leadership (Van Heerden, 2015). The programme is based on the core competencies of IPC as outlined by the Canadian Interprofessional Health Collaborative (2010), the Interprofessional Education Collaborative Expert Panel (2011), as well as Stellenbosch University (2015). For a clear deUinition of each competency, please visit the indicated resources and see the topic outlines.

As a theoretical baseline, the programme content, mode of delivery and facilitators also follow a interprofessional collaborative approach: facilitators are from various disciplines working together to create the programme content; the mode of delivery involves a collaborative and blended approach from both participants and digital content; and content incorporates a multidisciplinary view on collaboration and competencies.

2. ADMINISTRATIVE INFORMATION

2.1 Accessing the programme online

The programme is presented via Google Classroom – a free blended learning platform developed by Google for educational institutions that aims to simplify creating, distributing, and grading assignments. Our programme is aimed at usage in developing countries and therefore has to be easily accessible, data conscious and freely available to participants. Google Classroom allows us to manage the programme, while adhering to these requirements.

Accessing the programme for the Nirst time:

1. Ensure you have a Google account (Gmail email)
2. Go to classroom.google.com and click 'Go to Classroom'
3. Enter the email address and password for your Google account or choose an account to use if you are already logged in
4. Click on join class
5. Enter the class code: **qxwcbum**

*** Note:** participants can also join via the invite link sent to them when Uirst enrolling in the programme.

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Accessing the programme in general:

The programme can easily be accessed on a desktop via the Google Classroom quick link when signed into gmail. You can also download the Google Classroom application on your mobile phone and work through material on-the-go.

Get to know Google Classroom/Troubleshooting:

A complete guide to Google Classroom is available under the Getting Started unit of the programme. If you have any questions, consult the guideline or the Google Classroom support page. Participants can also contact our online learning instructor with technical issues: karlibrittz@gmail.com.

The most important functionalities:

Google Classroom allows you to access all content and share resources in one space. Participants can therefore work through all the available content, material and activities in a linear manner: working through each topic continuously (from top-to-bottom).

To complete activities, participants are expected to:

- Share their answers to posed questions online – which becomes an engaging discussion platform where everyone can respond to and learn from each other's experiences.
- Submit their answers as 'assignments' online – which facilitators can work through and send constructive feedback to. Based on this facilitators can also create and share new announcement and posts that can address ideas and questions posed.
- Contribute to a continuous online classroom stream/digital conversation – which participants can use to communicate, ask questions and share further resources for IPC.
- Answer short multiple choice questions (when prompted) to test their knowledge.

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2.2 Facilitator information and contact details

Facilitator	AfNiliation	Area of expertise	Responsibilities
Ms Montleyane Madisa	Botswana Open University, School of Social Science/ University of Pretoria	Doctoral candidate in Nursing Science – Interprofessional Collaboration in maternity care settings	Active facilitator and programme coordinator
Prof Tanya Heyns	University of Pretoria, Department of Nursing Science	Person centred care in critical care settings	Programme development and overseeing
Dr Celia Filmalter	University of Pretoria, Department of Nursing Science	Clinical Forensic Medicine	Programme development and overseeing
Dr Karli Brittz	University of Pretoria, School of the Arts – Digital Culture and Media	Digital Culture and Media – Online/Hybrid Education	Programme development and overseeing/Technical support

2.3 Study material

Each topic contains all the study material needed to complete each unit. This includes: video material and presentations, online resources, a summarised 'study notes' of the main ideas of each topic, as well as reading material. Participants do not need to access any additional material and all reading material can be downloaded from Google Classroom and/or read online.

2.4 Finances and educational resources

The programme is presented online and is freely available to participants. There is no Uinancial implication for participants and facilitators. The facilitators are involved in the programme as part of an ongoing research study.

The educational resources have been sourced and are presented via an online learning platform that adheres to the following guidelines: data conscious, freely accessible to participants, and easily accessible. Participants will need access to data and/or a stable Internet connection to take part in the programme – based on research all participants should have access to this at their working environment.

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3. PROGRAMME INFORMATION

3.1 Aims and objectives of the programme

Mabogo-Dinku IPC Programme introduces the notion of interprofessional collaboration and its various competencies using a wide range of material, activities and ideas. The programme gives participants working in a healthcare environment exposure to concepts and strategies that can actively be applied and adopted in their own work-based environments. As a whole, the programme's main aim of fostering interprofessional collaboration, will beneUit healthcare professionals by encouraging effective collaboration, promoting interdependency amongst healthcare disciplines, enhancing communication, facilitating shared decision-making and promoting shared leadership to deal with conUlict and tension (Schveitzer et al., 2017). Additionally, the programme aims to make access to IPC and education more accessible in developing countries, by establishing an easy-access, less time-consuming and free platform that participants can work through, apply and adopt in their own manner. Herath et al. (2017) and Reeves et al. (2017) conUirm that there is a lack of baseline information and interventions on IPC in low income regions (such as Botswana). Overall, a lack of interprofessional interactions lead to delayed patient treatment, delivery of fragmented care, as well as patient and practitioner dissatisfaction (Herath et al., 2017; Reeves et al., 2017). Thus, the programme aims to address these issues by equipping professionals with competencies for effective interprofessional collaborative care. As a result, the goal of the programme is not to provide a platform for critical and in-depth conceptual unpacking of the discourse of IPC/E, but rather to provide a baseline of skills for participants to adopt and implement in their own healthcare practice easily and effectively.

3.2 Programme outcomes

Many of the learning outcomes for the online programme are derived directly from the Interprofessional Education Collaborative Panel (2011) – as mentioned above. The programme outcomes are based in the core competencies of IPC.

After this programme, the participant should:

- Understand and describe IPC, its core components and why it is important
- Identify and apply the core competencies of IPC in everyday healthcare
- Practice effective communication and identiUication of roles and responsibilities
- Gain in-depth understanding of the self, limitations and weaknesses and learn how to apply and address these abilities in a team and person centred environment
- Foster effective communication between peers and faculty
- Demonstrate the ability to place the interests of patients at the centre of healthcare and treatment
- Practice effective problem-solving in potential conUlicting or tension-orientated situations
- Discover and demonstrate an in-depth understanding of the need for and importance of diverse cultures, personalities and roles in the working environment

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- Assess the signiUicance of individual and team capabilities for overall improvement of healthcare
- Recognise the importance of collaborative leadership and take active steps towards becoming a collaborative leader in the working environment
- Constructively engage self and others to manage the diverse values, roles and goals that arise in collaborative care
- Demonstrate and practice learnt collaborative skills in a team and practical environment

Outcomes speciNic to each topic/learning unit:

TOPIC	LEARNING OUTCOMES
Topic 1: IPC in practice *This topic introduces the concept of IPC in the healthcare practice and provides an overview of the various domains, models and learning strategies.*	• Describe interprofessional collaboration and its beneUits to patients, HCP and the organisation • Outline the 6 competency domains for IPC • Identify members of the interprofessional team • Identify opportunities to engage in IPC • Describe challenges of IPC and strategies to overcome them • Describe IPE as a model of choice for facilitating IPC • Appreciate and understand the use of IPE teaching and learning strategies • Practice self-awareness and reUlect on your own values and beliefs • Evaluate how your values and beliefs affect the care you give in HCP

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Topic 2: Team Functioning & Role ClariNication *This topic establishes the importance of clearly identifying various roles and responsibilities in HCP, and considers how these roles form and function in a team in a healthcare environment. It also introduces strategies and structures to effectively divide roles in interdisciplinary groups and facilitate effective team work.*	• Discuss the importance of role clarity and how it impacts effective delivery of services • Identify the responsibilities and competencies of different professional groups • Discuss ways in which role/responsibility problems could be addressed • DeUine common concepts of team and teamwork and how they inUluence accomplishments of tasks in the work environment • Describe the roles of each member of the team in service delivery • Describe and analyse team roles and strategies for cohesion and effectiveness • Identify tools that may facilitate teamwork and collaboration during meetings and shared decision making • Effectively engage in respectful interprofessional interactions and discussions regarding patient care interventions and welfare of team members

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Topic 3: Communication & ConNlict Resolution *This topic demonstrates the importance of effective communication skills with co-workers and patients. It demonstrates various communication skills and speciBically focuses on managing conBlict in the workplace.*	• DeUine interpersonal communication and describe its beneUits in enhancing interprofessional collaboration • Describe components of effective interpersonal communication skills • Conduct self-analysis and reUlection to examine personal communication styles and how they impacted performance in the workplace • Demonstrate an ability to apply communication skills appropriate to the situation and stakeholders (including patients) • Demonstrate an understanding of causes of conUlicts and impact on performance outcomes • Identify signs of conUlicts in the workplace • Describe how ethical and unethical behaviours could lead to conUlicts • Describe best practice conUlict management styles • Practice reUlective listening and communication in conUlict resolution • Effectively learn how to adapt and manage emotions in response to challenging situations

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Topic 4: Collaborative Leadership *This topic demonstrates the importance of leadership and performance in IPC. It introduces various leadership styles and tools to develop role models and effective teams in HCP.*	• Demonstrate an understanding of how leadership affects team processes and performance outcomes • Describe different leadership styles • Identify the activities required to successfully lead teams • Describe an approach to inUluence and work effectively with team leaders from other disciplines • Identify tools and strategies for leading interdisciplinary teams • Apply the tools for leading teams to enhance interprofessional collaborative practice • Demonstrate appropriate skills in coaching, role modelling of IPC practice • Mobilise and coordinate resources for effective IPC
Topic 5: Patient & Family Centred Care *This topic applies the above-mentioned topics and concepts of IPC to showcase the practice of family and patient centred care. It demonstrates and showcases the importance of person centred care in clinical practice.*	• Describe concepts of patient and family centred care and ways to bring those concepts into practice • Describe the beneUits of engaging patients/ families and communities in patient care • Describe facilitators and barriers to effectively deliver patient centred care and corrective measures • Demonstrate awareness of approaches or initiatives that support person centred care in clinical practice • Demonstrate essential skills/attributes required to foster patient's participation in their care and encourage open discussion and participation in decision-making

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Topic 6: Final Thoughts & Evaluation *This topic summarises IPC and allows for both reBlection and evaluation of what you have learnt, how you have implemented and how you can continue to practice IPC in your HCP.*	• Evaluate your progress throughout the programme • Demonstrate an understanding of IPC and its components in HCP • Critically reUlect on the impact of IPC and person centred care on your profession and role as healthcare worker

3.3 Programme structure

The programme is structured according to the main competencies of IPC. It is divided into six clear topics that follow continuously and develop on one another. Each topic has its own outcomes, but also interact with each other and the overall aims and objectives of the programme. Participants have access to all topics and material from the start of the programme, seeing as the programme is based on independent study and the participants' own timeframe. Although each topic can be treated as a stand alone unit to implement in healthcare practice, the programme is structured in such a way that activities and content build on one another and are implemented in the works space as the programme progresses. We just suggest to participants to work through each topic (especially the activities) before continuing onto the next.

Although participants can work through and apply the content in their own time, suggested timeframes are given in the **programme schedule (below)**. The programme schedule is also a live and active document and can be adapted by facilitators depending on the enrolled students (for example, if a speciUic healthcare group wishes to enrol and complete the programme within a given timeframe, speciUic dates and times can be added to the schedule outline online).

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SUGGESTED TIMEFRAME	CONTENT	TO DO
One week	**TOPIC 1:** IPC in practice	1. Work through all getting started material: • Watch welcome video • Complete enrolment form • Read get to know the syllabus docs • Complete the pre-programme questionnaire • Explore Google Classroom 2. Work through Topic 1 material: • Complete activity 1: Knowing myself. Post question responses on Google Classroom • Watch video content and complete multiple choice questions • Complete activity 2: My values and beliefs. Submit your answers via Google Classroom • Read through topic notes & reading material • Complete self/group evaluation
Two weeks	**TOPIC 2:** Team Functioning & Role ClariUication	1. Complete Activity 1: ReUlecting on team roles. Post question responses on Google Classroom 2. Complete Activity 2: Considering team roles. Post question responses on Google Classroom 3. Watch video content and complete questions during video 4. Complete Activity 3: Role clariUication and capabilities. Complete worksheets. 5. Watch video content on cultivating collaboration and answer questions posed during video 6. Work through topic notes and reading material 7. Complete self-evaluation

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Two weeks	**TOPIC 3:** Communication & ConUlict Resolution	1. Complete Activity 1: reUlecting on communication and conUlict. Share answers on Google Classroom 2. Watch video content on communication in a multidisciplinary environment 3. Complete Activity 2: how do you see conUlict. Share reUlection on Google Classroom. 4. Complete Activity 3: discovering and learning from differences. Share reUlection on Google Classroom. 5. Work through topic notes and reading material 6. Complete self-evaluation
One week	**TOPIC 4:** Collaborative Leadership	1. Complete self-assessment on collaborative leadership 2. Complete Activity 1: reUlecting on leadership style 3. Watch video content on collaborative leadership 4. Complete Activity 2: implementing leadership strategies 5. Work through topic notes and reading material 6. Complete self-evaluation
One week	**TOPIC 5:** Patient & Family Centred Care	1. Complete Activity 1. Share answers on Google Classroom 2. Watch video on a deUinition for person centred care 3. Watch video on a guide to person centred care 4. Complete Activity 2: Moving towards patient/family centred care 5. Work through topic notes and reading material 6. Complete self-evaluation
One week	**TOPIC 6:** Final Thoughts & Evaluation	1. Complete Final Assessment: personal testimony video 2. Complete programme evaluation

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3.4 Assessment

The programme implements continuous formative assessments. The main aim of assessments is for participants to test their knowledge, reUlect on IPC interventions and experiences and evaluate areas that have room for development in their IPC practice. The assessment methods allow facilitators to provide ongoing conversations and feedback regarding IPC, take a person centred approach to the programme material and encourage self-assessment and evaluation throughout, in correspondence with the core principles of IPC. In doing so, our assessment principles ensure that:

- There is a constructive alignment between outcomes, learning activities and assessments
- Participants are able to demonstrate their own understanding and the ability to adapt and apply learning in their own authentic ways (adopting and adapting to their own learning environment)
- Participant competency and skills gained is not assessed by an external evaluator, but rather on the basis of in-depth self-evaluation from a range of activities, which encourages a collaborative and responsive approach to developing their healthcare professions

The assessment package allows the programme to be completed without any formal examinations or summative assessments. There is also no Uinal mark awarded in the programme, instead participants are encouraged to reUlect on the skills they have learnt and use the activities as active interventions in the working environment. All participants receive a certiUicate of completion, once all their tasks are completed. Aligning with the key goals of IPC, all assessments are person orientated, encourage conversation, empathy and self-development.

Types of assessments in the programme:

- **Multiple choice questions:** posed during video presentations/content that evaluates and allows participants to reUlect on the material
- **Self-reNlection activities:** allows participants to actively reUlect on IPC in the workplace and critically think about and share their own understanding of concepts in a practical environment
- **Group activities:** allows participants to implement strategies in a group setting and engage with others to foster collaborative practice. Additionally, participants get to reUlect and engage with others about the effectivity of these activities.
- **Self/Group evaluation:** At the end of each programme topic, participants are encouraged to complete a self and/or group evaluation (depending on how they choose to adopt the programme). The evaluation is based on *Blob Trees* as developed by Pip Wilson and Ian Long (2018). Blob evaluation is a signiUicant way of opening discussions and developing a deeper understanding for emotions, empathy and self-awareness (all key skills necessary in IPC). The Blob's show a variety of different scenarios that people may relate to, and can be used to kickstart conversations and prompt reUlection. Participants are encouraged to answer questions based on a provided Blob illustration, which initiates discussion but also reUlection on what has been learnt and how it can be implemented in healthcare practice.

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4. PROGRAMME CONTENT

The programme content, topics and sub-topics align with the core competencies of IPC including. The following is an outline of topics, sub-topics and their signiUicance in the programme. For the outcomes of each topic refer to the outlined outcomes and objectives above. For a detailed look at the programme content, please refer to the material on Google Classroom.

All content and activities have been chosen and designed with a clear person centred approach in mind. Video content and presentations are accessible, relatable and person driven. We have drawn on material with real-world scenarios and applications, so that the content is easily digestible and understandable. Additionally, topic notes have been designed with an infographic, colourful and visually appealing aesthetic in mind, as this has proven to be effective in educational contexts, because imagery is used to highlight, explain and enhance the text-based information (available in the complimentary reading material). The aim of the topic notes is to give an overview, draw relations and get a message across quickly and effectively, while prompting further enquiry – which participants can access in the reading material.

Additionally, much of the content will also be participant-driven, with participants sharing and engaging with material. In this way the programme content becomes a true collaborative process in its content, structure and medium.

4.1 Getting Started - Programme Overview

In this section participants are introduced to the programme, syllabus, outline, schedule and they are encouraged to get to know the online platform, as well as virtually introduce themselves. This section consists of a welcome video and documents on the programme to work through. Participants are also asked to complete an enrolment form and a pre-programme questionnaire (for research purposes).

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4.2 Topic 1: IPC in practice

This topic introduces the concept of IPC in the healthcare practice and provides an overview of the various domains, models and learning strategies. Participants are guided through various activities to encourage self-awareness and a deeper understanding of their own healthcare values and beliefs.

Video content/material	Activities	Assessment/Evaluation	Reading material
1. Collaboration in Health Care: The Journey of an Accidental Expert TED-talk by Joy Doll. (With added multiple choice questions) 2. Person-centred care made simple by The Health Foundation (With added multiple choice questions)	1. Activity 1: Knowing myself 2. Activity 2: My values and beliefs	1. Self-assessment 2. Self/Group Evaluation	1. Topic notes: An introduction to IPC 2. The Health Foundation. 2016. *Person-centred care made simple.* Health Foundation: London. 3. Kaini, BK. 2017. Interprofessional Team Collaboration in Health Care. *Global Journal of Medical Research: K Interdisciplinary* 17(2). 4. Jeffrey, S. 2017. A Comprehensive guide to developing Self-Awareness. [O]. Available: https://scottjeffrey.com/wp-content/uploads/2017/06/Self-Awareness-Guide-Scott-Jeffrey.pdf 5. NDP Factsheet: What is person centred approach 6. Bates handout: Collaborative Learning Techniques

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4.3 Topic 2: Team Functioning & Role ClariNication

This topic establishes the importance of clearly identifying various roles and responsibilities in HCP, and considers how these roles form and function in a team and in a healthcare environment. It also introduces strategies and structures to effectively divide roles in interdisciplinary groups and facilitate effective team work.

Video content/material	Activities	Assessment/Evaluation	Reading material
1. Role ClariUication Video by AHS Health Services (With added multiple choice questions) 2. Cultivating Collaboration: Don't Be So Defensive, TED-talk by Jim Tamm (With added multiple choice questions)	1. Activity 1: ReUlection on my team functioning 2. Activity 2: Considering team roles 3. Activity 3: Role clariUication and capabilities	1. Self/Group Evaluation	1. Topic notes: Strategies for Role ClariUication 2. O'Rourke, MW & White, A. 2011. Professional Role Clarity and Competency in Health Care StafUing – The Missing Pieces. *Nursing Economics* July-August 29(4):183-188. 3. Hudson et al. 2017. Promotion of role clariUication in the Health Care Team Challenge. *Journal of Interprofessional care* 31(3):401-403. 4. Murphy, A. 2021. 4 Roles & Responsibilities Workshops to Bring Clarity to Your Team. [O]. Available: https://antmurphy.medium.com/4-roles-responsibilities-workshops-to-bring-clarity-to-your-team-e1012218f703

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4.4 Topic 3: Communication & ConNlict Resolution

This topic demonstrates the importance of effective communication skills with co-workers and patients. It demonstrates various communication skills and speciUically focuses on managing conUlict in the workplace.

Video content/material	Activities	Assessment/Evaluation	Reading material
1. Communication in Multidisciplinary Healthcare Teams by Safer Maternity Teams (With added multiple choice questions) 2. ConUlict management narrated PowerPoint presented by Annatjie van Der Wath	1. Activity 1: ReUlect on communication and conUlict (based on video content) 2. Activity 2: How do you see conUlict? 3. Activity 3: Discovering and learning from diversity	1. Self/Group Evaluation	1. Topic notes: Communication and ConUlict Resolution 2. Kelly, J. 2006. An Overview of ConUlict. *Dimens Crit Care Nurs* 25(1):22-28. 3. Brown et al. 2011. ConUlict on interprofessional primary health care teams – can it be resolved? *Journal of Interprofessional Care* 25:4-10. 4. Wagner et al. 2011. Developing interprofessional communication skills. *Teaching and Learning in Nursing* 6:97-101. 5. Foronda et al. 2015. Interprofessional communication in healthcare: an integrative review. *Nurse Education in Practice* 19:36-40.

4.5 Topic 4: Collaborative Leadership

This topic demonstrates the importance of leadership and performance in IPC. It introduces various leadership styles and tools to develop role models and effective teams in HCP.

Video content/material	Activities	Assessment/Evaluation	Reading material
1. A guide to collaborative leadership, TED-talk by Lorna Davis (With follow-up questions)	1. Activity 1: ReUlect on leadership (based on self-assessment) 2. Activity 2: Implement leadership strategies	1. Self-assessment: are you a collaborative leader? 2. Self/Group evaluation	1. Topic notes: Collaborative Leadership 2. VanVactor, JD. 2009. Collaborative leadership model in the management of health care. *Journal of Business Research* 65:555-561.

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4.6 Topic 5: Patient & Family Centred Care

This topic applies the above-mentioned topics and concepts of IPC to showcase the practice of family and patient centred care. It demonstrates and showcases the importance of person centred care in clinical practice.

Video content/material	Activities	Assessment/ Evaluation	Reading material
1. Let's talk about person-centred care, by NMCvideos 2. Person-centred care guideline by CCO	1. Activity 1: Patient and Family centred care reUlection (based on video case study) 2. Activity 2: Moving towards patient and family centred care	1. Self/Group evaluation	1. Topic notes: Family and Patient Centred Care. 2. Institute for Patient- and family-centred care. *Diverse Voices Matter: Improving Diversity in Patient and Family Advisory Councils.* [O]. Available: https:// www.ipfcc.org/resources/ Diverse-Voices-Matter.pdf 3. IPFCC. 2017. *Advancing the practice of patient- and family-centred care in hospital. How to get started.* 4. Minniti et al. 2014. Individual and Family Engagement in the Medicaid population: emerging best practices and recommendations. 5. IPFCC. 2021. Prevalence and functioning of patients and families as educators in hospitals and academic medical centers: a national study.

4.7 Topic 6: Final Thoughts & Evaluation

This topic summarises IPC and allows for both reUlection and evaluation of what participants have learnt, how they have implemented and how they can continue to practice IPC in your HCP. It includes a post-programme questionnaire as well as the completion of a personal testimonial (video) that summarises all of the key ideas, interventions and successes advanced by IPC as well as the participants experience and professional growth during the programme.

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5. PROGRAMME DEVELOPMENT

5.1 Programme target population

Any healthcare professional looking to extend their knowledge on IPC should be able to complete the programme. In particular the pilot study of this programme intends to be presented to:

- Healthcare professionals currently working in Botswana
- Healthcare professionals working in a maternity setting (as this area in particular has been identiUied as a setting that requires speciUic IPC intervention)
- The programme has been developed in such a way that each participant can adapt its content to their own setting and situation. It can be completed as a group or individual depending on the context of the participant. When completing the programme as an individual the participant will be prompted to involve and share ideas with others in their work setting (even if these others are not part of the programme).

5.2 Planned programme implementation phases

- Phase 1: Development of material
- Phase 2: Creation of online platform
- Phase 3: Evaluation round 1 (internal evaluators*)
- Phase 4: Evaluation round 2 (external evaluators**)
- Phase 5: Pilot study
- Phase 6: Pilot study evaluation
- Phase 7: Address shortcomings
- Phase 7: Implementation of programme

*Internal evaluators include the programme developers, made up of various healthcare professionals and online programme developers. Using the same assessment criteria evaluators assess the programme, give feedback during a focus group session and make required adjustments.

**External evaluators are selected from various backgrounds including healthcare professionals, curriculum development, digital humanities and interprofessional collaboration. Each external evaluator completes an assessment criterion and provides feedback and suggestions for the programme.

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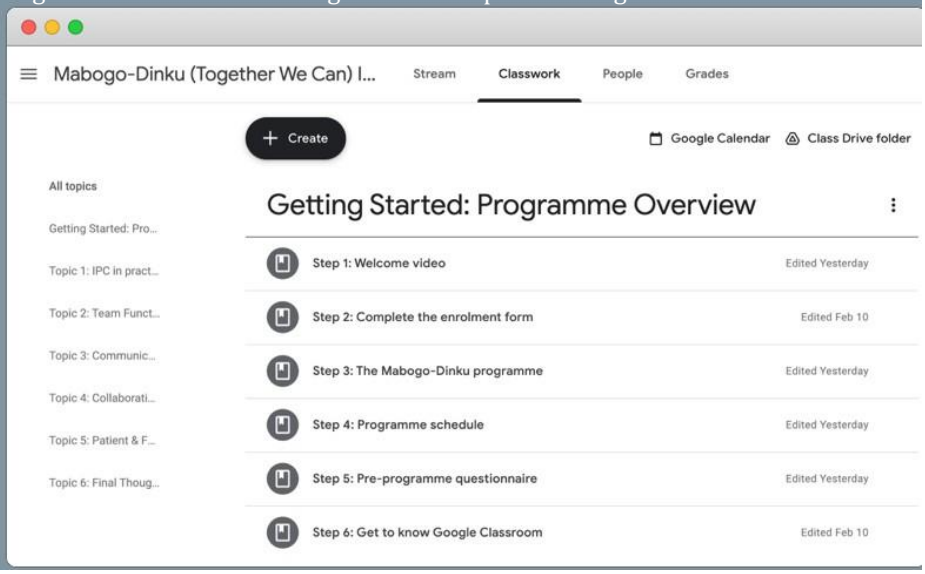
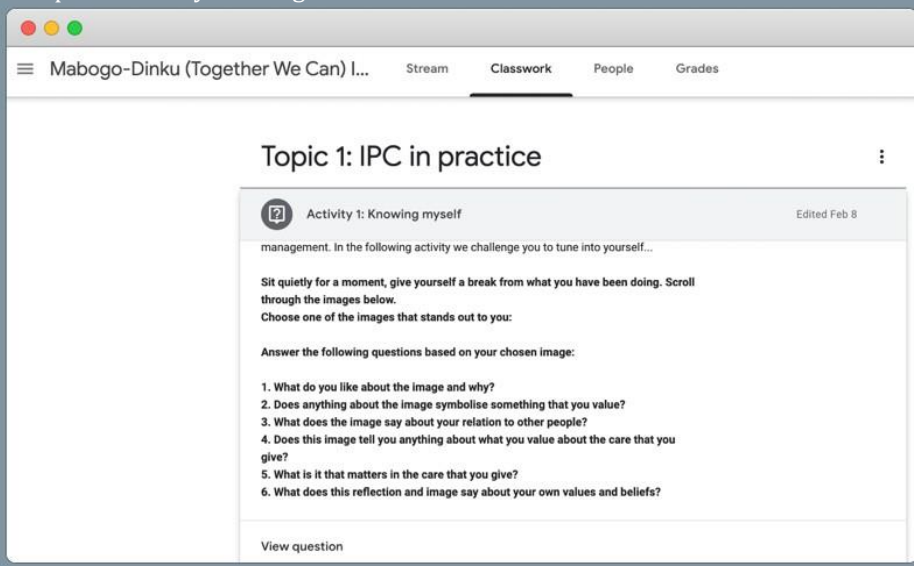
6. ONLINE CONTENT EXAMPLES

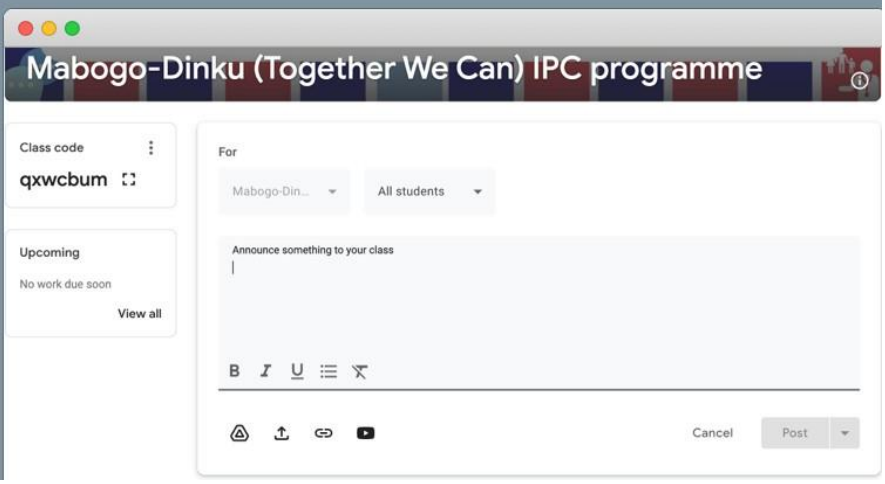
Programme content online organised via topics on Google Classroom



Example of activity on Google Classroom



Example of class stream, a constant Ulow of communication between participants



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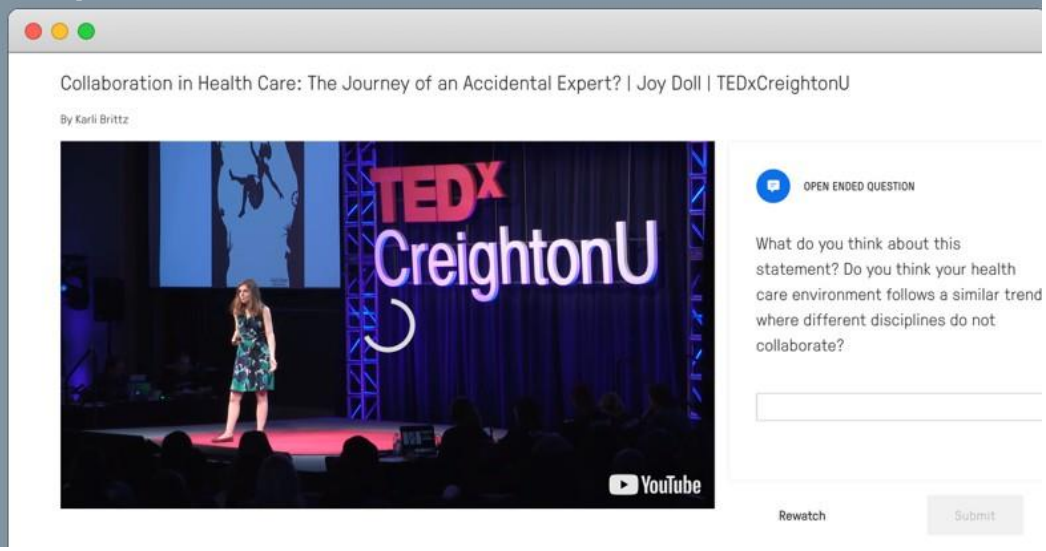
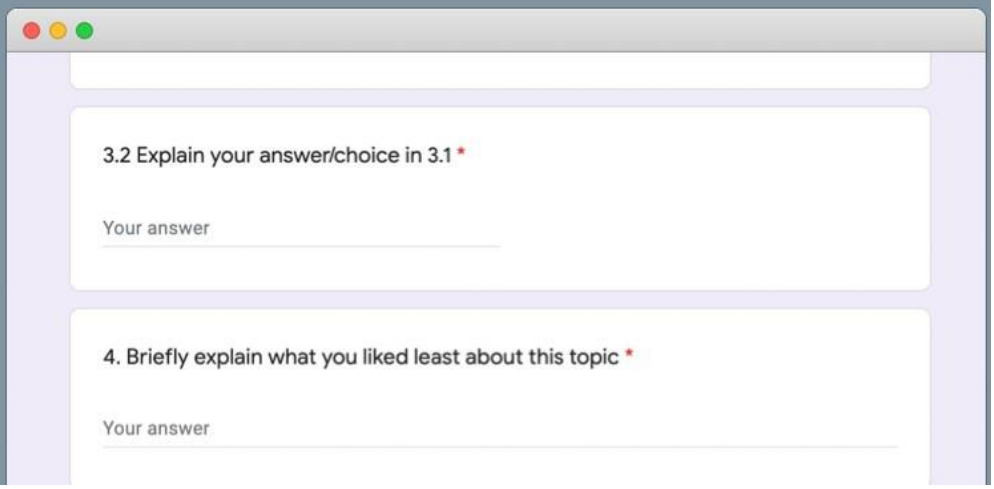
Example of topic notes opened via Google Classroom – instantly viewable or downloadable

Example of video content is integrated with EdPuzzles, with open-ended and multiple choice questions that must be answered to continue



Example of self-assessment after each topic easily completable on a form



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ANNEXURE 7.1

Phase 3 PIL Program Evaluation Expert Judgement Survey

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Annexure 7.1

PARTICIPANT'S INFORMATION & INFORMED CONSENT DOCUMENT

Program Evaluation - Expert Judgement Survey

STUDY TITLE: Designing a work-based inter-professional education programme for collaborative practice in maternity wards

Principal Investigators: Montlenyane Madisa

Institution: University of Pretoria, Faculty of Health Sciences

DAYTIME AND AFTER HOURS TELEPHONE NUMBER(S):

Daytime numbers: 0026771398284 / 002673646145

Afterhours: 0026771398284 / 002675770001

DATE AND TIME OF FIRST INFORMED CONSENT DISCUSSION:

			:	
Day	**Month**	**Year**	**Time**	

Dear potential research participant,

1) INTRODUCTION

You are invited to volunteer for a research study. This information leaflet is to help you to decide if you would like to participate. Before you agree to take part in this study you should fully understand what is involved. If you have any questions, which are not fully explained in this leaflet, do not hesitate to ask the investigator. You should not agree to take part unless you are completely happy about all the procedures involved.

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2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of this study is to design a programme for work based inter-professional collaboration in maternity ward aimed at teaching and enhancing inter-professional collaborative behaviours and practices among health care professionals working maternity wards in Botswana

By doing so I wish to learn to engage you in the evaluation of the training program developed by curriculum development team

3) EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPECTED FROM THE PARTICIPANTS

If you agree to participate, you will be asked to participate in the evaluation of a training programme guided by 5 point Likert scale data collection tool.

You will be provided with the dart of training program developed review and provide technical expertise on how the program should be improved. You will be provided with a questionnaire to use as you evaluate the program

The questionnaire will consist of questions arranged in 9 Criterion areas as follows: Scope, purpose and program objectives; program structure/organization; Stakeholder involvement; Program teaching, learning and assessment strategies; Module organization; Rigour of Development; Clarity of presentation and Applicability. A total of 40 questions on 5 point Likert scale have been developed to address the above mentioned criterion.

4) RISK AND DISCOMFORT INVOLVED.

We do not think that taking part in the study will cause any physical or emotional discomfort or risk. However, if you experience some discomfort during the process of curriculum development and feel that you may need psychological support or counselling the researcher will be able to refer you to **Department of Clinical Psychology in the hospital so that you could receive counselling.**

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5) POSSIBLE BENEFITS OF THIS STUDY.

You will not benefit directly by being part of this study. But your participation is important for us to develop a high quality training program that is relevant for today's complex health demands

Your contribution to development of training program may help the researcher improve Patient safety, delivery of quality health care services to women; communication and interpersonal skills in the workplace; and effective utilization of resources (including health human resources)

6) COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study.

7) VOLUNTARY PARTICIPATION

The decision to take part in the study is yours and yours alone. You do not have to take part if you do not want to. You can also stop at any time during the development of training program without giving a reason. If you refuse to take part in the study, this will not affect you in any way. You will still receive standard care and treatment for your illness.

8) HAS THE STUDY RECEIVED ETHICAL APPROVAL?

This Protocol was submitted to the Faculty of Health Sciences Research Ethics Committee, University of Pretoria, telephone numbers 012 356 3084 / 012 356 3085 and written approval has been granted by that committee. The study has been structured in accordance with the Declaration of Helsinki (last update: October 2013), which deals with the recommendations guiding doctors in biomedical research involving human/subjects. A copy of the Declaration may be obtained from the investigator should you wish to review it.

9) INFORMATION

If I have any questions concerning this study, I should contact:

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Montlenyane Madisa at 0026771398284

10) CONFIDENTIALITY

We will not record your name anywhere and no one will be able to connect you to the answers you give. Your answers will be linked to a fictitious code number or a pseudonym (another name) and we will refer to you in this way in the data, any publication, report or other research output.

All records from this study will be regarded as confidential. Therefore, we will not record your name anywhere and no one will be able to connect you to the answers you give. The results will be published in medical journals or presented at conferences in such a way that it will not be possible for people to know that you were part of the study.

All hard copy information will be kept in a locked facility at **Princess Marina Hospital Ethics review office in Botswana, for a minimum of 5 years and only the research team will have access to this information.**

11) CONSENT TO PARTICIPATE IN THIS STUDY.

- I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study.
- I have also received, read and understood the above written information about the study.
- I have had adequate time to ask questions and I have no objections to participate in this study.
- I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results.
- I understand that I will not be penalised in any way should I wish to stop taking part in the study and my withdrawal will not affect my treatment and care.
- If photos are taken it may only be used after I have seen it and agreed that it may be used.
- I am participating willingly.

I have received a signed copy of this informed consent agreement.

....

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Participant name	Date
.....	.....
Participant signature	Date
.....	.....
Investigator's name	Date
.....	.....
Investigator's signature	Date
.....	.....
Witness name and signature	Date

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ANNEXURE 7.2

Phase 3_IPE content validation questionnaire- Expert panellists

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Annexure 7.2: Programme Quality Assessment Tool: Expert Panelist

Instructions:

1. Below are a number of statements on you will evaluate the quality of training programme and the methodological rigor involved used in developing the programme. Please circle the most appropriate number under each statement to indicate the extent to which you agree or disagree with the statement.

   NB: The scale options will range from: 1= strongly agree; 2=agree; 3= neutral; 4 = disagree; and 5= strongly disagree
2. The last column after the Likert scale ratings is provided for additional comments. Please utilize the space to provide additional comments when necessary

Evaluation statements	1- Strongly agree	2-Agree	3- Neutral	4- Disagree	5- Strongly Disagree	Additional Comments
Criterion1: Scope, Purpose and programme outcomes						
Programme's education philosophy is clear and reflects vision , mission relevant to the local and institutional strategic initiatives	1	2	3	4	5	
Programme's goals or intent and objectives are clearly defined and relevant the needs of the nation, prospective learners, employers and the community	1	2	3	4	5	
The target population for the programme is specifically described	1	2	3	4	5	
Programme outcomes focus on the development of the learners' knowledge, attitudes and skills required for application in inter-professional practice and real life situations	1	2	3	4	5	

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Evaluation statements	**1-Strongly agree**	**2-Agree**	**3-Neutral**	**4-Disagree**	**5-Strongly Disagree**	**Additional Comments**
Programme outcomes are clearly stated and they reflect demonstrable behavior like what the student should be able to know and do	1	2	3	4	5	
Criterion 2: Programme structure/Organization						
Training Programme model is easily identifiable in the training programme	1	2	3	4	5	
Scope of the programme is adequate , evidenced by how and the extent to which the cognitive, affective and psychomotor skills will be covered	1	2	3	4	5	
Appropriate learning strategies such as experiential learning, collaborative learning and personal learning are designed into each module. ,	1	2	3	4	5	
Programme reflects learning experience that will be used to accomplish several learning outcomes	1	2	3	4	5	
modules are organized in such a way that they will foster cumulative and continuous learning	1	2	3	4	5	
Programme reflects all the resources that will be required to facilitate authentic learning	1	2	3	4	5	
Criterion 3: Programme teaching, learning and assessment strategies						
Programme reflects teaching strategies that promote work based learning, collaborative learning	1	2	3	4	5	

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Evaluation statements	1- Strongly agree	2-Agree	3- Neutral	4- Disagree	5- Strongly Disagree	Additional Comments
The teaching - learning processes include a range of of formative and summative assessments or tasks to monitor students' performance and validate learning outcomes	1	2	3	4	5	
Formative assessment is strong to enable the learners to receive objective feedback on their performance	1	2	3	4	5	
A tool for measuring Learner satisfaction is available so that corrective measures are implemented on time	1	2	3	4	5	
Criterion 4: Module Organization						
A standard format for module design and development are in place and are followed.	1	2	3	4	5	
The designed modules contribute towards the achievement of the overall programme objectives	1	2	3	4	5	
Modules are designed based on learner-centered principles.	1	2	3	4	5	
Module outcomes are clearly stated and sequenced to make sense to learners	1	2	3	4	5	
Module content is clearly described, well aligned and appropriate for achieving program outcomes	1	2	3	4	5	

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Evaluation statements	1- Strongly agree	2-Agree	3- Neutral	4- Disagree	5- Strongly Disagree	Additional Comments
Teaching/learning strategies; teaching methods, learner activities, and contact sessions are described and sequenced appropriately to contribute to the development of specified skills	1	2	3	4	5	
Modules focuses on depth of understanding by introducing concepts on a simple level at the beginning and then followed by more complex concepts and provision of multiple opportunities for experiential learning.	1	2	3	4	5	
Programme specified facilitators and types of resources required for each module	1	2	3	4	5	
Assessment strategies for each module are clearly described (Formative and Summative)	1	2	3	4	5	
Criterion 5: Stakeholder involvement						
The programme development team includes individuals from all the relevant professional groups.	1	2	3	4	5	
Programme development is informed by stakeholder needs, views and preferences	1	2	3	4	5	
Programme experts were involved in evaluation of quality of programme and evaluation of methodological rigor used to develop programme	1	2	3	4	5	
Programme Development team possesses appropriate qualification and experience	1	2	3	4	5	

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Evaluation statements	1- Strongly agree	2-Agree	3- Neutral	4- Disagree	5- Strongly Disagree	Additional Comments
Criterion 6. Rigor of Development						
Systematic methods were used throughout the process of programme development	1	2	3	4	5	
The health benefits and risks have been considered in formulating the recommendations	1	2	3	4	5	
There is an explicit link between: reviews and assessments which included contextual factors; research outcomes; recommendations and programme document	1	2	3	4	5	
The programme has been externally reviewed by experts prior to its publication	1	2	3	4	5	
A procedure for updating the training programme is provided.	1	2	3	4	5	
Criterion 7. Clarity of Presentation						
Recommendations from evidence presented provide a concrete and precise description of which option is appropriate in which situation and in what population group, as informed by the body of evidence	1	2	3	4	5	
The different possible options for addressing IPE issues are clearly presented in the training programme	1	2	3	4	5	
The most relevant recommendations are easily identifiable.	1	2	3	4	5	

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Evaluation statements	1- Strongly agree	2-Agree	3- Neutral	4- Disagree	5- Strongly Disagree	Additional Comments
Criterion 8. Applicability						
Potential resource implications for developing IPE training programme have been considered	1	2	3	4	5	
Structuring of training programme took into consideration facility workload and the work environment	1	2	3	4	5	
Guidelines for monitoring and evaluating effectiveness of training programme are described	1	2	3	4	5	
Criterion 9. Editorial Independence						
There is no evidence of statements that reveal funding bodies that could have influenced the content of the guideline	1	2	3	4	5	
Competing interests of guideline development group members have been recorded and addressed	1	2	3	4	5	

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ANNEXURE 7.2

Phase 3_IPE content validation questionnaire- Expert panellists

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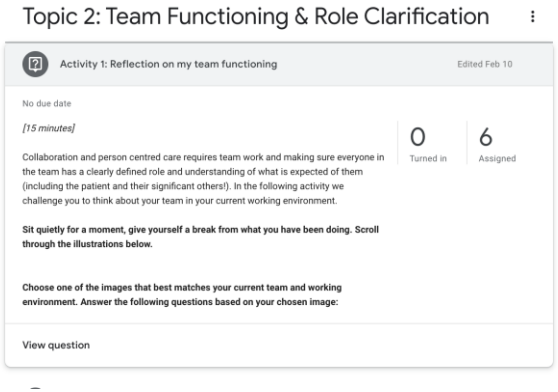
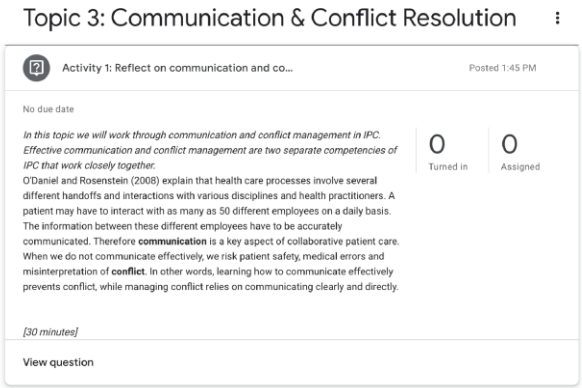
MABOGO-DINKU: PROGRAMME IMPROVEMENTS POST-EVALUATION DECEMBER 2022

TOPIC	SUGGESTED IMPROVEMENT BY EVALUATOR	IMPROVEMENT/ FEEDBACK	BEFORE	AFTER
Overview	None	N/a	N/a	N/a
1	None	N/a	N/a	N/a
2	None	N/a	N/a	N/a
3	- Better distinguish between communication and conflict resolution	- Indicate clear distinction between two terms at start of topic		

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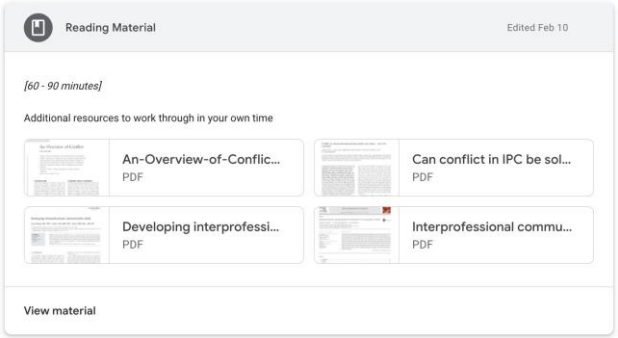
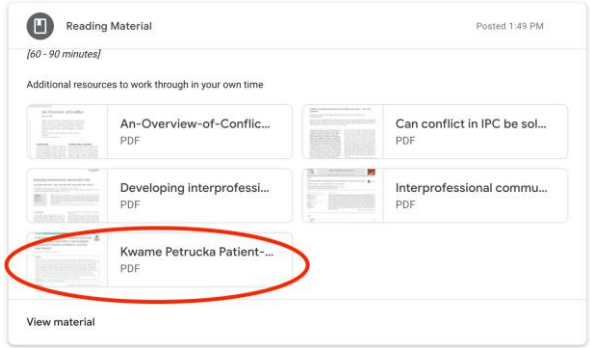
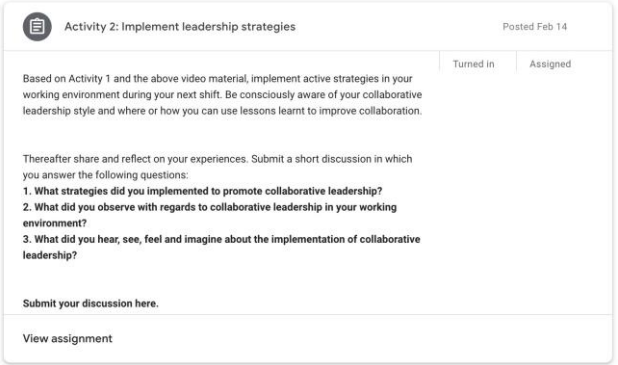
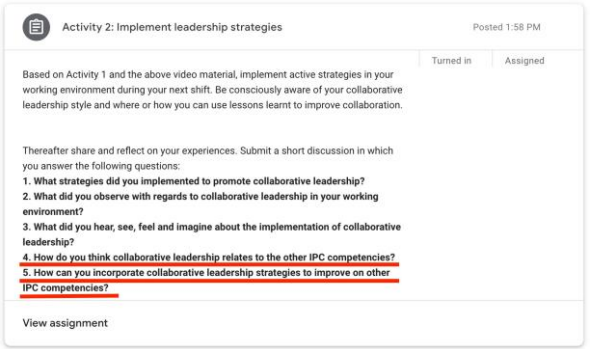
3		- Add additional reading material distinguishing between terms (Kwame & Petrucka) - The difference between the two terms as separate IPC components is also indicated in the introduction to IPC and components in Topic 1.		
4	- Leadership can be added as a concept throughout the programme and all topics	- Add question in Activity to indicate the importance of leadership throughout		

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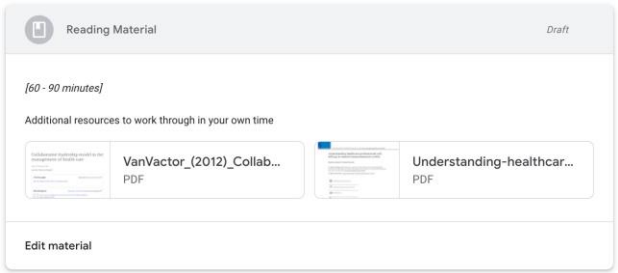
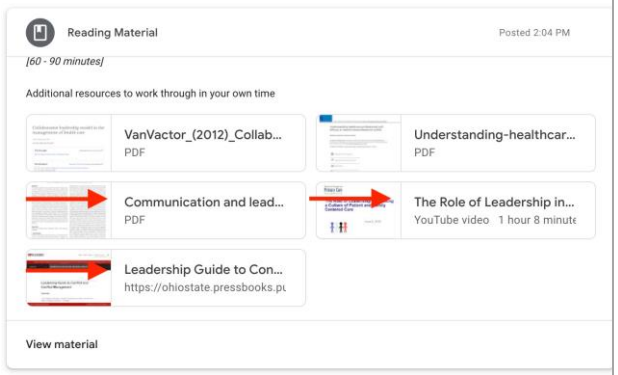
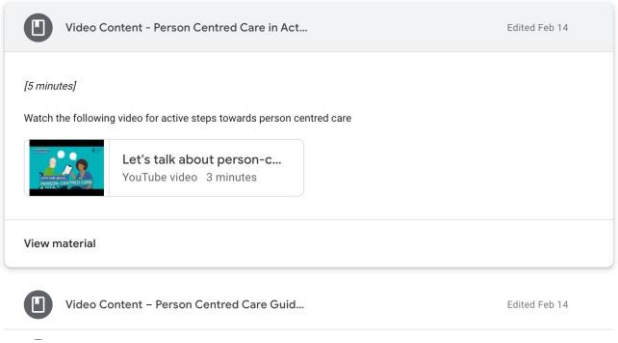
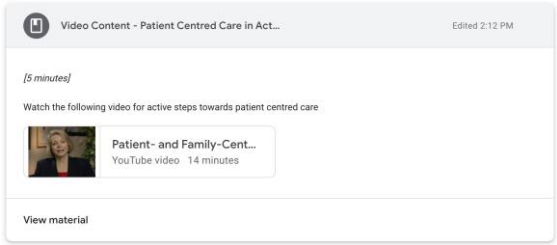
4		- Add additional reading material on leadership and each IPC component		
5	- Add interactive material and videos on patient and family centred care specifically	- Replace video content on person-centred care with patient-centred care to ensure the focus is more specifically on patient and family centred care		

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			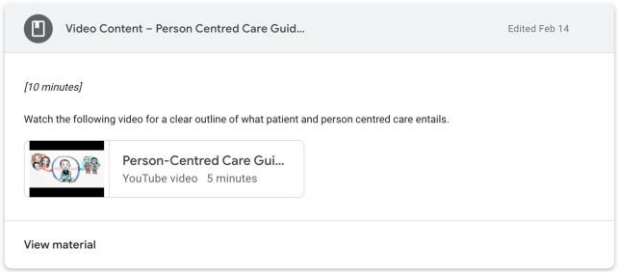	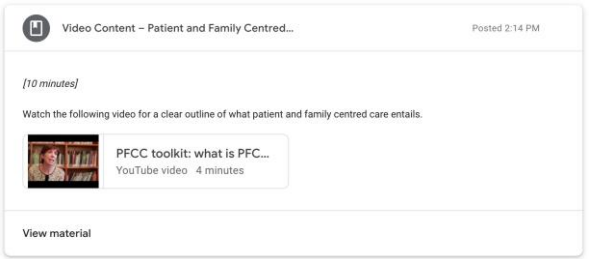
6	- Add a more measurable assessment tool	- The programme is specifically focused on self-assessment and self-development – changing this aspect to a more formal evaluative programme might change the dedicated goals and outcomes see the following reading material for support of self-evaluation/ informal assessment tools.		See the following literature on the importance of self-assessment: • https://files.eric.ed.gov/fulltext/EJ815370.pdf • https://www.researchgate.net/profile/David-Boud/publication/254219847_The_role_of_self-assessment_in_student_grading/links/56355be508ae88cf81bbdc23/The-role-of-self-assessment-in-student-grading.pdf • https://cmapspublic2.ihmc.us/rid=1XVF30RFM-182R9JG-7ZR/EnhancingLearningThroughSelfAssessment_preview.pdf • https://web.archive.org/web/20170808142659id_/http://www.fhs.mcmaster.ca/ceb/docs/Featured_paper_Eva.pdf • https://pdf.usaid.gov/pdf_docs/pnacn247.pdf

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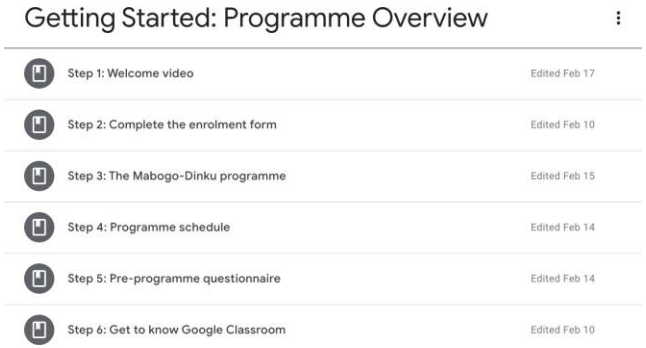
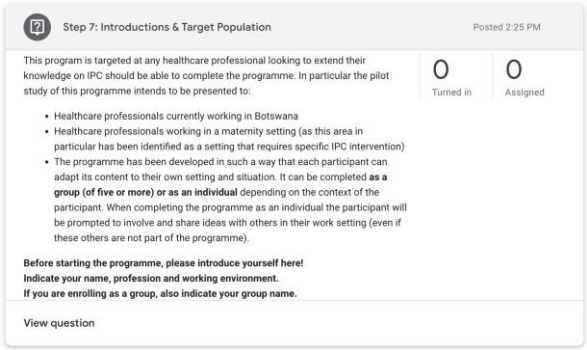
General	- Identify the target population more specifically in the programme - Indicate how the programme will be delivered and mechanisms of advertising - Individual or group enrolments need to be more clear	- Target population already in the curriculum can be included in the Introduction of the programme as well as an activity that requires participants to share more information on themselves		

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		- Section describing individual or group enrolments is clearly outlined in the curriculum and will be explained to participants during enrolment. - Ie. It is not included in the program itself, as participants will already know if they are enrolled as group/individual.		

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		- Marketing and advertising mechanisms include:
		  - Distribution of pamphlets
		  - Working through the Botswana government
		  - Joining and distributing e-pamphlet via WhatsApp groups
		  - Word of mouth
		  - Advertising on various social media groups and platforms (Facebook, Twitter etc.)
				- share pamphlet and introduction document

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WELCOME TO THE MABOGO-DINKtll PROGRAMME!

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ANNEXURE 7.4

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Rameses Network
Research-Gatsha an... 8
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Journal of Advanced Nursing <onbehalfof@manuscriptcentral.com> 7 Sept 2023.06:01 * +-,
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07-Sep-2023

JAN-2023-1917: Content validity of a work-based interprofessional collaboration training program for maternity care

Dear Ms Madisa:

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JAN-2023-1917

Please note that all papers are subject to preliminary review by the Editor-in-Chief before being sent for review.

The review process is usually completed within 10 weeks, but can take longer, depending on reviewer availability (e.g. during holiday periods or if an alternative reviewer needs to be approached). This time frame includes selecting and inviting reviewers, awaiting their response to the request. consideration ofthe reviews by the assigned Editor and. finally, the Editor-in-Chiefs decision and communication with the author. Please be patient during this process and it would be much appreciated if you would not email the Editorial Office to enquire about the status of your manuscript until a period of at least 10 weeks has lapsed. You can track the progress of your paper using the tracking facility in your author centre.

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