8-23-2022 12:30 PM

Teaching Family Planning in Nursing and Midwifery Schools: A Constructivist Grounded Theory Study

Pauline Uwajeneza, *The University of Western Ontario*

Supervisor: Yolanda Babenko-Mould, *The University of Western Ontario*
Co-Supervisor: Marilyn Evans, *The University of Western Ontario*
A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Nursing

Abstract

High maternal mortality remains a global health issue. In 2017, approximately 295,000 women worldwide died from complications related to pregnancy or childbirth, and 94% of these maternal deaths occurred in low-income countries. Evidence shows that family planning (FP) improves maternal health outcomes and significantly contributes to the reduction of maternal mortality. Low FP uptake is partly attributed to inadequate education of health care providers to provide FP services. The purpose of this study was to describe nurse/midwife educators' understanding and enactment of teaching FP methods with nursing/midwifery students in educational programs. More precisely, the aim of this study was to generate a substantive theory that explains how nurse/midwife educators introduce FP methods into their teaching practice to facilitate learning among nurse/midwifery students. This study was conducted following the constructivist grounded theory methodology as articulated by Dr. Kathy Charmaz. The primary source of data was individual semi-structured interviews with 25 nurse/midwife educators recruited from all the schools/faculties/departments of nursing and midwifery in Rwanda, augmented with written documents related to FP education in nursing/midwifery pre-service programs. The substantive theory that emerged from the data analysis indicated that the process of teaching FP in pre-service nursing/midwifery education has three phases: preparing, facilitating and evaluating. This theory also identified the influential factors that impact that process and the actions that nurse/midwife educators engage in to address the challenges related to those influential factors. These study findings generated valuable knowledge that can guide the improvement of teaching FP in pre-service nursing/midwifery programs in Rwanda and other limited-resource countries and contexts.

Key words: Family planning, birth control, contraception, nursing/midwifery education, nurse/ midwife, family planning training, and pre-service education.

Summary for Lay Audience

Family Planning (FP) helps individuals and couples to attain the desired number of children at a desired and planned time. Individuals and couples have a fundamental human right to decide freely and responsibly the spacing and number of their children. Therefore, they have the right to adequate education and information related to FP methods. Nurses and midwives are the cornerstones of the health care system, and they are in good positions to provide FP services that focus on FP methods. However, some scholars in the field of FP have noted that a considerable number of nurses and midwives have limited knowledge and skills to provide education about FP methods. Studies about FP in undergraduate nursing/midwifery education have focused on gaps in the curriculum and in students' competencies. To date, no study has been conducted in Rwanda to explore how nurse/midwife educators experience teaching FP methods in pre-service nursing/midwifery education.

A qualitative study using constructivist grounded theory methodology was conducted with all the schools/departments of nursing and midwifery in Rwanda. This study aimed to describe nurse/midwife educators' understanding and enactment of teaching FP methods in educational programs. Twenty-five nurse/midwife educators involved in teaching FP methods in nursing/midwifery programs participated in individual interviews.

The findings of this study identified the factors that influence nurse/midwife educators' ability to teach FP to nursing/midwifery students and the actions they engaged in to overcome the challenges encountered during the process of teaching FP. The recommendations for this study involve addressing the factors that limit nurses'/midwives' ability to effectively teach FP to nursing/midwifery students, where such knowledge would better equip students to apply to practice upon graduation.

Co-Authorship Statement

Pauline Uwajeneza conducted this research study under the supervision and guidance of Dr. Yolanda Babenko-Mould and Dr. Marilyn Evans and the advisement of Dr. Donatilla Mukamana as a committee member. All publications and presentations related to this dissertation will be co-authored with my supervisors and committee member.

Acknowledgements

I would like to thank the Directors/Deans/Heads of the Departments of Nursing and Midwifery Schools in Rwanda for allowing me to conduct this study at their institutions. I extend a special thanks to the nurse/midwife educators who agreed to participate in this study. Without their willingness to share their experiences teaching family planning in pre-service nursing and midwifery, this study would not have been possible.

I have had the privilege of working with Dr. Yolanda Babenko-Mould, Dr. Marilyn Evans, and Dr. Donatilla Mukamana for both my master's and doctoral studies. You contributed immensely to my personal, professional, and academic development.

I will be forever grateful for the time Dr.Yolanda Babenko-Mould invested in me when I started my graduate studies in 2013. She has been a tremendous source of knowledge, support, and encouragement. She taught me how a faculty member empowers students and assists them in achieving their learning goals. Words cannot express my gratitude for the guidance, learning opportunities, encouragement, and confidence she instilled in me.

A heartfelt thanks to Dr. Marilyn Evens. Her expertise in qualitative research strengthened this research. I will never forget her constructive and challenging questions that shaped my critical thinking and ability to conduct interviews with participants and analyze qualitative data. Her encouragement, support and numerous constructive comments on my work made me a qualitative researcher. I very much appreciate her commitment to continuing working as my supervisor even during her retirement.

My special thanks go to Dr. Donatilla Mukamana, my advisory committee member. She provided guidance and advice and needed support to facilitate the smooth running of this study. I am so grateful to have had such positive mentors and sources of encouragement throughout the

dissertation journey. I want to recognize Dr. Deanna Befus, who was an original member of my research committee. I also want to recognize and thank Dr. Innocent Dushime for the advice and guidance provided. Thank you for seeing my potential, encouraging me to pursue my goals and being there when I needed help.

I am grateful to Western University, which provided a scholarship for my doctoral studies, and the International Development Research Centre (IDRC), which provided a grant for this research study. The Training, Support and Access Model for MNCH in Rwanda (TSAM) project's willingness to support my PhD journey and the financial support provided for academic, office supplies, and attendance at an international conference in 2018 is highly appreciated.

I want to extend deep gratitude to Dr. David Cechetto, Carolyn Beukeboom, and Jean Pierre Ndayisenga, who took the time to read some of my scholarly writings and share their insights with me as health professionals and academics.

My deepest gratitude goes to the Sisters of St Joseph, especially Sister Joan and Sister Carole, and to Paula Marcotte. A warm thanks also to Gloria Monteith, David Schiller, Maureen Beamish, and Roderick Robertson for everything they have shared with my family. Your presence and assistance to my family have been a great blessing.

Most importantly, I acknowledge the love and sacrifice of my family. My husband, Didace Kamilindi, supported me every step of the journey. A heartfelt thanks to you and to our children, Marie Pascale, Rita, Brice, and Bryan. None of this could have been possible without your unconditional love, patience, support, and encouragement. To our beloved children, may you be blessed as you strive to develop your talents and fulfil your dreams for your own happiness and in the service of others.

Finally, deep appreciation to my Mom, my unfailing supporter and cheerleader, to my siblings Aline, Alice, Pierre, Pelin, Perlin, their spouses and my nephews and nieces. A big thanks to my classmates, colleagues, and all those I am blessed to call friends – thank you for your friendship and support. You helped me to accomplish this milestone.

Table of Contents

List of Tables

List of Figures

List of Appendices

Chapter One: Introduction

High maternal mortality remains a global health issue. In 2017, approximately 295 000 women worldwide died from complications related to pregnancy or childbirth, and 94% of these maternal deaths occurred in low-income countries, with 66% occurring in Sub-Saharan Africa (World Health Organization [WHO], 2019). Lowering the maternal mortality ratio (MMR) toward the United Nations (UN) target of less than 70 per 100,000 births by the year 2030 has been slow. MMR was reduced by 38.4% worldwide, from an estimated 342 per 100,000 births in 2000 to 211 per 100,000 births in 2017 (WHO, 2019). In Sub-Saharan Africa, the MMR was reduced by 38.3% in 2017. In Rwanda specifically, the MMR was reduced from 1160 per 100,000 births in 2000 to 248 per 100,000 births in 2017, a 78.6% reduction (WHO, 2019). Although these findings indicate there has been tremendous progress in improving maternal health in Rwanda, the MMR in Rwanda remains high compared to other developing countries. For example, Iran and Tunisia had a maternal mortality rate of 16 per 100 000 births and 33 per 100 000 births in 2017, respectively (WHO, 2019). In these two countries, initiatives, such as consistent education of health care providers, mainly midwives and accessibility of reproductive health services, specifically family planning (FP) programs that contributed to the decrease of the fertility rate, have helped lower the MMR (Hajri & Belhadj, 2020; Mirghafourvand et al., 2021).

Evidence shows that FP improves maternal health outcomes and significantly reduces maternal mortality by preventing unsafe abortions, unintended pregnancies, and sexually transmitted illnesses (Apanga & Adam, 2015; Goldie et al., 2010; Stover & Ross, 2010). According to WHO (2001): "Family planning implies the ability of individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their birth.

FP can be achieved through contraception, defined as any means capable of preventing pregnancy, and through the treatment of involuntary infertility" (p 6).

A study conducted in India indicated that increasing FP methods uptake was the most effective strategy to reduce maternal deaths (Goldie et al., 2010). The researchers purport that if all women who do not wish to get pregnant have access to and engage in FP methods for over five years, more than 150,000 maternal deaths would be prevented, and more than $1 billion US would be saved from the expenses related to the complications of pregnancy and unsafe abortion, and one of every two recorded abortion-related deaths would be averted (Goldie et al., 2010). The United Nations highlight the importance of using FP methods in achieving various Sustainable Development Goals (SDGs), specifically SDG 3: Good Health and Wellbeing and SDG 5: Gender Equality (United Nations, 2019a, 2015). Reports from 51 countries indicate that only 57% of women of reproductive age, married or in a union, make their own decisions about sexual relations and particular FP methods (United Nations, 2019b). Empowering women and couples to decide the number, timing, and spacing of pregnancies is a fundamental way to positively impact the issues vital to SDGs, such as health, education, and the status of women in society (Starbird, 2015). However, low FP methods uptake is partly attributed to inadequate education of health care providers about FP methods and how to provide education, support, resources, and counselling to clients in a manner that promotes the acceptability and use of different FP methods (Fehring, 2004; McClellan et al., 2018; Phillips & Sandhu, 2018).

Evidence also indicates that women's access to sexual reproductive health (SRH) care can be improved by comprehensively including SRH courses and content, including SRH/FP, in nursing/midwifery pre-service education programs (McLemore & Levi, 2017; Phillips & Sandhu, 2018). The provision of quality SRH/FP services by nurses/midwives is reported to be directly

affected by nurses'/midwives' educational exposure to SRH/FP content and clinical experience (McLemore & Levi, 2017). Nursing/midwifery skills and competencies are developed and strengthened through formal education (McCarthy et al., 2017; Murararaneza & Mtshali, 2018). Thus, it is generally important to support the education of nursing and midwifery students in their development of SRH/FP knowledge and skills at the pre-service stage, that includes a particular focus on FP methods. Doing so will enable them to apply this knowledge once they graduate as health professionals (Berdzuli et al., 2009; Bvumbwe & Mtshali, 2018; Middleton et al., 2014; Muganyizi et al., 2014; Yalahow et al., 2017). This would lead to the provision of quality FP method education and resources for clients to further reduce maternal morbidity and mortality rates (Ganatra & Faundes, 2016; Stover & Ross, 2010). Improving FP methods teaching at the pre-service stage should be considered a fundamental approach to ensuring the sustainability of FP programming efforts in practice (Berdzuli et al., 2009; Hewitt & Cappiello, 2015; Mugore et al., 2018), particularly in low- and middle-income countries (LMIC).

Background and Significance

Rwanda is the second most densely populated country in Africa, with around 13 million people and a density of 525 inhabitants per square kilometre in 2020 (United Nations Population Division, 2022). The uptake of contraceptive use among women in Rwanda increased from 17% in 2005 to 64% in 2020 (National Institute of Statistics of Rwanda [NISR], 2021). However, the Demographic and Health Survey (DHS) conducted in Rwanda in 2019 - 2020 revealed that about 30% of women who started using FP methods discontinued the methods within 12 months due to side effects. Only 61% of users of modern FP methods were informed about side effects, and 57% were informed about what to do when they experience side effects (NISR, 2021). These results indicate a gap in the FP education and counselling that clients receive from the health care

providers who initially provided the FP services to clients. In the Rwandan context, the term FP services is comprised of education, counselling about FP methods, and provision of different FP services in particular, which vary from some other nations that define FP services in a broader manner. However, in Rwanda, other SRH services, such as screening and treatment of sexually transmitted infections and infertility, are attended to by various other specialty areas and health providers. In Rwanda, health care professionals must provide all the information related to FP methods chosen by the client, including the side effects and what to do when side effects arise. Thorough counselling about the side effects is an integral part of providing education about FP methods (WHO, 2018).

The DHS conducted in Rwanda also revealed that 37% of sexually active unmarried women, and 14% of married women in Rwanda, have unmet needs for FP methods (NISR, 2021). Women are considered to have unmet needs for FP methods when they are sexually active during their reproductive years and want to delay or prevent pregnancies but are not using any FP methods (Machiyama et al., 2017; Sedgh et al., 2016; United Nations, 2017). A leading cause of unmet needs for FP is women's inability to access information or counselling services about FP methods (Machiyama et al., 2017; Sedgh et al., 2016). Important factors, including health professionals' lack of knowledge, attitude, skills, and confidence in providing FP methods, have been identified as barriers to the accessibility and effective use of FP services in Rwanda (Brunie et al., 2013; Schwandt et al., 2018).

Rwanda's government expects to prevent 250,000 unintended pregnancies every year and increase the total demand for FP methods among women in the reproductive age of 15-49 years from 72% in 2017 to 80% by 2024 (Government of Rwanda, 2017). To reduce unintended pregnancies, the Ministry of Health (MoH) in Rwanda has set targets of reducing the unmet

needs for FP from 19% in 2017 to 15% in 2024 and increasing the rate of use of modern contraceptives among women aged 15-49 from 48% in 2017 to 60% in 2024 (MoH, 2018). The Rwandan MoH notes that education and mentorship of health providers could be used as effective strategies to achieve these targets by ultimately increasing health care providers' knowledge, skills, and confidence in providing FP services (MoH, 2018).

Nurse scholars confirm that nurses/midwives need ongoing, continuous professional development (CPD) via educational offerings to gain knowledge and skills about current health-related information, evidence, and technologies that were not available during their pre-service educational experience in order to reinforce quality practice (Gray et al., 2014; Katsikitis et al., 2013). However, studies conducted in African countries, including Tanzania, Somalia, and Uganda, about FP methods education during nursing/midwifery pre-service education programs indicate gaps in curricula, resources, and clinical practice learning opportunities that need to be addressed to effectively prepare future nurses/midwives to be competent in offering FP services to clients (Muganyizi et al., 2014; Mugore et al., 2018; Yalahow et al., 2017). Although all nurses/midwives may benefit from refresher CPD workshops, it's important to recognize that when students are not provided with robust opportunities to develop FP knowledge, skills, and confidence at the pre-service stage, it ultimately means that the clinical setting experiences the unintended consequences of limited pre-service preparation and is often faced with having to take on the various costs involved in developing such foundational knowledge with in-service clinicians (Berdzuli et al., 2009; Mugore et al., 2018).

In LMIC, including Rwanda, the emphasis has been placed on educating health providers involved in FP services through CPD learning opportunities. The majority of these CPD courses/programs, associated materials, and donor support have traditionally been directed to

improving the in-service education of health providers in practice settings. Despite the significant investments towards FP methods education at the in-service stage, the results of these educational programs are not always sustainable due to the inability to educate all health care providers in need of FP methods education and the high turnover rates of educated health care providers (Berdzuli et al., 2009; Muganyizi et al., 2014; Mugore et al., 2018). Equipping nurse/midwife students at the pre-service stage with the necessary knowledge, skills, and confidence to implement education about FP methods into their practice after graduation could improve FP methods uptake and use (Berdzuli et al., 2009).

Most research about FP methods in undergraduate nursing and midwifery schools has focused on gaps in the curriculum and the competencies of students (Erfanian & Khadivzadeh, 2011; Karvande et al., 2018; Mohammed et al., 2019; Walker & Davis, 2014; McCance & Cameron, 2014; Muganyizi et al., 2014). There was a need identified for research in particular about the knowledge, skills, attitudes, and confidence of nurse and midwife educators for teaching FP methods to students in LMIC. To our knowledge, the study described in this report is the first conducted in Rwanda to explore nurse/midwife educators' experience of teaching FP methods in nursing/midwifery education in the classroom and clinical setting.

The study generated important information to guide the improvement of nursing/ midwifery education and practice-based care about FP methods. This study's findings have implications for nursing/midwifery pre-service education by expanding knowledge about the factors that influence the process of teaching FP to nurse/midwife students to prepare them to offer quality care in FP services to women and their partners. The substantive theory, as per Charmaz (2014) that emerged from the findings, describes how nurse/midwife educators introduced FP methods in their teaching practice. This substantive theory could guide nurse/

midwife educators to consider the contextual factors that may influence their teaching practice and may support their awareness of the ways in which challenges can be addressed to enable a more informed process of teaching FP methods.

Overview of Nursing and Midwifery Education in Rwanda

Nursing and midwifery education was formally initiated in Rwanda in 1949 with a faith-based program when the Catholic Diocese of Kabgayi began to train assistant midwives. In 1952 the school of Kabgayi upgraded the training of assistant midwives to a three-year program in nursing and midwifery, denoted as the A3 level (Harerimana et al., 2015; Mukamana et al., 2015). In 1962 the nursing and midwifery training at Kabgayi school was upgraded to a comprehensive program of nursing at what was called the A2 level (Mukamana et al., 2015). In 1962, the Protestant church opened a school that trained assistant midwives and nurses at Kirinda. The Catholic church started the nursing and midwifery A3 program at Rwamagana School during the same year.

The A3 was a three-year post-primary nursing or midwifery education program. An A2 comprehensive nursing program involved seven years in secondary school focusing on nursing. Currently, the A1 is a three-year diploma in nursing or midwifery program. Finally, the A0 level is a four-year university-level bachelor of science program in nursing or midwifery (Mukamana et al., 2015).

Between 1964-1968 the education system in Rwanda was reformed, and during that period, nursing and midwifery education was merged and upgraded to a comprehensive A2 nursing program level, a secondary education program (Harerimana et al., 2015). In 1970, the University of Rwanda opened a program in nursing A1. The A1 could be considered similar to a diploma-level program in North America. Unfortunately, the program was closed in 1977

(Harerimana et al., 2015; Mukamana et al., 2015). Subsequently, nursing education in Rwanda continued at the A2 level. In 1987, the Government of Rwanda opened many other schools of nursing at the A2 level (Harerimana et al., 2015) to increase the number of healthcare providers equipped with the knowledge and skills to provide healthcare services in different regions of the country and thus improve access to primary health care (Rifkin, 2018). In 1994, the Rwandan genocide against the Tutsi resulted in the tragic and massive loss of health care providers from across the country.

In 1996, the Government of Rwanda opened the Kigali Health Institute (KHI) to mitigate the shortage of health care professionals aggravated by the genocide against the Tutsi in 1994 (Harerimana et al., 2015; Mukamana et al., 2015). KHI started with an A1 program in nursing and midwifery and other health sciences programs. In 2006 KHI started to develop the A0 program in nursing with two options: 1. direct entry to a four-year Bachelor of Science in Nursing (BSN) degree, and 2. an upgrading program for nurses and midwives to advance from A1 to A0 to acquire a Bachelor of Nursing Education (BNE). In 2007, the MoH discontinued the A2 nursing program and opened five regional schools (Byumba in the northern province; Kibungo, Rwamagana and Nyagatare in the eastern province, and Kabgayi in the southern province) that offered nursing and midwifery A1 programs. In 2013, the Department of Nursing and Midwifery at KHI and the five regional schools of nursing and midwifery were merged to form one School of Nursing and Midwifery under the University of Rwanda (UR). This is the only public school of nursing and midwifery in Rwanda. The School of Nursing and Midwifery at UR currently offers A1 and A0 programs in nursing and midwifery and a master's degree in nursing specialties such as critical care, pediatric, or perioperative nursing (Mukamana et al., 2015; Uwizeye et al., 2018).

There are five private schools that offer nursing and midwifery A1 and A0 programs in Rwanda. These are Ruli Higher Institute of Health, which offers an A1 program in nursing and midwifery; the Adventist University of Central Africa, the campus of Ngoma that offers A1 and A0 programs in nursing and midwifery; Mount Kenya University, which offers an A0 program in nursing; Kibogora Polytechnic that offers an A1 program in nursing and midwifery, and Gitwe University that offers A1 and A0 programs in nursing. The MoH regulates schools of nursing and midwifery in Rwanda through the National Council of Nurses and Midwives [NCNM] (MoH, 2012; NCNM, n.d.) and the Ministry of Education (MoE) through the Higher Education Council (HEC) (Higher Education Council, 2022).

Family Planning in Nursing/Midwifery Curriculum

Since 2007, nursing and midwifery education throughout Rwanda has moved from a content-based curriculum to a competency-based curriculum [CBC] (Harerimana & De Beer, 2013). This change was adopted to develop competent nurses and midwives "equipped with critical thinking, problem-solving, teamwork, communication, leadership, and management skills" (Murararaneza & Mtshali, 2021, p 1) required to offer quality healthcare services in Rwanda (Nsengimana, 2020; WHO, 2009). The CBC is structured in modules organized in a logical sequence to facilitate students' learning (Murararaneza & Mtshali, 2018; 2021). In many nursing and midwifery schools, FP methods are included in the curricula of the A1 diploma and A0 nursing and midwifery programs as a unit in the module of reproductive health or women's health.

Definition of Key Terms

Teaching: Teaching is an intentional act of communicating information to the learner with the the objective of facilitating learning to achieve expected outcomes (Bastable, 2003).

Teaching process: Teaching is necessarily a process including planning, implementation, evaluation and revision. According to Billings and Halstead (2016), the teaching process must consider the learner, the intended learning outcome, and the environment in which it occurs. Teachers' beliefs, practices, and attitudes shape the students' learning environment and influence student motivation and achievement (Ročāne, 2015).

Learning: Learning is a process of acquiring knowledge and skills that change the learner's thinking and behaviour (DeYoung, 2003).

Pre-service and in-service education: Pre-service education involves required education before entering a professional workforce (McCarthy et al., 2017; WHO, 2013). For this study, pre-service refers to professional education programs offered at nursing/midwifery schools. In-service education refers to the ongoing or continuous professional development (CPD) available to health care providers to update and improve their knowledge and skills in practice.

Registered nurse: In the context of Rwanda, a registered nurse is an individual who has graduated from a recognized school of nursing and has passed the national licensing exam.

Registered midwife: an individual who has completed a midwifery education program and has passed the national licensing exam.

Nurse/midwife educator: a registered nurse or midwife who works as a faculty member in a nursing and/or midwifery school.

Nurse/midwifery student: a student enrolled in recognized nursing and/or midwifery education program.

Reproductive health:

> A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity in all matters relating to the reproductive system and its function and

> process. Reproductive health, therefore, implies that people are able to have a satisfying and safe sex life and that they have the capability to produce and the freedom to decide if, when, and how often to do so. Implicit in this last condition is the right for men and women to be informed of and to have access to safe, effective, affordable and acceptable methods of family planning of their choice (WHO, 1995, p 3).

Teaching family planning (FP) methods: refers to the content, procedures, instructions, and counselling techniques that educators support students to learn about in theory and clinical courses related to any birth control method.

FP services: In Rwanda, this term specifically relates to supporting women and their partners through education, support, resources, and counselling to choose a family planning method that is right for them, including the hormonal methods, IUDs, or other contraceptives, follow up and managing side effects.

The term FP services is often used interchangeably with the term FP methods (definition above). For clarity, the Rwandan conceptualization of what constitutes FP services, as specifically FP methods, differs from how FP services are described in the US by the Centres for Disease Control and Prevention [CDC] (Gaven et al., 2014). In the US, FP services include: "offering pregnancy testing and counselling; helping clients who want to conceive; providing basic infertility services; providing preconception health services to improve infant and maternal outcomes and improve women's and men's health; and providing sexually transmitted disease (STD) screening and treatment services to prevent tubal infertility and improve the health of women, men, and infants" (Gaven et al., 2014). While in Rwanda, some of the CDC noted services are not offered by those involved in FP services but are offered by other health professionals, such as gynecologists. This is important to clarify as

this dissertation focuses on teaching FP methods in Rwanda. From a Rwandan FP service perspective, providing STD screening or infertility education/treatment is not included under the umbrella of FP services.

Purpose of the Study

The purpose of this study was to explore nurse/midwife educators' understanding and enactment of teaching FP methods in nursing and midwifery education programs in Rwanda. In particular, the aim of this study was to generate a substantive theory that describes how nurse/midwife educators enact teaching of FP methods with nursing/midwifery students and what influences that process.

Research Questions

1) What are nurse/midwife educators' perceptions of teaching FP to nurse/midwife students?
2) What is nurse/midwife educators' knowledge about teaching FP methods?
3) How do nurse/midwife educators engage in teaching FP methods with nurse/midwife students?
4) What are the facilitators and barriers that impact the process of teaching FP in pre-service nursing and midwifery education in Rwanda?

Declaration of Self

In this statement, I address what I consider might be the latent prejudices, personal biases, life experiences, and expectations, which could influence my perspective on this research study. In my work in Rwanda as a clinical midwife in maternity services, we provided information about FP methods to clients and responded to their questions or concerns related to the use of FP methods. During this experience, I witnessed the challenges faced by nurses/midwives in

providing factual and detailed information about some FP methods, such as Fertility Awareness Based Methods (FABM)/natural family planning methods (NFP). It was challenging because we did not have detailed guidelines to teach those methods to clients as we had for other FP methods.

I believe that FABM/NFP methods are effective FP methods when used correctly. I understand that a client could choose to use a FP method such as the NFP method that aligns with her/his religious beliefs. I also understand that many clients may choose to use FABM/NFP for other personal reasons, such as fear of side effects. I believe that clients have the right to choose any suitable and convenient FP method to them, and a health care provider is responsible and accountable for teaching the clients how to use the chosen FP method effectively. However, during my career as a clinical midwife, I struggled to provide accurate information about FABM/NFP methods to clients because I did not learn the necessary details about those methods in my pre-service or in-service midwifery education. I also observed that some nurses/midwives promoted personally preferred methods while providing FP methods information to women and their partners.

After three years of clinical experience in the hospital as a clinical midwife, I continued my studies in nursing education, following which I worked as a midwife/nurse educator in different schools of nursing/midwifery in Rwanda. In the nursing and midwifery curricula, the Reproductive Health Module included a unit on FP methods. I was involved in teaching FP methods, and again, I witnessed the challenges related to teaching some FP methods that I did not have the opportunity to learn or practice during my formal education or professional practice.

I had a solid willingness to learn and teach in detail FABM/NFP to students so that they would be able to teach these methods to clients. However, I struggled to find the updated detailed

content about these FP methods, as they were only mentioned in the curricula and the national protocol for family planning elaborated by the Ministry of Health but were not as well developed as other FP methods. Furthermore, I conducted a study in Rwanda to understand the experiences of nurses/midwives in providing FABMs to clients. The findings of that study showed that FABM pre-service education and training is minimal and superficial, resulting in nurses/midwives' inadequate knowledge and skills in teaching those methods to clients.

These experiences sparked my interest and motivated me to better understand the facilitators and barriers that impact teaching different FP methods in pre-service nursing and midwifery education. I believe that FP overall is a fundamental human right, and clients accessing FP services have the right to receive accurate information on all FP methods to make an informed decision when choosing a FP method. Nurse/midwife educators have a crucial role in preparing future nurses/midwives to provide quality FP services to clients. I believe that a well-structured policy that provides solutions to the factors that impact FP education could help to improve the quality of FP training in pre-service nursing/midwifery education and, in turn, improve the quality of FP services that nurse/midwife students will offer upon graduation.

My experience in teaching FP enhanced my ability to conduct interviews. It helped me during data analysis, as I better understood the participants' perspectives. I hope this research will advance the evidence base for improving FP training in pre-service education for future nurses/midwives and other health care providers who participate in FP services. Thus, the quality of FP services they will offer upon graduation.

Chapter Overview

This dissertation is prepared in the integrated-article format with four chapters. Two chapters (chapters 2 and 3) for this dissertation are written as manuscripts to publish in peer-

reviewed scientific journals. Each manuscript is a stand-alone journal article, and thus there is overlap in some content among chapters. The integrated-article thesis format has been selected to allow timely dissemination of the results of this dissertation study.

Chapter One reflects the introduction that explains the importance of conducting the research study. It contains the background and significance of the research study, the definitions of key terms used in this dissertation, the purpose, and the research questions that guided this constructivist-grounded theory study.

Chapter Two is a manuscript titled: Teaching Family Planning Methods in Nursing/ Midwifery Education and Practice: A Scoping Review. The purpose of this scoping review was to identify and analyze: 1) the literature about nursing/midwifery students' education about FP methods, 2) nursing/midwifery students' knowledge and skills about and confidence in providing information and FP resources to clients about FP methods, 3) nurses'/midwives' education about FP methods, and 4) nurses'/midwives' knowledge, skills and confidence for providing information and resources to clients about FP methods. The review aims to uncover gaps in the literature around educational preparation about FP methods and the provision of FP services in practice. The results of this scoping review provided foundational ideas for further study about nurse/midwife educators' teaching of FP in pre-service nursing and midwifery education and assisted in guiding the development of this constructivist grounded theory study.

Chapter Three is a manuscript titled Teaching Family Planning Methods in Nursing and Midwifery Schools in Rwanda: A Constructivist Grounded Theory Study. This manuscript presents a qualitative study guided by constructivist grounded theory (CGT) methodology.

Chapter Four, which is the conclusion of the thesis, includes an overall summary of the study results. A discussion of the key findings based on the existing literature and how these

findings contribute to the current knowledge of FP education in nursing/midwifery programs is presented. Implications and recommendations for nursing education, policy, research, and practice are explored and presented in this last chapter.

References

Apanga, P. A., & Adam, M. A. (2015). Factors influencing the uptake of family planning services in the Talensi District, Ghana. *Pan African Medical Journal*, *8688*, 1–9. https://doi.org/10.11604/pamj.2015.20.10.5301

Bastable, S. (2003). *Nurse as educator: Principles of teaching and learning for nursing practice* (Second). Jones and Bartlett Publishers.

Berdzuli, N., Rossi, E., & Zlidar, N. (2009). *Improving Family Planning Pre-Service Education : Experience from the Eastern Europe and Eurasia Region The Europe and Eurasia Regional Family Planning Activity*. https://www.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=10486&lid=3

Billings, D., & Halstead, J. (2016). *Teaching in nursing: A guide for faculty*. Elsevier.

Brunie, A., Tolley, E. E., Ngabo, F., Wesson, J., & Chen, M. (2013). Getting to 70%: Barriers to modern contraceptive use for women in Rwanda. *International Journal of Gynecology and Obstetrics*, *123*(SUPPL.1), 11–15. https://doi.org/10.1016/j.ijgo.2013.07.005

Bvumbwe, T., & Mtshali, N. (2018). Nursing education challenges and solutions in Sub-Saharan Africa: An integrative review. *BMC Nursing*, *17*(1), 1–11. https://doi.org/10.1186/s12912-018-0272-4

DeYoung, S. (2003). *Teaching strategies for nursing educators* (Pearson Ed). Prentice Hall.

Erfanian, F., & Khadivzadeh, T. (2011). Evaluation of midwifery students' competency in providing intrauterine device services using the objective structured clinical examination. *Iranian Journal of Nursing and Midwifery Research*, *16*(3), 191–196. http://www.ncbi.nlm.nih.gov/pubmed/22224105%0Ahttp://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC3249797

Fehring, R. J. (2004). The future of professional education in natural family planning. *Journal of Obstetric, Gynecologic, and Neonatal Nursing : JOGNN / NAACOG*, *33*(1), 34–43. https://doi.org/10.1177/0884217503258549

Ganatra, B., & Faundes, A. (2016). Role of birth spacing, family planning services, safe abortion services and post-abortion care in reducing maternal mortality. *Best Practice and Research: Clinical Obstetrics and Gynaecology*, *36*, 145–155. https://doi.org/10.1016/j.bpobgyn.2016.07.008

Gaven, L., Moskosky, S., Carter, M., Curtis, K., Glass, E., Goodfrey, E., Marcell, A., Mautone-Smith, N., Karen, P., Tepper, N., & Zapata, L. (2014). *Providing quality family planning services: Recommendations of CDC and the U.S. Office of Population Affairs: Vol. MMWR 63* (Issue 4). https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6304a1.htm

Goldie, S. J., Sweet, S., Carvalho, N., Natchu, U. C. M., & Hu, D. (2010). Alternative strategies to reduce maternal mortality in India: A cost-effectiveness analysis. *PLoS Medicine*, *7*(4). https://doi.org/10.1371/journal.pmed.1000264

Government of Rwanda. (2017). Family Planning 2020 Commitment. *Family Planning Summit*. http://ec2-54-210-230-186.compute-1.amazonaws.com/wp-content/uploads/2017/08/Govt.-of-Rwanda-FP2020-Commitment-2017-Update-SO.pdf

Gray, M., Rowe, J., & Barnes, M. (2014). Continuing professional development and changed re-registration requirements: midwives' reflections. *Nurse Education Today*, *34*(5), 860–865. https://doi.org/10.1016/j.nedt.2013.10.013

Hajri, S., & Belhadj, H. (2020). The role of midwives in first-trimester abortion care: A 40-year experience in Tunisia. In *International Journal of Gynecology and Obstetrics* (Vol. 150, Issue S1, pp. 43–48). https://doi.org/10.1002/ijgo.13010

Harerimana, A., & De Beer, J. (2013). Nurse educators' utilisation of different teaching strategies in a competency-based approach in Rwanda. *Africa Journal of Nursing and Midwifery*, *15*(1), 29–41. esearchgate.net/publication/287337108_Nurse_educators'_utilisation_of_different_teaching_strategies_in_a_competency-based_approach_in_Rwanda

Harerimana, A., Mtshali, N. G. F., Mukamana, D., & Mugarura, J. (2015). Historical overview of nursing and midwifery education. *British Journal of Medical and Health Research*, *2*(12), 1–10. https://www.researchgate.net/publication/291946017_Historical_Overview_of_Nursing_and_Midwifery_Education_and_Nursing_Workforce_in_Rwanda

Hewitt, C., & Cappiello, J. (2015). Essential Competencies in Nursing Education for Prevention and Care Related to Unintended Pregnancy. *Journal of Obstetric Gynecologic and Neonatal Nursing*, *44*(1), 69–76. https://doi.org/10.1111/1552-6909.12525

Higher education council. (2022). *The mission of the Higher education council*. Rwanda Ministry Of Education. https://hec.gov.rw/index.php?id=22#:~:text=The mission of HEC is the welfare and development of Rwanda

Karvande, S., Sonawane, D., Samal, J., & Mistry, N. (2018). Family planning training needs of auxiliary nurse midwives in Jharkhand, India: Lessons from an assessment. *National Medical Journal of India*, *31*(2), 73–78. https://doi.org/10.4103/0970-258X.253164

Katsikitis, M., McAllister, M., Sharman, R., Raith, L., Faithfull-Byrne, A., & Priaulx, R. (2013). Continuing professional development in nursing in Australia: Current awareness, practice and future directions. *Contemporary Nurse*, *45*(1), 33–45. https://doi.org/10.5172/conu.2013.45.1.33

Machiyama, K., Casterline, J. B., Mumah, J. N., Huda, F. A., Obare, F., Odwe, G., Kabiru, C. W., Yeasmin, S., & Cleland, J. (2017). Reasons for unmet need for family planning, with attention to the measurement of fertility preferences: protocol for a multi-site cohort study. *Reproductive Health*, *14*(1), 23. https://doi.org/10.1186/s12978-016-0268-z

McCance, K., & Cameron, S. (2014). Midwives' experiences and views of giving postpartum contraceptive advice and providing long-acting reversible contraception: A qualitative study. *Journal of Family Planning and Reproductive Health Care*, *40*(3), 177–183. https://doi.org/10.1136/jfprhc-2013-100770

McCarthy, C. F., Gross, J. M., Verani, A. R., Nkowane, A. M., Wheeler, E. L., Lipato, T. J., & Kelley, M. A. (2017). Cross-sectional description of nursing and midwifery pre-service education accreditation in east, central, and southern Africa in 2013. *Human Resources for Health*, *15*(48), 1–10. https://doi.org/10.1186/s12960-017-0224-1

McClellan, K., Temples, H., & Miller, L. (2018). The Latest in Teen Pregnancy Prevention: Long-Acting Reversible Contraception. *Journal of Pediatric Health Care*, *32*(5), e91–e97. https://doi.org/10.1016/j.pedhc.2018.02.009

McLemore, M. R., & Levi, A. J. (2017). Expanding Access to Sexual and Reproductive Health Services Through Nursing Education. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, *46*(5), e149–e156. https://doi.org/10.1016/j.jogn.2017.02.004

Middleton, L., Howard, A. A., Dohrn, J., Von Zinkernagel, D., Hopson, D. P., Aranda-Naranjo, B., Hall, C., Malata, A., Bvumbwe, T., Chabela, A., Molise, N., & El-Sadr, W. M. (2014). The Nursing Education Partnership Initiative (NEPI): Innovations in nursing and midwifery education. *Academic Medicine*, *89*(8 SUPPL.), 24–28. https://doi.org/10.1097/ACM.0000000000000342

Ministry of Health. (2018). *Fourth Health Sector Strategic Plan* (Issue July 2018-Jun 2014). http://npngti.com/wp-content/uploads/2018/06/Rwanda_Nat-Health-Sector-Plan_2018-2024.pdf

Mirghafourvand, M., Khosravi, S., Tabrizi, J. S., Mohammadi, A., & Abedi, P. (2021). Two decades of Iranian midwives' activities as a health care provider under the supervision in a multidisciplinary team in reducing maternal mortality. *Reproductive Health*, *18*(1), 1–3. https://doi.org/10.1186/s12978-021-01100-3

Mohammed, S., Abdulai, A.-M., & Iddrisu, O. A. (2019). Pre-service knowledge, perception, and use of emergency contraception among future healthcare providers in northern Ghana. *Contraception and Reproductive Medicine*, *4*(1), 1–7. https://doi.org/10.1186/s40834-018-0082-9

Muganyizi, P. S., Ishengoma, J., Kanama, J., Kikumbih, N., Mwanga, F., Killian, R., & Mcginn, E. (2014). An analysis of pre-service family planning teaching in clinical and nursing education in Tanzania. *BMC Medical Education*, *14*(1), 1–9. https://doi.org/10.1186/1472-6920-14-142

Mugore, S., Mwanja, M., Mwari, V., & Kalula, A. (2018). Adaptation of the Training Resource Package to Strengthen Preservice Family Planning Training for Nurses and Midwives. *Global Health: Science and Practice*, 1–10. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6172108/

Mukamana, D., Uwiyeze, G., & Sliney, A. (2015). Nursing and Midwifery Education in Rwanda: Telling our Story. *Rwanda Journal*, *2*(2), 9. https://doi.org/10.4314/rj.v2i2.1F

Murararaneza, C., & Mtshali, G. N. (2018). Conceptualization of competency-based curricula in pre-service nursing and midwifery education: A grounded theory approach. *Nurse*

Education in Practice, *28*, 175–181. https://doi.org/10.1016/j.nepr.2017.09.018

Murararaneza, C., & Mtshali, G. N. (2021). Planning reform to competency-based curricula in undergraduate nursing and midwifery education: A qualitative study. *Nurse Education Today*, *106*(July), 1–6. https://doi.org/10.1016/j.nedt.2021.105066

National Institute of Statistics of Rwanda. (2021). *Rwanda demographic and health survey 2019-2020*. https://dhsprogram.com/pubs/pdf/FR370/FR370.pdf

Nsengimana, V. (2020). Implementation of the competence-based curriculum in Rwanda : Opportunities, Challenges and Mitigation. *Rwandan Journal of Education*, *5*(1), 1–9. https://www.who.int/hrh/nursing_midwifery/hrh_global_standards_education.pdf

Phillips, J., & Sandhu, P. (2018). Barriers to implementation of long-acting reversible contraception : A systematic review. *Journal of the American Association of Nurse Practitioners*, *30*(4), 236–243. https://pdfs.semanticscholar.org/2693/410207bf300f5118688349956a8d86d8efba.pdf

Rifkin, S. B. (2018). Health for All and Primary Health Care, 1978–2018: A Historical Perspective on Policies and Programs Over 40 Years. In *Oxford Research Encyclopedia of Global Public Health* (Issue October). https://doi.org/10.1093/acrefore/9780190632366.013.55

Ročāne, M. (2015). The significance of teacher' s beliefs in the learning process. *Society. Integration. Education.*, *2*, 165–174. https://doi.org/http://dx.doi.org/10.17770/sie2015vol2.452

Schwandt, H. M., Feinberg, S., Akotiah, A., Douville, T. Y., Gardner, E. V., Clodette, I., McQuin, E., Mohamed, M., Rugoyera, A., Musemakweli, D., Nichols, C. W., Nyangezi Uwajeneza, N., Arizmendi, J. S., Welikala, D., Yamuragiye, B., & Zigo, L. (2018). Family

planning in Rwanda is not seen as population control , but rather as a way to empower the people : Examining Rwanda' s success in family planning from the perspective of public and private stakeholders. *Conttraception and Reproductive Medicine*, *3*(18), 2–7. https://doi.org/10.1186/s40834-018-0072-y

Sedgh, G., Ashford, L. S., & Hussain, R. (2016). Unmet Need for Contraception in Developing Countries: Examining Women's Reasons for Not Using a Method. *Guttmacher Institute*, *June*, 2–48. https://www.guttmacher.org/sites/default/files/report_pdf/unmet-need-for-contraception-in-developing-countries-report.pdf

Starbird, E. (2015). *Family Planning in the Sustainable Development Goals*. https://www.wilsoncenter.org/sites/default/files/Starbird_USAID_Family_Planning_SDGs.pdf

Stover, J., & Ross, J. (2010). How increased contraceptive use has reduced maternal mortality. *Maternal and Child Health Journal*, *14*(5), 687–695. https://doi.org/10.1007/s10995-009-0505-y

United Nations. (2015). Transforming our World: The 2030 agenda for sustainable development (A/RES/70/1). In *United Nations*. United Nations. https://sdgs.un.org/sites/default/files/publications/21252030 Agenda for Sustainable Development web.pdf

United Nations. (2017). *World Family Planning*. http://www.un.org/en/development/desa/population/publications/pdf/family/WFP2017_Highlights.pdf

United Nations. (2019a). *Family Planning and the 2030 Agenda for Sustainable Development: Data Booklet.*

https://www.un.org/en/development/desa/population/publications/pdf/family/familyPlanning_DataBooklet_2019.pdf

United Nations. (2019b). *Progress on the Sustainable Development Goals: The gender snapshot 2019*. https://www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2019/progress-on-the-sdgs-the-gender-snapshot-2019-single-pages-en.pdf?la=en&vs=5813

United Nations Population Division. (2022). *Countries in the world by population*. https://www.worldometers.info/world-population/population-by-country/

Walker, S. H., & Davis, G. (2014). Knowledge and reported confidence of final year midwifery students regarding giving advice on contraception and sexual health. *Midwifery*, *30*(5), e169–e176. https://doi.org/10.1016/j.midw.2014.02.002

World Health Organization. (1995). *Achieving Reproductive Health for all : The Role of WHO*. https://apps.who.int/iris/bitstream/handle/10665/63717/WHO_FHE_95.6.pdf;jsessionid=E8C5352CD71A1595A2CBFB68B240B242?sequence=1

World Health Organization. (2001). *Definitions and indicators in family planning, maternal and child health and reproductive health used in the WHO regional office for Europe*. https://apps.who.int/iris/handle/10665/108284

World Health Organization. (2009). Human Resources for Health: Global standards for the initial education of professional nurses and midwives. In *World Health Organization 2009* (pp. 1–40). https://www.who.int/hrh/nursing_midwifery/hrh_global_standards_education.pdf

World Health Organization. (2013). *Transforming and scaling up health professionals' education and training*. WHO Library Cataloguing-in-Publication Data. https://apps.who.int/iris/bitstream/handle/10665/93635/9789241506502_eng.pdf;jsessionid

=4A5D3FF145FFC8F604D5DB981FDCFECF?sequence=1

World Health Organization. (2018). *Family Planning: A Global Handbook for Providers* (3rd ed.). https://www.fphandbook.org/sites/default/files/global-handbook-2018-full-web.pdf

World Health Organization. (2019). *Trends in maternal mortality 200 to 2017: Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division*. https://www.unfpa.org/sites/default/files/pub-pdf/Maternal_mortality_report.pdf

Yalahow, A., Hassan, M., & Foster, A. M. (2017). Training reproductive health professionals in a post-conflict environment : exploring medical, nursing, and midwifery education in Mogadishu, Somalia environment : exploring medical, nursing, and midwifery. *Reproductive Health Matters*, *8080*. https://doi.org/10.1080/09688080.2017.1405676

Chapter 2: Teaching Family Planning Methods in Nursing and Midwifery Education and Practice: A Scoping Review

Introduction

Unintended pregnancies remain a global public health issue. Worldwide, 74 million women living in low and middle-income countries (LMIC) have unintended pregnancies, which leads to 25 million unsafe abortions and 47000 maternal deaths every year (World Health Organization [WHO], 2019). Most of the women who experienced unintended pregnancy leading to abortion had discontinued family planning (FP) methods due to experiencing issues related to their use, such as adverse side effects, inconvenience of use, and health concerns (Bellizzi et al., 2020; WHO, 2019). These issues could be addressed through effective FP methods of counselling and support (WHO, 2019). FP is a key aspect of sexual and reproductive health (SRH). In particular, as early as 1994, the United Nations (UN) referred to reproductive health as a "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and its functions and processes" (1994). The sustainable development goals (SGD) elaborated by the UN (2019) make specific reference to FP in goal three ("ensure healthy lives and promote well-being for all ages") and goal five ("achieve gender equality and empower all women and girls") through the targets related to these SDGs that require the accessibility and improved FP uptake to be achieved by the year 2030. For example, numerous countries have vowed to invest in and improve SRH services, such as FP methods education and counselling, to achieve these goals with the aim of reducing maternal mortality rates to less than 70 per 100,000 live births and ensuring universal access to SRH services by 2030 (Dockalova et al., 2016).

Nurses and midwives play an essential role in the health care system, including the provision of FP services. Through education, having well-prepared nurses and midwives to provide care around SRH issues and FP methods, in particular, could help ensure quality FP methods education and resources were provided. Such preparation of health professionals may ultimately reduce unintended pregnancies along with associated health and social consequences. According to the (WHO, 2017; 1973), nurses and midwives can function as general practitioners either specifically in FP methods education, counselling, and resource provision or in other nursing and midwifery services where SRH services more broadly are carried out; as clinical specialists in procedures related to FP; as supervisors in nursing and midwifery aspects of FP; as educators of health care providers in the area of FP, and as researchers in the nursing and midwifery aspects of FP. At each level of engagement, nurses and midwives should provide SRH services, including FP methods, to the extent determined by their education and the nursing/midwifery regulations where they are practicing (WHO, 2017; 1973). A number of studies from various countries and contexts exist about education initiatives undertaken with clients about FP methods (Angeles et al., 2005; Bora et al., 2022; Williams et al., 2021), and such studies assume or note that health professionals providing such educational services to clients have received professional education, as students or health providers. However, what might client outcomes look like when health professionals have not been educated as students or in practice to be able to support clients to mobilize knowledge about FP methods to address their SRH needs? That concern provided the foundational impetus to carry out this scoping review and to understand what is being undertaken in education contexts for students and in practice for practicing nurses and midwives.

Research has shown a lack of consistent knowledge and skills among health professionals about FP methods, including among nurses and midwives, and these critical factors limit the quality of FP methods information that a woman (and partner) receives (Dehlendorf et al., 2010; Gupta et al., 2019; McCance & Cameron, 2014; Rupley et al., 2015). Furthermore, the results of studies about FP methods in pre-service nursing/midwifery education indicate that FP education is often incomplete, and students are left to graduate without the required knowledge and skills to provide quality services related to FP methods (Karvande et al., 2018; Muganyizi et al., 2014 Yalahow et al., 2017).

This paper describes a scoping review of research studies regarding FP education for nurse/midwifery students at the pre-service academic level and nurse/midwives who are in-service. The review also explored literature about students' and clinicians' reported knowledge, skills, and confidence for providing education and resources to clients about FP methods in practice settings. This scoping review aided in the development of a constructivist grounded theory study to explore nurse/midwife educators' understanding and enactment of teaching FP methods to students in theory and clinical contexts. The results of this scoping review study have implications for nursing and midwifery education to support faculty and curriculum development at the in-service stage and continuous professional development (CPD) for in-service nurses/midwives. Finally, the study results will inform future research to guide further the improvement of FP methods education in nursing and midwifery academic contexts and the quality of FP service provision in nursing and midwifery practice.

Purpose

The purpose of this scoping review was to identify and analyze: 1. the literature about nursing/midwifery students' education about FP methods, 2. nursing/midwifery students'

knowledge and skills about and confidence for providing information and FP resources to clients about FP methods, 3. nurses'/midwives' education about FP methods, and 4. nurses'/midwives' knowledge and skills about and confidence for providing information and resources to clients about FP methods. The review aims to uncover gaps in the literature around educational preparation about FP methods and the provision of FP services in practice.

Methods

Study Design

Following the methodological framework outlined by Arksey and O'Malley (2005), this scoping review identified and analyzed the existing literature related to FP in nursing and midwifery education and practice. The framework for the scoping review involves five stages: identifying the research question, identifying relevant studies, study selection, charting the data, and collating and reporting the results (Arksey & O'Malley, 2005). A scoping review framework helps the researcher to map the existing literature and evidence about a topic, clarify key concepts in the literature, scrutinize how studies were conducted on a given topic and identify knowledge gaps. It also helps answer a broad question and informs future research (Munn et al., 2018; Sutton et al., 2019; Tricco et al., 2018). A scoping review is a good fit for topics that have not been comprehensively reviewed (Peters et al., 2015). For this study, a scoping review was selected because it allowed the researcher to synthesize existing literature about FP methods in nursing and midwifery education with students and in practice with clinicians using findings from diverse study designs and methods (Munn et al., 2018).

Stage 1: Identifying the Research Questions

The review addressed the following questions:

1. What has been reported about education for FP methods for nurse/midwifery students in nursing and midwifery programs?
2. What has been reported about the impact of nurse/midwives' education for FP methods on practice?
3. What has been reported about nurse/midwifery students' knowledge, skills, and confidence in providing information and resources to clients about FP methods?
4. What has been reported about nurses'/midwives' knowledge, skills, and confidence in providing information and resources to clients about FP methods?

Stage 2: Identifying Relevant Studies

To retrieve relevant studies, a librarian from Western University worked with the research team to identify relevant databases, key search terms, and guidance for locating pertinent studies. The databases Medline, CINAHL, and Scopus, were searched. The search involved modifying search terms until the final terms to identify relevant studies were determined. The key terms used included: 1) family planning OR family planning services; birth control OR contraception 2) nursing Or nursing education OR education nursing OR nursing practice 3) midwifery OR midwifery education OR midwifery practice 4) nurse OR nurse-midwife 5) midwife 6) confidence 7) knowledge 8) skills. In addition, grey literature and reference lists of relevant articles were searched for further relevant studies.

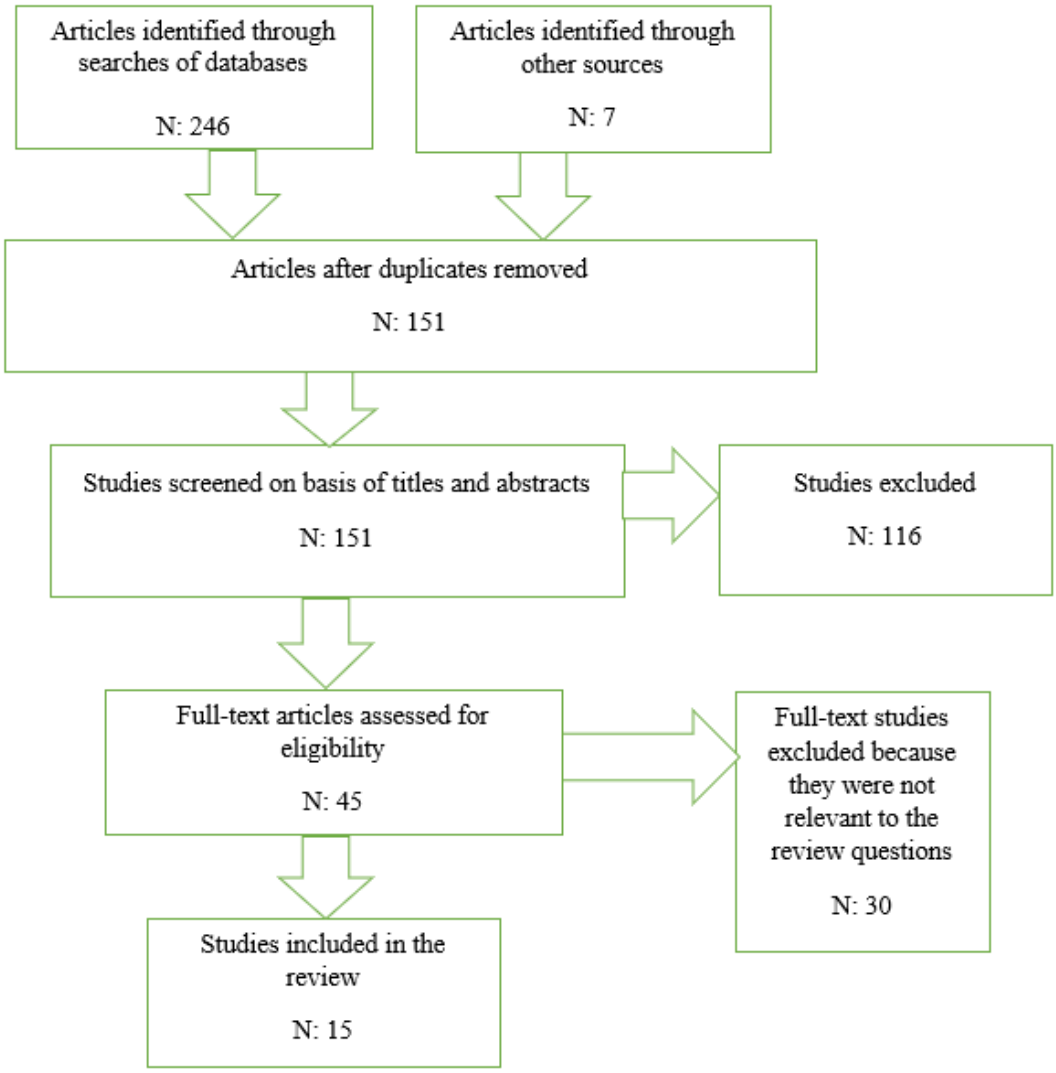
Stage 3: Study Selection

The search in the first stage yielded 253 studies. The researcher used Excel spreadsheets with the studies retrieved from databases to assess and eliminate duplicates. One hundred-two duplicates were excluded. Then, two reviewers (the Ph.D. student researcher and a nursing graduate student at Western who has experience in conducting scoping reviews) participated in

the screening phases to assess the titles and abstracts of 151 remaining articles against the inclusion and exclusion criteria and confirmed their eligibility for the scoping review. Ultimately, full-text articles were eligible for inclusion in the review if they were about FP services in nursing/midwifery education or practice; participants were nurse/midwife educators, nurse/midwife students, or practicing nurses/midwives; and if the literature was published in English from 2010 onwards.

Out of the 151 articles, 106 articles were excluded because their titles and/or abstracts did not specifically meet the inclusion criterion of being relevant to the scoping review purpose about FP in nursing and midwifery education and practice. The full text of the remaining 45 articles were assessed for relevance to the scoping review questions. An additional 30 of those 45 articles were excluded because the studies were not relevant to at least one of the review questions. The remaining 15 articles met the eligibility criteria, precisely aligned to the scoping review research questions, and were included in the review (See figure one).

Figure 1 Flow diagram indicating the search process



Stage 4: Charting of the Data

Table 1

Summary of Findings from Reviewed Articles

Authors	**Country**	**Aim**	**Design, Methods, and Measures**	**Sample and Sampling**	**Relevant Findings**
Muganyizi et al., 2014	Tanzania	Identify gaps in pre-service FP teaching and propose opportunities for improving the training	Mixed methods	35 pre-service schools of health providers, including 17 nursing schools 19 teachers of FP, including nurse/mid wife educators	FP teaching was classically theoretical, with only 23% of all the schools having systems in place to produce graduates who could skillfully provide FP methods
Zafar et al., 2019	Pakistan	Assess the effectiveness and acceptability of a competency-based onsite training post-partum FP (PPFP)	Observation-al mixed methods study	88 doctors and midwives	The training significantly improved provider knowledge, and skills were retained.
Muganyizi et al., 2018	Tanzania	To assess the rate of complications following immediate postpartum insertion of	Prospective cohort study	Women who underwent immediate postpartum IUD (PPIUD)	PPIUD insertion performed by midwives under the FIGO PPIUD program was safe and comparable to similar services reported in the literature.

		intrauterine devices (IUDs) by trained midwives		insertions provided by trained midwives	
Botfield et al. 2021	Australia	Explore midwives' contraceptive knowledge, views, and practices regarding midwifery-led contraception provision in the postpartum period	Survey	128 midwives	Most midwives provide some contraception information and believe this is an integral part of a midwife's role. Yet most have not undertaken formal training in FP methods.
Karvande et al., 2018	India	Evaluation of the FP education for auxiliary nurse midwives	Mixed methods study	Nineteen auxiliary nurse midwives (ANMs) and 31 users of FP methods	The FP education for ANMs was inadequate. The gaps in their knowledge and skills could be attributed to systemic issues such as quality of pre-service education, absence or poor implementation of in-service training, or individual issues such as incompetence or apathy towards service provision.

Baldani et al., 2018	Croatie	Assess the level of knowledge of midwives working in different clinical settings about oral emergency contraception	A cross-sectional web-based survey	225 midwives	There was an evident gap in the knowledge about the provision of emergency contraception.
Kolak et al., 2017	Sweden	Describe midwives' experiences of providing contraception counselling to immigrant women.	Qualitative study	Ten midwives	Midwives require knowledge and understanding of cultures and religions in order to provide contraception counselling to immigrant women
Mohamed et al., 2019	Ghana	Assess the knowledge, awareness, attitude, and use of emergency contraception (EC)	A cross-sectional study	191 female final year nursing and midwifery students	Most of the students demonstrated a positive attitude towards EC, but many of them believed EC encourages promiscuous sexual behaviour and that it is morally wrong to use EC.

Rupley et al., 2015	Ghana	Assess the knowledge, attitudes, and practices of maternal care providers regarding the provision of postpartum intrauterine contraceptive devices (IUDs)	A descriptive, cross-sectional study	91 maternity care providers	Few health care providers in maternal health care services felt confident in their ability to insert an IUD
Walker & Davis, 2015	UK	Explored the views of three cohorts of final-year midwifery students regarding their confidence in advising women on FP methods and sexual health in the postnatal period.	A mixed-method study	Three cohorts of final-year midwifery students	Students applied theoretical knowledge poorly in a practically oriented context, and most students limited information to clients in the form of general advice.

McCance & Cameron, 2013	UK	To explore midwives' experiences and views of giving postpartum contraceptive advice and of possible expansion of role to include the provision of long-acting reversible methods of contraception (LARC)	A qualitative study	Twelve midwives	Midwives confirmed that they all routinely give FP methods advice but that this was primarily cursory. They viewed this part of their job as of lesser importance and felt inadequately trained for providing education and resources about various FP methods in a more informed manner to clients.
Erfanian & Khadivzadeh, 2011	Iran	Assess midwifery students' skills in delivering intrauterine device (IUD) services using a clinical examination and their satisfaction with the Objective Structured Clinical Examination (OSCE)	Quantitative study	Sixty-two bachelor of science midwifery students	Students' skills in providing IUD services was lower than the expected level.

Botfield et al.2021	Australia	Determine the efficacy of FP implant training for nurses and consider the implications for clinical service delivery	Interventional study	Five nurses and five supervising doctors and nurses	After the training, all nurses self-reported feeling very confident in inserting an implant and a little confident in removing the implant.
Dana & Schaller, 2018	Global	Explore experiences, awareness, and lessons learned using the Training Resource Package (TRP) for FP methods	Mixed methods	216 informants: Nurses/ midwives and doctors	The TRP is a crucial global resource for countries to update FP methods guidelines and training. TRP has been used in 34 countries, mainly for in-service FP methods education.
Beeman 2010	Global	Review what is known about natural family planning (NFP) methods in health care professionals' education and practice	Narrative review	Not provided	Health care providers had insufficient knowledge of NFP. There was limited information about the inclusion of NFP in pre-service medical and nursing education.

Stage 5: Collating and Reporting the Results

The research questions provided a structure to guide the review of the 15 studies that remained after the screening process was completed. The reviewed articles focused on FP methods, knowledge and skills of students, nurses and midwives; three articles reviewed FP

education (training) that took place in nursing and midwifery education programs; four articles assessed in-service nurses' and midwives' knowledge, skills, and/or confidence in providing FP methods services (such as education and resources); and three articles addressed the impact of in-service education about FP methods in nursing and midwifery programs (See table 1). As such, using inductive content analysis as described by Elo and Kyngas (2008), the following categories were drawn from the reviewed articles: 1) Curriculum and resources: Influences on education about FP methods in pre-service nursing and midwifery programs; 2) Impact of FP education on nurses and midwives: Task shifting and opportunities for professional growth; 3) Limitations in students' understanding and provision of FP methods; 4) Knowledge and skills gap among nurses/midwives in providing FP services.

Category 1 Curriculum and Resources: Influences on Education about FP Methods in Pre-service Nursing and Midwifery Programs

Researchers have identified gaps that need to be addressed to strengthen society's SRH in general and FP methods education in particular (Cappiello et al., 2017; Hewitt & Cappiello, 2015; Muganyizi et al., 2014; Yalahow et al., 2017). For example, Muganyizi et al. (2014) conducted a multi-mixed method study in Tanzania to identify gaps in pre-service FP methods education and suggested opportunities for strengthening FP training in pre-service education for future health care providers. The study included 35 pre-service medical and nursing schools and 19 teachers of FP methods from those schools. The researchers conducted semi-structured interviews with teachers and analyzed 11 curricula and other relevant documents used in teaching FP methods at the participating schools. The suitability of the curricula to facilitate family planning training was assessed based on the following six criteria: 1) alignment of the inclusion of FP methods with the vision and mission of the school; 2) FP methods topics are

included in the curriculum; 3) the curriculum states the expected FP methods competence outcomes of the graduate; 4) the curriculum shows how the expected outcomes will be measured; 5) the program demonstrates the continuity in teaching from less to more complex competencies, and 6) exposure to all graduates on FP methods teaching. The findings indicated that only one curriculum out of the 11 assessed curricula met the criteria for suitability of FP methods education. The results also revealed that FP teaching was typically theoretical and thus, lacked a substantive clinical experiential component to learning. Teachers expressed concern with the lack of necessary FP methods teaching materials and inadequate clinical exposure of students to FP services. The researchers concluded that most schools preparing future health care providers, including nursing and midwifery students, were unable to produce competent FP methods providers and recommended strengthening pre-service FP education with more focus on application of theoretical knowledge via practical skills (Muganyizi et al., 2014).

A multi-stakeholder study was conducted in India to assess the FP education needs of auxiliary nurses/midwives (Karvande et al., 2018). The term auxiliary nurse/midwives relate to students in nursing or midwifery educational programs at the pre-service stage. The study involved interviews with 19 auxiliary nurses/midwives, 15 government officials and international development partners, structured observations at 17 health care facilities, a review of health information systems management, and interviews with 31 clients in FP services (Karvande et al., 2018). The study results indicated that auxiliary nurses/midwives (students) lacked knowledge about different FP methods, such as emergency contraception (EC) and fertility awareness-based methods (FABM). Auxiliary nurses/midwives also had limited counselling and routine assessment skills before inserting an IUD. Lack of or limited infrastructure further hampered the quality of FP services. The authors pointed out that the gaps

in auxiliary nurse/midwives' knowledge and skills could be attributed to systematic problems such as inadequate pre-service and in-service FP methods education (Karvande et al., 2018). The authors recommended a systematic effort to improve the quality of FP methods education for auxiliary nurse/midwives by adopting a mix of theory and practical education, a suitable duration of education, careful selection of FP methods educators, and a confidence-building and supportive teaching-learning approach to increase auxiliary nurses'/midwives' competency and confidence in providing FP methods services (Karvande et al., 2018).

Some studies reviewing the inclusion of SRH education, including FP, in pre-service nursing or midwifery education found that specific FP methods, such as FABM, were absent in some programs. Beeman (2010) conducted a narrative review of the literature over ten years, from 2000 to 2009, to assess if undergraduate and graduate nursing and medical programs teach FABM/natural family planning (NFP) methods. The results of this narrative review indicated a paucity of information regarding the inclusion of FABM/NFP methods in nursing and the pre-service medical education curriculum. Data were not available regarding the specific content, adequacy or depth of FABM/NFP instructions in either undergraduate or graduate nursing or medical programs (Beeman, 2010).

Several global FP methods educational tools and curricula such as the Knowledge for Health [K4Health] toolkit (United States Agency for International Development, n.d.), High Impact Practices in FP (Johns Hopkins University, n.d.), Medical Eligibility Criteria for FP (WHO, 2015), FP: A Global Handbook for Providers (WHO, 2018), and Training Resource Package (TRP) for FP have been developed by non-governmental organizations, and are available online, mainly through K4Health. However, there is little documentation on how

different countries, institutions, and organizations have used these tools to teach FP in pre-service and in-service education programs for health care providers, including nurses/midwives.

During this scoping review, only one study, described in the following paragraph below, was located that focused on standardized educational resources, such as TRP. A team of reproductive health and health systems experts from the Netherlands, United States, Tanzania, and Uganda, used a mixed-methods study design to conduct a status review on the global use of TRP in pre-service education and with nurses/midwives in-service (Dama & Schaefer, 2018). The purpose of this review was to document the awareness, experience, and lessons learned related to using the TRP by organizations providing FP methods education to students or health providers. Data collection strategies included global online surveys with 216 participants who knew about the TPR. The respondents who used the TRP were invited to participate in the TRP user survey, and 55 users of TRP, including 30 nurses/midwives, participated in the TRP user survey. Among the users of TRP, 34 were trainers of FP methods using TPR. The other source of data collection in this study were background documents review and a literature review.

TRP use among countries was comparatively low compared to the number of FP programs and pre-service and in-service education programs that were supposed to be using the TRP to develop FP curricula and deliver FP training. In various LMICs, a lack of resources was identified by trainers as the main challenge that limited the dissemination, promotion, and use of TRP. The modules and teaching tools were perceived as very useful by educators who were able to make use of the TRP. However, the interactive teaching techniques recommended for TRP were challenging to implement in many low-resource settings due to large class sizes and a shortage of FP methods resources and practice lab learning spaces. Participants also mentioned poor internet connection as a common reason for not using TRP in low-resource settings. The

majority of the educators who participated in the study and used TRP affirmed that the educational results indicated improved FP methods knowledge and skills among learners (Dama & Schaefer, 2018).

The small amount of literature located about FP methods and education in nursing and midwifery programs suggests that FP methods content is included in pre-service nursing/midwifery education (Karvande et al., 2018; Muganyizi et al., 2014). However, there is a paucity of information regarding what is included as FP methods in the curriculum and what influences the teaching of FP methods to future health care providers (Beeman, 2010). The literature also revealed that education about FP methods is more theoretical in some schools, and students have limited exposure to the practice context to bridge the theory-practice gap in providing care about FP methods to clients (Muganyizi et al., 2014). Lack of infrastructure and resources in LMIC settings have been identified as key elements that hinder teaching about FP methods at the pre-service stage of education (Karvande et al., 2018; Muganyizi et al., 2014). For example, although TRP-related resources are available online to teach FP methods in pre-service for students and in-service for healthcare providers, its use is limited due to a lack of internet connection, FP materials, and infrastructure (Dama & Schaefer, 2018).

Category 2 Impact of FP Education on Nurses and Midwives: Task Shifting and Opportunities for Professional Growth

Researchers have consistently recommended educational activities for both current and future healthcare providers to improve the quality of FP services they offer to clients (Baldani et al., 2018; Botfield, Wright, et al., 2021; Gupta et al., 2019; Kolak et al., 2017; Rupley et al., 2015; Simmons et al., 2018; Tshitenge et al., 2018). In the past decade, task sharing among health professionals to conduct certain procedures has become more pronounced and has been

reflected in the area of SRH services where nurses'/midwives' scope of practice has broadened. For instance, long-acting FP methods such as IUDs and implants were only accessible to clients through physicians in many countries. However, the WHO (2017) recommended task-sharing among health professionals to enable FP services to be more accessible. FP task-sharing enables additional healthcare providers, such as nurses/midwives and community health workers, to provide FP services after completing competency-based training (WHO, 2017). With the appropriate education, nurses and midwives can safely and effectively provide FP services about FABM, oral contraceptives, condoms, hormonal injectables, implants, and IUDs (WHO, 2017). Many countries have already opted for task-sharing, and nurses and midwives already provide counselling on long-acting FP methods: IUD and implants (Guilbert et al., 2013; Polus et al., 2015; Zafar et al., 2019). The advancement of task-sharing highlights the opportunities nurses/midwives can mobilize to support SRH. However, it is important to reiterate that health professional education continues to be a fundamental prerequisite requirement to enable SRH services to be provided by nurses/midwives in an informed and skilled manner.

The results of intervention studies designed to address knowledge deficits for FP methods among healthcare providers and that implement FP task-sharing practices indicate a positive change in knowledge, skills, attitudes and confidence among health providers after participating in educational activities (Botfield, Wright, et al., 2021; Karvande et al., 2018; Muganyizi et al., 2018; Zafar et al., 2019).

Zafar et al. (2019) conducted an observational, mixed-methods study in two phases with 88 midwives and doctors and 11 trainers to assess the effectiveness of an educational intervention about FP methods that used an anatomic model representing the uterus after birth which was developed to educate health care providers about IUD insertion (mama-U). The

purpose of the intervention was to expand access to postpartum family planning (PPFP) services by educating health professionals about FP methods, including postpartum intrauterine device (PPIUD) insertion (Zafar et al., 2019). The first phase was completed during PPIUP education sessions using the Mama-U model, which was held at various healthcare facilities for midwives and doctors in Pakistan. Two months later, the second phase was conducted during the post-educational intervention follow-up visits. The study involved interviews with 20 midwives and doctors who participated in the FP methods educational intervention with mama-U and also involved focus group discussion with 85 women who received a PPIUD from a provider involved in the educational intervention. The study's results showed that education significantly improved health care providers' knowledge and ability to provide PPIUD services. Midwives and doctors had comparable PPIUD insertion skills post-educational intervention. Zafar et al. (2019) concluded that the competence-based education with the Mama-U model could improve the quality of PPIUD counselling and PPIUD insertion services among health care providers and would also serve to extend PPFP/PPIUD service delivery by midwives and nurses as a means of task-sharing.

A prospective cohort study was conducted in Tanzania to assess the rate of complications among women clients following immediate PPIUD insertion provided by midwives who had completed education about FP counselling and provision of the PPIUD method. Before the education intervention, PPIUD was not part of the scope of practice for midwives in Tanzania (Muganyizi et al., 2018). The study sample involved 596 women who returned six weeks after PPIUD insertion for clinical follow-up. Complications were assessed based on the presence of uterine infection, IUD expulsion, medical removal of IUD, and method discontinuation. The results indicated that among 596 PPIUDs inserted by trained midwives, 43 (7.2 %) cases had

complications. Those complications included 16 (2.7%) uterine infections, 14 (2.3%) IUD expulsions, 26 (4.4%) cases of IUD removal, and 33 (5.5%) cases of method discontinuation. The authors concluded that considering that the midwives had no prior education or experience in providing IUD services as part of FP procedures, the reported cases of complications were few. This indicates that midwives successfully performed PPIUD insertion procedures after involvement in education, and the FP method of IUD-associated procedures reflected success in moving task-sharing forward in Tanzania (Muganyizi et al., 2018).

Botfield, Wright, et al. (2021) conducted a mixed-methods study in Australia to evaluate the effectiveness of education for nurses about increasing competency and confidence in performing FP implant procedures. Five nurses who participated in the Implanon NXT insertion and removal educational course completed a pre-educational intervention survey and a post-educational survey upon completion. Before completing the educational intervention, every participant was first required to pass a clinical competency assessment in providing Implanon NXT. One year after completing the education, a clinical data report provided extracted data on the number of implant insertions and removals each participant undertook over the previous 12 months. The findings indicated that all five nurses were competent across the various contraceptive implant learning outcomes after completing the Implanon NXT educational course (Botfield, Wright, et al., 2021). Although the sample size of the study was quite small, the results shed light on how education can effectively support nurses' knowledge and skills in a sustainable manner.

Overall, the literature located about nurses/midwives and education about FP methods demonstrated positive impacts on nurses'/midwives' knowledge and skills, which may ultimately transfer to providing a higher quality of care related to FP methods (Botfield, Wright, et al.,

2021; Muganyizi et al., 2018; Zafar et al., 2019). However, the located studies only focused on IUDs and implants. There is a large gap in the literature about the impact of education on nurses/midwives' abilities to provide FP services beyond one or two specific methods or that considers substantive education in counselling or how to contextualize services in partnership with clients to fits their needs in a culturally sensitive and equitable manner (Gaven et al., 2014; Bruce, 1990).

Category 3 Limitations in Students' Understanding and Provision of FP Methods

Educated nurses and midwives are crucial to improving SRH services, which can ultimately reduce the high rate of maternal morbidity and mortality caused by the consequences of unintended pregnancies, such as unsafe abortion and complications of pregnancies. However, researchers in the field of FP, an area of SRH, reported that medical, nursing, and midwifery education programs often fail to equip future health care providers with the required knowledge, skills, and confidence to offer quality FP services upon graduation (Gupta et al., 2019; Landy et al., 2013; Muganyizi et al., 2014). For example, Walker and Davis (2014) conducted a mixed-method study to explore the attitude and confidence of midwifery students for providing FP methods and sexual health advice to women during the postpartum period. Three cohorts of final-year midwifery students at a higher education institution in England participated in focus groups. They responded to a questionnaire and factual quiz about their confidence in providing FP and sexual health advice and what could be done to increase their confidence. The results indicated that the midwifery students' confidence varied in relation to the type of FP method. The factual quiz results highlighted students' limited advice to clients about FP methods to general information and did not adequately apply theoretical knowledge in specific FP contexts. The authors concluded that midwifery students needed more practical education about SRH in

general and FP methods in particular, and they recommended a more dedicated effort by mentors to help students feel confident in providing FP and sexual health advice to clients (Walker & Davis, 2014)

A qualitative descriptive study was conducted in Iran to assess the competence of midwifery students using the objective structured clinical evaluation (OSCE) process in relation to IUD services (Erfanian & Khadivzadeh, 2011). The study involved 62 midwifery students who participated in ten OSCE stations about IUDs. An OSCE station is an area where students or examinees are expected to perform tasks within a specified time and are evaluated against criteria related to a given clinical skill (Zayyan, 2011). In six stations, midwifery students performed IUD-related procedures or interacted with standard patients, and in the other four stations, they responded to IUD-related questions. Students were assessed on cognitive, interactive, and technical skills in those stations. The results indicated that the overall performance of 98.2% of students in relation to knowledge and skills about FP methods was poor, and students' skills in providing IUD services were lower than expected. The authors recommend that students should be required to complete an OSCE during FP methods classes to evaluate their abilities to provide IUD services to ensure students have mastered the related skills. The authors also recommended a workshop program on IUD for midwifery students.

Mohammed et al. (2019) conducted a cross-sectional study using survey methods in Ghana with 100 female final-year nursing students and 91 female final-year midwifery students to assess their knowledge, awareness, attitude, and use of the FP method of emergency contraception (EC). The results highlighted that 86% of the midwifery students reported that they were aware of the EC method, 80.10% correctly indicated the time to take emergency contraceptive pills, but only 45.5 % knew the appropriate time to use an IUD as an emergency

contraception method for FP. Regarding the participants' attitude toward EC, 38.74% mentioned that it is morally wrong to use EC, and 54.45% noted that EC use promotes promiscuity (Mohammed et al., 2019). The authors concluded that, although nurses and midwifery students were aware and knowledgeable about EC, the majority lacked details about the use of IUDs as EC. The nursing and midwifery curriculum should address EC extensively to demystify negative perceptions and attitudes towards EC and other forms of contraception and improve students' knowledge about EC (Mohammed et al., 2019).

The available literature on nursing/midwifery students' knowledge, skills and confidence in providing FP methods was very limited and fragmented. In particular, the few studies available for review did not comprehensively explore or examine students' FP knowledge, skills and confidence in providing FP methods education and resources. Given that an assumption and expectation is that FP methods are taught to students globally, the limited studies from various contexts made it challenging to note more detailed insights into the issues educators manage in teaching FP methods to nurse/midwifery students or interventions that have served to advance students' FP method knowledge confidence and skills. Of the available studies, a number were mainly focused on the topic of specific methods such as IUDs and implants (Erfanian & Khadivzadeh, 2011) and EC (Mohammed et al., 2019) and did not more fully explore students' knowledge or skills about a broader range of FP methods, or students' confidence in engaging in providing education and counselling to clients (Walker & Davis, 2014). Although there was a paucity of literature in this area, the pattern that was noted internationally was the serious issue of students' limited knowledge and the potential for a pattern to exist around negative attitudes toward some FP methods, such as EC (Mohammed et al., 2019).

To varying degrees, studies included in this review assessed students' cognitive knowledge, practical skills, and confidence to offer FP methods services without focusing on all the elements of quality care that may come under the umbrella of FP services from a global context. According to Bruce (1990), the framework of quality FP care that focuses on the client needs is characterized by six elements: client's right to choose FP methods; providing information to clients so that they can make informed decisions; technical competence of health care providers in providing different FP methods; interpersonal relations where providers treat all clients with dignity and respect; follow-up/continuity mechanisms, and an appropriate constellation of services where clients can receive the range of services they need. Quality FP services highlight the principles of quality care, such as safety, effectiveness, client-centred, accessibility, and equity (Gaven et al., 2014). No known studies were located that explored or assessed students' understanding of health equity, accessibility issues, client/person-centred care, or client safety in relation to FP methods.

Studies located for this scoping review were found to assess nurse/midwifery students and nurses/midwives on only two elements of quality FP care: providing FP information to clients and technical competence. There is a need for studies about the nurse/midwife students on other elements of quality FP services to understand how students and, ultimately, nurses and midwives in practice are prepared to offer quality FP services to clients. Furthermore, the current published studies did not consider how students' negative attitudes towards FP methods could influence the student's motivation to learn and gain the skills and confidence to offer different FP methods to clients. Studies to understand how educators' FP teaching practices and personal attitudes towards FP methods influence students' preparation to offer quality FP services would be important to move the knowledge base forward in this topic area. The issue of understanding

where potential stigmatizing attitudes are generated from and how they could permeate students' practice upon graduation is important to study further. Educators are key role models for students in both the classroom and practice context. If educators perpetuate a culture of stigma around FP methods or layering their own values onto the learning experience in a way that alters the curriculum, then that may be transposed to learners, which gets embedded into ways of being as health professionals in future practice with clients.

Category 4 Knowledge and Skills Gap Among Nurses/Midwives in Providing FP Services

Inadequate knowledge, skills, and confidence among nurses and midwives in providing FP services continue to be reported by researchers. Gupta et al. (2019) conducted a cross-sectional study in India with 81 medical interns who had completed the final exam of the bachelor of medicine and surgery program and 82 nurses with less than five years of experience to assess their knowledge and skills about FP services. The study results indicated that 60% of the interns and 48% of the nurses could list only five FP methods that could be provided to clients. Forty-three percent of interns and 69.5% of nurses were not confident in inserting an IUD, and among those who performed IUD insertion, 12.3% of interns and 18.3% of nurses failed to insert the IUD correctly. Only 12.3% of interns and 17.1 % of nurses reported performing IUD insertion during their medical and nursing education. The authors concluded that medical interns' and nurses' knowledge and skills to provide services about FP methods were lacking and that education about FP methods in medical and nursing programs was inadequate to provide quality FP services upon graduation. The researchers recommended improving the curriculum about FP methods in medical and nursing programs and emphasizing more effective and in-depth teaching of FP methods in pre-service and in-service medical and nursing education programs (Gupta et al., 2019).

Baldani et al. (2018) conducted a cross-sectional web-based survey with 225 midwives in Croatia to assess midwives' level of knowledge about oral emergency contraception (EC). The findings indicated a gap in midwives' knowledge regarding unintended pregnancies. Fifty-four percent of participants were unaware that sperm could subsist for up to 5 days in the female reproductive tract. The study results also showed a general gap in participants' knowledge of oral EC. Almost half of the participants (40%) incorrectly mentioned that oral EC was abortifacient and had a potential teratogenic effect on pregnancy (Baldani et al., 2018), while 55.75% of participants stated that oral EC promotes irresponsible sexual behaviour, and 53.98% responded that oral EC might predispose users to hormonal imbalance. Baldani et al. (2018) concluded that misconceptions about oral EC existed among midwives in Croatia. They recommended educational activities for pre-service and in-service midwifery programs to improve new graduate midwives' knowledge about EC (Baldani et al., 2018).

Rupley et al. (2015) conducted a cross-sectional study in Ghana with 39 physicians and 52 midwives who were practitioners in the areas of obstetrics and gynecology to assess the attitudes, knowledge and practices of maternity care providers in providing postpartum IUD to clients. The results showed that 77% of participants had participated in education about counselling clients about FP methods, and 60% of the midwives reported that they felt comfortable counselling clients about FP methods. However, 90% of participants mentioned that they rarely discuss IUDs in prenatal or postpartum care. Forty-four percent of physicians and 17% of midwives indicated that they never inserted an IUD (Rupley et al., 2015) and only 41% of physicians and 33% of midwives knew that it was safe to insert an IUD immediate postpartum. Forty-four percent of physicians and 48% of midwives would not recommend IUD use for nulliparous women, and 56% of physicians and 42% of midwives would not recommend IUD use in teenagers. Rupley et

al. (2015) concluded the maternity care providers' knowledge and skills about IUD insertion during the postpartum period were limited. Most maternity health care providers did not have updated information on IUD use. They recommended improving health care providers' knowledge and skills through strengthening pre-service and in-service education about FP methods (Rupley et al., 2015).

In Australia, Botfield et al. (2021) conducted a survey study with 128 midwives to explore midwives' knowledge, views, and practices, for providing FP methods information to clients during the postpartum period. The results indicated that most midwives (84%) agreed that FP methods information provided during the immediate postpartum period is essential to women. The majority (88%) believed that providing FP methods information to clients is always part of the midwifery role. However, only 14% of participants stated that they participated in formal education about FP methods. Participants indicated that they were used to and comfortable discussing the following methods with women: 80% Progestogen-only pills, 78% implants, 77%+- condoms, 69% IUD, 62% combined oral contraceptive pills, 45% lactation amenorrhea method, 45% tubal ligation, and 42% of participants indicated that they were familiar and comfortable discussing vasectomy with clients. However, the quality of FP methods information that midwives provided to clients was not assessed (Botfield et al., 2021). When asked the appropriate time to provide FP methods information to women, 66% of the participants stated at postnatal home visits, 62% mentioned during the immediate postpartum period, and 52% indicated at antenatal visits. Botfield et al. (2021) concluded that many midwives provide some degree of FP methods information to women. However, their knowledge about different FP methods was variable, and most of them declared that they had never participated in formal FP education. The authors suggested including education about counselling with clients about FP

methods in pre-service midwifery programs to equip midwife students with FP methods knowledge and skills before graduation (Botfield et al., 2021).

McCance and Cameron (2014) conducted a qualitative study in England with 12 midwives to explore their experiences and views on providing advice about FP methods to women in the post-partum stage and providing women with FP resources such as long-acting, reversible FP methods. The findings indicated that all midwives discussed FP methods with women in the postpartum period, as it was considered part of routine care before discharging women to the home. Most participants believed that providing FP methods information to women during antenatal visits would not benefit most women as they are more concerned with the actual pregnancy prenatally. Most participants stated that providing FP advice to women was a minor part of their role. It was described that they felt ill-equipped to teach FP methods to clients and that their limited FP methods knowledge hindered their practice (McCance & Cameron, 2014). Midwives in the study were concerned about taking a more significant role in teaching FP methods to women and providing long-acting FP methods, given their heavy workload. Education about FP methods and support for midwives were recommended to improve the FP services that midwives provide to clients (McCance & Cameron, 2014). Overall, it was noted that information about FP methods that midwives provided to clients was considered to be inconsistent (McCance & Cameron, 2014).

A qualitative study to describe midwives' experiences of providing counselling about FP methods to women was conducted in Sweden (Kolak et al., 2017) with ten midwives who practiced at midwife-led prenatal clinics in areas that were densely populated with people who had immigrated to Sweden. The participants noted that some counselling was challenging since cultural beliefs about FP methods differ between midwives and clients, as does how midwives

perceive clients' approach to obtaining and providing information. The findings indicated that midwives' limited knowledge and understanding of various women's cultures and religious beliefs affected counselling about FP methods with immigrant women (Kolak et al., 2017). The authors concluded that midwives require knowledge of women's cultural and religious beliefs towards FP methods to provide effective counselling about FP to immigrant women. They suggested that midwives would then be more prepared to know how to support a tailored approach to counselling about FP methods to individual clients' contexts and needs (Kolak et al., 2017).

The literature reviewed indicated inadequate knowledge, skills, and confidence among nurses and midwives to implement the components of quality services about FP methods (Kolak et al., 2017; McCance & Cameron, 2014) to provide FP services centred on the needs of the clients (Kolak et al., 2017), and to have the education and technical competence related to IUD and implant insertion and removal (Botfield, Tulloch, et al., 2021). There is a gap in the literature regarding the studies that assess nurse/midwives' ability to apply other components of quality FP services, such as equity and the implementation of the client's right to choose FP methods. Overall, the literature reviewed indicated a gap in FP methods education for nurses/midwives in both developed and developing countries.

Discussion

Upon reviewing the 15 studies included in this scoping review, we identified key gaps in the current literature about FP methods in pre-service nursing and midwifery education and practice. FP methods and related services have been studied in very limited ways and often de-contextualized to the life of clients and their needs. Most studies focused on IUDs and implant-related procedures and missed the broader picture of what quality FP services involve.

Additional studies about the broader educational aspects that ultimately influence the professional development of nurse/midwifery students and that impact nurses'/midwives' abilities to apply knowledge and skills to practice in the area of FP services related to various FP methods would inform professional understanding of the ways in which education may have a cascade effect on client outcomes.

Studies conducted in developed and developing countries indicated that nurse/midwives and students had limited knowledge and skills to offer quality FP services (Kolak et al., 2017; McCance & Cameron, 2014; Walker & Davis, 2014). Considering the framework of quality health care in FP services (Bruce, 1990; Jain et al., 1992), the recommendations for quality care in FP elaborated by the centers for disease control and prevention [CDC] (Gaven et al., 2014), and the significance of quality health care to clients and health care providers (Gaven et al., 2014; Tafese et al., 2013), the results of this scoping review highlight a serious need to focus on all the components of quality family planning services in the FP educational program for nurses and midwives. Quality care is defined as the extent to which health services are likely to increase patients' likelihood of obtaining desired health outcomes and are consistent with evidence-based professional knowledge (Gaven et al., 2014; Tafese et al., 2013; WHO, 2020). For clients, quality care refers to wait time, availability, privacy, information, and services they receive (Gaven et al., 2014; Tafese et al., 2013). For health care providers, quality care is associated with care outcome, safety, increased uptake of the services and reduction of morbidity and mortality (Gaven et al., 2014; Tafese et al., 2013). In the context of FP services, quality FP services are centred on the clients and emphasize the choice of methods by the clients, provision of FP information given to clients, provider's technical skills, interpersonal relations, follow-up mechanisms, and the appropriate constellation of the FP services (Bruce, 1990; Jain et al., 1992)

are paramount if the issues of unintended pregnancies, MMR, and unmet needs continue to be addressed in a meaningful way in the future.

McLemore and Levi (2017) pointed out that the provision of quality SRH services by nurses/midwives, including services focused on FP methods, depends on the SRH/FP content and clinical experience they had during their pre-service nursing and midwifery education. Emphasizing the principles of quality care in FP services at the pre-service stage would be an appropriate opportunity to prepare future nurses/midwives to offer quality FP services. Evidence shows that preparing future nurses/midwives to offer quality SRH/FP services that satisfy clients would further improve access to SRH/FP services (McLemore & Levi, 2017; Phillips & Sandhu, 2018). Client satisfaction with FP services has been associated with continuing use of the chosen FP methods (Bintabara et al., 2018; Kriel et al., 2021; Jain et al., 1992). Clients' satisfaction with FP services is significantly influenced by provider-client interactions, in which the provider explains both the necessary information about the methods and their side effects and answers clients' questions. Privacy, reasonable waiting time, availability of a range of FP methods, user autonomy in choosing a FP method, and provider skills to offer the chosen methods are also significant elements identified to be associated with clients' satisfaction with FP services (Chavane et al., 2017; Wogu et al., 2020).

Even though policies, available resources, and management of the health care facility and programs about FP methods are essential in determining the quality of FP services that clients receive, health care providers play a paramount role in providing quality FP services. Thus, equipping students with the required knowledge, skills, confidence, and attitudes to offer quality services is very crucial to reassure clients' satisfaction with services about FP methods. Inadequate healthcare providers' FP knowledge, skills, and confidence to offer quality FP

services have been identified as one of the leading causes of FP discontinuation and unmet FP needs (Bellizzi et al., 2020; Bereku et al., 2022).

Inadequate knowledge, skills and confidence to offer quality services about FP methods (Baldani et al., 2018; Botfield et al., 2021; Gupta et al., 2019; Rupley et al., 2015) identified in the present scoping review indicate a serious and ongoing theory-practice gap experienced by nurse/midwife students and nurses/midwives in practice. Kerthu and Nuuyoma (2019) define the theory-practice gap as "a discrepancy found between what students learn in the formal classroom settings and what they experience in clinical settings" (p. 21). In nursing and midwifery literature, the concept of theory practice-gap is explained as distancing theoretical knowledge (evidence-based knowledge) from actual practice (Saifan et al., 2021). It reflects the separation between what should be done (theory or evidence-based knowledge) and the actual practice (Greenway et al., 2019).

Inadequacy of pre-service nursing/midwifery education for FP methods seriously limits the acquisition of practical skills and the preparation of students to deal with clinical realities and is a primary challenge associated with the theory-practice gap (Abu Salah et al., 2018). The results of different studies included in this scoping review identified FP education inadequacy in pre-service nursing/midwifery programs, confirming the FP theory-practice gap in nursing and midwifery. For example, there is a lack of inclusion of some specific FP methods in the FP Curriculum (Beeman, 2010), and insufficient practical education for FP methods (Erfanian & Khadivzadeh, 2011; Walker & Davis, 2014) persists. A theory-practice gap is not limited to nursing and midwifery students; it also affects newly graduated and experienced nurses and midwives who may lack proficiency in their clinical skills and critical thinking abilities around FP methods (Greenway et al., 2019; Scully, 2011; Voldbjerg et al., 2016).

Lack of clinical skills and critical thinking proficiency among nurse/midwife students and staff means that they cannot offer quality health care services to improve clients' health outcomes and lives. On the side of clients specifically in the field of FP, lack of proficiency among healthcare providers has been identified to be associated with client dis-satisfaction, incorrect use of chosen FP methods leading to client harm, and limited use of FP services; thus, perpetuating the issue of unmet FP needs among clients who wished to stop or prevent pregnancy (Machiyama et al., 2017). Limited education of health professionals can translate to a lack of knowledge about FP methods for clients, resulting in unintended pregnancies. The social and economic cascade effect of such outcomes can impact clients in the present, as well as the child. Limited uptake of FP can result in economic burdens carried by the woman, stigma from family and society, limitations/loss of education opportunities, and self-stigmatization. It is proposed that such outcomes can have a generational effect on women in certain contexts and cultures.

In this scoping review, the results of studies conducted in LMIC settings revealed specific gaps related to those settings that might be associated with poor integration of theory into practice while providing FP services among nurse/midwife students and graduates from those schools. For example, lack of or insufficient resources and infrastructure required to teach FP effectively and more time allocated to theory than practice were specific causes of ineffective FP teaching (Muganyizi et al., 2014; Karvande et al., 2018). Salifu et al. (2019) found that limited resources, such as lack of equipment and supplies needed in the simulation/skills-lab and clinical environments to demonstrate the procedures effectively, hampered the ability of students, educators, and health professional staff to promote theory-practice integration. Thus, such situations risk an ongoing lack of quality care for clients. Women who have poor experiences with health professionals around FP methods might be less motivated to access other health-

related services of concern over similar poor experiences with health professionals. It is possible that women might choose to avoid antenatal or postpartum care because of challenging experiences they have had with nurse/midwife students and nurses/midwives who might not have respected client choice, who didn't engage in client/person-centred care, who did not communicate with empathy and compassion, and who did not support the education of the client because of the health providers' own limited knowledge and skills.

Schools of nursing and midwifery need to review the FP curriculum structure and content to ensure that educators have the time and space in the program to support students' professional development in a way that includes the appropriate amount of human, technical, and environmental resources. Government agencies need to partner with academic and clinical practice site administrators to invest in faculty development initiatives about FP methods and also in pre-service education for FP methods because such courses/modules in programs need to be funded and budgeted for in a way that enables proper infrastructure and resources to exist to result in positive learning outcomes for FP services.

Experts in nursing education propose strategies that could help bridge the theory-practice gap in pre-service education and increase the students' confidence in providing quality health care services, including FP services. For example, simulation education could be delivered before students enter clinical placement, which can bridge the theory-practice gap as it allows faculty to teach using scenarios that reflect the realities of clinical placements in a safe learning environment (Abu Salah et al., 2018; Brown, 2018). Simulation promotes students' use of critical reasoning, decision-making, problem-solving, and self-reflection (Brown, 2018; Wall, Andrus, & Morrison, 2014), the positive outcomes of which can be applied in practice.

The results of a qualitative study conducted in Iran indicated three strategies to bridge the theory-practice gap (Shoghi et al., 2019). The participants included nurse scholars from academic settings and experienced nurses from the clinical setting. The first strategy identified was developing and expanding a context-based curriculum that includes cultural-based content (Shoghi et al., 2019). A context-based curriculum that recognizes the influence of the local context and culture, including traditional spiritual or religious beliefs and practices, could effectively help equip students with the required FP methods, knowledge, skills, and attitude that will help them offer quality FP services upon graduation (Karvande et al., 2018; Liu, Hebert, Hasselbacher, & Stulberg, 2019). A context-based curriculum with a culturally sensitive approach that centers on health equity as a core principle could help students bridge the FP theory-practice gap as the students will learn FP content that reflects the FP service needs of clients in the surrounding communities and clinical settings. The curriculum needs to be consistently evaluated and clearly enacted, so a 'hidden' curriculum that lacks such a health equity approach is not permitted to flourish and become a way of being among educators or learners.

The second strategy suggested involved an interactive collaboration between nurse clinicians and nurse educators to cultivate a positive approach to FP services and a positive attitude to work together in harmony and empower each other (Shoghi et al., 2019). Such collaborative efforts could help bridge the theory-practice gap in nursing/midwifery education by jointly developing curricular content and creating a supportive and conducive clinical learning and teaching environment for students where they will be empowered and encouraged to integrate theory into practice. This can ultimately positively influence clients during interactions with students or health professionals about FP methods.

Tiwaken et al. (2015) highlighted that a supportive clinical learning environment is crucial for developing nursing knowledge, skills and attitude. Tanriverdi et al. (2017) conducted a study to identify the solutions recommended by students to bridge the gaps between the knowledge and skills learned at school and the current practice in clinical settings. The findings of that study indicated that students highlighted the interactive collaboration between nurse educators and staff nurses in clinical settings as an essential strategy that could help them apply their knowledge and skills in clinical placement (Tanriverdi et al., 2017).

Nursing students who participated in studies to understand their experiences in clinical placements reported that staff nurses/midwives in clinical settings were not always supportive when students were trying to apply the correct procedures to patients (Salifu et al., 2019; Tiwaken et al., 2015). Similarly, in a study that aimed to synthesize the available literature about the challenges faced by nurse/midwife students in clinical placements, Panda et al. (2021) found that the attitude of nurses and midwives in clinical settings significantly affected clinical learning for students. Interactive collaboration between nurse/midwife educators from nursing and midwifery schools and staff nurses/midwives from different healthcare facilities is beneficial in facilitating students' ability to familiarize themselves with the clinical settings and gain the aptitude to offer quality health care services, including FP services, thus bridging the existing theory-practice gap.

The third strategy to bridge the theory-practice gap was designing and implementing clinical guidelines based on the local situation (Shoghi et al., 2019). This strategy could be beneficial and applicable in FP teaching in nursing and midwifery education. Through well-designed clinical guidelines, nurse/midwife educators could have a common language and shared expectations with students and clinical nurses (Shoghi et al., 2019). Clinical guidelines that reflect the reality

in clinical settings could help bridge the theory-practice gaps that sometimes are related to the incongruity of presupposed 'ideal' theories and procedures from other contexts that are not applicable in the local contextual realities.

This scoping review highlighted that education in FP methods improved nurses' and midwives' knowledge, skills and confidence in providing FP services (Botfield, Wright, et al., 2021; Muganyizi et al., 2014; Zafar et al., 2019). It is recommended that nurses/midwives are provided with opportunities to engage in continuous professional development (CPD) about FP services to ensure they have the required up-to-date knowledge and skills to provide quality FP care. It is recommended that nurse and midwife educators who teach FP in pre-service nursing and midwifery programs also participate in regular FP training to update their FP knowledge and skills in order to teach current and relevant information to students from a health equity lens.

The FP curriculum in pre-service nursing and midwifery education should align with the current recommendations by the WHO (2017) regarding task-sharing of FP services to improve access to such services. The FP curriculum in different nursing/midwifery schools could be revised to include all the required FP content and competencies that graduate nurses and midwives will need to provide quality FP services confidently. Nurses and midwives who are well equipped to offer quality FP services will significantly contribute to the achievement of the sustainable millennium development goals 3 (ensure healthy lives and promote well-being for all at all ages) and 5 (achieve gender equality and empower all girls) (UN, 2019b). Most research about FP methods in undergraduate nursing/midwifery schools focused on gaps in the curriculum and students' competencies. There is a serious paucity of known studies about the ways in which educators are prepared to teach and enact teaching of FP methods in general and in LMIC in particular. There is a need for research about the knowledge, skills, attitudes, and confidence of

nurse and midwife educators in teaching FP methods to students. If educators are key actors in students' professional development, then it is important to be aware of how they are educated and how they prepare the nurses/midwives of the future to be skilled practitioners in the area of SRH/FP. In Rwanda, no study has been conducted to understand the processes underpinning the teaching of FP methods in pre-service nursing/midwifery education programs. The sensitive nature of FP methods in relation to cultures, norms, and beliefs in Rwandese society may influence the teaching of FP methods, which ultimately influences students' learning. There is a need for research on the barriers and facilitators that impact the nurse/midwife educators' ability to translate their FP knowledge and skills into their teaching practice. Otherwise, the factors that influence the teaching moment are left unspoken about and, when undiscovered, can remain close to potential change.

Concluding Remarks

This scoping review revealed that education about FP methods is included at the pre-service stage. However, there are gaps in the curriculum about FP methods in some nursing/midwifery programs that need to be addressed to produce graduates who can provide quality FP services. Those gaps include a lack of evidence for including all FP methods in the curriculum and limited time for clinical practice in FP services. Furthermore, inadequate resources and infrastructure in low-resource settings further limit FP teaching quality in pre-service nursing and midwifery education and lead to theory-practice gaps in FP services.

The reported FP knowledge, skills, and confidence of nurse/midwife students and practicing nurses/midwives from both high-resource and low-resource settings in providing FP services varied according to the FP method. In general, nurse/midwife students and staff poorly applied FP evidence-based knowledge into practice. All researchers who conducted studies about

nursing/midwifery students' and staff's knowledge, skills and confidence in providing FP services recommended improving FP education by providing more details about different FP methods and more practice opportunities in pre-service and in-service education.

There is a gap in knowledge about nurse/midwife educators' ability to teach and facilitate FP learning to nurse/midwife students. If nurse/midwife educators' ability to teach FP in pre-service nursing and midwifery education is explored further, there will be a better understanding of effective strategies to improve the quality of FP methods education in pre-service and in-service context to equip nurses/midwives with the required knowledge, skills and attitude to offer quality FP services.

References

Abu Salah, A., Aljerjawy, M., & Salama, A. (2018). The Gap between Theory and Practice in the Nursing Education: the Role of Clinical Setting. *JOJ Nursing & Health Care*, *7*(2), 1–6. https://doi.org/10.19080/jojnhc.2018.07.555707

Angeles, G., Guilkey, D. K., & Mroz, T. A. (2005). The effects of education and family planning programs on fertility in Indonesia. *Economic Development and Cultural Change*, *54*(1), 165–201. https://doi.org/10.1086/431261

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology: Theory and Practice*, *8*(1), 19–32. https://doi.org/10.1080/1364557032000119616

Baldani, D. P., Škrgatić, L., Goldštajn, M. Š., Goluža, T., Flisar, I., & Pagon, S. (2018). Questionnaire on the midwives' knowledge about oral emergency contraception. *Acta Clinica Croatica*, *57*(1), 134–140. https://doi.org/10.20471/acc.2018.57.01.17

Beeman, P. C. (2010). Natural Family Planning in Education and Practice. *The Linacre Quarterly*, *77*(4), 399–414. https://doi.org/10.1179/002436310803888592

Bellizzi, S., Mannava, P., Nagai, M., & Sobel, H. L. (2020). Reasons for discontinuation of contraception among women with a current unintended pregnancy in 36 low and middle-income countries. *Contraception*, *101*(1), 26–33. https://doi.org/10.1016/j.contraception.2019.09.006

Bereku, T., Habtu, Y., Abreham, B., Ayele, M., & Eliso, M. (2022). Magnitude and factors for method discontinuation and switching among long-acting reversible contraceptive users in health facilities of Southern Ethiopia. *Reproductive Health*, *19*(1), 1–10. https://doi.org/10.1186/s12978-022-01357-2

Bintabara, D., Ntwenya, J., Maro, I. I., Kibusi, S., Gunda, D. W., & Mpondo, B. C. T. (2018). Client satisfaction with family planning services in the area of high unmet need: Evidence from Tanzania Service Provision Assessment Survey, 2014-2015. In *Reproductive Health* (Vol. 15, Issue 1). https://doi.org/10.1186/s12978-018-0566-8

Bora, J. K., Saikia, N., Kebede, E. B., & Lutz, W. (2022). Revisiting the causes of fertility decline in Bangladesh: the relative importance of female education and family planning programs. *Asian Population Studies*, *January* 1–24. https://doi.org/10.1080/17441730.2022.2028253

Botfield, J. R., Tulloch, M., Contziu, H., Phipps, H., Bateson, D., Wright, S. M., McGeechan, K., & Black, K. I. (2021). Contraception provision in the postpartum period: Knowledge, views and practices of midwives. *Women and Birth*, *34*(1), e1–e6. https://doi.org/10.1016/j.wombi.2020.07.013

Botfield, J. R., Wright, S. M., Fenwick, S. E., & Cheng, Y. (2021). Training nurses in contraceptive implant procedures: implications for practice in Australia. *Collegian*, *28*(1), 114–120. https://doi.org/10.1016/j.colegn.2020.04.005

Brown, J. E. (2018). Graduate Nurse's Perspective of Simulation to Address the Theory-Practice Gap in Nursing. In *Graduate Nurse's Perspective Of Simulation To Address The Theory-Practice Gap In Nursing*. http://search.ebscohost.com/login.aspx?direct=true&db=rzh&AN=131799037&site=ehost-live

Bruce, J. (1990). Bruce, Judith. *Studies in Family Planning*, *21*(2), 61–91. https://www.popcouncil.org/uploads/pdfs/councilarticles/sfp/SFP212Bruce.pdf

Cappiello, J., Coplon, L., & Carpenter, H. (2017). Systematic Review of Sexual and

Reproductive Health Care Content in Nursing Curricula. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, *46*(5), e157–e167. https://doi.org/10.1016/j.jogn.2017.04.132

Chavane, L., Dgedge, M., Bailey, P., Loquiha, O., Aerts, M., & Temmerman, M. (2017). Assessing women's satisfaction with family planning services in Mozambique. *Journal of Family Planning and Reproductive Health Care*, *43*(3), 222–228. https://doi.org/10.1136/jfprhc-2015-101190

Dama, A., & Schaefer, L. (2018). *Training Resource Package for Family Planning (TRP) Status review: Learning from experiences in the field*. https://hrh2030program.org/wp-content/uploads/2018/08/1.4-TRP-Status-Report-Final-WITH-Annexes.pdf

Dehlendorf, C., Levy, K., Ruskin, R., & Steinauer, J. (2010). Health care providers' knowledge about contraceptive evidence: a barrier to quality family planning care? *Contraception*, *81*(4), 292–298. https://doi.org/10.1016/j.contraception.2009.11.006

Dockalova, B., Lau, K., Barclay, H., & Marshall, A. (2016). Sustainable Development Goals and Family Planning 2020. In *International Planned Parenthood Federation* (pp. 1–12). https://www.ippf.org/sites/default/files/2016-11/SDG and FP2020.pdf

Elo, S., & Kyngas, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, *62*(1), 107–115. https://doi.org/10.1111/j.1365-2648.2007.04569.x

Erfanian, F., & Khadivzadeh, T. (2011). Evaluation of midwifery students' competency in providing intrauterine device services using the objective structured clinical examination. *Iranian Journal of Nursing and Midwifery Research*, *16*(3), 191–196. http://www.ncbi.nlm.nih.gov/pubmed/22224105%0Ahttp://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC3249797

Gaven, L., Moskosky, S., Carter, M., Curtis, K., Glass, E., Goodfrey, E., Marcell, A., Mautone-

Smith, N., Karen, P., Tepper, N., & Zapata, L. (2014). *Providing quality family planning services: Recommendations of CDC and the U.S. Office of Population Affairs: Vol. MMWR 63* (Issue 4). https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6304a1.htm

Greenway, K., Butt, G., & Walthall, H. (2019). What is a theory-practice gap? An exploration of the concept. *Nurse Education in Practice*, *34*(November), 1–6. https://doi.org/10.1016/j.nepr.2018.10.005

Guilbert, E. R., Robitaille, J., Guilbert, A. C., & Morin, D. (2013). Challenges of implementing task-shifting in contraceptive care - An experience in Quebec, Canada. *Contraception*, *88*(5), 587–590. https://doi.org/10.1016/j.contraception.2013.07.004

Gupta, M., Verma, M., Kaur, K., Iyengar, K., Singh, T., & Singh, A. (2019). Competency assessment of the medical interns and nurses and documenting prevailing practices to provide family planning services in teaching hospitals in three states of India. *PLoS ONE*, *14*(11), 1–25. https://doi.org/10.1371/journal.pone.0211168

Hewitt, C., & Cappiello, J. (2015). Essential Competencies in Nursing Education for Prevention and Care Related to Unintended Pregnancy. *Journal of Obstetric Gynecologic and Neonatal Nursing*, *44*(1), 69–76. https://doi.org/10.1111/1552-6909.12525

Jain, A., Bruce, J., & Mensch, B. (1992). Setting standards of quality in family planning programs. *Studies in Family Planning*, *23*(6), 392–395. https://doi.org/10.2307/1966897

Karvande, S., Sonawane, D., Samal, J., & Mistry, N. (2018). Family planning training needs of auxiliary nurse midwives in Jharkhand, India: Lessons from an assessment. *National Medical Journal of India*, *31*(2), 73–78. https://doi.org/10.4103/0970-258X.253164

Kerthu, H. S., & Nuuyoma, V. (2019). Theory-practice gap: Challenges experienced by nursing students at the satellite campus of a higher education institution in Namibia. *International*

Journal of Higher Education, *8*(5), 21–28. https://doi.org/10.5430/ijhe.v8n5p21

Kolak, M., Jensen, C., & Johansson, M. (2017). Midwives' experiences of providing contraception counselling to immigrant women. *Sexual and Reproductive Healthcare*, *12*, 100–106. https://doi.org/10.1016/j.srhc.2017.04.002

Kriel, Y., Milford, C., Cordero, J. P., Suleman, F., Steyn, P. S., & Smit, J. A. (2021). Quality of care in public sector family planning services in KwaZulu-Natal, South Africa: a qualitative evaluation from community and health care provider perspectives. *BMC Health Services Research*, *21*(1), 1–16. https://doi.org/10.1186/s12913-021-07247-w

Landy, U., Blodgett, M., & Darney, P. (2013). Medical education and family planning: Developing future leaders and improving global health. *International Journal of Gynecology and Obstetrics*, *121*(SUPPL1), 25–28. https://doi.org/10.1016/j.ijgo.2013.02.006

Machiyama, K., Casterline, J. B., Mumah, J. N., Huda, F. A., Obare, F., Odwe, G., Kabiru, C. W., Yeasmin, S., & Cleland, J. (2017). Reasons for unmet need for family planning, with attention to the measurement of fertility preferences: protocol for a multi-site cohort study. *Reproductive Health*, *14*(1), 23. https://doi.org/10.1186/s12978-016-0268-z

McCance, K., & Cameron, S. (2014). Midwives' experiences and views of giving postpartum contraceptive advice and providing long-acting reversible contraception: A qualitative study. *Journal of Family Planning and Reproductive Health Care*, *40*(3), 177–183. https://doi.org/10.1136/jfprhc-2013-100770

McLemore, M. R., & Levi, A. J. (2017). Expanding Access to Sexual and Reproductive Health Services Through Nursing Education. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, *46*(5), e149–e156. https://doi.org/10.1016/j.jogn.2017.02.004

Mohammed, S., Abdulai, A.-M., & Iddrisu, O. A. (2019). Pre-service knowledge, perception, and use of emergency contraception among future healthcare providers in northern Ghana. *Contraception and Reproductive Medicine*, *4*(1), 1–7. https://doi.org/10.1186/s40834-018-0082-9

Muganyizi, P. S., Ishengoma, J., Kanama, J., Kikumbih, N., Mwanga, F., Killian, R., & Mcginn, E. (2014). An analysis of pre-service family planning teaching in clinical and nursing education in Tanzania. *BMC Medical Education*, *14*(1), 1–9. https://doi.org/10.1186/1472-6920-14-142

Muganyizi, P. S., Kimario, G., Ponsian, P., Howard, K., Sethi, M., & Makins, A. (2018). Clinical outcomes of postpartum intrauterine devices inserted by midwives in Tanzania. *International Journal of Gynecology and Obstetrics*, *143*, 38–42. https://doi.org/10.1002/ijgo.12603

Munn, Z., Peters, M., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, *18*, 143. https://doi.org/10.1186/s12874-018-0611-x

Panda, S., Dash, M., John, J., Rath, K., Debata, A., Swain, D., Mohanty, K., & Eustace-Cook, J. (2021). Challenges faced by student nurses and midwives in the clinical learning environment – A systematic review and meta-synthesis. *Nurse Education Today*, *101*(February), 104875. https://doi.org/10.1016/j.nedt.2021.104875

Peters, M. D. J., Godfrey, C. M., Khalil, H., McInerney, P., Parker, D., & Soares, C. B. (2015). Guidance for conducting systematic scoping reviews. *International Journal of Evidence-Based Healthcare*, *13*(3), 141–146. https://doi.org/10.1097/XEB.0000000000000050

Phillips, J., & Sandhu, P. (2018). Barriers to implementation of long-acting reversible contraception : A systematic review. *Journal of the American Association of Nurse Practitioners*, *30*(4), 236–243. https://pdfs.semanticscholar.org/2693/410207bf300f5118688349956a8d86d8efba.pdf

Polus, S., Lewin, S., Glenton, C., Lerberg, P. M., Rehfuess, E., & Gülmezoglu, A. M. (2015). Optimizing the delivery of contraceptives in low- and middle-income countries through task shifting: A systematic review of effectiveness and safety. *Reproductive Health*, *12*(1), 1–13. https://doi.org/10.1186/s12978-015-0002-2

Rupley, D. M., Morhe, E. S. K., Moyer, C. A., & Dalton, V. K. (2015). Maternity care provider knowledge, attitudes, and practices regarding the provision of postpartum intrauterine contraceptive devices at a tertiary center in Ghana. *International Journal of Gynecology and Obstetrics*, *128*(2), 137–140. https://doi.org/10.1016/j.ijgo.2014.09.010

Saifan, A., Devadas, B., Daradkeh, F., Abdel-Fattah, H., Aljabery, M., & Michael, L. M. (2021). Solutions to bridge the theory-practice gap in nursing education in the UAE: a qualitative study. *BMC Medical Education*, *21*(1), 1–11. https://doi.org/10.1186/s12909-021-02919-x

Salifu, D. A., Gross, J., Salifu, M. A., & Ninnoni, J. P. K. (2019). Experiences and perceptions of the theory-practice gap in nursing in a resource-constrained setting: A qualitative descriptive study. *Nursing Open*, *6*(1), 72–83. https://doi.org/10.1002/nop2.188

Scully, N. J. (2011). The theory-practice gap and skill acquisition: An issue for nursing education. *Collegian*, *18*(2), 93–98. https://doi.org/10.1016/j.colegn.2010.04.002

Shoghi, M., Sajadi, M., Oskuie, F., Dehnad, A., & Borimnejad, L. (2019). Strategies for bridging the theory-practice gap from the perspective of nursing experts. *Heliyon*, *5*(9), e02503. https://doi.org/10.1016/j.heliyon.2019.e02503

Simmons, K. B., Zapata, L., & Curtis, K. M. (2018). Health Care Provider Perceptions of the Safety of IUDs for Women with HIV. *Perspectives on Sexual and Reproductive Health*, *50*(2), 67–73. https://doi.org/10.1363/psrh.12056

Sutton, A., Clowes, M., Preston, L., & Booth, A. (2019). Meeting the review family: exploring review types and associated information retrieval requirements. *Health Information and Libraries Journal*, *36*(3), 202–222. https://doi.org/10.1111/hir.12276

Tafese, F., Woldie, M., & Megerssa, B. (2013). Quality of family planning services in primary health centers of Jimma Zone, Southwest Ethiopia. *Ethiopian Journal of Health Sciences*, *23*(3), 245–254. https://doi.org/10.4314/ejhs.v23i3.7

Tanriverdi, G., Ozyazicioglu, N., Atay, S., Sivrikaya, S. K., Gursoy, M. Y., & Cetin, A. (2017). The Recommended Solutions of Nursing Students to Bridge the Gap between the School and Practice Areas. *International Journal of Caring Sciences*, *10*(1), 199–208. http://login.ezproxy.ub.unimaas.nl/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=cin20&AN=123010450&site=ehost-live&scope=site

Tiwaken, S. U., Caranto, L. C., & Jose David, J. T. (2015). The Real World: Lived Experiences of Student Nurses during Clinical Practice. *International Journal of Nursing Science*, *5*(2), 6675. https://doi.org/10.5923/j.nursing.20150502.05

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., … Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, *169*(7), 467–473. https://doi.org/10.7326/M18-0850

Tshitenge, S. T., Nlisi, K., Setlhare, V., & Ogundipe, R. (2018). Knowledge, attitudes and

practice of healthcare providers regarding contraceptive use in adolescence in Mahalapye, Botswana. *South African Family Practice*, *60*(6), 181–186. https://doi.org/10.1080/20786190.2018.1501239

United Nations. (2019a). *Family Planning and the 2030 Agenda for Sustainable Development: Data Booklet*. https://www.un.org/en/development/desa/population/publications/pdf/family/familyPlanning_DataBooklet_2019.pdf

United Nations. (2019b). *Progress on the Sustainable Development Goals: The gender snapshot 2019*. https://www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2019/progress-on-the-sdgs-the-gender-snapshot-2019-single-pages-en.pdf?la=en&vs=5813

Voldbjerg, S. L., Grønkjær, M., Sørensen, E. E., & Hall, E. O. C. (2016). Newly graduated nurses' use of knowledge sources: a meta-ethnography. *Journal of Advanced Nursing*, *72*(8), 1751–1765. https://doi.org/10.1111/jan.12914

Walker, S. H., & Davis, G. (2014). Knowledge and reported confidence of final year midwifery students regarding giving advice on contraception and sexual health. *Midwifery*, *30*(5), e169–e176. https://doi.org/10.1016/j.midw.2014.02.002

Wall, P., Andrus, P. M., & Morrison, P. (2014). Bridging the Theory Practice Gap through Clinical Simulations in a Nursing UnderGraduate Degree Program in Australia. *International Journal of Learning, Teaching and Educational Research*, *8*(1), 127–135.

Williams, P., Santos, N., Azman-Firdaus, H., Musange, S., Walker, D., Sayinzoga, F., & Chen, Y. H. (2021). Predictors of postpartum family planning in Rwanda: the influence of male involvement and healthcare experience. *BMC Women's Health*, *21*(1), 1–6.

https://doi.org/10.1186/s12905-021-01253-0

Wogu, D., Lolaso, T., & Meskele, M. (2020). Client Satisfaction with Family Planning Services and Associated Factors in Tembaro District, Southern Ethiopia . *Open Access Journal of Contraception, Volume 11*, 69–76. https://doi.org/10.2147/oajc.s258831

World Health Organization. (2015). *Medical eligibility criteria for contraceptive use* (Fifth edition; p. 267). https://www.who.int/reproductivehealth/publications/family_planning/MEC-5/en/

World Health Organization. (2017). *Task sharing to improve access to Family Planning / Contraception*. http://apps.who.int/iris/bitstream/handle/10665/259633/WHO-RHR-17.20-eng.pdf;jsessionid=F8EC7ABE0219996CACF5751313C08F53?sequence=1

World Health Organization. (2018). *Family Planning: A Global Handbook for Providers* (3rd ed.). https://www.fphandbook.org/sites/default/files/global-handbook-2018-full-web.pdf

World Health Organization. (2019). *High rates of unintended pregnancies linked to gaps in family planning services: New WHO study*. https://www.who.int/news/item/25-10-2019-high-rates-of-unintended-pregnancies-linked-to-gaps-in-family-planning-services-new-who-study

World Health Organization. (2020). *Quality health services*. Fact Sheets. https://www.who.int/news-room/fact-sheets/detail/quality-health-services

Yalahow, A., Hassan, M., & Foster, A. M. (2017). Training reproductive health professionals in a post-conflict environment : exploring medical, nursing, and midwifery education in Mogadishu, Somalia environment : exploring medical, nursing, and midwifery. *Reproductive Health Matters*, *8080*. https://doi.org/10.1080/09688080.2017.1405676

Zafar, Z., Habib, H., Kols, A., Assad, F., Lu, E. R., & Schuster, A. (2019). Reinvigorating

postpartum intrauterine contraceptive device use in Pakistan: An observational assessment of competency-based training of health providers using low-cost simulation models. *BMC Medical Education*, *19*(1), 1–10. https://doi.org/10.1186/s12909-019-1683-y

Zayyan, M. (2011). Objectif structured clinical examination: The assessment of choice. *Oman Medical Journal*, *26*(4), 219–222. https://doi.org/10.5001/omj.2011.55

Chapter 3 Teaching Family Planning in Nursing and Midwifery Schools: A Constructivist Grounded Theory Study

Background and Significance

Family Planning (FP) helps individuals and couples attain the desired number of children at a desired and planned time (Agbeno et al., 2021; World Health Organization [WHO], 2014). According to the United Nations [UN] (1968) and WHO (2014), individuals and couples have a fundamental human right to decide freely and responsibly the spacing and number of their children. Therefore, they have the right to adequate health education, counselling, and resources related to FP methods (UN, 1968; WHO, 2014). FP is an essential intervention to reduce unintended pregnancies, abortion, and maternal and child mortality rates (Li et al., 2019). It is estimated that FP can reduce 64% of abortions, 44% of maternal deaths, and 21% of infant deaths (Ahmed et al., 2012; Starbird et al., 2016).

FP is a multi-sectoral intervention to accelerate progress in gender equality and empowerment, improve maternal, newborn, child and adolescent health, and shape economic development (Starbird et al., 2016). According to the UN (2019), FP is essential to achieving important sustainable development goals (SDGs), specifically SDG 3: Ensure healthy lives and promote wellbeing for all at all ages, and SDG 5: Achieve gender equality and empower all women and girls (UN, 2019). To achieve the 2030 agenda for SDGs (UN, 2015), many countries, including Rwanda, are committed to improving FP access and the quality of FP services for women and families (Dockalova et al., 2016; Ministry of Health [MoH], 2019).

Nurses and midwives form the cornerstone of the health care system, they account for 50% of the global health workforce (WHO, 2020), and they are in a good position to provide FP services to the public (McCance & Cameron, 2014; Mugore et al., 2018). However, various

scholars in the field of FP have identified that nurses and midwives often lack the necessary knowledge and skills to effectively provide FP services to women and partners (Daniele et al., 2017; Tshitenge et al., 2018; Walker & Davis, 2014).

In Rwanda, factors such as lack of knowledge, attitude, skills, and confidence in providing FP services among health care providers have been identified as barriers to the accessible and effective use of FP services (Brunie et al., 2013; Schwandt et al., 2018). One of the adopted strategies to improve FP services in Rwanda is increasing health care providers' knowledge and skills in FP counselling and management of side effects through in-service FP education (MoH, 2018). In some low and middle-income countries (LMIC), including Rwanda, efforts in improving FP services have been directed to in-service education through the educational development of health care providers. Due to high turnover among healthcare providers and the inability to reach all healthcare providers in need of FP education, the results of those educational programs are not always sustainable (Berdzuli et al., 2009; Muganyizi et al., 2014).

Strengthening FP education in pre-service contexts would be the best strategy to improve FP services in LMIC, as equipping nurse/midwife students with the required foundational FP knowledge and skills would enable them to offer quality FP services upon graduation. Although continuous professional development (CPD) is necessary for nurses/midwives to refresh their knowledge and skills and learn new and updated knowledge related to their professions (Gray, Rowe, & Barnes, 2014; Katsikitis et al., 2013), those who graduate without foundational FP knowledge and skills create an additional need for institutions to provide ongoing in-service FP education. In many LMICs, resource constraints limit CPD opportunities. Thus, improving FP knowledge, skills, attitudes, and confidence in pre-service nursing/midwifery education

programs would increase the number of health care providers who can offer quality FP services upon graduation, which may reframe in-service budgets to focus on shorter refresher CPD offerings and may assist in mitigating the issue of turnover among trained health care providers in this field (Berdzuli et al., 2009; Mugore et al., 2018).

Research about FP education in nursing/midwifery programs has focused on structural issues in this topic area in regards to variabilities in curricular content (Karvande et al., 2018; Muganyizi et al., 2014) and availability of resources, which ultimately impact students' professional development in providing FP services to clients (Erfanian & Khadivzadeh, 2011; Mohammed et al., 2019; Walker & Davis, 2014). Further, there was a large gap in the research literature about nurse/midwife educators' experience of teaching FP in pre-service nursing/midwifery education to facilitate FP learning for nurse/midwife students. The limited amount of literature located about this topic attended to students' or clinicians' experiences and did not explore how teachers influence education in the area of FP. This study bridges that gap in the literature, and a substantive theory is presented that describes the process nurse/midwife educators enact when teaching FP in nursing and midwifery programs in Rwanda. This study added new insights about nurse/midwife educators' knowledge, attitude, values, and beliefs towards FP methods in Rwanda that impact their ability to teach FP methods in pre-service nursing and midwifery education. The findings of this study could guide the development of effective strategies to improve nurse/midwife expertise in teaching FP methods to ultimately enhance in-service nursing and midwifery education and clinical practice.

Purpose of the Study

The purpose of this study was to explore nurse/midwife educators' understanding and enactment of teaching FP methods in nursing and midwifery education programs in Rwanda. In

particular, the aim of this study was to generate a substantive theory that describes how nurse/midwife educators enact teaching of FP methods with nursing/midwifery students and what influences that process.

Research Questions

1. What are nurse/midwife educators' perceptions of teaching FP to nurse/midwife students?
2. What is nurse/midwife educators' knowledge about teaching FP methods?
3. How do nurse/midwife educators engage in teaching FP methods with nurse/midwife students?
4. What are the facilitators and barriers that impact the process of teaching FP in pre-service nursing and midwifery education in Rwanda?

Methodology

This study was guided by constructivist grounded theory methodology as proposed by Charmaz (Charmaz, 2006; 2014), using qualitative methods for data analysis. Grounded theory (GT) is a suitable methodology when there is insufficient theory to explain insight into the phenomenon under study (Allan, 2003; Bluff, 2005; Charmaz, 2008; Charmaz, 2014). GT has a specific history that has evolved in different directions resulting in three prevailing approaches: Glaserian grounded theory (GGT), Straussian grounded theory (SGT), and constructivist grounded theory (CGT). Each of these approaches shares the same roots and several similar methodological strategies. For example, data collection and analysis co-occur under the specific techniques of theoretical sampling, coding, constant comparison, and memo writing (Charmaz, 2014; Kenny & Fourie, 2014). However, they are differentiated by their philosophical underpinnings and approach to the research process (Kenny & Fourie, 2015; Rieger, 2019). "The

GGT is imbued with positivist/post-positivist assumptions, SGT has evolved from a post-positivist position towards a constructivist view, and CGT is based on constructivist ideas" (Rieger, 2019, p 9).

GGT is based on an objectivist epistemology that assumes that the researcher is detached from the phenomenon under study (Charmaz, 2008); Rieger, 2019). Glaser (1992) highlights that GT is a methodology of discovery where the theory emerges from the objective data. To align with the tenets of objectivism, the initial research questions are not necessary, and the literature review should be delayed preventing the researcher from developing preconceived ideas that could lead to unwanted researcher influence (Kenny & Fourie, 2015; Rieger, 2019).

Strauss and Corbin (1990) modified the initial version of GT (Glaser & Strauss, 1967) and designed a systematic coding structure to create rather than to discover the theory (Kenny & Fourie, 2015). Both Glaser and Charmaz have critiqued Strauss and Corbin's coding structure to be complicated and prescriptive (Kenny & Fourie, 2015). Glaser argued that the complicated coding structure in SGT leads the researcher to force the data into preconceived concepts to coerce theory development (Glaser, 1992). In contrast to GGT, in SGT, the researcher has an interpretive role, and the researcher's perspectives are considered helpful to the research process rather than restrictive during data collection and analysis. Furthermore, the literature can be used to stimulate reflection, and the research questions should be stated before initiating the research (Rieger, 2019).

According to Charmaz (2017), CGT is similar to GGT and SGT in that it shares the basic principles of GT, which are, explain a process, use inductive logic, engage in an iterative process of analysis, use of constant comparative methods, theoretical sampling, memo writing, and development of a substantive theory. However, CGT does not subscribe to the positivist or post-

positivist assumptions of the earlier versions. In contrast to GGT and SGT, CGT is based on a relativist ontology that acknowledges reality as a social construction and subjective epistemology that assumes that researchers are not separate from the research (Charmaz, 2006; 2014). In CGT, the researcher is a co-creator of knowledge and influences the research process throughout data collection, during interactions with participants, and when engaged in data analysis. The researcher's experiences are beneficial throughout the process as they help the researcher make consistent and ongoing subjective interpretations of the data (Higginbottom & Lauridsen, 2014). Charmaz (2009) argued that knowledge creation depends on the researcher's perspectives, privileges, positions, and geographical location. CGT data analysis is similar to that of GGT as it highlights initial, focused, and theoretical coding while having less prescriptive research procedures than SGT (Rieger, 2019).

The constructivist approach was chosen for this study based on its flexible analytic procedures and practice that promote the researcher's reflexivity (Charmaz, 2006). CGT was the best fit for this study to generate a substantive theory to explore nurse/midwife educators' understanding of FP methods and their enactment of teaching FP methods in pre-service nursing/midwifery education. Constructivist grounded theorists attempt to understand and describe both the stated and the silent meaning and actions of individuals in everyday life experiences. Furthermore, a constructivist grounded theorist attempts to uncover and describe participants' meaning and actions within broader social beliefs (Charmaz, 2014). CGT helped the researcher move beyond merely identifying the facilitators and barriers that impacted educators' teaching FP in academic settings to uncover and explain nurse/midwife educators' meaning and actions related to teaching FP in pre-service nursing/midwifery education in the cultural context

of Rwandese society. CGT also helped the researcher integrate subjective experiences with social conditions in data analysis (Charmaz, 2014).

Setting

This study was conducted in six schools of nursing/ midwifery in Rwanda (five private schools and one public school). In the nursing and midwifery school curricula, the modules of reproductive health or women's health that contains the unit or topic of family planning are taught in both the A1 programs and A0 programs of nursing and midwifery. In Rwanda, there are two pathways of nursing and midwifery education. The A1 nursing or midwifery program is a three-year diploma-level program offered by higher learning institutions, and the A0 program is a four-year university-level program leading to a bachelor of sciences degree (Mukamana et al., 2015, Uwizeye et al., 2018).

Sample and Sampling

Twenty-five nurse/midwife educators participated in this study. Inclusion criteria included nurse/midwife educators from the schools of nursing and midwifery who had been engaged in FP methods teaching activities in pre-service nursing/midwifery education in Rwanda for at least one year. The educators also needed to be willing to participate in an audio-recorded individual interview. Nurses and midwives who met inclusion criteria but were on leave from work during the study period were excluded from study participation.

Purposive sampling was initially used to recruit participants, followed by theoretical sampling (Charmaz, 2014). Purposive sampling is a suitable strategy for qualitative research where the researcher deliberately chooses participants based on their qualities of being knowledgeable or experienced on the subject under study (Charmaz 2006; 2014; Etikan, 201).

The average sample size for GT studies is 25, but it is recommended to plan for 25 to 30 participants (Dworkin, 2012; Thomson, 2011). Thus, 25-30 nurse/midwife educators were sought to participate in the study, recognizing that more participants might be needed to reach theoretical saturation. According to Charmaz (2014), theoretical saturation is reached when the categories are well defined and supplementary data does not provide new insights. To thoroughly saturate the properties of each major category, theoretical sampling, as described by Charmaz (2014), was conducted. Theoretical sampling includes gathering enough information about a category to determine that no new information is being reported through the analysis, and the category is believed to be comprehensively described (Charmaz, 2014). The information the researcher looks for through theoretical sampling and how to conduct it depends on its purpose (Charmaz, 2004). Theoretical sampling for this study included conducting follow-up interviews with enrolled study participants and subsequent interviews with new participants. The iterative process of CGT brings the researcher back to the participants who have already been interviewed or includes new lines of inquiry that reflect the developing analysis in subsequent interviews with new participants (Charmaz, 2014). When the researcher was constructing the categories and found them incomplete or needing more clarity, they went back to enrolled participants (follow-up interviews) or included new questions in subsequent interviews to seek further data to answer the emerging categories-related questions. Theoretical saturation was reached after the analysis of 29 individual interviews with 25 participants.

Recruitment

After receiving ethics approval to conduct this research from the Western University Research Ethics Board and the University of Rwanda Institutional Review Board, permission to initiate the study was requested from the Deans or Directors of the nursing/midwifery schools in

Rwanda. Upon their approval, the graduate student researcher (GSR) sent an email script (See Appendix F) with an attachment of the letter of information (LOI) and consent form (See Appendices C and D) to the Deans or Directors of nursing/midwifery schools to be forwarded to nurse/midwife educators of their respective schools to inform them about the study. The LOI included the study purpose, study-related details, and contact information of the study principal investigators (PI) and GSR. Nurse/midwife educators who were interested in participating in the study contacted the GSR directly by email or telephone. When contacted by potential participants, the GSR answered any study-related questions they had about the study. The GSR subsequently determined if they met the study's inclusion criteria and, if they were, inquired if they were interested in participating in the study. If so, individual interview dates and times were arranged with potential participants.

Data Collection

The primary source of data collection was individual, in-depth, semi-structured interviews. The participants signed and emailed a consent form to the GSR's email address before starting the interview. Due to the COVID-19 global pandemic circumstances and public health restrictions, the GSR conducted all interviews remotely via Zoom™. The interviews were scheduled on a date and time convenient for participants and the study interviewer. Interviews were conducted based on the participant’s preference of Kinyarwanda or English and lasted between 45-90 minutes. Interviews were audio-recorded with the participant's consent and transcribed verbatim by research assistants who had completed their master’s degree and had knowledge and experience in research using qualitative methods. Relevant documents related to FP education, such as the curriculum, nursing/ midwifery procedures checklists, and clinical performance logbooks, were retrieved and analyzed as supplemental sources of data.

An interview guide with open-ended questions designed to address the purpose of the study and research questions was used (see Appendix H). According to Charmaz (2006; 2014), interviews for CGT focus on participants' views, meaning, and definitions. Therefore, to align with Charmaz (2006; 2014), the researcher started the interviews by inviting participants to share their thoughts with a broad, open-ended question. For example, the first question for all nurse/midwife educators was: "Tell me about your experience of teaching FP." Probing questions and reflecting techniques (Charmaz, 2014) were used to help participants articulate their thoughts and share deeper meanings in their responses. For example, when the interviewer noted beliefs and feelings in participants' responses, probing questions such as "What do you believe could be done? Or What would you like to be done? Do you mean that…? …. given your beliefs about…how did that influence your teaching of FP methods?

Based on the principles of theoretical sampling (Charmaz, 2014), follow-up interviews with participants, and subsequent interviews with additional participants were conducted to help develop the properties of the emerging categories and demonstrate links among categories. The interview guide was revised to include focused questions based on analysis, and literature was sought to further develop the emerging categories (Charmaz, 2014). As recommended by Charmaz (2014), immediately after the interviews, the interviewer used field notes to record non-verbal observations, including the general impressions of the conversation. Initial thoughts or the researcher's interpretation and meaning of the data were written in memos.

Participants completed a demographic tool before the beginning of the interview to record age, gender, level of education, credentials, professional experience, religion, and if they participated in FP training organized and sponsored by the Training, Support and Access Model (TSAM) in Rwanda project (See appendix G). The TSAM project was an international

development partnership project funded by Global Affairs Canada that aimed to improve Rwanda's maternal, newborn, and child health (MNCH). Its members worked in partnership with different schools of nursing and midwifery in Rwanda to strengthen the quality of pre-service education and in-service education (TSAM for MNCH in Rwanda, 2019). The demographic data helped to describe the study sample and enhance the interpretation of the results. Data collection and analysis co-occurred as a component of GT methodology (Bluff, 2005; Charmaz, 2006; 2014; Kolb, 2012; Rieger, 2019; Strauss & Corbin, 1990; Tie et al., 2019).

Data Analysis

The data were managed using NVivo software, version 12. Coding and comparative methods (Kolb, 2012) were used to analyze data and develop categories. According to Charmaz (2014), coding in CGT is an essential part of data analysis and an essential link between collecting data and developing the theory. For this study, the researcher used initial coding, focused coding, modified axial coding methods, and theoretical coding of CGT, as described by Charmaz (2014). Prior to engaging in the analysis process, the interviews conducted in Kinyarwanda were first transcribed in Kinyarwanda and then translated into English by the researcher's assistant, and the researcher reassured the translation accuracy by listening to the audio-recordings of interviews, reviewing the Kinyarwanda translation, and comparing those to the data transcribed in English.

Initial Coding

The researcher first read each transcript while listening to the audio recording to determine the accuracy and completeness of the transcript. The researcher then read the entire transcript to get a sense of what was said, after which she started initial coding, line-by-line. Charmaz (2014) advises researchers to focus on actions and processes embedded in the data and

use gerunds when assigning labels to the lines of the transcripts. This type of coding helps to define implicit meaning and actions. For example, when the researcher initially coded about teaching FP procedures, the words such as *using an equipped skills lab, demonstrating the procedure*, and *helping the student perform the procedure* were used. During the initial coding, the researcher categorized segments of data with a name that summarized and accounted for each piece of data, as suggested by Charmaz (2006; 2014).

Constant comparative methods helped the researcher compare data to find similarities and differences. The constant comparative method is an iterative process that refers to "comparing data with data, data with code, code with code, code with category, the category with category, and category with the concept" (Charmaz, 2014, p 342). The initial coding phase helped the researcher construct codes and group them into categories later.

Focused Coding

Focused coding followed the initial coding process. The goal of focused coding is to determine the adequacy and strength of initial codes. According to Charmaz (2006; 2014), the researcher compares data on a more abstract level. The researcher interacted with the data fragments at this phase to generate a more abstract code that explained many previous codes. She raised the analytic level of codes and subsequently compared them with data to check how and to what extent they fitted other data. According to Charmaz (2014), initial and focused coding helps the researcher construct codes and develop them into categories that crystallize participants' experiences. During the focused coding phase, the researcher began developing a framework or a diagram that interpreted what was happening in the data (Charmaz, 2014).

Axial Coding

Axial coding is an intermediate phase between focused and theoretical coding that adds insight and structure to the categories (Strauss & Corbin, 1990). However, Charmaz (2014) cautions researchers using CGT that axial coding might be complicated and recommends a modified strategy. Therefore, for this study, the researcher used the modified strategy of axial coding proposed by Charmaz (2014), which involves comparing data with data of the same kind of experiences or events and re-examining the data coded during the initial coding to develop sub-categories and to make a connection between categories. This phase helped the researcher to show the links between categories (Charmaz, 2014).

Theoretical Coding

The last level of coding in CGT studies is theoretical coding (Charmaz, 2014). Theoretical coding encompasses "selecting the central or core category, systematically relating it to other categories, validating those relationships and filling in categories that needed further refinement and development" (Strauss & Corbin, 1990, p 116). Theoretical coding helped the researcher refine the final categories and relate them to each other in the emerging theory (Charmaz, 2014; Kolb, 2012). Constant comparison processes involved comparing new data and previous data until theoretical saturation was reached (Charmaz, 2014). This approach revealed the core category that unified the other conceptual categories of teaching FP in pre-service nursing/midwifery education. During this phase, analysis of memos and the use of constant comparative methods helped the researcher further elaborate the explanatory diagram showing the connection between categories and the core category, which resulted in the substantive theory describing how nurse/midwife educators enacted the teaching of FP methods into nursing/midwifery programs.

Memo-Writing

Memo-writing guided the process of coding and the development of categories. According to Charmaz (2014), "Memo-writing is the pivotal intermediate step between data collection and writing drafts of papers" (p. 162). It is the methodological link through which the researcher transforms data into theory. The memos help the researcher think about the data and discover his/her ideas about them. It also encourages the researcher to compare codes and data and define links between them (Charmaz, 2014). Memo-writing helped the researcher to reflect on what was happening in the data and her assumptions. In CGT, memos are written in informal, unofficial language for personal use (Charmaz, 2014). For this study, the researcher engaged in memo-writing at the early stage of data collection and analysis (early memos) by writing her initial thoughts and feelings. Memos were also written at the later stage of data analysis (advanced memos). Charmaz (2014) indicated that they were more extensive than the earlier memos to conceptualize substantive and theoretical codes and categories further as they integrated the ideas of the earlier memos.

Theoretical Sensitivity and Reflexivity

Charmaz (2014) advises researchers to develop theoretical sensitivity to bring analytic precision to their study. Theoretical sensitivity is the researcher's ability to understand and give meaning to the data from the phenomena under study using abstract terms (Charmaz, 2014). In addition to the immersion in the data, engaging in the literature from the beginning of the study is an important source of theoretical sensitivity (Charmaz, 2014). Throughout this study, literature was sourced as a way of theoretical sampling and enhancing theoretical sensitivity. A review of relevant literature helped the researcher understand the data and distinguish what was pertinent from what was not pertinent (Charmaz 2014).

The creation of knowledge is not neutral; and instead, it is influenced by the pre-existing knowledge, experiences, conditions, and the context of both the researcher and the participants (Charmaz, 2009). Thus, during data analysis, the knowledge and professional experiences of the researcher and their supervisors were used to increase theoretical sensitivity. The regular discussion of the data during supervisory committee meetings helped the researcher to understand more about the meaning of the data in the context of teaching FP methods in pre-service nursing and midwifery education. However, reflexivity was used to avoid bias or force the data into preconceived concepts based on these experiences. Researchers using CGT are instructed to be reflexive to avoid imposing preconceived ideas on the data (Charmaz 2014).

Reflexivity is "a process of thoughtful and conscious awareness of the researcher in the research process" (Engward & Davis, 2015, p.1532). It involves transparency in decision-making in the research process. According to Charmaz (2017), reflexivity in CGT is a methodological self-consciousness that requires the researchers to examine their positions, privileges and priorities and assess how they influence the research process and the relationship with the research participants. The researcher was conscious that what they heard and observed during the data collection and subsequent analysis probably related to their past personal and professional experiences. Thus, to minimize bias and avoid forcing preconceived ideas on the data, the researcher reflected on their meaning of the phenomenon. For example, the researcher wrote down their experience teaching a unit of FP methods, and during data analysis, the researcher compared their experience and the participants' experience. Always, the researcher focused on participants’ experiences and was mindful of representing participants' voices. Regular discussion between the researcher and the dissertation supervisors also helped the researcher be

more reflexive throughout this research study, as our discussion focused on what participants said and the meaning of the data.

Authenticity

To assure the quality of this proposed study, the criteria for CGT, namely, credibility, originality, resonance, and usefulness, were used, as per Charmaz (2006; 2014). Credibility was achieved by collecting rich data through in-depth interviews using open-ended questions. Theoretical sampling helped to collect adequate data until the point of theoretical saturation. Investigator triangulation was used, and the researcher and their supervisors coded some data independently and then compared and contrasted their coding. The results from this proposed study are presented along with a discussion section providing associations between the argument, the gathered data, data analysis, and the literature (Charmaz, 2014). Credibility was also ensured through reflexivity during the research process. According to Charmaz (2014), researchers are part of the world they study and construct their grounded theories through their "past, and present involvement and interactions with people, perspectives, and research practices" (p.17). Thus, the researcher identified her preconceptions and took a reflexive stance to avoid uncounted influences in every aspect of the research process (Charmaz, 2014). Throughout the process of this proposed study, the researcher wrote reflective notes to elucidate her thoughts.

Originality was addressed through generating new insights and concepts about teaching FP education in pre-service nursing/midwifery programs by outlining the theoretical significance of this study. Originality was also ensured by identifying how the theory created from the data challenged, extended or refined existing ideas, concepts and practices (Charmaz, 2014). To the best of the researcher's knowledge, no studies have been conducted to explore how nurse/ midwife educators teach FP to nurse/midwife students in Rwanda or what factors influence the

teaching process. The findings from this study contributed to a new body of knowledge in education about FP methods in nursing/midwifery pre-service programs by illuminating the factors that limit nurse/midwife educators' ability to teach FP.

Resonance was established by ensuring that the emerging categories portrayed the fulness of the nurse/midwife educators' experiences of teaching FP methods and ensuring that the emerging substantive theory made sense to the participants (Charmaz, 2014). Member checking was used to explore how well the participants agreed with the data and emerging categories. During the interview, the researcher asked for clarifications and paraphrased the responses and comments of participants as needed to make sure that she understood what the participants were describing. Rich, in-depth descriptions of the theory are provided so readers might identify with it.

Usefulness was achieved by providing interpretations that people can use, and by contributing to the updated knowledge about FP methods education, further substantive research areas were also discussed (Charmaz, 2014). The implications section was written to inform nursing education, practice, research, and policy in the field of FP.

Ethical Consideration

This research began after receiving ethical approval from Western University, Health Sciences, Research Ethics Board. Also, an ethical research permit was obtained from the Institutional Review Board (IRB) at the College of Medicine and Health Sciences, the University of Rwanda (See appendix I). Before initiating the interview, the researcher ensured that she received a signed consent form from each participant. Participants were able to ask questions before starting the interview. Participants were informed that confidentiality and anonymity were

preserved, and their identities would not be disclosed in any publications or presentations of the study results. Every participant was assigned a code to preserve anonymity.

The documents related to FP education received from the schools of nursing/midwifery were only used for the purpose of this study. As mentioned in the data collection section, these documents were analyzed to supplement the data from interviews. The completed demographic questionnaires, signed consent forms (digitally signed or scanned copies), and de-identified and coded data are stored electronically in password-protected Western OneDrive study files only accessible to the study PIs and GSR. As per Western University policy, all study data will be permanently deleted seven years after completing the study.

Results

Participant Demographics

Of the final sample, fifteen participants were female, and ten were male. The average age of the participants was 38 years old, ranging between 29 and 56 years old. Sixteen participants were registered midwives, and nine were registered nurses. Concerning their stated religion, twelve participants were Catholic, nine were Protestant, and four were Adventist. Sixteen participants were master's degree holders, and nine had bachelor's degrees. Five participants had experience ranging between 1-5 years in nursing/midwifery education; nineteen had 6-10 years, and two had experience of more than ten years in teaching nursing/midwifery.

Regarding the experience of teaching family planning (FP) in pre-service nursing and midwifery education, eighteen participants had experience ranging between 1-5 years, six had experience ranging between 6-10 years, and one had more than ten years. Fourteen participants participated in the FP training for nurse/midwife educators organized and sponsored by the TSAM for the MNCH project in Rwanda (See Table 2).

Table 2: Participants' Demographic Characteristics

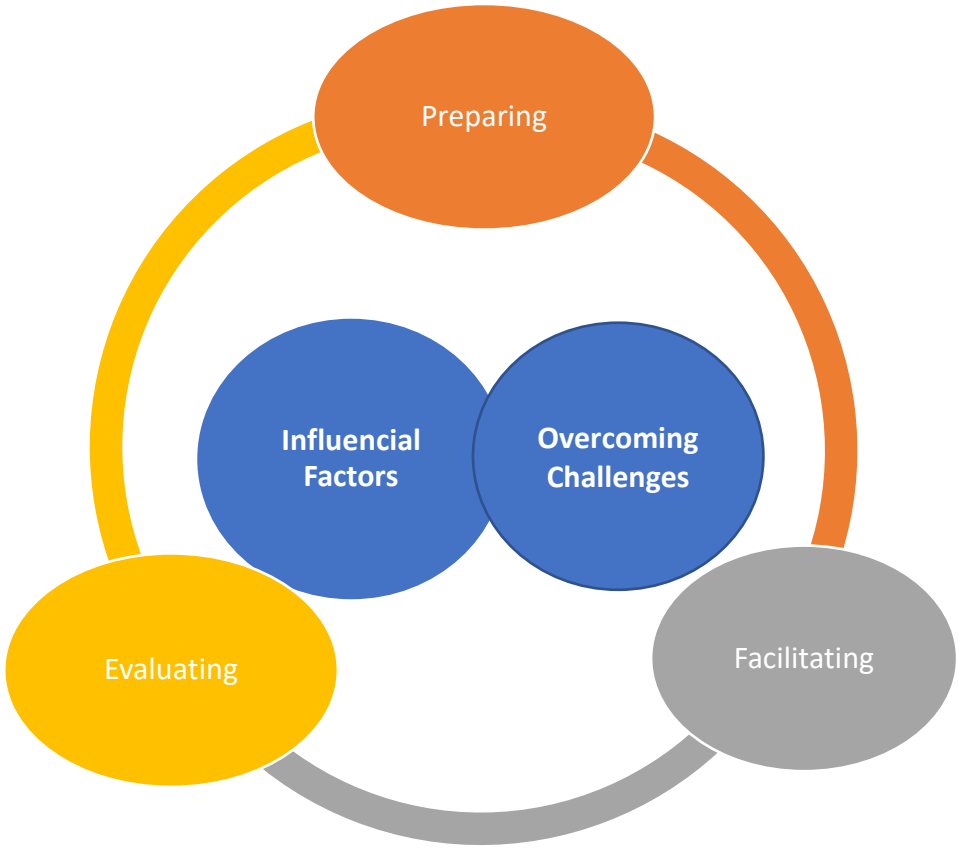
VARIABLES	**FREQUENCES**	**%**
Ages		
>30	1	4
30- 39	13	52
40-49	7	28
50-59	3	12
60- 69	1	4
Gender		
Female	15	60
Male	10	40
Profession:		
Nursing	9	36
Midwifery	16	64
Working Experience in Nursing or Midwifery, Years		
In clinical practice		
1-5	4	16
6-10	9	36
>10	12	48
In education		
1-5	5	20
5-10	17	68
>10	3	12
In teaching FP		
1-5	18	72
6-10	6	24
>10	1	4
Education Level		
Bachelor's degree	8	32
Master's degree	17	68
Religion		
Catholic	12	48
Protestant	9	36
Adventist	4	16
Participation in FP training organized by TSAM	14	56

The Process of Teaching FP Methods in Pre-service Nursing and Midwifery Education

The model describing nursing and midwife educators' experience of teaching FP methods to students consisted of the core category named teaching FP in pre-service nursing and midwifery education. This core category reflects a cyclical process of three phases: Preparing, Facilitating, and Evaluating. The core category integrates the two categories which are related to the core category: Influential Factors and Overcoming Challenges. The elements of those two categories interacted with each other and influenced the phases of the teaching process undertaken by the nurse/midwife educators. The nurse/midwife educators engaged in various actions to overcome the challenges resulting from the influential factors, and then these actions influenced the three phases of the core category.

The category 'Influential Factors' (IF) consists of three main elements: context, self (nurse/midwife educator) and policies and social norms. The category 'Overcoming Challenges' (OC) denotes four main actions that the participants used to address elements of the IF and include: using available resources, supporting the professional development of self, students and colleagues, focusing on essential FP methods, and interacting with students and co-workers (See Figure 2).

Figure 2: Model of Teaching FP Methods in Pre-service Nursing and Midwifery Education



Core category

Teaching FP in Pre-service Nursing and Midwifery Education. Nurse/midwife educators described the process of teaching FP as a cyclical process that has three phases: Preparing, Facilitating, and Evaluating.

Preparing. Educators from all schools noted that FP was a unit in the reproductive health module or women's health module. Its explicit content and related teaching activities required ongoing preparation after the beginning of the respective module, where FP methods were included as a unit based on the teaching timetable at each school. During the preparation phase, the module leader was identified as responsible for coordinating the module teaching activities, organizing the meetings with the module team members to decide on the content and

collaborating with the head of the department who approves the module content. Most participants mentioned that they started preparing activities, such as developing the module outline, before the beginning of the semester, and they kept preparing the lesson plan weekly based on the teaching schedule. One participant commented:

> As soon as you are informed that you will be the module leader, you develop the module outline based on the curriculum, and then you send it to the head of the department and all team members of your particular module for everyone to prepare the lessons' content and related teaching activities for the unit assigned to her/him. [P 11].

Another participant mentioned: *"The module leader gave me the module outline, and when it is time for the unit of FP, I prepare the FP content of my lessons, and I make sure that my lessons are ready before the due schedule of our module*." [P20]

Facilitating. Facilitating was the second phase in the process of teaching FP methods described by the participants. Participants described their prior FP methods knowledge and skills as indispensable prerequisites to confidently teaching FP to nurse/midwife students. Participants explained that they applied their FP methods knowledge and psychomotor skills to facilitate students' learning of the FP methods theoretical content and application of clinical skills in practice during the FP methods teaching sessions. One participant commented: "

> To me, teaching FP methods is transferring my FP knowledge and skills to the students I am teaching. That is why it is challenging and frustrating when you feel that you do not have sufficient knowledge and skills about the topic you have to teach. [P10]

Many of the participants stated they first taught the FP methods theoretical content in general in the classroom context (the advantages of FP methods on individual, family,

community and society, and FP counselling) and subsequently, each FP method, such as its indications, contraindications, advantages, and disadvantages. When the theoretical part was completed, they focused on the practical part in the skills/simulation lab and clinical placement sites. One participant shared:

> I start by teaching theory in the classroom; I have time to explain the concepts related to FP methods and different FP methods. Then, we have practical hours, and we move from the classroom to the skills/simulation lab, where I demonstrate different FP methods-related procedures such as removing and inserting implants and IUD on mannequins. Finally, students go to clinical placement, and I go there too and teach them to provide FP services. [P15]

***Evaluating*.** The evaluation was the last phase in the FP methods teaching process which involved formative and summative evaluation. Participants explained that formative evaluation included formal assignments, asking students questions, and conducting tests and practical activities during and after the presenting phase to assess students' learning outcomes and one's own teaching effectiveness and then prepare subsequent FP methods teaching sessions. At the end of the module, educators conducted a summative evaluation. The summative evaluation was set to assess students' learning outcomes for the entire module where FP was a unit or a topic. Most participants said they evaluated the FP methods learning outcomes in theory (writing assignments and exams) and practice in skills lab: OSCE (objective structured clinical examination) and clinical placement. One participant noted: "Before students are sent to clinical placement, each student has to pass the OSCE to determine his/her readiness to start clinical placement." [P4]

Participants explained that all students are not evaluated on FP methods learning outcomes in

clinical placement. In the clinical settings, students rotate in different services, and during the evaluation period, students are evaluated in the services where they are allocated at that time period, as this participant commented: "*We evaluate a student in service where she/he is during the clinical evaluation period, which may be FP service or another service or ward…The clinical evaluation tool is the same for any clinical services or wards*." [P19]. As such, although evaluation is often undertaken, evaluation might encompass other aspects of practice outside of students' knowledge and skills about FP methods in particular.

Categories

Influential Factors. This category encompassed factors that influenced the way nurse/midwife educators taught FP methods. The category of influential factors had three sub-categories: the context, self, policies and social norms. For clarity, in this study, social norms are considered those collective expectations that lead to behaviours, and in this study, government-level policies may lead to collective expectations that nurse/midwife educators teach students in keeping with those policies. Such behaviours in teaching may ultimately influence student learning and practice.

Context. The availability of needed materials and equipment to teach different FP methods, including access to up-to-date FP methods content, and the number of students compared to the number of available educators to teach FP methods was identified as the sub-category of contextual factors influencing the teaching process. Participants discussed the availability of up-to-date resources as an essential contextual factor for teaching FP to students. Availability or lack of the required resources and equipment was mentioned as a facilitator or barrier of the process of teaching FP. One participant commented: "*The main factors that positively influenced my preparation and teaching are accessing up-to-date FP methods content*

and having a skills lab with sufficient materials and equipment related to the FP methods I had to teach." *[*P15]

Participants described how they retrieved needed information about FP methods when preparing the FP methods lesson plans and content. The majority of participants said it was easy to find up-to-date content for some FP methods, such as hormonal, barrier, long-acting and permanent surgical methods, but not always other methods. The popular content sources for those FP methods that most participants used were a handbook about FP for healthcare providers that was published by the WHO and other documents accessed from the Hinari. The Hinari is a program initiated by the WHO with other major publishers to enable LMICs to access biomedical and health-related literature (WHO, 2021). A participant commented:

> I frequently refer to the WHO FP handbook for providers, version 2018. Though I use other sources of information, the WHO FP handbook is my primary reference, and it is easy to get the update and well-structured FP content from that book. [P 19]**.**

Another participant mentioned: "*I mainly use HINARI to get FP content*." [P14]

All participants discussed how accessing up-to-date content with required detailed information for preparing the lesson plans and content for fertility awareness-based methods (FABM) was challenging. One participant commented: "*The main challenge with fertility awareness-based methods is that we do not have updated sources with detailed information that can help us to prepare the content and teach those methods effectively to students*." [P4]

Participants also discussed the challenges related to the lack of or insufficient materials and equipment necessary to teach the practical part of FP methods in the skills/simulation lab. Participants from the schools where the skills/simulation lab was not well equipped with the required equipment and material to teach FP methods described that as a gap in teaching FP

because students go to clinical placement without practicing FP methods skills on mannequins in the skills/simulation lab. *"We do not yet have an equipped skills lab with required materials and equipment to demonstrate FP procedures, and students cannot do the practice before going to clinical placement"* [P 13]

Lack of teaching tools, for example, checklists for some FP methods, such as fertility awareness-based methods (FABMs), including natural family planning (NFP), were mentioned by most participants as limiting the ability of nurse/midwife educators to go through all the phases of teaching FP methods. For example, participants from all the schools mentioned that they only teach and evaluate FABMs/NFP in theory because they do not have the necessary materials and teaching tools that they can use to teach and evaluate those methods in skills/simulation lab and clinical placement. Another element that participants discussed as a challenge to teaching FP methods is that only a few FP methods are included in the checklist and the student logbook. One participant recounted: *"We mainly evaluate students during the OSCE on only implants and IUD because we do not have checklists for other FP methods."* [P18] Another participant noted: *"We should evaluate students' ability to teach and provide FABMs, but it is a bit challenging because we do not have the teaching tools for these methods. For example, FABMs are not included in the students' checklist and logbook* [P5].

The student-teacher ratio is another contextual factor participants identified that impacted the teaching of FP methods mainly when the educators needed to demonstrate different FP method procedures, help students practice FP methods procedures, and evaluate the students in the skills lab and clinical placement. One participant noted: "*We experience a shortage of facilitators[educators] compared to the number of students because we are only three midwives to teach FP methods for 160 students. In the skills lab, we are obliged to demonstrate limited FP*

methods." [P 19]. Participants also mentioned that having many students in clinical placements was a barrier to teaching FP methods in pre-service nursing and midwifery education because all the students cannot find the opportunities to practice different FP procedures. One participant commented: "*An essential element that complicates teaching and learning FP methods in clinical placement is the number of students, as it is not only our students that need to be allocated in FP services but also students from other schools."* [P3]

Time allocated to FP methods in the curriculum was discussed by almost all participants as a barrier that hinders nurse/midwife educators' ability to teach FP methods effectively. The majority of participants noted that the necessary FP methods content was included in the curriculum, but the time assigned to teach the theory and practical parts was insufficient. One participant commented: *"FP as a unit has 20 hours. The necessary FP methods content is included in the curriculum. Nevertheless, to me, the time allocated to FP as a unit is not sufficient. We need at least 60 hours to complete both theory and practice.*" [P6]

Participants explained that the reproductive health module where FP methods are included is taught in the second semester of the last year of the nursing/midwifery A1 program at different schools, and they described this as a barrier because it does not allow for clinical application prior to graduation. A participant mentioned: "*Students do not have adequate time to practice FP methods in clinical placement as they are supposed to practice FP in clinical placement after completing the reproductive health module in year three (last year), the second semester."* [P22]

Self. The sub-category of "self" reflects the educator's personal factors such as knowledge, attitude, beliefs, and moral values towards FP in general, which impacted their motivation and ability to teach FP methods. Participants discussed how these personal factors

influenced their decisions to include, omit, focus on, or teach some FP methods in a superficially manner. Participants also found themselves navigating situations where learners' beliefs about FP methods varied from that of what was expected to be taught, as per the curriculum requirements, or varied from their own personally held beliefs. Finally, participants also felt personally conflicted about students' learning as a whole because they were aware that some clinical teachers did not have knowledge about FP methods and yet were responsible for students' experiential learning and growth in that area.

Participants discussed knowledge, skills, and confidence in teaching different FP methods as essential prerequisites to teach FP adequately to nurse and midwife students. Some participants explained how frustrating and challenging it was when required to teach FP methods that he/she never practiced or on which he/she had limited knowledge. One participant commented: "*I experienced challenges and frustration when I started teaching FP methods because I felt that I had limited theoretical knowledge and was without practical skills about FP methods, especially implants and IUD."* [P18].

Participants discussed their limited knowledge, skills and confidence in teaching about implants and IUD before participating in the TSAM FP methods training. A participant commented: *"Implants and IUD are the FP methods I performed for the first time when I had the opportunity to attend the FP training. Before that FP training, I was not confident in teaching those methods."* [P8]

Participants shared how they personally felt inadequate in their knowledge and skills in the clinical setting when they discovered their knowledge was lacking and inconsistencies occurred between what they had taught students and what they saw being taught to students by nurses and midwives in practice. One participant noted:

> I mainly teach in class and skills lab, but I do not have enough time to practice in the clinical settings, and this is a challenge because sometimes there are new updates on FP protocol that I did not teach. …after all, I was unaware of the new protocol, and I felt lousy finding that what I taught was somehow different from what was being implemented in clinical settings. [P24]

Educators felt frustrated when professional development opportunities about FP were not afforded to them, but had taken place in practice settings with health care providers. This added to the theory-practice gap that teachers unwittingly perpetuated and may have contributed to feelings of inadequacy where students were seeing that clinicians were seemingly more up-to-date (in some cases) than their teachers. One participant recounted:

> When the Ministry of Health organizes FP methods training for health care providers from FP services, it does not involve nurse/midwife educators who teach FP in pre-service nor informs us about the updated protocols and new procedures. We do not have access to new updates until they are posted online. [P20]

Some participants were conflicted about clinical instructors' lack of knowledge about teaching students FP methods but didn't seem to have the capacity to change the circumstance for learners. As one participant stated: Participants explained that to teach the practical part of the FP methods unit in the skills lab and clinical placement, the educators needed to involve other educators in FP teaching activities. One participant reported:

> I teach the FP methods theory alone in the classroom, but for practice in the skills lab and clinical placement, we need to involve other educators, and sometimes it is a challenge because some educators are not prepared to teach all FP methods. [P16]

Participants who had the opportunity to participate in the TSAM project FP education workshops, where they could practice different FP methods, mentioned that their FP knowledge and skills improved as a result of the educational training. In addition, their confidence for teaching numerous FP methods learned and practiced during the training increased. One participant noted: *After participating in the FP training, my ability and confidence to perform implant-related procedures improved, and I was proud to teach the implant-related procedures confidently.* [P3 RWA]

Some participants commented on how they improved the FP methods curricular content and the number of the FP methods they teach to students after participating in the TSAM FP training. One participant noted: *The FP training helped me identify some methods I did not teach because I did not know them, and after the training, I increased the number of FP methods I teach*. [P23]

Participants who had the opportunity, as both educators and health care providers, to offer FP methods in practice explained how that experience boosted their confidence for subsequently teaching the FP methods to students. However, they expressed the need to be trained on the FABMs/NFP as they did not have the opportunity to learn and provide those methods as they did for artificial FP methods. One participant commented: "*I worked in a health center for two years, so I feel very confident in teaching the artificial methods of FP because I used to provide them, but I need training on FABMs/NFP methods to teach them confidently."*

Participants expressed different views and attitudes towards FABM/NFP. Some had a positive attitude, while others had a negative attitude towards those FP methods. Participants who had a positive attitude towards FABMs/NFP mentioned that they dedicated more time to teaching these methods. One participant commented: "*When I teach FP, I allocate more time to*

FABMs/NFP because many people do not know how to use them effectively. I also explain to students that FABMs/ NFP methods are effective when the users use them correctly." [P21]

In contrast, participants who had a negative attitude towards FABM/NFP methods explained how they mentioned FABM/NFP methods when teaching because they are included in the curriculum. However, they told students that when they provide information to clients about FABM/NFP methods, they have to explicate that these methods are not as effective as other FP methods. One participant noted: "*When teaching the FP unit, I talk about FABMs/NFP methods because they are in the curriculum, but I tell the students that they are challenging to use effectively."* [P17] Some participants mentioned that when they teach FABMs/NFP, they inform students that such methods should not be the first choice. One participant commented: "*I teach students that artificial FP methods are more effective than FABMs/NFP methods, and FABMs/NFP would only be given to the clients who resist using other FP methods."* [P19]

Participants who had a favourable attitude toward FABMs/NFP disagreed with the classification of FABMs/NFP methods as traditional methods in some documents and the curriculum because, in the Rwandan context, what is labelled traditional is not valued or considered scientific. One participant commented: "*Classifying some FP methods as traditional methods and others as modern methods is an indirect way to devalue what is labelled traditional. Therefore, I classify FP methods as hormonal, non-hormonal and permanent, irreversible surgical FP methods."* [P24]

Another participant said:

> When I teach FP, I do not classify FABM/NFP methods as traditional methods but instead modern scientific FP methods because they are based on the scientific physiology of the female reproductive system. My preferred classification is natural and artificial FP

methods. [P16]

Some participants explained that even if, in the nursing/midwifery curriculum, withdrawal is included in FABM/NFP methods when teaching FABMs/NFP, they highlight that FABM/NFP methods are the FP methods that are based on the observation of the physiological signs of the woman's fertile and infertile periods, and withdrawal should not be included in those methods. One participant commented: *When I teach FP, I mention that withdrawal should not be included in FABM/NFP methods as it is not based on observing physiological signs of a woman's fertile and infertile period.* [P 21]

Some participants described how their negative attitudes towards FABMs/NFP changed after participating in the FP training organized and sponsored by the TSAM project. One participant noted: *Before participating in the FP training sponsored by the TSAM project in 2017, I superficially mentioned FABM/NFP methods when teaching FP. With the new knowledge on FABM/NFP methods I gained from that training, I improved the FP content I teach and allocated more time to teach FABM/NFP methods*. [P16]

Beliefs and moral values towards FP methods were critical personal factors that participants discussed as sources of moral conflicts they experienced as educators when teaching FP methods content when it was against their beliefs. All participants who experienced moral conflicts and dilemmas teaching some FP methods identified themselves as Christian. Some participants had a dilemma teaching all artificial methods of FP. "*Due to my religious beliefs and my position in the society, I cannot teach artificial methods of FP." [P7]*

Other participants had moral issues teaching emergency contraception (EC) as, for them, that method leads to abortion. One participant commented: "*Using emergency contraception is a sin because if the woman has conceived, taking emergency contraceptives results in a voluntary*

abortion, which is seriously against my religious beliefs, and I do not want to preach to people to commit evil." [P10]

Participants explained how students often expressed moral conflicts and negative attitudes towards some FP methods being taught which required the educator to ensure a thoughtful and sensitive approach to support discussions and maintain a safe and positive teaching-learning environment for all learners. It was important to participants that students and educators could collectively express their beliefs One participant commented:

> Sometimes we have students who refuse to provide some contraceptive methods against their religious beliefs. So, it is a dilemma in clinical placement as all students have to complete all the teaching and learning activities as indicated in the curriculum. On the other hand, those students have the right to maintain and behave according to their moral values. [P21]

Policies and Social Norms. The sub-category of policy and social norms reflects the existing FP national guidelines and protocols established by the Government of Rwanda through the Ministry of Health. It also denoted the institutional FP policy and the Rwandan society's beliefs and norms towards FP that influenced the FP teaching in pre-service nursing and midwifery education. Participants explained that when teaching FP, they are required to align with the national FP policy. One participant commented: "*When teaching FP, we mainly refer to the FP national policy and protocol, where the political will to sensitize and promote long-acting FP methods is predominant*." [P17]

Participants explained that the FP policy in Catholic institutions, which only promoted NFP methods, and the focus on hormonal and long-acting FP methods by public institutions influenced the FP methods' teaching and learning context during the

clinical placement. One participant commented:

> The fact that healthcare facilities provide specific FP methods based on their mandate is an opportunity for students allocated to those healthcare facilities to learn and practice those specific FP methods. It is also challenging if the student cannot rotate in different settings to practice all the FP methods. [P4]

The participants from the nursing/midwifery schools owned by the Catholic church noted that the schools' administrations did not ascribe to the teaching of artificial FP methods. One participant recounted: "*Even though this is a Catholic school, the administration does not influence the FP teaching though we teach some FP methods against the Catholicism philosophy regarding FP."* [P2]

Participants also identified social norms, community beliefs, and preferences towards FP methods as highly influential factors of teaching FP methods in pre-service nursing and midwifery education. When teaching FP, participants pointed out that they highlight the importance of FP counselling to teach students the appropriate approach to address the social norms and clients' beliefs that might limit their ability to choose appropriate FP methods. One participant noted: "*I focus a lot on FP counselling, where I encourage my students to allow clients time for the culturally respectful exchange that will help clients to understand the advantages of FP and make an informed decision in choosing appropriate FP methods and services."* [P5]

Overcoming Challenges. The category overcoming challenges has four sub-categories: Using available resources to their potential; educators supporting the professional development of self, students and colleagues; focusing on essential FP methods; interacting with students and co-workers. These sub-categories illustrate the actions that nurse/midwife educators adopted to

deal with the influential factors that affected their ability to teach FP methods in nursing/midwifery pre-service education.

***Using Available Resources to their Potential*.** Participants described strategically adapting their teaching activities to the actual context of the learning environment based on the resources available to them. When the required resources, such as materials, equipment, updated FP methods sources, and sufficiently well-trained clinical instructors, were not available at the moment of teaching FP methods, they used what resources were available to their best potential with the aim of improving the quality of FP methods teaching until they acquired more resources. One participant noted: "*We do not yet have equipped skills lab to teach the insertion and removal of an IUD. To demonstrate these procedures, I use an IUD device I received from the health center and an obstetric mannequin we use to teach normal delivery" [P14]*.

***Supporting the Professional Development of Self, Students, and Colleagues*.** This sub-category embodied the educators' actions to address the influential factor: Self. Participants expressed different personal ways they coped with their own personal and professional aspects that had influenced the teaching of FP methods and how they collaborated with colleagues to support their learning and that of other educators.

One participant commented:

> When I was assigned to teach FP for the first time, I approached my colleague who had taught FP previously, and she shared with me all the FP materials and documents she used…Before demonstrating the FP procedures in the skills lab, I first practiced those procedures under the guidance of my colleague. [P10].

Some participants mentioned that they planned some hours to work in clinical settings to boost their skills and confidence in teaching FP. One participant narrated: "*To keep updating my*

clinical skills, I work in the hospital one day a week and do the hands-on practice." [P5]

During the clinical placements, participants explained that while they were trying to gain the required skills and confidence in teaching FP methods such as IUD and implants, they requested that health care providers support the teaching process by facilitating students' learning about how to provide those methods on their behalf. One participant noted:

> My first years teaching FP methods were challenging because I did not master the matter very well, and during the clinical placement while supervising students in FP services, I relied on the staff and requested them to teach students on my behalf because I could not perform some FP procedures like inserting and removing IUD or implants. [P 12]

Participants recounted different strategies to deal with their feelings when teaching FP methods when they were different from their own beliefs and moral values. Some participants aimed to set aside personal beliefs and moral values to ensure that students were informed about all the FP methods content and fulfill their professional obligation as educators. One participant commented:

> I try to separate my beliefs and moral values from my professional duties. When I teach the FP methods different from my beliefs and moral values, I always tell myself that fulfilling my responsibility is also an essential moral value to me. So, thinking that I am performing my duties somehow gives me peace of mind. [P18]

Others explained that they aimed to look beyond their own personal perspectives, which demonstrated a level of insight and growth as an educator, when they requested their colleagues to teach the topic they were uncomfortable with on their behalf instead of compromising students' learning: "*As we work in a team, my colleagues teach artificial methods, and I teach the natural methods that are in congruence with my religious beliefs and moral values*." [P7]

Some other participants decided to teach the FP methods content against their beliefs and moral values superficially to cope with their moral dilemmas. One participant noted: "*I have a moral conflict with emergency contraception. I teach about it superficially to inform the students about its existence. However, I cannot go beyond and explain the method in detail*." [P 10]

***Focusing on Essential FP Methods*.** Some participants noted the importance of focusing on teaching FP methods in keeping with broader policies and social norms, even if it went beyond their own comfort levels and beliefs. Participants wanted to focus on teaching about FP methods that aligned with national FP policy to support student professional development. Doing so helped them feel as though they had dealt with a personal challenge to ensure students were exposed to national requirements in practice. One participant commented: "*We focus on hormonal and long-acting FP methods to equip future nurses/midwives with the required skills to implement the national FP policy."* [P17]

Participants also explained that they deliberately focused on the standard day method, one of the FABMs/NFP methods, because it is the most FABM/NFP method known, accepted and commonly used in the community. Such actions aligned with social norms and moved to teach practices solely beyond personal preferences or knowledge areas. This helped educators feel they had succeeded in teaching a broad base of FP methods. One participant said: "*I focus on the standard day method because it is the popular FABM/NFP method available at almost all health care facilities that provide FP services."* [P16]

Navigating Students' Beliefs and Supporting Collegial Interactions for Learning.

Participants described the interaction among nurse/midwife educators, health care providers in different clinical settings and students as the fundamental approach to establishing and maintaining a positive FP teaching and learning environment, as doing so would support

overcoming other challenges such as resource constraints, variation in knowledge, and beliefs about FP methods. Participants explained that interactive collaboration between co-workers from schools or clinical settings helped them get the needed support to resolve some issues that limited their ability to teach FP methods effectively. They interacted and collaborated with their co-workers to get assistance when they needed to demonstrate different FP methods in the skills lab or were uncomfortable or not confident in teaching some FP methods. One participant explained: *"When it is time to demonstrate FP procedures, you need other nurse/midwives to help you teach different procedures as we put students in small groups and teach each procedure at a separate station."* [19]

As a positive way of dealing with their own knowledge deficits around FP methods, participants discussed how they collaborated with health care providers during clinical supervision to help students learn and practice different FP methods procedures that their clinical supervisors were not confident to teach. One participant commented: *"Before attending the FP workshop when I was in clinical supervision, I requested the nurse who worked in the FP service to teach my students the FP procedures I was not confident to teach, and I was there observing like students!" [P3].* Participants described how they interacted with health care providers in FP services to gain updated information and learn updated procedures when they noticed the inconsistency in what they taught and the current practice in clinical settings. A participant commented:

> When I found that what I taught to my students was a bit different from the current clinical placement practice, I kept quiet and observed how new things were being done. After I approach the staff of the clinical area and ask him or her to teach me how I can teach students, but sometimes it is difficult because I feel somehow frustrated. [P 24]

As a way of managing the varying perspectives and beliefs of students, participants discussed different approaches they used to interact with students who had negative or varied beliefs and attitudes towards FP methods. One participant commented:

> The students who have moral conflicts with FP mainly due to their religious beliefs learn with others in the classroom and practice in the skills lab. In the clinical placement, I allow them not to provide the methods against their beliefs, and I encourage them to orient or refer clients to get the desired FP services. [P15]

However, not all participants took the same approach, and some participants noted that a strategy of dealing with diverse or opposing student perspectives about FP methods was to align teaching practices with academic regulations. A participant commented: "*All students have to do all learning activities, including providing FP methods in clinical placement as indicated in the curriculum. Otherwise, they are at risk of failing as there are no academic regulations that protect the educator nor the students*." [P21].

Discussion

The results of this study indicated that the process of teaching FP methods in pre-service nursing and midwifery education involved the process of preparing (preparation of FP content, preparing teaching-learning activities, and revising activities based on previous course experiences), facilitating (application of educator's FP knowledge and skills during the theoretical and practical sessions of teaching FP methods), and evaluating (formative evaluation and summative evaluation). Important contextual influential factors reflected the integrated aspects that informed the teaching process. Nurse/midwife educators engaged in a variety of activities to deal with those influential factors to teach FP methods. These study results contribute to the literature about teaching FP methods in pre-service nursing and midwifery

education that serves to highlight the dynamic factors that impact nurse/midwife educators' ability to teach FP methods-related topics in the classroom and clinical learning environments to nurse/midwife students.

Contextual Factors

Resources

The study results showed that material resources such as updated FP methods sources, equipped skills lab, teaching tools and well-trained human resources are critical factors influencing teaching FP methods in pre-service nursing and midwifery education. The availability of those resources facilitated FP teaching. However, those resources were inadequate at most schools, and nurse/midwife educators adapted to teaching FP methods to the fullest potential with the resources available to them. In other studies, the lack of required resources to teach FP methods in pre-service education was a factor associated with poor quality related to FP teaching and the inability of nursing/midwifery programs to graduate nurses/midwives who can offer quality FP methods services to clients to support their health and well-being (Berdzuli, Rossi, & Zlidar, 2009; Muganyizi et al., 2014).

This study’s results confirm the findings from studies in the field of nursing and midwifery education in different countries of Sub-Saharan Africa that indicated that lack of infrastructure, limited trained human resources, and lack of material resources pose significant challenges to nursing/midwifery education (Bell et al., 2013; Bvumbwe & Mtshali, 2018; Marchi-Alves et al., 2013; Ndayisenga et al., 2020) and can ultimately lead to harms related to client care. Nurse scholars have identified inadequate resources in nursing/midwifery schools and clinical settings as one of the sources of the theory-practice gap in nursing and midwifery

(Gassas, 2021; Kerthu & Nuuyoma, 2019; Salifu et al., 2019), which notably translates to variation in the provision of quality care or advancements in the profession overall.

Time Allocated to Teaching FP Methods

Insufficient time allocated to teaching FP methods in nursing and midwifery curricula (20 hours in most schools) is another crucial barrier limiting nurse/midwife educators' ability to teach FP methods effectively in pre-service nursing/midwifery education. The limited time means that content is sporadically addressed and that students are not always effectively supported to apply classroom learning to the skills lab or practice context. On average, educators often have two weeks in clinical with students in FP services units, which has been found to be insufficient for students to achieve the FP methods clinical learning objectives. Adequate time for student learning in clinical settings is crucial in nursing/midwifery education, as clinical practice provides real-world nursing/midwifery experience to prepare a future nurse/midwife to offer quality health care service upon graduation. Students need sufficient time in clinical settings to learn clinical principles and develop critical thinking skills in solving problems (Fernández-García et al., 2021; Mbakaya et al., 2020).

Some of the consequences of limited time/hours allotted to FP methods include insufficient FP training offered to students where all the FP methods and content cannot be sufficiently covered, the FP teaching is more theoretical than practical, lacks depth, and several students are graduating without being exposed to some FP methods (Muganyizi, 2014; Puckett, 2011; Walker & Davis 2014).

Student-teacher Ratio

The high number of students compared to the number of available educators was challenging, particularly during the teaching and demonstration of FP-related procedures in the

skills lab, where every student needed to practice FP methods procedures under the guidance and supervision of an educator. However, every student could not find that opportunity due to the many students compared to the number of available nurse/midwife educators. At some schools, the student-to-instructor ratio in the skills lab was more than 25: 1, while the standard should be 3-4: 1 (Goswami et al., 2021). In other studies, High students-to instructor ratios in clinical contexts have been associated with instructors' heavy workloads, decreased time for teaching and evaluating students, low instructor and student morale, increased safety concerns, and instructors' incapability to use innovative teaching strategies to support students learning (Ndayisenga et al., 2020; Tousignant et al., 2021).

Number of Students in the Clinical Placement

Many students at a time in FP service units meant that many students don't benefit from the necessary learning opportunities, clinical working conditions may be hampered due to overcrowding, and quality of care might be compromised - the clients' right to privacy may not be respected, and clients may be embarrassed when surrounded by many students. The high number of students from different schools in clinical placements simultaneously was identified as a barrier to FP teaching and learning as many students overcrowded the FP services, which limited students' opportunity to practice all the FP procedures. Literature about nursing/midwifery education conducted in Africa has similarly identified the high number of students in clinical placement as a challenge that limits the quality of clinical teaching and learning (Asirifi et al., 2017; Bvumbwe & Mtshali, 2018; Daniels, 2016; Mukamana et al., 2020).

Navigating Students' Beliefs and Supporting Collegial Interactions for Learning

There were situations where nurse/midwife educators needed to interact actively with

some students, co-workers and nurses/midwife staff at different clinical settings where students were allocated for clinical placement to sustain a positive teaching and learning environment. Nurse/midwife educators interacted with students with negative attitudes and moral conflicts toward FP methods. Interaction with those students was an appropriate way to support and advise them on matching their own beliefs and moral values towards FP methods with that of the nursing profession and academic expectations. Oermann et al. (2018) describe faculty-student interaction as an essential hallmark of the supportive learning environment that significantly influences students' professional development. Faculty-student interactions have been found to influence student outcomes where a caring and supportive learning environment supports civility and inclusivity, valuing diversity, and less perceptions of hegemony (Ingraham et al., 2018).

In this study, some nurse/midwife educators allowed students not to provide FP services against their religious beliefs and advised them to refer clients to get the desired services during the clinical placement. In contrast, other educators prioritized the curriculum and expected learning outcomes and obliged students to practice all FP services to fulfill the nursing/midwifery program requirements. The discrepancy in handling the cases of students who refused to practice and provide some FP methods against their religious beliefs during the clinical placement might be related to the lack of clear academic regulations and guidance about this issue and the educator's preferred style of managing conflicts. In such a situation, Luparell and Conner (2016) advise developing a policy or student code of conduct to support and inform expectations of the proper behaviour toward a moral conflict and academic expectations.

Self (Educators Personal Factors)

The results of this constructivist grounded theory study highlighted that nurse/midwife educators' knowledge, skills, and confidence in teaching FP methods are also vital factors that

influence teaching and learning in pre-service nursing/midwifery education. Nurse/midwife educators who practiced FP methods as healthcare providers in healthcare facilities before joining academia and those who had the opportunities to participate in FP training reported being knowledgeable, skillful and confident in teaching FP methods because they were used to providing them in clinical contexts or had a chance to learn and practice during TSAM FP methods workshops. However, those who did not practice FP methods as health providers or did not have an opportunity to participate in FP methods CPD workshops reported limited knowledge, skills, and a lack of confidence in teaching different FP methods. Those educators felt unprepared and incompetent to teach FP to nurse/midwifery students. They might have failed to equip nurse/midwife students with the required knowledge and skills to provide quality FP services.

The present study results are in keeping with the results of studies that assessed the FP knowledge and skills of graduating students, which indicated that most nurse/midwife students graduate with poor FP knowledge and skills (Erfanian & Khadivzadeh, 2011; Mohammed et al., 2019; Walker & Davis, 2014). In Ghana, Salifu et al. (2019) describe experiences and perceptions of the theory-practice gap in nursing education and practice in a low-resource setting. They found that lack of clinical experience among nurse educators was perceived as a contributing factor to the theory-practice gap in nursing education and practice. A systematic review study to explore the contributing factors to the theory-practice gap for junior nurses found that newly qualified nurses felt unprepared for practice and lacked confidence in their capability to provide quality health care services (Monaghan, 2015). It stands to reason those gaps in educator knowledge have a cascade effect on student development and can play an ultimate role in the health of women who are seeking services for FP methods.

Nurse/midwife educators in this study interacted and worked in a team with their co-workers to teach the practical FP methods procedures in the skills lab and clinical placement. The results of studies on teamwork among faculty members indicated that positive work relations and effective communication facilitate effective teamwork (Masimula et al., 2021), and teamwork positively impacts the performance of faculty members (Sanyal & Hisam, 2018). However, as reported in this study, the unpreparedness of some nurse educators involved in teams of teaching FP methods in the skills lab and clinical placement is an essential finding and directs attention to a vital area that needs to be addressed through faculty development opportunities.

Participants in this study highlighted the interaction between nurse/midwife educators and nurses/midwives employed in different clinical settings where students were allocated for clinical placement to establish and maintain a positive clinical learning environment. This study revealed that when the nurse educator was not confident in teaching or guiding the student to provide a specific FP method, he/she requested the nurse/midwife to teach the students that procedure. Studies exploring nursing students' experience in the clinical learning environment revealed that nurse educators' interactive collaboration with nursing staff in clinical placement positively affects the students' learning process (Arkan et al., 2018; George et al., 2020). In this study, when nurse educators noticed an inconsistency in what they taught to students at school and the current practice in clinical settings, they approached the nurse/midwifery staff to learn the updated procedures. This collaboration to share knowledge would benefit students, nurse educators, and staff more if it happened earlier and structured at the institutional and individual levels. In a study conducted in Rwanda, Umubyeyi et al. (2021) found that nursing students, nurse educators and nurses staff in

clinical settings wished for more opportunities for collaboration between nursing schools and clinical institutions to improve the clinical learning environment for students and empower nurse educators and nurses/midwives in practice.

To deal with their limited FP knowledge and skills and boost their confidence in demonstrating FP procedures in the skills lab, nurse/midwife educators practiced the FP procedures they felt unsure about and demonstrated professional growth while learning under the assistance and guidance of their experienced colleagues in FP methods during the preparation of the FP teaching session. This coping strategy is described in the literature as "peer coaching." Boillat & Elizov (2014) explained peer coaching as "a dynamic and flexible faculty development approach that depends on a collaborative and supportive relationship between peers" (p 167). Peer coaching is based on the identification by an educator of personal learning needs based on actual life experience and challenges, and it offers the occasion to work with a colleague to find strategies and solutions (Boillat & Elizov, 2014). Peer coaching can be consultative or confrontative. The learner initiates the consultative coaching by asking questions or feedback, while the initiator for confrontative coaching is the observer coach, who indicates the areas done correctly and those needing improvements. The common element in consultative and confrontative peer coaching is a mutual partnership to improve performance (Waddell & Dunn, 2005). In this study, nurse/midwife educators used consultative coaching by requesting guidance and feedback from their colleagues to improve their FP skills and confidence in demonstrating the FP procedures.

The results of this study revealed different coping strategies that some nurse/midwife educators, who identified themselves as Catholic believers, used to deal with their religious beliefs and moral values toward FP when teaching FP methods. Those who wished to be

consistent with their beliefs and moral values requested their colleagues to teach artificial methods on their behalf, and they taught natural family planning (NFP) methods aligned with their religious beliefs (Paul VI, 1968). Some nurse/midwife educators prioritized their professional obligation, tried to separate their religious beliefs from teaching duties, and taught about all of the FP methods, including artificial methods, even though they may have been fundamentally considered methods that went against their beliefs. Some other nurse/midwife educators taught all FP methods but were uncomfortable teaching emergency contraception which they believed to lead to abortion. Thus, they mentioned emergency contraception superficially without necessary details to facilitate students' learning, as they did not want to promote abortion indirectly.

In this study, nurse/midwife educators' morality toward FP aligned with the Social-Cognitive Theory of Moral Thought and Action (Bandura, 1991). The Social-Cognitive Theory of Moral Thought and Action stipulates those different factors, such as personal factors or cognitive-affective self-reactions and environmental factors, influence a moral decision. People give lesser or greater weight to each factor involved in making a moral decision (Bandura, 1991). Nurse/midwife educators' morality toward FP was not uniform, and it involved variable reconciliations concerning religious beliefs, moral values, and professional obligations with emphasis on specific religious beliefs and moral values or professional obligations.

These results concur with a qualitative study conducted in the USA to explore how Catholic obstetricians-gynecologists integrate their professional obligation related to FP and their religious beliefs and moral values. In that study, Marchin et al. (2020) found that some practitioners implemented the Catholicism approach of FP and only provided NFP methods (Paul VI, 1968). Moderate practitioners, in addition to NFP methods, provided contraceptive methods

to prevent abortion. Some other Catholic obstetricians-gynecologists separated their beliefs and professional practice, and they provided any FP method desired by the patient, including abortion (Marchin et al., 2020).

Nursing and midwifery program educators had divergent understandings and attitudes toward FABM/NFP methods. Those who had positive attitudes towards FABMs/NFP considered them to be effective and disagreed with the classification of FABM/NFP as traditional methods of FP, as in the Rwandan context. In Rwanda, what is labelled as 'traditional' is not valued or considered scientific. Nurse/midwife educators who had negative attitudes towards FABM/NFP methods considered them ineffective, and when teaching FP, they classified them as traditional methods. In some literature and government reports, FABM/NFP methods are incorrectly classified as traditional methods (Festin et al., 2016; Malarcher et al., 2016). However, the WHO (2017) and various scholars (Bertrand et al., 2021; Brewer & Stevens, 2021; Choi et al., 2010; Dumitru & Duane, 2016; R. Fehring et al., 2017; Festin et al., 2016; Gribble et al., 2008; Jennings et al., 2011; Malarcher et al., 2016; Marquez et al., 2017; Mulatu et al., 2020; Obelenienė et al., 2021; Pallone & Bergus, 2009; Simmons & Jennings, 2020; Unseld et al., 2017; Urrutia et al., 2018) classify FABM/NFP as modern, effective FP methods.

The nurse/midwife educators' divergences regarding their understanding and attitudes towards some FP methods might have negative implications on teaching FP methods in pre-service nursing/midwifery education. With inconsistent information provided by nurse/midwife educators, students may be confused about those methods or develop negative attitudes towards some FP methods while they are supposed to know all the FP methods and help clients make an informed decision about the FP method to choose and use (WHO, 2014). The study results regarding the knowledge and perception of nurse/midwife educators of teaching FABM align

with the results of the studies that indicated that health care providers lack knowledge on FABM because those methods are not well taught in pre-service health care education (Beeman, 2010; Choi et al., 2010; Fehring, 2004).

Policy and Social Norms

The national policy of FP and social norms in Rwanda were among the factors identified to influence teaching FP in pre-service nursing and midwifery education. As such, when teaching FP in pre-service nursing and midwifery education, many participants focused on FP methods highlighted by the national policy of FP and a commonly used method in both public and Catholic healthcare institutions. One of the priorities highlighted in the FP policy in Rwanda is increasing access to long-acting and permanent FP methods (MoH, 2012, Wall et al., 2018). In the curriculum and teaching tools, such as checklists and students' logbooks of nursing/ midwifery programs, long-acting FP methods such as IUD and implants are emphasized. The permanent FP methods (vasectomy for men and tubal ligation for women) are included in the nursing/midwifery curriculum. However, apart from the related health education and counselling that nurses/midwives provide to clients, those FP methods are provided by medical doctors; that is why the nurse/midwives, when teaching FP, do not focus on permanent FP methods as they do for long-acting FP methods. However, they are still required by the curriculum to discuss such options with students, as they should be aware of how to assess for issues with the methods or to counsel clients with basic questions or refer women to consult further with physicians.

The FABM/NFP method highlighted in pre-service nursing/midwifery education is the Standard Days Method (SDM). The SDM is widely known and used in the community and available in public and Catholic health care institutions. In Rwanda, the Catholic church owns around 40% of health care facilities (Jessee, 2020; Schwandt et al., 2018). These Catholic-run

health care facilities only promote and provide NFP methods (Mukamuyango et al., 2020; Jessee, 2020; Obelenienė et al., 2021; Paul VI, 1968), and public or government health care facilities mainly provide artificial contraceptive methods and the SDM. The SDM was developed in 2001 by the Institute for Reproductive Health, Georgetown University (Blair et al., 2007; Igras et al., 2014). From 2002 to 2012, Rwanda was among the countries where pilot studies were conducted to introduce SDM into the existing FP services offered by the Ministry of Health. The pilot programs involved training health care providers, including community health workers, nurses, midwives, and medical doctors, to teach clients how to use SDM; and involved procurement; supervision; creation of a reporting system, and introduction of SDM in the training curricula of both pre-and in-service health care providers' education (Blair et al., 2007; Gribble et al., 2008; Lundgren et al., 2012; Igras et al., 2014). A successful scale-up of SDM through the national FP program and the fact that SDM is low-cost, acceptable by different communities, including faith-based communities, and easy to teach and learn (Igras et al., 2014; Lundgren et al., 2012; VanEnk et al., 2018) could explain why SDM is a popular FABM/NFP method in Rwanda – where policies and social norms converge.

Based on the findings of this study, teaching FP in nursing and midwifery schools in Rwanda is a process that requires a teamwork spirit between faculty members and interactive collaboration between schools and other stakeholders such as the health care institutions and the Ministry of health and its institutions. Clinical experience in FP services and regular FP training are essential prerequisites to boost the knowledge, skills and confidence of nurse/midwife educators in teaching FP methods. Lack of necessary resources, nurse/midwife educators' limited confidence in teaching FP, religious beliefs and negative attitudes towards some FP methods are the barriers that can impact the FP methods teaching process in pre-service nursing

and midwifery education. Peer coaching, gaining updated and real-world experience, and sharing information and knowledge with nurse/midwifery staff are the professional development strategies that helped nurse/midwife educators to improve their abilities to teach FP methods.

Implications and Recommendations

To improve the quality of FP methods education in pre-service nursing and midwifery programs, academic institutions could improve the contextual factors that negatively impact nurse/midwife educators' ability to teach FP methods. The administrators of nursing/midwifery programs would ensure the availability of the necessary resources, including infrastructure, equipment, materials, access to updated FP content, and ensure there exists a proportionate rate of educators to the number of students. The inadequate time allocated to teaching FP methods in the curriculum and insufficient time that students spent in FP services during clinical placements reported in this study need to be addressed to prepare nurse/midwife students to offer quality FP services upon graduation. There is a need for curricular refresh among the schools of nursing/midwifery to increase the time allocated to FP both for the theoretical and practical aspects in the skills lab and clinical settings to increase students' exposure to FP planning methods.

The findings indicated that nurse/midwife educators who did not have the opportunity to participate in FP methods workshop training or work in FP services after graduation had inadequate FP methods knowledge, skills, or confidence in teaching FP methods. The school administration should consider this study's implication and ensure that the educators assigned to teach FP methods have experience in FP services or have participated in FP training. The schools would work in partnership with the Ministry of Health and its related institutions to involve nurse/midwife educators who participate in FP teaching activities in the FP training to introduce

new FP protocols or get invited to participate in refresher FP courses that the Ministry of Health regularly provides to healthcare professionals.

Further, educators expressed frustration and concerns that sometimes they taught FP methods using outdated protocols because they were not aware of the new FP protocols. Through a partnership between the schools and the Rwandan Ministry of Health and associated clinical practice settings, nurse/midwife educators would be involved in the development and review of FP modules, procedures and protocols and timely share the updated FP documents with all nurse/midwife educators who teach FP methods to ensure students are receiving the most current information about FP methods.

Nurse/midwife educators suggested that school administrators should create a structure for clinical instructors whereby any educator scheduled to teach FP methods and is in need of enhanced knowledge in the topic area could complete online modules about FP methods as well as receive mentorship for a certain amount of time in clinical placement sites. This time in clinical practice would help nurse/midwife educators refresh their skills, learn updated procedures, and strengthen the collaboration, partnership, and professional relationship with the staff in clinical placements.

In this study, nurse/midwife educators who had religious beliefs and moral values that did not align with some FP methods used different strategies to cope with their feelings of moral dilemma, including teaching some FP methods superficially. In the same way, nurse/midwife educators who had a negative attitude towards FABMs taught those methods superficially to students. Considering that the clients have the right to gain accurate information on all the FP methods and choose the suitable method (WHO, 2014), students should learn all the FP methods to be able to provide health teaching to clients and provide any method chosen by clients. Thus,

the administrators of nursing and midwifery programs should ensure that nurse/midwife educators assigned to teach FP are confident and comfortable teaching all the FP methods indicated in the curriculum. For the FP methods that some educators cannot effectively teach for different reasons, the school/program administration should establish strategies such as inviting a guest speaker who can facilitate students learning of those methods.

Conclusion

The process that nurse/midwife educators go through when teaching FP methods to nurse/midwifery students in pre-service nursing and midwifery education is reflected in the established model of preparing, facilitating, and evaluating, which inform one another in a continuous loop (Billings & Halstead, 2016; DeYoung, 2003). The influential factors and the nurse/midwife educators' actions to deal with the influential factors (overcoming challenges) are at the core of the process in the model of teaching FP methods in pre-service nursing and midwifery education as they determine how nurse/midwife educators enact teaching FP methods into teaching practice to facilitate FP learning for nurse/midwife students.

Among the influential factors, the contextual factors such as availability of resources and the nurse/midwife educator factors such as knowledge, skills, confidence in teaching FP, beliefs and attitude towards different FP methods are the main factors that influenced FP teaching in pre-service nursing and midwifery education in Rwanda. The influential factors were associated with the barriers that limited the nurse/midwife educators' ability to teach FP methods effectively in pre-service nursing/midwifery education, such as lack or insufficiency of required resources, nurse/midwife educators' poor FP knowledge, skills, confidence in teaching FP and negative attitudes towards some FP methods, and poor collaboration between nursing/midwifery schools and stakeholders such as the health care institutions and the Ministry of Health and

related institutions. Nurse/midwife educators engaged in a variety of strategies to deal with/overcome the challenges produced by the influential factors, which ultimately resulted in the development of facilitating actions to support teaching FP. Those facilitators were teamwork among faculty members, peer coaching, participation in FP training, and interactive collaboration between nurse/midwife educators, students, and nurse/midwife staff in health care institutions.

These study findings contributed to advancing the paucity of research on the experience of nurse/midwife educators in teaching FP methods in pre-service nursing and midwifery education. The substantive theory that emerged from this study captures nurse/midwife educators' perspectives on essential factors impacting their ability to teach FP methods to nurse/midwife students. This study provided valuable information that could help develop effective strategies to increase the expertise, comfort and confidence of nurse/midwife educators in teaching FP methods, with an aim to make a positive difference in student learning outcomes and client quality of care.

References

Agbeno, E. K., Osarfo, J., Anane-Fenin, B., Achampong, E. K., Neequaye, N. A., Opoku, D. A., Aliyu, M., Ken-Amoah, S., Ofori, A. A., & Ashong, J. A. (2021). Attitudes and Practices of Healthcare Professionals and Clinical Medical Students on Contraception: A Cross-Sectional Study in Cape Coast, Ghana. *International Journal of Reproductive Medicine*, *2021*, 1–11. https://doi.org/10.1155/2021/6631790

Ahmed, S., Li, Q., Liu, L., & Tsui, A. O. (2012). Maternal deaths averted by contraceptive use: An analysis of 172 countries. *The Lancet*, *380*(9837), 111–125. https://doi.org/10.1016/S0140-6736(12)60478-4

Allan, G. (2003). A critique of using grounded theory as a research method. *Electronic Journal of Business Research Methods*, *2*(1), 1–10. www.ejbrm.com/issue/download.html?idArticle=126

Arkan, B., Ordin, Y., & Yılmaz, D. (2018). Undergraduate nursing students' experience related to their clinical learning environment and factors affecting their clinical learning process. *Nurse Education in Practice*, *29*(July 2016), 127–132. https://doi.org/10.1016/j.nepr.2017.12.005

Asirifi, M., Ogilvie, L., Barton, S., Aniteye, P., Stobart, K., Bilash, O., Eliason, C., Ansong, G., Aziato, L., & Kwashie, A. (2017). Assessing challenges of clinical education in a baccalaureate nursing program in Ghana. *Journal of Nursing Education and Practice*, *7*(10), 109. https://doi.org/10.5430/jnep.v7n10p109

Bandura, A. (1991). Social Cognitive Theory of Moral Thought and Action. In W. M. Kurtines & J. L. Gewirtz (Eds.), *Handbook of Moral Behavior and Development* (pp. 45–103). Lawrence Erlbaum Associates. https://doi.org/10.4324/9781315807294

Beeman, P. C. (2010). Natural Family Planning in Education and Practice. *The Linacre Quarterly, 77*(4), 399–414. https://doi.org/10.1179/002436310803888592

Bell, S. A., Rominski, S., Bam, V., Donkor, E., & Lori, J. (2013). Analysis of nursing education in Ghana: Priorities for scaling up the nursing workforce. *Nursing and Health Sciences*, *15*(2), 244–249. https://doi.org/10.1111/nhs.12026

Berdzuli, N., Rossi, E., & Zlidar, N. (2009). *Improving Family Planning Pre-Service Education : Experience from Eastern Europe and Eurasia Region Europe and Eurasia Regional Family Planning Activity*. https://www.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=10486&lid=3

Bertrand, J. T., Ross, J., & Glover, A. L. (2021). Declining yet persistent use of traditional contraceptive methods in low- And middle-income countries. *Journal of Biosocial Science*, 1–18. https://doi.org/10.1017/S0021932021000341

Billings, D., & Halstead, J. (2016). *Teaching in nursing: A guide for faculty*. Elsevier.

Blair, C., Sinai, I., Mukabatsinda, M., & Muramutsa, F. (2007). Introducing the standard days method: expanding family planning options in Rwanda. *African Journal of Reproductive Health*, *11*(2), 60–68. https://doi.org/10.2307/25549716

Bluff, R. (2005). Grounded theory: the methodology. In *Qualitative Research in Health Care* (Eds., Issue 2003, pp. 147–167). Open University Press.

Boillat, M., & Elizov, M. (2014). Peer Coaching and Mentorship. In Y. Steinert (Ed.), *Faculty Development in the Health Professions: A Focus on Research and Practice. Innovation and Change in Professional Education* (Vol 11, pp. 159–179). Springer, Dordrecht. https://doi.org/10.1007/978-94-007-7612-8_3

Brewer, M., & Stevens, L. (2021). Use of fertility awareness-based methods of contraception:

Evidence from the National Survey of Family Growth, 2013–2017. *Contraception*, *104*(2), 183–187. https://doi.org/10.1016/j.contraception.2021.03.014

Brunie, A., Tolley, E. E., Ngabo, F., Wesson, J., & Chen, M. (2013). Getting to 70 %: Barriers to modern contraceptive use for women in Rwanda. *International Journal of Gynecology and Obstetrics*, *123*, e11–e15. https://doi.org/10.1016/j.ijgo.2013.07.005

Bvumbwe, T., & Mtshali, N. (2018). Nursing education challenges and solutions in Sub-Saharan Africa: An integrative review. *BMC Nursing*, *17*(1), 1–11. https://doi.org/10.1186/s12912-018-0272-4

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis* (S. David (ed.)). SAGE Publication.

Charmaz, K. (2008). Constructionism and the Grounded Theory Method. In *Handbook of Constructionist Research* (pp. 397–412). The Guilford Press. http://www.sxf.uevora.pt/wp-content/uploads/2013/03/Charmaz_2008-a.pdf

Charmaz, K. (2009). Shifting the grounds: Constructivist grounded theory methods. In J. Morse, P. Stern, & J. Corbin (Eds.), *Developing Grounded Theory: The Second Generation.* (2nd Genera). Left Coast Press.

Charmaz, K. (2014). Grounded Theory in Global Perspective. *Qualitative Inquiry*, *20*(9), 1074–1084. https://doi.org/10.1177/1077800414545235

Charmaz, K. (2017). The Power of Constructivist Grounded Theory for Critical Inquiry. *Qualitative Inquiry*, *23*(1), 34–45. https://doi.org/10.1177/1077800416657105

Choi, J., Chan, S., & Wiebe, E. (2010). Natural Family Planning: Physicians' Knowledge, Attitudes, and Practice. *Journal of Obstetrics and Gynaecology Canada*, *32*(7), 673–678. https://doi.org/10.1016/S1701-2163(16)34571-6

Daniele, M. A. S., Cleland, J., Benova, L., & Ali, M. (2017). Provider and lay perspectives on intra-uterine contraception: A global review. *Reproductive Health*, *14*(1), 1–11. https://doi.org/10.1186/s12978-017-0380-8

Daniels, F. (2016). Effects of increased student enrolments in a Bachelor of Nursing programme on health care service delivery. *South African Journal of Higher Education*, *28*(6), 1750–1761. https://doi.org/10.20853/28-6-423

DeYoung, S. (2003). *Teaching strategies for nursing educators* (Pearson Ed). Prentice-Hall.

Dockalova, B., Lau, K., Barclay, H., & Marshall, A. (2016). Sustainable Development Goals and Family Planning 2020. In *International Planned Parenthood Federation* (pp. 1–12). https://www.ippf.org/sites/default/files/2016-11/SDG and FP2020.pdf

Dumitru, A. M., & Duane, M. (2016). Behavioural Methods of Family Planning: A Comparative Study of Efficacy and Safety of Fertility Awareness Based Methods and Birth Control Pills. *Issues in Law & Medicine*, *31*(2), 205–209. https://www.ncbi.nlm.nih.gov/pubmed/29108179

Dworkin, S. L. (2012). Sample size policy for qualitative studies using in-depth interviews. *Archives of Sexual Behavior*, *41*(6), 1319–1320. https://doi.org/10.1007/s10508-012-0016-6

Engward, H., & Davis, G. (2015). Being reflexive in qualitative grounded theory: Discussion and application of a model of reflexivity. *Journal of Advanced Nursing*, *71*(7), 1530–1538. https://doi.org/10.1111/jan.12653

Erfanian, F., & Khadivzadeh, T. (2011). Evaluation of midwifery students' competency in providing intrauterine device services using the objective structured clinical examination. *Iranian Journal of Nursing and Midwifery Research*, *16*(3), 191–196. http://www.ncbi.nlm.nih.gov/pubmed/22224105%0Ahttp://www.pubmedcentral.nih.gov/art

iclerender.fcgi?artid=PMC3249797

Etikan, I. (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*, *5*(1), 1. https://doi.org/10.11648/j.ajtas.20160501.11

Fehring, R. J. (2004). The future of professional education in natural family planning. *Journal of Obstetric, Gynecologic, and Neonatal Nursing : JOGNN / NAACOG*, *33*(1), 34–43. https://doi.org/10.1177/0884217503258549

Fehring, R., Schneider, M., Fehring, R. J., & Schneider, M. (2017). *Effectiveness of a Natural Family Planning Service Program Effectiveness of a Natural Family Planning Service Program*. *42*(1), 43–49.

Fernández-García, D., Moreno-Latorre, E., Giménez-Espert, M. del C., & Prado-Gascó, V. (2021). Satisfaction with the clinical practice among nursing students using regression models and qualitative comparative analysis. *Nurse Education Today*, *100*. https://doi.org/10.1016/j.nedt.2021.104861

Festin, M. P. R., Kiarie, J., Solo, J., Spieler, J., Malarcher, S., Van Look, P. F. A., & Temmerman, M. (2016). Moving towards the goals of FP2020 — classifying contraceptives. *Contraception*, *94*(4), 289–294. https://doi.org/10.1016/j.contraception.2016.05.015

Gassas, R. (2021). Sources of the knowledge-practice gap in nursing: Lessons from an integrative review. *Nurse Education Today*, *106*(September 2020), 105095. https://doi.org/10.1016/j.nedt.2021.105095

George, T. P., DeCristofaro, C., & Murphy, P. F. (2020). Self-efficacy and concerns of nursing students regarding clinical experiences. *Nurse Education Today*, *90*(March), 104401.

https://doi.org/10.1016/j.nedt.2020.104401

Glaser, B. (1992). *Basics of grounded theory analysis: Emergence vs. forcing*. Sociology Press.

Glaser, B. G., & Strauss, A. L. (1967). The discovery of grounded theory: Strategies for qualitative research. In *Aldine Transactionransaction*. Aldine Transaction. http://www.sxf.uevora.pt/wp-content/uploads/2013/03/Glaser_1967.pdf

Goswami, G., Sharma, S. K., Sharma, R., & Rani, R. (2021). Simulation and Skill Training Facilities in Nursing Institute at Uttarakhand: A Cross-Sectional Study. *Iranian Journal of Nursing and Midwifery Research*, *26*(5). https://doi.org/10.4103/IJNMR 325 20

Gribble, J. N., Lundgren, R. I., Velasquez, C., & Anastasi, E. E. (2008). Being strategic about contraceptive introduction: the experience of the Standard Days Method®. *Contraception*, *77*(3), 147–154. https://doi.org/10.1016/j.contraception.2007.11.001

Higginbottom, G., & Lauridsen, E. I. (2014). The roots and development of constructivist grounded theory. *Nurse Researcher*, *21*(5), 8–13. https://doi.org/10.7748/nr.21.5.8.e1208

Ingraham, K. C., Davidson, S. J., & Yonge, O. (2018). Student-faculty relationships and its impact on academic outcomes. *Nurse Education Today*, *71*(August), 17–21. https://doi.org/10.1016/j.nedt.2018.08.021

Igras, S., Sinai, I., Mukabatsinda, M., Ngabo, F., Jennings, V., & Lundgren, R. (2014). The systems approach to monitoring and evaluation guides the scale-up of the Standard Days Method of family planning in Rwanda. *Global Health Science and Practice*, *2*(2), 234–244. https://doi.org/10.9745/GHSP-D-13-00165

Jennings, V., Sinai, I., Sacieta, L., & Lundgren, R. (2011). TwoDay Method: A quick-start approach. *Contraception*, *84*(2), 144–149.

https://doi.org/10.1016/j.contraception.2010.11.011

Jessee, E. (2020). “There Are No Other Options?”: Rwandan Gender Norms and Family Planning in Historical Perspective. *Medical History*, *64*(2), 219–239. https://doi.org/10.1017/mdh.2020.4

Karvande, S., Sonawane, D., Samal, J., & Mistry, N. (2018). Family planning training needs of auxiliary nurse midwives in Jharkhand, India: Lessons from an assessment. *National Medical Journal of India*, *31*(2), 73–78. https://doi.org/10.4103/0970-258X.253164

Kenny, M., & Fourie, R. (2014). Tracing the history of grounded theory methodology: From formation to fragmentation. *The Qualitative Report*, *19*(1965), 1–9. https://doi.org/http://www.nova.edu/ssss/QR/QR19/kenny103.pdf

Kenny, M., & Fourie, R. (2015). Contrasting classic, Straussian, and constructivist grounded theory: methodological and philosophical conflicts. *The Qualitative Report*, *20*(8), 1–18. https://nsuworks.nova.edu/tqr/vol20/iss8/9/

Kerthu, H. S., & Nuuyoma, V. (2019). Theory-practice gap: Challenges experienced by nursing students at the satellite campus of a higher education institution in Namibia. *International Journal of Higher Education*, *8*(5), 21–28. https://doi.org/10.5430/ijhe.v8n5p21

Kolb, S. M. (2012). Grounded Theory and the Constant Comparative Method : Valid Research Strategies for Educators. *Journal of Emerging Trends in Educational Research and Policy Studies*, *3*(1), 83–86. http://jeteraps.scholarlinkresearch.com/articles/Grounded Theory and the Constant Comparative Method.pdf

Li, Q., Rimon, J. G., & Ahmed, S. (2019). Capitalizing on shared goals for family planning: A concordance assessment of two global initiatives using longitudinal statistical models. *BMJ Open*, *9*(11), 1–9. https://doi.org/10.1136/bmjopen-2019-031425

Lundgren, R., Sinai, I., Jha, P., Mukabatsinda, M., Sacieta, L., & León, F. R. (2012). *Assessing the effect of introducing a new method into family planning programs in India, Peru, and Rwanda*. https://doi.org/10.1186/1742-4755-9-17

Luparell, S., & Conner, J. R. (2016). Managing Student Incivility and Misconduct in the Learning Environment. In D. M. Billings & J. A. Halstead (Eds.), *Teaching in Nursing: A Guide for Faculty* (5th Editio). Elsevier.

Malarcher, S., Spieler, J., Fabic, S., Jordan, S., Starbird, E. H., & Kenon, C. (2016). Fertility Awareness Methods : Distinctive Modern Contraceptives. *G*, *4*(1), 1–3. https://doi.org/10.9745/GHSP-D-15-00297

Marchi-Alves, L. M., Ventura, C. A. A., Trevizan, M. A., Mazzo, A., de Godoy, S., & Mendes, I. A. C. (2013). Challenges for nursing education in Angola: The perception of nurse leaders affiliated with professional education institutions. *Human Resources for Health*, *11*(1), 1–8. https://doi.org/10.1186/1478-4491-11-33

Marchin, A., Seale, R., Sheeder, J., Teal, S., & Guiahi, M. (2020). Integration of Catholic Values and Professional Obligations in the Provision of Family Planning Services: A Qualitative Study. *JAMA Network Open*, *3*(10), e2020297. https://doi.org/10.1001/jamanetworkopen.2020.20297

Marquez, M. P. N., Kabamalan, M. M. M., & Laguna, E. P. (2017). Ten Years of Traditional Contraceptive Method Use in the Philippines: Continuity and Change. *Demographic and Health Surveys*, *130*(July), 1–36. https://dhsprogram.com/pubs/pdf/WP130/WP130.pdf

Masimula, Q. K., van der Wath, A., & Coetzee, I. (2021). Promoting a person-centred workplace culture in a public nursing education institution in South Africa by fostering effective teamwork amongst nurse educators. *Nurse Education Today*, *99*(January), 104783.

https://doi.org/10.1016/j.nedt.2021.104783

Mbakaya, B. C., Kalembo, F. W., Zgambo, M., Konyani, A., Lungu, F., Tveit, B., Kaasen, A., Simango, M., & Bvumbwe, T. (2020). Nursing and midwifery students' experiences and perception of their clinical learning environment in Malawi: a mixed-method study. *BMC Nursing*, *19*(1), 1–14. https://doi.org/10.1186/s12912-020-00480-4

McCance, K., & Cameron, S. (2014). Midwives' experiences and views of giving postpartum contraceptive advice and providing long-acting reversible contraception: A qualitative study. *Journal of Family Planning and Reproductive Health Care*, *40*(3), 177–183. https://doi.org/10.1136/jfprhc-2013-100770

Ministry of Health. (2012). *Family planning policy* (Issue December). http://www.moh.gov.rw/fileadmin/templates/Docs/Rwanda-Family-Planning-Policy.pdf

Ministry of Health. (2018). *Fourth Health Sector Strategic Plan* (Issue July 2018-Jun 2014). http://npngti.com/wp-content/uploads/2018/06/Rwanda_Nat-Health-Sector-Plan_2018-2024.pdf

Ministry of Health. (2019). *Business Case for Family Planning in Rwanda*. http://www.familyplanning2020.org/sites/default/files/Our-Work/Advocacy-cso/Business_Case_FP_Rwanda.pdf

Mohammed, S., Abdulai, A.-M., & Iddrisu, O. A. (2019). Pre-service knowledge, perception, and use of emergency contraception among future healthcare providers in northern Ghana. *Contraception and Reproductive Medicine*, *4*(1), 1–7. https://doi.org/10.1186/s40834-018-0082-9

Monaghan, T. (2015). A critical analysis of the literature and theoretical perspectives on the theory-practice gap amongst newly qualified nurses within the United Kingdom. *Nurse*

Education Today, *35*(8), e1–e7. https://doi.org/10.1016/j.nedt.2015.03.006

Muganyizi, P. S., Ishengoma, J., Kanama, J., Kikumbih, N., Mwanga, F., Killian, R., & Mcginn, E. (2014). An analysis of pre-service family planning teaching in clinical and nursing education in Tanzania. *BMC Medical Education, 14*(1), 1–9. https://doi.org/10.1186/1472-6920-14-142

Mugore, S., Mwanja, M., Mwari, V., & Kalula, A. (2018). Adaptation of the Training Resource Package to Strengthen Preservice Family Planning Training for Nurses and Midwives. *Global Health: Science and Practice*, 1–10. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6172108/

Mukamana, D., Embo, M., Tengera, O., Muhayimana, A., Murekezi, J., DeGrave, H., Ndayisenga, J. P., & Valcke, M. (2020). Perceptions of midwifery students, mentors, and supervisors on the use of clinical teaching portfolio in Rwanda. *Journal of Nursing Education and Practice*, *10*(10), 52. https://doi.org/10.5430/jnep.v10n10p52

Mukamana, D., Uwiyeze, G., & Sliney, A. (2015). Nursing and Midwifery Education in Rwanda: Telling our Story. *Rwanda Journal*, *2*(2), 9. https://doi.org/10.4314/rj.v2i2.1F

Mukamuyango, J., Ingabire, R., Parker, R., Nyombayire, J., Abaasa, A., Asiki, G., Easter, S. R., Wall, K. M., Nyirazinyoye, L., Tichacek, A., Kaslow, N., Price, M. A., Allen, S., & Karita, E. (2020). Uptake of long-acting reversible contraception following integrated couples HIV and fertility goal-based family planning counselling in Catholic and non-Catholic, urban and rural government health centers in Kigali, Rwanda. *Reproductive Health*, *17*(1), 1–15. https://doi.org/10.1186/s12978-020-00981-0

Mulatu, T., Sintayehu, Y., Dessie, Y., & Deressa, M. (2020). Modern Family Planning Utilization and Its Associated Factors among Currently Married Women in Rural Eastern

Ethiopia: A Community-Based Study. *BioMed Research International*, *2020*. https://doi.org/10.1155/2020/6096280

Ndayisenga, J. P., Evans, M. K., Babenko-Mould, Y., & Mukeshimana, M. (2020). Nurse and midwife educators' experiences of translating teaching methodology knowledge into practice in Rwanda. *International Journal of Nursing Education Scholarship*, *17*(1), 1–13. https://doi.org/10.1515/ijnes-2020-0031

Obelenienė, B., Narbekovas, A., & Juškevičius, J. (2021). Anthropological and Methodical Differences of Natural Family Planning and Fertility Awareness–based Methods. *Linacre Quarterly*, *88*(1), 14–23. https://doi.org/10.1177/0024363919886517

Oermann, M. H., De Gagne, J. C., & Phillps, B. C. (2018). Understanding the Learner. In M. H. Oermann, J. C. De Gagne, & B. C. Phillips (Eds.), *Teaching in Nursing and Role of the Educator: The Complete Guide to Best Practice in Teaching, Evaluation, and Curriculum Development* (Second ed). Springer Publishing Company.

Pallone, S. R., & Bergus, G. R. (2009). Fertility awareness-based methods: another option for family planning. *Journal of the American Board of Family Medicine : JABFM*, *22*(2), 147–157. https://doi.org/10.3122/jabfm.2009.02.080038

Paul VI. (1968). Humanae Vitae. In *Encyclical letter* (pp. 1–11). Libreria Editrice Vaticana. http://www.vatican.va/content/paul-vi/en/encyclicals/documents/hf_p-vi_enc_25071968_humanae-vitae.html

Puckett, A. (2011). *Strengthening pre-service education for family planning services in sub-Saharan Africa* [the University of North Carolina at Chapel Hill]. https://doi.org/https://doi.org/10.17615/9k48-x990

Rieger, K. L. (2019). Discriminating among grounded theory approaches. *Nursing Inquiry*,

26(1), 1–12. https://doi.org/10.1111/nin.12261

Salifu, D. A., Gross, J., Salifu, M. A., & Ninnoni, J. P. K. (2019). Experiences and perceptions of the theory-practice gap in nursing in a resource-constrained setting: A qualitative descriptive study. *Nursing Open*, *6*(1), 72–83. https://doi.org/10.1002/nop2.188

Sanyal, S., & Hisam, M. W. (2018). The Impact of Teamwork on Work Performance of Employees: A Study of Faculty Members in Dhofar University Entrepreneurship in the Middle East. *IOSR Journal of Business and Management*, *20*(3), 15–22. https://doi.org/10.9790/487X-2003011522

Schwandt, H. M., Feinberg, S., Akotiah, A., Douville, T. Y., Gardner, E. V., Clodette, I., McQuin, E., Mohamed, M., Rugoyera, A., Musemakweli, D., Nichols, C. W., Nyangezi Uwajeneza, N., Arizmendi, J. S., Welikala, D., Yamuragiye, B., & Zigo, L. (2018). Family planning in Rwanda is not seen as population control but rather as a way to empower the people : Examining Rwanda's success in family planning from the perspective of public and private stakeholders. *Contraception and Reproductive Medicine*, *3*(18), 2–7. https://doi.org/10.1186/s40834-018-0072-y

Simmons, R. G., & Jennings, V. (2020). Fertility awareness-based methods of family planning. *Best Practice & Research Clinical Obstetrics & Gynaecology*, *66*, 68–82. https://doi.org/10.1016/j.bpobgyn.2019.12.003

Starbird, E., Norton, M., & Marcus, R. (2016). Investing in family planning: Key to achieving the sustainable development goals. *Global Health Science and Practice*, *4*(2), 191–210. https://doi.org/10.9745/GHSP-D-15-00374

Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques* (S. McElroy (ed.)). Sage Publications, Inc.

Thomson, S. B. (2011). Sample size and grounded theory. *Journal of Administration & Governance, 5*(1), 45–52. https://www.researchgate.net/publication/228513695_Sample_Size_and_Grounded_Theory

Tie, Y. C., Birks, M., & Francis, K. (2019). Grounded theory research : A design framework for novice researchers. *Sage Open Medicine, 7*, 1–8. https://doi.org/10.1177/2050312118822927

Tousignant, K., Vandyk, A., Lalonde, M., Bigras, S., Roggie, S., Weeks, K.-L., Morley, M., & Jacob, J.-D. (2021). Nursing Students in Clinical Placements Learning in Dyads: A Feasibility Study Using a Non-Randomized Pilot Trial. *Quality Advancement in Nursing Education - Avancées En Formation Infirmière, 7*(1). https://doi.org/10.17483/2368-6669.1235

Tshitenge, S. T., Nlisi, K., Setlhare, V., & Ogundipe, R. (2018). Knowledge, attitudes and practice of healthcare providers regarding contraceptive use in adolescence in Mahalapye, Botswana. *South African Family Practice, 60*(6), 181–186. https://doi.org/10.1080/20786190.2018.1501239

Umubyeyi, B., Babenko-Mould, Y., Hynie, M., Regan, S., & Leipert, B. (2021). A "Co-CREATES" framework to foster a positive learning environment for nursing students' professional development in Rwanda. *Nurse Education in Practice, 53*(March), 103053. https://doi.org/10.1016/j.nepr.2021.103053

United Nations. (2015). Transforming our World: The 2030 agenda for sustainable development (A/RES/70/1). In *United Nations*. United Nations. https://sdgs.un.org/sites/default/files/publications/21252030 Agenda for Sustainable Development web.pdf

United Nations. (2019). *Family Planning and the 2030 Agenda for Sustainable Development: Data Booklet*. https://www.un.org/en/development/desa/population/publications/pdf/family/familyPlanning_DataBooklet_2019.pdf

Unseld, M., Rötzer, E., Weigl, R., Masel, E. K., & Manhart, M. D. (2017). Use of Natural Family Planning (NFP) and Its Effect on Couple Relationships and Sexual Satisfaction: A Multi-Country Survey of NFP Users from the US and Europe. *Frontiers in Public Health*, *5*(March). https://doi.org/10.3389/fpubh.2017.00042

Urrutia, R. P., Polis, C. B., Jensen, E. T., Greene, M. E., Kennedy, E., & Stanford, J. B. (2018). Effectiveness of fertility awareness-based methods for pregnancy prevention: A systematic review. *Obstetrics & Gynecology*, *00*(00), 1–14. https://doi.org/10.1097/AOG.0000000000002784

Uwizeye, G., Mukamana, D., Relf, M., Rosa, W., Kim, M. J., Uwimana, P., Ewing, H., Munyiginya, P., Pyburn, R., Lubimbi, N., Collins, A., Soulé, I., Burke, K., Niyokindi, J., & Moreland, P. (2018). Building Nursing and Midwifery Capacity Through Rwanda's Human Resources for Health Program. *Journal of Transcultural Nursing*, *29*(2), 192–201. https://doi.org/10.1177/1043659617705436

VanEnk, L., Shelus, V., Mugeni, C., Mukabatsinda, M., & Cachan, J. (2018). Assessing the Competency and Acceptability of Community Health Worker Provision of Standard Days Method® in Family Planning Services in Gisagara District, Rwanda. *Studies in Family Planning*, *49*(2), 159–170. https://doi.org/10.1111/sifp.12059

Waddell, D. L., & Dunn, N. (2005). Peer Coaching : The Next Step in Staff Development. *Journal of Continuing Education in Nursing*, *36*(2), 84–89.

https://www.proquest.com/openview/f709706676c8f5f2fa2d8b44aa8d1c34/1?pq-origsite=gscholar&cbl=35533

Walker, S. H., & Davis, G. (2014). Knowledge and reported confidence of final year midwifery students regarding giving advice on contraception and sexual health. *Midwifery*, *30*(5), e169–e176. https://doi.org/10.1016/j.midw.2014.02.002

Wall, K. M., Bayingana, R., Ingabire, R., Ahlschlager, L., Tichacek, A., Allen, S., & Karita, E. (2018). Rwandan stakeholder perspectives of integrated family planning and HIV services. *International Journal of Health Planning and Management*, *33*(4), e1037–e1049. https://doi.org/10.1002/hpm.2586

Word Health Organisation. (2014). Ensuring human rights in the provision of contraceptive information and services - guidance and recommendations. *World Health Organization*. https://doi.org/10.1109/ITAB.2007.4407404

Word Health Organisation. (2020). *Nursing and Midwifery*. Fact Sheets. https://www.who.int/news-room/fact-sheets/detail/nursing-and-midwifery

Chapter 4: Discussion Implications, Recommendations, and Conclusion

This final chapter notes key findings related to the research questions, and literature is drawn into the discussion of these findings. The study's implications and recommendations for nursing education, practice, policy, and research are presented. The strengths and limitations of the study are noted. Finally, a conclusion arising from the findings of the study is presented.

Summary of the Study

The development of this constructivist grounded theory (CGT) study was supported by a scoping review study to analyze and identify gaps in the literature regarding family planning (FP) education in pre-service nursing/midwifery education. The scoping review findings revealed a need for further research about nurse/midwife educators' ability to teach different FP methods to nurse/midwife students in pre-service nursing and midwifery education.

This CGT study aimed to describe nurse/midwife educators' understanding of FP methods and the enactment of these methods into their teaching practice. The essential outcome of the study was the generation of a substantive theory of teaching FP methods in pre-service nursing and midwifery schools that describes how nurse and midwife educators introduced FP methods into their teaching practice to facilitate FP learning among nurse/midwife students. Details about the specific findings are presented in chapter three.

The study used a CGT approach guided by Charmaz's (2006; 2014) perspective. Using purposive and theoretical sampling, 25 nurse/midwife educators (9 nurses and 16 midwives) from six schools of nursing and midwifery in Rwanda participated in the study. Data were collected remotely via Zoom™ using a semi-structured interview guide with open-ended questions designed to address the purpose of the study and associated research questions.

The data analysis process involved CGT's four coding phases: initial, focused, axial, and

theoretical (Charmaz, 2006, 2014). Following Charmaz (2006, 2014), theoretical sampling was also used to address gaps identified in the analysis. Thus, the interview guide was modified as the study progressed to add areas that needed further exploration and to clarify gaps in the emerging substantive theory. As per Charmaz (2006, 2014), the four criteria used to evaluate the quality of CGT in relation to this study were credibility, originality, resonance, and usefulness.

Key Findings and Discussion

The Process of Teaching FP Methods in Pre-service Nursing/Midwifery Education

Three main Phases of the Process of Teaching FP Methods

The findings illustrated that the topic of FP methods is included in the undergraduate curriculum for nursing and midwifery programs in Rwanda. The phases of the process of teaching FP to students (preparing, facilitating, and evaluating), as described by nurse/midwife educators, are similar to the phases of teaching described in the literature (DeYoung, 2003; Millard, 2000; Petty, 2009). According to Millard (2000) and Petty (2009), teaching is a process that includes planning, implementation, and evaluation. The planning phase in the teaching process (DeYoung, 2003, Millard, 2000), which is named the preparing phase in this CGT study, includes all the preparation activities that the educators do before entering the classroom. These include formulating objectives, selecting and organizing content, choosing the appropriate teaching methods, designing the assessment methods, and revising/updating the course as required (DeYoung, 2003). In addition to these more traditional activities that educators would engage in before teaching, educators who were not confident enough to teach some FP methods procedures engaged in professional development activities such as peer coaching to increase their knowledge in and confidence for teaching those FP methods procedures before the teaching session.

The implementation phase, which in this CGT was termed facilitating, refers to the teaching sessions where the educators meet or interact with students and implement the teaching plans (DeYoung, 2003). Teaching in nursing/midwifery occurs in different settings, including classrooms, clinical settings, or online platforms (Oermann et al., 2018). In this CGT study, nurse/midwives educators used the term "facilitating" to explain that they facilitate FP learning for students. Facilitating learning for students is the role of the educator in a student-centred approach to teaching and learning and in andragogy which is encouraged and has been identified to support student learning in health care providers, including nursing/midwifery (Mukhalalati & Taylor, 2019; Jinks, 1999). Although the teaching methodologies that nurse/midwife educators used were not the focus of this study, educators who facilitate students' learning use teaching methods that help students to be self-directed learners and take responsibility for their learning (Petty, 2009)

The last phase in the process of teaching is evaluating. In this phase, the educators assess if the planned learning outcomes were achieved and the factors that hindered learning. The evaluation phase information is used to further inform the planning phase for the following teaching session (Millard, 2000). Nurse/midwife educators in this study did the formative evaluation during the facilitating phase and at the end of the module, where FP was a unity. However, evaluation was inconsistent in a number of practice settings, which influenced educators' ability to be aware of what could be improved/changed/attended to support student learning.

This study highlighted the influential factors that affected the process of teaching FP methods, such as contextual factors, self, and FP methods policy and social norms. When the educators were performing specific activities in each phase of the process of teaching FP, they

had to make decisions about the actions that could help them deal with those factors. The influential factors mentioned above are considered a category discussed in detail in chapter three. This chapter discusses the impact of those factors on nurse/midwife educators' ability to teach FP methods in pre-service nursing and midwifery education.

During the preparation phase, nurse/midwife educators needed a well-designed FP curriculum, time to prepare, adequate prerequisites such as FP methods knowledge and skills, and updated resources on all FP methods to prepare the lesson plans and content. Inadequacy of those required resources and prerequisites impacted the preparing phase and determined the educators' decisions and actions to prepare for and then engage in the facilitating phase. According to Bogren et al. (2021), the quality of education comprises three interrelated dimensions: quality of human resources, infrastructure, and material resources available. Lack of required resources humper the quality of teaching and learning (Billings & Halstead, 2016; Colby, 2000). To prepare nurse/midwife students to provide quality health care services upon graduation, one of the core competencies that nurse/midwife educators need include maintaining current knowledge and skills in theory and practice related to the subjects they are teaching (Bownes & Freeman, 2020; WHO, 2016). The resources and materials are necessaire in teaching and learning to support the students learning needs (Billings & Halstead, 2016).

In other studies mainly conducted in low resource settings, inadequate resources, such as lack of instructional materials, insufficient simulation-based learning teaching and learning infrastructures and equipment, deficient competencies in educators, limited access to update evidence-based literature, and inadequate time have been identified as the main factors that undermining the quality of nursing and midwifery education (Bogren et al., 2021; Lateef & Mhlongo, 2019, Janighorban, Yamani, & Yousefi, 2016).

The facilitating phase depended on the preparing phase and the learning and teaching spaces where the educator needed to interact with other nurses/midwife educators and students to enable a conducive and positive learning environment. For example, teaching in the skills lab was done in small groups, where the educator first demonstrated the procedure skills, and after that, students practiced those procedures under the supervision and guidance of the educator (Bugaj & Nikendei, 2016). The nurse/midwife educator who teaches the FP unit needed to involve colleagues who could help teach the FP methods procedure skills in the skills lab to complete the unit within the time allocated. However, it has been noted that some of the assisting educators or colleagues were not initially assigned to teach the module where FP is located, or a few others were not formally educated in FP methods content to be delivered to students, and consequently, this could negatively affect the quality of teaching FP methods in various ways.

Involving colleague educators who were not initially assigned to teach FP methods is linked to the shortage of faculty members who are ready and prepared enough to teach FP competencies to nurse and midwife students. According to Bvumbwe & Mtshali (2018) and Saba et al. (2018), when nurse and midwife educators are not prepared enough to teach nursing-related courses, this results in ineffective teaching related to fear or anxiety of being challenged by students during demonstration and debriefing sessions. Therefore, using unprepared nurse-midwife educators in teaching FP methods may result in the inadequate capacity of academic institutions to graduate nurses and midwives ready to provide quality FP methods services. This highlights how academic institutions need to make sure that educators who are involved in the FP teaching process are substantively prepared with all competencies required to teach FP content and skills to nurse and midwifery students.

In clinical placements, nurse/midwife educators needed to interact with the

nurse/midwifery clinical staff and involve them in the teaching activities to facilitate FP learning for students who considered them as the expert in providing FP services and were familiar with the settings (Habimana et al., 2016). Nurse/midwife educators in this CGT study used the traditional faculty model (TFM) for clinical teaching, where the students provide patient care under the supervision of a nursing/midwifery instructor from a nursing/midwifery school. In the TFM of clinical teaching, the instructor and students are seen as guests in the clinical setting, and the nurse/midwife staff avoids interfering with the process of teaching and learning (Habimana et al., 2016; Luhanga, 2018; Plemmons, 2016). In a study conducted in Rwanda to explore the strategies to improve the practical learning environment, nursing students, staff, clinical instructors and nurse leaders suggested changing this approach and adopting a more supportive approach to clinical teaching, such as the preceptorship approach where educators and clinical staff are both involved in students' learning (Umubyeyi et al., 2021)

The last phase in the process of teaching FP methods in pre-service midwifery and nursing education involved evaluating the FP methods learning outcomes, and this consisted of two types – formative and summative. A formative evaluation was performed during the presenting phase to inform the ongoing process of teaching FP methods. The formative evaluation helped the educator in preparing subsequent FP methods lessons knowing where to emphasize points to enable students to take up new knowledge and skills, and a summative evaluation at the end of the reproductive health or women's health module where FP was a unit. To conduct the evaluation in the skills lab, objective structured clinical evaluation (OSCE) with various stations were used where students had to complete the OSCE within the allocated time. The nurse educators needed to collaborate and involve other colleague nurses/midwife educators available to assist in conducting OSCE. The OSCE is organized in different stations depending on the

skills/competencies to be evaluated, and each station has an examiner who uses a rating scale or checklist to evaluate students (Kelly et al., 2016; Al Sinawi et al., 2012). Each of the involved educators was assigned a specific evaluation station. Effective collaboration among nurse educators and teamwork during the teaching process has been identified to contribute to the achievement of student learning goals (Masimula et al., 2021; Ndayisenga et al., 2020).

During the evaluation phase of the process of teaching FP, educators need to use an evaluation tool specific to each FP procedure, related equipment, and materials. However, the findings of this study revealed that in the clinical placement, formative and summative evaluation in FP services was not necessarily completed with all the students. In clinical placements, students rotated to various services such as FP service, antenatal care services, delivery and post-partum services and others, and they were only evaluated in the service where they were allocated during the evaluation period. This situation indicates that some students might not have the opportunity to be evaluated on FP methods skills because of how clinical rotations are set up. Based on the importance of evaluation for student learning, this situation needs attention. Evaluation helps to ascertain the student's competence (Sadeghi & Bagheri, 2017). For students, it is a source of motivation and a reason to accomplish the learning goals to be successful future health professionals (Barkimer, 2018).

To be more effective in assessing students' strengths and areas for improvement, both formative and summative evaluations are essential. The purpose of formative assessment is to monitor students' learning and provide educators and students with feedback that can be used to improve teaching and learning (Lajane et al., 2020; Koh, 2010), while summative evaluation is used to evaluate student learning at the end of an instructional unit, course or program by comparing it to some standard or benchmark (Billings & Halstead, 2016). In this evaluation

phase, formative assessment helps the educator improve students' learning without judging their performance. As a result, the formative assessment allows students and educators to know how students' learning is progressing and inform them about the quality of their work and how they can self-regulate. Educators provide feedback to their students through formative assessment, which helps students to develop their learning (Billings & Halstead, 2016; Lajane et al., 2020; Koh, 2010). Moreover, the nurse or a midwife educator uses summative evaluation to make sure FP-related objectives and expected learning outcomes are well achieved

As highlighted above, in relation to the process educators engaged in to enact FP methods teaching, the nurse/midwife educators described a number of challenges that hampered their ability to effectively teach FP, which should be addressed to ensure the provision of quality of FP education at the pre-service stage of learners' development as soon-to-be health professionals. In particular, in the substantive theory that emerged from this CGT study, the facilitators and barriers to teaching FP in pre-service nursing and midwifery education are named influential factors. In relation to this CGT study, these influential factors are discussed in further detail as contextual factors and factors related to the educator (self).

Main Influential Factors

Contextual Factors. The existing literature indicated that no other study was conducted in this area to explore how nurse and midwife educators teach FP to nurse and midwife students. Therefore, the findings from this study are unique as they reflect the understudied area of teaching FP from nurse and midwife educators' perspectives. This CGT study revealed that the contextual factors that needed consideration to teach FP were resources, time allocated to FP, and the number of students in the clinical placements. These factors caused challenges to the process of teaching FP methods. Availability of the required resources, such as formally

educated nurse/midwife teachers, a manageable ratio of teachers compared to the number of students, FP methods materials needed for teaching specific FP methods like intrauterine devices, implants and updated FP resources such as books and articles, FP teaching and evaluation tools, and equipped skills lab facilitated FP methods teaching and positively impacted the nurse/midwife educators' ability to teach FP.

When available, these resources could be considered facilitators. However, insufficient or lack of resources were barriers limiting nurse/midwife educators' ability to teach FP methods as they could not do some of the necessary teaching activities without the required resources. For example, at schools where the skills lab was not equipped with the required equipment, such as mannequins and tools to teach the FP methods, nurse/midwife educators could not teach some FP procedures, and students could not do the hands-on practice before clinical placement. Consequently, this situation limits students' opportunities to learn and gain the required knowledge and skills that will be needed after their graduation or when joining the workforce in their respective clinical or community settings. In addition, when students were not exposed to more hands-on practices in their pre-service education, they were not well prepared to offer quality FP methods services. Clinical placements where students have the opportunities to apply the theory into practice and where they are mentored by qualified and skilled educators and staff is fundamental to preparing nurse/midwife students who can offer quality health care services, including FP services (WHO Expert Group on (Nursing and Midwifery Education, 2001).

The WHO (2009) recommends that equipped nursing or midwifery schools should have accessible, current and relevant physical facilities such as classrooms, clinical practice sites, information and communications technology, clinical simulation laboratories and libraries. They should also have professional support personnel and human resources to meet program and

student demands and a system in place for student-support services. In studies about FP methods in pre-service education conducted in sub-Saharan Africa and India, inadequate resources and infrastructure necessary to teach FP methods to students were reported to limit FP education quality (Karvande et al., 2018; Muganyizi et al., 2014). Similar to the results of this CGT study, educators from schools that lacked infrastructure, such as the skills lab and required FP materials described the quality of FP training in those schools as inadequate to equip nurse/midwife students with the required knowledge and skills to offer quality FP upon graduation.

Health care quality may be compromised if nurses/midwives are not equipped to assume their professional responsibilities (Oldland et al., 2020). Inadequate prepared nurses/midwives in the Rwandan context, where nurses and midwives are the main providers of FP methods (Schwandt et al., 2021), may result in poor FP methods delivery outcomes, ineffective provision of FP methods, increased rate of failure of provided FP methods, low rate of FP methods uptake and increased cases of unmet needs of FP. Also, inadequate preparedness for providing FP methods-related care could cause various psychological adverse outcomes among women and their families when they are experiencing unexpected outcomes due to poor FP services.

In addition to human and material resources, insufficient time allocated to FP methods in the curriculum coupled with a large number of students from different schools completing their placement experience at the same time and in the same FP service areas were identified as other critical contextual factors that interrupted the process of FP teaching in pre-service nursing and midwifery education. Researchers highlighted that insufficient time allocated to FP methods both for theory and practice was associated with superficial FP teaching (lacking depth) and students graduating without the required skills to offer quality FP methods care (Muganyizi, 2014; Puckett, 2011; Walker & Davis, 2014). Similar to the findings of this study, studies conducted in

Africa indicated that having many students in clinical placements resulted in overcrowded clinical services and limited students' opportunities to integrate theory into practice (Asirifi et al., 2017; Bvumbwe & Mtshali, 2018, Daniels, 2016; Mukamana et al., 2020).

Self (Educators' Personal Factors). A critical new finding from this CGT study relates to the personal, contextual factors of nurse/midwife educators teaching FP methods. In particular, the ways in which their personal values, beliefs, attitudes, knowledge, skill, and confidence could ultimately impact students' learning and, in turn, students' provision of quality FP methods care as soon-to-be health professionals. In this study, nurse/midwife educators who did not have experience in FP methods as health professionals after graduation or did not participate in FP education as students had limited knowledge, skills and confidence in teaching FP methods. Furthermore, many had a negative attitude toward fertility awareness-based methods (FABM) as they had a bias about the efficacy of such FP methods. Some nurse/midwife educators held religious beliefs and moral values that were against some FP methods, which conflicted with their obligation to teach all the FP methods. Ultimately, nurse/midwife educators' limited FP knowledge, skills, confidence, negative attitudes towards some FP methods, and religious beliefs and moral values against some FP methods negatively impacted their ability to teach some FP methods and caused inconsistency in teaching FP in pre-service nursing and midwifery education.

Effective teaching and learning depend on the knowledge and skills that the nurse/midwife educators bring to the teaching and learning context (Mukumbang & Alindekane, 2017). Educators' knowledge of the subject matter that they teach is essential to facilitate students' learning and help them achieve their learning goals. However, educators who have limited knowledge of the subject matter they are teaching, as revealed in this CGT study, may

confuse students and limit their ability to achieve their learning goals (Ibrahim et al., 2019). Educators' beliefs and attitudes are also essential issues in teaching and learning. They influence them in different ways, including how they teach and what they teach (OECD, 2009). Educators' beliefs and attitudes toward course subjects are fundamental factors that influence teaching. They are linked with the educators' strategies to overcome challenges, and they influence student motivation and learning. Educators' personal beliefs shape their perspectives and judgements, which then determine their behaviours and decisions during the teaching process (Fazle & Khan, 2020).

In this study, some nurse/midwife educators who identified themselves as ascribing to Catholicism held religious beliefs and moral values against some FP methods, which conflicted with their responsibility as educators to teach students all the FP methods. The Catholic Church promotes natural FP methods that align with its philosophy on human reproduction and women's dignity (Mullady & Ruppersberger, 2013; Paul VI, 1968). However, most participants, who identified their religious beliefs as Catholic, had personal understanding and beliefs towards FP methods that challenged their religion's FP philosophy; thus, they were amenable to teaching artificial FP methods. Similar moral decisions and behaviours have been identified in a study conducted in the USA among Catholic gynecologists. Some Catholic gynecologists valued their professional obligations and provided any FP method that aligned with the client's choice, even if it was against the gynecologist's own religious beliefs (Marchin et al., 2020). In this CGT study, though some participants presented moral conflicts with teaching artificial FP methods, only one had moral conflicts with all the artificial FP methods, and many of them expressed having a moral conflict with teaching students about emergency contraception, as they believed that emergency contraception is an indirect way to induce abortion. Thus, some privileged the

learning goals and taught emergency contraception to students despite their moral dilemma and others decided to only mention it to let the students know that the method exists but without details that could help students provide the methods to clients.

In the field of reproductive health, including FP methods, the provision of some health care, such as abortion and some FP methods, go counter to some health care providers' religious beliefs and moral values (Chavkin et al., 2013). When health care providers, including nurses/midwives, personal beliefs and moral values conflict with the professional norms and practice, conscience issues arise (Lamb et al., 2019a). Health care providers who hold religious beliefs against some FP methods can object to the provision of such services, which is known in nursing literature as consciousness objection (Lamb et al., 2019a; 2019b). In some countries, those health care providers have the right to do so and are protected under the freedom of religion (Chavkin et al., 2013). However, they are required to refer the clients to other health care providers or services where they can access those health care. Hearth care provider's right of consciousness objection must be bounded by the obligation to ensure that clients' right to information and services are respected

There is a gap in the literature about what nurse/midwife educators should do when conscience issues arise when teaching sensitive topics, such as FP methods that may conflict with their personal beliefs and values. Nurse/midwife educators have a crucial role in shaping the values and professional identity of nurse/midwife students (Mukumbang & Alindekane, 2017). They act as professional role models for students (Jack et al., 2017). Thus, nurse/midwife educators involved in FP methods teaching must understand their values and biases about different FP methods and avoid projecting their beliefs and values against some FP methods to students who need to be equipped with the required knowledge, skills, and positive attitude that

will help them to offer quality FP services to clients. To achieve this, administrators of nursing and midwifery schools need to create morally supportive environments for nurse/midwife educators that provide adequate room to exercise objection in a way that does not limit the quality of FP teaching and learning for students.

These study findings provided insight into the connection between poor knowledge and negative attitudes towards some FP methods. For example, with limited knowledge and skills on FABM, some nurse/midwife educators had a negative attitude towards FABM before gaining advanced knowledge about those methods. After participating in FP training covering those methods, they reported that their negative attitude towards FABM changed, and they improved the content and the way of teaching those methods to nurse/midwife students. Similarly, Solo and Festin (2019), in their study to understand provider bias in FP services, found that bias or negative attitudes towards some FP methods were related to providers' inadequate knowledge about those methods. In another study, Judge et al. (2011) found that FP education about emergency contraception (EC) increased providers' knowledge, reduced their bias towards the use of EC, and increased counselling and provision of EC to clients.

The increase of knowledge about FP methods has been noted as contributing to educators' positive attitudes towards some FP methods and the improvement in teaching those methods to students. Thus, formal FP education and strategies that might improve the educator's knowledge and confidence in teaching FP methods are crucial to improving the quality of FP education to support nurse/midwife students' FP learning. Studies conducted in Rwanda to assess the impact of education programs to improve the knowledge, skills and confidence of health care providers, including mentors and nurse/midwife educators, in providing quality FP services and effectively teaching different subjects indicated a positive impact on educators' ability's to effectively teach

and facilitate students learning and improved health care provider's knowledge and skills to offer quality FP services (Kasine et al., 2018; Ndayisenga et al., 2020; Uwajeneza et al., 2015).

It was observed in this CGT study that there was inconsistency in clinical FP teaching between nurse/midwife educators who had the opportunity to improve their FP knowledge and skills if they participated in FP training or advanced nursing/midwifery education and those who did not have the opportunity. Furthermore, inconsistency between the current FP practice in clinical settings and what students learned from nursing/midwifery schools was another significant barrier to the process of FP teaching. According to Ismail et al. (2015), Mbakaya et al. (2020), and Vuso and James (2017), inconsistency or contradictory information about FP methods content and procedures taught to students between nurse/midwife educators and between the clinical staff nurses/midwives is a challenge that negatively impacted their clinical learning experience.

The competencies and consistency in teaching among nurse/ midwife educators play a big role in students' professional competency development and contribute significantly to students' abilities to provide quality health care services upon graduation (Ali et al., 2020; WHO, 2016). Inconsistency among nurse/midwife educators when teaching FP methods negatively impacts students learning, as students may be confused about which accurate FP content they have to retain. It indicates that nurse/midwife educators who are involved in teaching FP methods do not collaborate during the preparing phase to agree on the content to be taught to students during the facilitation phase. During the facilitation phase, each educator may provide FP information based on their knowledge, skills, beliefs and values towards FP methods. Some may prepare the content using ancient sources while others use updated, evidence-based content; some may not search for updated information to update their FP knowledge and skills.

Inconsistencies in teaching FP methods among nurse/midwife educators may also be related to what may be referred to as the ‘hidden curriculum’(Chen, 2015). Even though formal and official curricula at each school indicate what should be taught in the FP unit, the noted inconsistency in teaching FP methods between clinical settings and classroom teaching might be linked to a hidden curriculum. In every context, other unwritten or unofficial elements of that hidden curriculum, such as personal values, attitudes and beliefs towards FP, differ among individuals, i.e., educators, nurses/midwives from clinical settings that students are exposed to when learning FP (Chen, 2015; Raso et al., 2019, Yazdani et al., 2019).

When students are exposed to nurse/midwife educators who are not consistent in teaching FP methods, they will not be prepared to integrate FP methods theory into practice which is one of the causes of theory-practice gaps (Gülten Sucu et al., 2019; Raso et al.,2019). The theory-practice gap occurs when evidence-based knowledge does not reflect actual practice (Shoghi et al., 2019). One of the consequences of the theory-practice gap is poor quality health care services with risks to patient safety and poor patient outcomes (Gassas, 2021; Salifu et al., 2019). Specifically, in FP, poor FP methods services increase the rate of failure due to inaccurate use of the FP methods and unwanted pregnancies, limiting clients' satisfaction and FP accessibility and uptake (Bellizzi et al., 2022; Wulifan et al., 2015).

To address the issue of inconsistency among nurses and midwives in nursing and midwifery education and improve the quality of nursing/midwifery education, the WHO (2016) recommended the competencies that nurse/midwife educators need to develop and demonstrate to provide quality nursing/midwifery education and equip nurse/midwife students with the qualities that will help them to offer quality health care. Those competencies include: understanding theories and principles of adult learning; demonstrating the skills and ability to

develop and implement the curriculum; maintaining the knowledge and skills in nursing practice; using research and evidence-based knowledge to identify and solve educational and practice-based problems; demonstrating effective communication that promotes collaborative teamwork and enhances partnership among health professional education and clinical practice; professionalism; monitor, assess, and evaluate teaching and learning methods and experiences concerning nursing/midwifery; and demonstrating management, leadership and advocacy skills (WHO, 2016). Administrators of nursing and midwifery programs must facilitate opportunities for nurse/midwife educators to develop and apply these core competencies to offer quality nursing/midwifery education and produce nurses and midwives who will provide quality health care services.

Overcoming Challenges

This CGT study provided insights into different actions that nurse/midwife educators engaged in to deal with the challenges of teaching FP methods to students, such as limited resources, heavy workload related to high students -teacher ratio and the limited time allocated to FP. In the substantive theory that emerged from this CGT, those actions are framed within the discourse of overcoming challenges. Nurse/midwife educators tried to adapt teaching FP with the available resources while recognizing the inherent challenges caused by a lack of or insufficient resources.

Despite the resource constraints nurse and midwife educators were experiencing, findings from this study indicated that they were resilient, flexible, and adaptable to teach and facilitate FP learning for students. For example, at some schools with less equipped skills labs to teach the skills/ procedures related to FP methods, educators used alternative teaching options like online FP videos to cover different FP methods. Using the online video of a best practice exemplar

effectively supports and enhances student learning for nursing and midwifery skills, increasing students' satisfaction and positive learning experience (Clerkin et al., 2022; Forbes et al., 2016; Holland et al., 2013). Video has been identified as a contemporary, relevant teaching strategy that can help nurse/midwife students develop clinical skills (Forbes et al., 2016). However, different scholars affirm that video is more effective when used as an adjunct to psychomotor skills teaching in the skills lab/clinical teaching or blended teaching (Clerkin et al., 2022; Holland et al., 2013), and students perceive video as a more valuable revision tool and an excellent preparation method for practice (Forbes et al., 2016)

Using video as the only possible alternative teaching option for teaching FP methods-related competencies for schools with less equipped skills lab is better than omitting to teach those skills due to a lack of resources. Nonetheless, it is not sufficient to adequately prepare students for FP services, which could harm the safety of the client (Wu & Busch, 2019) and limit the efficiency of the administered FP method when mistakes are made by the student when practicing on an actual client for the first time (Wu & Busch, 2019). A student who enters clinical placement without exposure to the FP procedures in a safe learning environment where they can learn from successes and mistakes and build confidence in their ability to provide FP care may not learn from the experience since they may be uncomfortable and afraid of making mistakes (Uysal, 2016). Thus, the administrators of the nursing programs would ensure the availability of FP teaching resources to facilitate FP learning for nurse/midwife students.

To deal with their limited FP knowledge, skills, and confidence in teaching FP methods, nurse/midwife educators engaged in peer coaching, teamwork, interaction and collaboration with co-workers and clinical nurse/midwives. It has been previously identified that in clinical teaching, the collaboration between nurse/midwife educators and nurse/midwife staff is

empowering, improves conducive clinical teaching and learning environment, and improves students' clinical learning experiences (Bvumbwe, 2016; Maguire, Zambroski, & Cadena, 2012; Tang & Chan, 2019; Umubyeyi, Babenko-Mould, Hynie, Regan, & Leipert, 2021; Williamson et al., 2020). As mentioned by Carlson et al. (2020) and Preston (2019), teamwork and peer coaching among nurse and midwife educators involved in this study increased their confidence in teaching responsibilities and their willingness to apply new knowledge to the teaching process. Therefore, results from this study can be considered in the context of research about teamwork and peer-coaching among faculty members

The nurse/midwife educators who had negative attitudes toward FABM classified these methods as traditional methods, taught them superficially to students, and discouraged them from providing FABM to clients because they believed that these methods were not effective as other FP methods. In the same way, nurse/midwife educators who had religious beliefs and moral values against emergency contraception taught it superficially to inform the students that it exists merely, but without the details that could help students provide emergency contraception to clients. This is one of the impacts that nurse/midwife educators' beliefs and negative attitudes towards some FP methods have on their teaching practice, which would negatively influence the attitude and bias of nurse/midwife students on emergency contraception.

Felstead (2013) pointed out that students view their educators as their primary role models for learning to engage in practice. Thus, students exposed to educators who had negative attitudes toward FABM and emergency contraception would likely have negative attitudes towards those methods going forward as health professionals upon graduation. The educators' coping strategy of providing limited or no teaching about some FP methods essentially demonstrated their intentions to prioritize their own attitudes and beliefs over the importance of

attending to advancing students' learning in a fulsome way so that those students could then engage in health care practices from the standpoint of equity for the client. Ultimately, such decisions by some educators might have negatively affected students' knowledge, skills, attitude, and confidence towards the methods they learned about, and they were left unaware and uninformed about the FP methods that were not taught. It is proposed that the cycle of selective information shared with students means that upon graduation, they will need to seek out FP education to provide accurate and necessary FP information to enable clients to make informed choices about FP methods.

In conclusion, the model describing the theoretical process of teaching FP in pre-service nursing and midwifery education programs in Rwanda provides new insights into influential factors by highlighting contextual considerations of nurse/midwife educators, such as knowledge, moral values and beliefs towards some FP methods that can significantly impact the quality of family planning teaching in pre-service nursing and midwifery education. The model also contributed to the existing limited knowledge about teaching FP in pre-service nursing and midwifery education by providing insights into the actions nurse/midwife educators engage in to overcome the challenges that limit their ability to teach FP planning. Understanding the influential factors and the strategies of nurse educators to overcome the challenges created by those factors could guide the development of strategies to improve the quality of FP teaching in pre-service nursing and midwifery education. Policymakers in nursing/midwifery education could use these study results to develop policies and strategies to improve the educators' expertise in teaching FP and eliminate the factors that hamper the quality of FP training in pre-service nursing/midwifery education. For example, in collaboration with the high education council and the nursing and midwifery council, a policy governing regular FP training for

nurse/midwife educators involved in FP teaching would help equip nurse/midwife educators with updated FP knowledge and skills to teach FP confidently. Also, a policy that recognizes and governs consciousness objection in teaching sensitive topics that conflict with moral values and religious beliefs of some educators would be established to clarify effective strategies to implement the FP curriculum and help students to achieve the expected FP learning goals.

Significance of the Study

This study is significant as it is the first study investigating the process of teaching FP in pre-service nursing and midwifery education and the factors influencing that process from the nurse/midwife educators' perspectives. This CGT study addressed the gap in the literature regarding how nurse/midwife educators perceived and enacted FP methods into teaching practice in pre-service nursing/midwifery education, and a substantive theory was described that captures nurse/midwife educators' perspective about the essential factors impacting their ability to teach FP methods. Understanding the barriers that limit nurse/midwife educators' ability to effectively teach FP to nurse/midwife students provided insights into possible reasons for nurse/midwife students' unpreparedness to offer quality FP services when entering the workforce.

Nursing/midwifery theoretical models can assist in guiding the advancement and direction of nursing/midwifery disciplines. The development of a substantive theory of teaching FP in pre-service nursing and midwifery education provides a foundation to improve FP services and education both in pre-service and in-service education for nurses/midwives. The knowledge acquired through this study could lead to the development of interventions to address the factors that negatively impact the process of teaching FP. A better understanding of those factors could lead to positive changes in the curriculum, the recruitment of faculty members, and faculty development.

The substantive theory that emerged from this study extends the literature on FP training by illustrating that educators or trainers in FP need the required resources, knowledge and skills to teach FP. Additionally, they should focus on reflection and reflexivity regarding how their personal beliefs and moral values regarding FP methods influence their attitudes toward the philosophy, ultimately impacting their ability to teach FP methods effectively. These findings may have implications in other healthcare disciplines involved in providing FP services, such as medicine, as medical educators also teach FP in pre-service medical education.

Implications and Recommendations

Implication for Nursing/Midwifery Education and Practice

Based on the findings of this study, the factors that influence the process of FP teaching in pre-service nursing and midwifery education need to be addressed to improve the quality of FP training in pre-service nursing and midwifery education. The contextual factors: resources (infrastructures, materials and teaching tools, and human resources: nurse/midwife educators who can be involved in FP teaching activities), time allocated to FP, and the number of students in clinical placements are essential factors to consider in order to teach FP to nurse/midwife students effectively.

Simulation and skills development facilities are crucial in nursing/midwifery pre-service education, as they provide nurse/midwife students with the opportunity to practice hands-on procedures and develop clinical decision-making skills through scenarios and situations that reflect real-life clinical situations (Goswami, Sharma, Sharma, & Rani, 2021; Kim, Park, & Shin, 2016). These study findings revealed that the skills/simulation lab in some schools of nursing/midwifery lacked the required materials and equipment to teach FP in pre-service nursing and midwifery education effectively. The school administration could prioritize

equipping skills/simulation labs with all the required facilities and ensure that all faculty members are trained to use those facilities when teaching different professional courses, including FP. The program administrators at the departmental level would ensure the availability and implementation of a plan and schedule for students to practice nursing/midwifery procedures, including FP procedures, before clinical placement.

Availability and effective use of skills/simulation lab at school could also help to improve students' clinical learning experience by reducing the number of students in clinical placements at a time. With a well-equipped skills lab, first-year students might have more time to practice the procedure skills in the skills lab instead of going to clinical placement without the basic skills on different procedures. Thus, there will be sufficient spaces in clinical placements and opportunities for senior nursing/midwifery students to achieve their clinical learning objectives before graduation. Different studies on skills/simulation lab in medical and nursing/midwifery education identified different benefits of using skills/simulation labs (Bugaj & Nikendei, 2016; Berragan, 2011; Ewertsson, Allvin, Holmström, & Blomberg, 2015; Herrmann-Werner et al., 2013). The skills/simulation lab helps students feel secure as they do not have to worry that a mistake can cause pain or damage a person (Bugaj & Nikendei, 2016). Many practice opportunities in the skills/simulation lab can increase students' confidence in performing procedures, and they are comfortable when they perform the procedure on the actual person. (Berragan, 2011). By switching roles in simulations, students develop team spirit and the values of teamwork, such as effective communication, trust, honesty, humility, discipline and creativity (Berragan, 2011; Ewertsson et al., 2015; Herrmann-Werner et al., 2013; Mitchell et al., 2012). Teamwork in the healthcare system is recognized as an essential tool for constructing a more patient-centred care approach, coordinated and effective healthcare system that provides quality

health care (Mitchell et al., 2012). Thus, educating nurse-midwife students to work in a team during the process of teaching them FP is one of the ways to prepare them to offer quality family planning services.

This CGT study indicated that too many students in FP services during a clinical placement limited their ability to practice different FP methods. Evidence indicates that a large number of students in a clinical service or ward leads to overcrowding of the service and poor clinical learning outcomes (Asirifi et al., 2017; Abuosi et al., 2021; Mbakaya et al., 2020; Panda et al., 2021). Participants in this study suggested that health care institutions could collaborate and work in partnership with all the schools of nursing and midwifery to plan the clinical placement and admit a reasonable number of students from each school at different times to improve the quality of clinical teaching and learning. Before the beginning of the academic year, all the schools that share clinical settings would have a planning meeting with each health facility to plan the clinical placements for students. This joint planning will help clinical settings to receive students from different schools at different times to avoid many students that overcrowding services and limit students' opportunities for achieving clinical learning goals.

Collaboration and partnership between academic institutions and healthcare institutions to support the professional development of nurse/midwife students would not be limited to planning clinical placement but would also involve sharing knowledge, expectations of students, and educational roles and responsibilities (Umubyeyi et al., 2021). The findings of this study indicated that nurse/midwife staff in clinical settings play an essential role in teaching FP to nurse/midwife students during clinical placements. The nurse/midwife educators relied on staff nurse/midwife to teach the FP methods they were not confident in teaching their students. Building a formal partnership and collaboration among the schools of nursing/midwifery and the

health care institutions at the administrative level would help to sustain the existing informal collaboration at the individual level.

There is evidence that collaborative approaches to clinical teaching where staff nurses/midwives work in collaboration with nurse/midwife educators from schools successfully enhance practice-academic partnership and the commitment of staff nurses/midwives to guide and mentor students (Bvumbwe, 2016; Phuma-Ngaiyaye et al., 2017). In a previous study conducted in Rwanda, Umubyeyi et al. (2021) found a collaboration and partnership gap between academic institutions and health care facilities. To bridge that gap, health care facilities would assign staff nurses/midwives in charge of clinical teaching and learning or establish an education department or unit that will assure a smooth clinical learning experience for students and work in partnership and collaboration with nurse/midwife educators from schools. In collaboration with the teaching institutions, the administrators of health care institutions could organize educational workshops to train staff nurses/midwives on clinical teaching, mentoring, and knowledge transfer strategies

The impact of preceptorship training on staff nurses/midwives has been documented in the literature Kamolo et al. (2017), in a critical review of preceptor development for nurses working with undergraduate nurse students, found that nurses who participated in a preceptor training program reported an increase in knowledge, skills and confidence in facilitating students' clinical learning. Hong and Yoon (2021) found that preceptor training positively affected the clinical teaching behaviour of nurse preceptors. A study conducted to assess the perception of newly qualified nurses on preceptorship programs found that the preceptors play an essential role in alleviating stress for preceptees, and the preceptorship program positively affected preceptees in terms of communication, clinical skills, and professional skills development (Marks-Maran et al.,

2013).

These study findings indicated that nurse/midwife educators might teach FP using outdated information because they lack updated FP resources. Thus, there were inconsistencies between outdated content students learn from schools and the current updated clinical practice. To equip nurse/midwife students with the required knowledge and skills to provide quality FP services upon graduation, the school administrators need to ensure the availability of updated FP resources and the preparedness of nurse/midwife educators to teach up-to-date FP content and procedures.

This study revealed that a lack of updated FP resources to prepare the content for some FP methods, such as FABM, and a lack of FP teaching and evaluating tools related to some FP methods were barriers that limited nurse/midwife educators' ability to teach all the FP methods effectively. To equip nurse/midwife students with the required knowledge and skills to provide all the FP methods to clients, the school administration would consider this challenge and ensure the availability of updated resources for all FP methods included in the curriculum.

In this study, the time allocated to FP for classroom and clinical teaching was considered inadequate to equip students with the required FP knowledge and skills to offer quality FP services to clients. In order to improve the quality of FP teaching in pre-service nursing and midwifery education, the nursing/midwifery FP curriculum would need to be revised, and the suggestions to increase the number of hours provided by the nurse/midwife educators would be considered to allow sufficient time of practice both in the skills lab and in clinical placements.

Implications for Policy

In this study, educators' personal factors, such as knowledge, skills, confidence, and

beliefs related to FP methods, were identified as essential elements that positively or negatively influence the teaching of FP methods. Experience in offering FP services and participation in FP training were found to be instrumental for educators to develop knowledge, skills, positive attitudes, and confidence in teaching FP methods to nurse/midwife students. A policy outlining pre-requisite knowledge and skills for teaching courses, such as FP methods, could be a strategy to ensure that administrators invest in the education of their faculty and put more consideration into workload assignments to ensure there is a good fit between educators' strengths and course topic areas.

Some educators who have negative attitudes towards some FP methods or religious beliefs against some FP methods might not be comfortable teaching all the FP methods effectively to facilitate FP learning to nurse/ midwife students. The school administration could establish and implement the policy to facilitate faculty members who might not be comfortable teaching some FP methods against their religious beliefs—for example, by inviting a guest speaker who could provide a lecture on a topic that the educator is not confident about or comfortable teaching. Heads of the departments would contact the faculty member assigned to teach the FP methods unit to ensure that they are comfortable and prepared to teach all the FP methods. Nurse/midwife educators who may have moral conflicts teaching some FP methods may also themselves inform the program coordinator in advance to arrange how students will learn those methods effectively. This type of policy might further enhance openness and feelings of safety among educators around disclosure.

It was revealed in this study that the schools of nursing/midwifery did not have policies and guidelines to accommodate students who refused to practice some FP methods in the clinical placement that are against their religious beliefs and moral values during clinical practice.

Consequently, when nurse/midwife educators encountered such cases, they managed them differently based on each educator's character, beliefs, and perceptions. Schools could establish policies and guidelines that would offer nurse educators guidance on handling such cases and provide clear orientation and guidance to students in making moral decisions towards FP methods and other sensitive topics during their formal education.

A number of participants in this study suggested that their respective school administration would provide them time (at least one day a week) to work in clinical placement sites to practice hands-on procedures to refresh and enhance their clinical skills in order to teach and mentor students in the classroom, skills/simulation and clinical placement effectively. Regarding teaching FP methods, schools could establish and implement a policy to help newly hired educators assigned to teaching FP methods get clinical experience in FP services.

The study findings also revealed that the Ministry of Health did not involve academic institutions when introducing new FP methods protocols or invite schools to join training sessions with healthcare providers to learn about how to implement the newly updated protocols. Thus, nurse/midwife educators were not informed about the updated protocols and procedures and sometimes taught FP methods using outdated information. Furthermore, nurse/midwife educators lack the knowledge, skills and resources to prepare and teach fertility awareness-based methods, while known experts and institutions provide those specific FP methods in Rwanda. Policy demonstrating collaboration between academic and clinical settings to support faculty development and clinical instructor mentorship skills could formalize the faculty and clinical staff collaborative learning processes. The outcome of this policy would be the savings of financial resources spent on educating newly hired nurses/midwives in FP methods and the sustainability of FP services (Berdzuli, Rossi, & Zlidar, 2009; Mugore, Mwanja, Mwari, &

Kalula, 2018).

Implications for Research

Further research is needed to address the influential factors impacting teaching FP methods in pre-service nursing and midwifery education by educators. These studies should focus on researching interventions such as the education programs for nurse/midwife educators that include theoretical content and spending time learning how to provide FP methods counselling, education, and resources with clients in clinical settings, which might be affordable strategies to greatly decrease the barriers limiting nurse/midwife's ability to teach all the FP methods effectively. This substantive theoretical model needs to be investigated by other educators who teach FP methods in pre-service for other healthcare providers. Replication of findings with other populations will help test the influential factors that impact educators' ability to teach FP to healthcare provider students and the educators' strategies to overcome challenges when teaching FP in pre-service education for healthcare providers and will further assist in supporting the validation of the process identified in this study.

Further, a study could be conducted to understand how nurse/midwife educators practice peer coaching as a strategy for faculty development and to understand the impact of peer coaching on nurse/midwife educators' ability to teach FP to nurse /midwife students. Further investigation could elicit an even deeper understanding of how nurse/midwife educators' beliefs and moral values towards FP influence FP learning for nurse/midwife students.

Studies are also needed to understand the experiences of nurse/midwife students in learning FP methods and providing FP services during their clinical placements. For example, a study should be conducted to assess nurse/midwife students' knowledge, skills, and confidence in providing different FP methods to clients. Studies need to investigate how students’ religious

beliefs and moral values toward FP methods might impact what they choose to share with clients as students and later as graduates.

Strengths and Limitations

This study has some limitations that require mentioning. Participants in this study only included nurse/midwife educators from the schools of nursing and midwifery in Rwanda. Although they all had experience teaching FP methods to varying degrees in the classroom, skills lab, and clinical settings, the nurse/midwives working in FP services in different health care facilities where students were allocated for clinical placements are also involved in guiding and teaching FP methods to nurse/ midwife students. Involving them in the study would have increased the diversity of participants and provided data with different perspectives. That being said, participants were able to share their perceptions in relation to teaching FP from a variety of contexts and did speak to interactions with clinical staff.

Collecting data remotely through Zoom™ limited the researcher's ability to be physically present and perhaps be able to pick up participants' more nuanced emotions and non-verbal behaviours during the interviews. Sometimes it was necessary to turn the video camera off during the interview to increase internet connectivity. Furthermore, personal meetings and lengthy communication in Rwanda are traditionally primarily in-person and face-to-face. Participants who do not fully trust confidentiality through internet communication platforms might have been reluctant to respond openly to the interview questions, as they would have done if the interviews had been conducted in person. However, having the ability to share their stories using technology was also a flexible and accessible way for participants to be part of the research and knowledge development process.

This study had many strengths. Participants were recruited from all the current schools of

nursing/midwifery in Rwanda, thus likely revealing issues that were occurring nationally. The use of member checking with participants and CGT rigour criteria contributed to the quality of this study.

Conclusion

Equipping nurse/midwife students with the required knowledge and skills to offer quality FP methods counselling, resources, and education to clients upon graduation is vital to improving the quality of FP services overall and supporting the sustainability of SRH and FP content and programs. This is the first study that addressed nurse/midwife educators' enactment of teaching FP methods to facilitate FP learning among nurse/midwife students in Rwanda. The substantive theory that emerged from this CGT study indicated that the process of teaching FP in pre-service nursing and midwifery education has three cycle phases: Preparing, Facilitating, and Evaluating. This study results provide insight into the influential factors that impact teaching FP and nurse/midwife educators' ability to teach FP effectively to nurse/midwife students. The main influential factors that significantly impacted nurse/midwife educators' ability to teach FP are contextual factors, including personal factors related to the nurse/midwife educators. The contextual factors included the availability of resources, students-teacher ratio, number of students in clinical placements, and the time allocated to the FP unity.

The personal factors related to the nurse/midwife educators include knowledge, skills, confidence, attitude, beliefs and moral values towards FP methods. To overcome the challenges caused by those influential factors, some nurse/midwife educators adapted their FP teaching to the available resources. They also engaged in different actions such as peer coaching, teamwork, and interactive collaboration with colleague nurse/midwife educators and staff nurses/midwives in clinical placements. To improve the quality of FP methods education in pre-service nursing

and midwifery education, the nurse/midwife educators' insights regarding the facilitators and barriers that impact the process of FP methods teaching must be understood and addressed by school administration in partnership with educators, clinical partners, and the Ministry of Health in Rwanda. With the insights provided by this study, future research should investigate strategies to overcome highlighted barriers, increase nurse/midwife educators' expertise in teaching FP, and reduce the poor preparedness of nurse/midwife students on some FP methods identified in this study.

References

Abuosi, A. A., Kwadan, A. N., Anaba, E. A., Daniels, A. A., & Dzansi, G. (2021). The number of students in clinical placement and the quality of the clinical learning environment: A cross-sectional study of nursing and midwifery students. *Nurse Education Today*, *108*(2022). https://doi.org/10.106/j.nedt.2021.105168

Al Sinawi, H., Sharbati, M. Al, Obaid, Y., & Viernes, N. (2012). Preparing and conducting objective structured clinical examination for Oman medical specialty board R1-R4 residents. *Oman Medical Journal*, *27*(3), 246–248. https://doi.org/10.5001/omj.2012.56

Ali, E. F., Abd-EIAal, E. M., & AboSrea, T. H. (2020). Nursing Educators Staff Competencies regarding performance in Technical Institute of Nursing. *Journal of Nursing Science - Benha University*, *29*(9), 1890–1896. https://jnsbu.journals.ekb.eg/article_159639_152a1639df4c57ac590833c952daf986.

Asirifi, M., Ogilvie, L., Barton, S., Aniteye, P., Stobart, K., Bilash, O., Eliason, C., Ansong, G., Aziato, L., & Kwashie, A. (2017). Assessing challenges of clinical education in a baccalaureate nursing program in Ghana. *Journal of Nursing Education and Practice*, *7*(10), 109. https://doi.org/10.5430/jnep.v7n10p109

Barkimer, J. (2018). Evaluation of Clinical Growth and Nursing Student Motivation in the Traditional Clinical Learning Environment. *ProQuest Dissertations and Theses*, 166. http://ezproxy.puc.cl/dissertations-theses/evaluation-clinical-growth-nursing-student/docview/2137578591/se-2?accountid=16788%0Ahttp://todosibuc.uc.cl/openurl/56PUC_INST/56PUC_INST_SP?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:dissertation&genre

Bellizzi, S., Mannava, P., Nagai, M., & Sobel, H. L. (2020). Reasons for discontinuation of

contraception among women with a current unintended pregnancy in 36 low and middle-income. *Contraception*, *101*(1), 26–33. https://doi.org/10.1016/j.contraception.2019.09.006

Berragan, L. (2011). Simulation: An effective pedagogical approach for nursing. *Nurse Education Today*, *31*(2011), 660–663. https://doi.org/10.106/j.ndt.2011.01.019

Billings, D., & Halstead, J. (2016). *Teaching in nursing: A guide for faculty*. Elsevier.

Bogren, M., Kaboru, B. B., & Berg, M. (2021). Barriers to delivering quality midwifery education programmes in the Democratic Republic of Congo — An interview study with educators and clinical preceptors. *Women and Birth*, *34*(1), e67–e75. https://doi.org/10.1016/j.wombi.2020.06.004

Bugaj, T. ., & Nikendei, C. (2016). Practical clinical training in skills labs: Theory and practice. *Journal for Medical Education*, *33*(4), 1–21. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5003146/

Bvumbwe, T. (2016). Enhancing nursing education via an academic–clinical partnership: An integrative review. *International Journal of Nursing Sciences*, *3*(3), 314–322. https://doi.org/10.1016/j.ijnss.2016.07.002

Bvumbwe, T., & Mtshali, N. (2018). Nursing education challenges and solutions in Sub-Saharan Africa: An integrative review. *BMC Nursing*, *17*(1), 1–11. https://doi.org/10.1186/s12912-018-0272-4

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis* (S. David (ed.)). SAGE Publication.

Chavkin, W., Leitman, L., & Polin, K. (2013). Conscientious objection and refusal to provide reproductive healthcare: a White Paper examining the prevalence, health consequences, and policy responses. *International Journal of Gynaecology and Obstetrics: The Official Organ*

of the International Federation of Gynaecology and Obstetrics, *123 Suppl*, S41-56. https://doi.org/10.1016/S0020-7292(13)60002-8

Chen, R. (2015). Do as we say or do as we Do? Examining the Hidden Curriculum in Nursing Education. *Canadian Journal of Nursing Research*, *47*(3), 7–17. https://doi.org/10.1177/084456211504700301

Clerkin, R., Patton, D., Moore, Z., Nugent, L., Avsar, P., & O'Connor, T. (2022). What is the impact of video as a teaching method on achieving psychomotor skills in nursing? A systematic review and meta-analysis. *Nurse Education Today*, *111*(September 2021), 105280. https://doi.org/10.1016/j.nedt.2022.105280

Colby, J. (2000). Defining Equality in Education. In *Educational Studies*. https://doi.org/10.1207/s15326993es0802_3

Daniels, F. (2016). Effects of increased student enrolments in a Bachelor of Nursing programme on health care service delivery. *South African Journal of Higher Education*, *28*(6), 1750–1761. https://doi.org/10.20853/28-6-423

DeYoung, S. (2003). *Teaching strategies for nursing educators* (Pearson Ed). Prentice Hall.

Ewertsson, M., Allvin, R., Holmström, I. K., & Blomberg, K. (2015). Walking the bridge: Nursing students' learning in clinical skill laboratories. *Nurse Education in Practice*, *15*(4), 277–283. https://doi.org/10.1016/j.nepr.2015.03.006

Fazle, M., & Khan, R. (2020). Teach (er) and Teach (ing): Beliefs, Attitudes, and Teaching Practices. *Teacher Development Academic*, *1*(1), 49–65. https://tdsig.org/wp-content/uploads/2020/06/TDAJ-V1N1-Ramzan.pdf

Forbes, H., Oprescu, F. I., Downer, T., Phillips, N. M., McTier, L., Lord, B., Barr, N., Alla, K., Bright, P., Dayton, J., Simbag, V., & Visser, I. (2016). Use of videos to support teaching

and learning of clinical skills in nursing education: A review. *Nurse Education Today*, *42*, 53–56. https://doi.org/10.1016/j.nedt.2016.04.010

Gassas, R. (2021). Sources of the knowledge-practice gap in nursing: Lessons from an integrative review. *Nurse Education Today*, *106*(September 2020), 105095. https://doi.org/10.1016/j.nedt.2021.105095

Gülten Sucu, D., Hülya Fırat, K., & Refia Selma, G. (2019). Difficulties in Clinical Nursing Education: Views of Nurse Instructors'. *International Archives of Nursing and Health Care*, *5*(1). https://doi.org/10.23937/2469-5823/1510114

Habimana, A., Malachie, T., & Pauline, U. (2016). Nursing students in clinical practice - Developing a model for clinical supervision. *Nurse Education in Practice*, *3*(1), 381–391. https://doi.org/10.1016/j.nepr.2006.11.011

Herrmann-Werner, A., Nikendei, C., Keifenheim, K., Bosse, H. M., Lund, F., Wagner, R., Celebi, N., Zipfel, S., & Weyrich, P. (2013). "Best Practice" Skills Lab Training vs. a "see one, make one" Approach in Undergraduate Medical Education: An RCT on Students' Long-Term Ability to Perform Clinical Procedural Skills. *PLoS ONE*, *8*(9). https://doi.org/10.1371/journal.pone.0076354

Holland, A., Smith, F., McCrossan, G., Adamson, E., Watt, S., & Penny, K. (2013). Online video in clinical skills education of oral medication administration for undergraduate student nurses: A mixed methods, prospective cohort study. *Nurse Education Today*, *33*(6), 663–670. https://doi.org/10.1016/j.nedt.2012.01.006

Hong, K. J., & Yoon, H. J. (2021). Effect of nurses' preceptorship experience in educating new graduate nurses and preceptor training courses on clinical teaching behaviour. In *International Journal of Environmental Research and Public Health* (Vol. 18, Issue 3, pp.

1–12). https://doi.org/10.3390/ijerph18030975

Ibrahim, A.-R., Joel, A., Eunice, U., & Abimbola, O. (2019). Students ' Perspective on Factors Influencing Teaching - Learning in a College of Nursing and Midwifery Institution, North Central Nigeria. *Lautech Journal of Nursing*, *5*(November). https://www.researchgate.net/publication/340655589_STUDENTS%27_PERSPECTIVE_ON_FACTORS_INFLUENCING_TEACHING_-LEARNING_IN_A_COLLEGE_OF_NURSING_AND_MIDWIFERY_INSTITUTION_NORTH_CENTRAL_NIGERIA

Ismail, L. M.-N., Aboushady, R. M.-N., & Eswi, A. (2015). Clinical instructor's behaviour: Nursing student's perception toward effective clinical instructor's characteristics. *Journal of Nursing Education and Practice*, *6*(2). https://doi.org/10.5430/jnep.v6n2p96

Jack, K., Hamshire, C., & Chambers, A. (2017). The influence of role models in undergraduate nurse education. *Journal of Clinical Nursing*, *26*(23–24), 4707–4715. https://doi.org/10.1111/jocn.13822

Janighorban, M., Yamani, N., & Yousefi, H. (2016). The facilitators and impediment factors of midwifery student's empowerment in pregnancy and delivery care: A qualitative study. *Journal of Research in Medical Sciences*, *21*(5). https://doi.org/10.4103/1735-1995.189649

Jinks, A. A. (1999). Applying education theory to nursing curricula: Nurse teachers' definitions of student-centred andragogical teaching and learning concepts. *Journal of Further and Higher Education*, *23*(2), 221–230. https://doi.org/10.1080/0309877990230206

Judge, S., Peterman, A., & Keesbury, J. (2011). Provider determinants of emergency contraceptive counselling and provision in Kenya and Ethiopia. *Contraception*, *83*(5), 486–490. https://doi.org/10.1016/j.contraception.2010.09.005

Kamolo, E., Vernon, R., Head, A., & Toffoli, L. (2017). A Critical Review of Preceptor Development for Nurses Working with Undergraduate Nursing Students. *International Journal of Caring Sciences*, *10*(2), 1089. www.internationaljournalofcaringsciences.org

Karvande, S., Sonawane, D., Samal, J., & Mistry, N. (2018). Family planning training needs of auxiliary nurse midwives in Jharkhand, India: Lessons from an assessment. *National Medical Journal of India*, *31*(2), 73–78. https://doi.org/10.4103/0970-258X.253164

Kasine, Y., Babenko-Mould, Y., & Regan, S. (2018). Translating continuing professional development education to nursing practice in Rwanda: Enhancing maternal and newborn health. In *International Journal of Africa Nursing Sciences* (Vol. 8, pp. 75–81). https://doi.org/10.1016/j.ijans.2018.03.001

Kelly, M. A., Mitchell, M. L., Henderson, A., Jeffrey, C. A., Groves, M., Nulty, D. D., Glover, P., & Knight, S. (2016). OSCE best practice guidelines—applicability for nursing simulations. *Advances in Simulation*, *1*(1), 1–10. https://doi.org/10.1186/s41077-016-0014-1

Koh, L. C. (2010). Academic staff perspectives of formative assessment in nurse education. *Nurse Education in Practice*, *10*(4), 205–209. https://doi.org/10.1016/j.nepr.2009.08.007

Lajane, H., Gouifrane, R., Qaisar, R., Chemsi, G., & Radid, M. (2020). Perceptions, Practices, and Challenges of Formative Assessment in Initial Nursing Education. *The Open Nursing Journal*, *14*(1), 180–189. https://doi.org/10.2174/1874434602014010180

Lamb, C., Evans, M., Babenko-Mould, Y., Wong, C. A., & Kirkwood, K. W. (2019a). Conscience, conscientious objection, and nursing: A concept analysis. *Nursing Ethics*, *26*(1), 37–49. https://doi.org/10.1177/0969733017700236

Lamb, C., Evans, M., Babenko-Mould, Y., Wong, C., & Kirkwood, K. (2019b). Nurses' use of

conscientious objection and the implications for conscience. *Journal of Advanced Nursing*, *75*(3), 594–602. https://doi.org/10.1111/jan.13869

Lateef, A. M., & Mhlongo, E. M. (2019). Factors Influencing Nursing Education and Teaching Methods in Nursing Institutions: A Case Study of South West Nigeria. *Global Journal of Health Science*, *11*(13), 13. https://doi.org/10.5539/gjhs.v11n13p13

Luhanga, F. L. (2018). The traditional-faculty supervised teaching model: Nursing faculty and clinical instructors' perspectives. *Journal of Nursing Education and Practice*, *8*(6), 124. https://doi.org/10.5430/jnep.v8n6p124

Marchin, A., Seale, R., Sheeder, J., Teal, S., & Guiahi, M. (2020). Integration of Catholic Values and Professional Obligations in the Provision of Family Planning Services: A Qualitative Study. *JAMA Network Open*, *3*(10), e2020297. https://doi.org/10.1001/jamanetworkopen.2020.20297

Marks-Maran, D., Ooms, A., Tapping, J., Muir, J., Phillips, S., & Burke, L. (2013). A preceptorship programme for newly qualified nurses: A study of preceptees' perceptions. In *Nurse Education Today* (Vol. 33, Issue 11, pp. 1428–1434). https://doi.org/10.1016/j.nedt.2012.11.013

Mbakaya, B. C., Kalembo, F. W., Zgambo, M., Konyani, A., Lungu, F., Tveit, B., Kaasen, A., Simango, M., & Bvumbwe, T. (2020). Nursing and midwifery students' experiences and perception of their clinical learning environment in Malawi: a mixed-method study. *BMC Nursing*, *19*(1), 1–14. https://doi.org/10.1186/s12912-020-00480-4

Millard, L. (2000). Teaching the teachers: Ways of improving teaching and identifying areas for development. *Annals of the Rheumatic Diseases*, *59*(10), 760–764. https://doi.org/10.1136/ard.59.10.760

Mitchell, P., Wynia, M., Golden, R., Bob, M., Okun, S., Webb, E., Rohrbach, V., & Von Kohorn, I. (2012). Core principles and values of effective team-based health care. In *Discussion Paper* (Issue 1). https://nam.edu/wp-content/uploads/2015/06/VSRT-Team-Based-Care-Principles-Values.pdf

Muganyizi, P. S., Ishengoma, J., Kanama, J., Kikumbih, N., Mwanga, F., Killian, R., & Mcginn, E. (2014). An analysis of pre-service family planning teaching in clinical and nursing education in Tanzania. *BMC Medical Education*, *14*(1), 1–9. https://doi.org/10.1186/1472-6920-14-142

Mukamana, D., Embo, M., Tengera, O., Muhayimana, A., Murekezi, J., DeGrave, H., Ndayisenga, J. P., & Valcke, M. (2020). Perceptions of midwifery students, mentors, and supervisors on the use of clinical teaching portfolio in Rwanda. *Journal of Nursing Education and Practice*, *10*(10), 52. https://doi.org/10.5430/jnep.v10n10p52

Mukhalalati, B. A., & Taylor, A. (2019). Adult Learning Theories in Context: A Quick Guide for Healthcare Professional Educators. In *Journal of Medical Education and Curricular Development* (Vol. 6, p. 238212051984033). https://doi.org/10.1177/2382120519840332

Mukumbang, F. C., & Alindekane, L. M. (2017). Student nurse-educators' construction of teacher identity from a self-evaluation perspective: A quantitative case study. In *Nursing Open* (Vol. 4, Issue 2, pp. 108–115). https://doi.org/10.1002/nop2.75

Mullady, B., & Ruppersberger, L. (2013). The moral nature and practice of natural family planning versus contraception. *Linacre Quarterly*, *80*(3), 202–212. https://doi.org/10.1179/0024363913Z.00000000031

Ndayisenga, J. P., Evans, M. K., Babenko-Mould, Y., & Mukeshimana, M. (2020). Nurse and midwife educators' experiences of translating teaching methodology knowledge into

practice in Rwanda. *International Journal of Nursing Education Scholarship*, *17*(1), 1–13. https://doi.org/10.1515/ijnes-2020-0031

Oermann, M. H., De Gagne, J. C., & Phillps, B. C. (2018). Understanding the Learner. In M. H. Oermann, J. C. De Gagne, & B. C. Phillips (Eds.), *Teaching in Nursing and Role of the Educator: The Complete Guide to Best Practice in Teaching, Evaluation, and Curriculum Development* (Second edi). Springer Publishing Company.

Oldland, E., Botti, M., Hutchinson, A. M., & Redley, B. (2020). A framework of nurses' responsibilities for quality healthcare — Exploration of content validity. In *Collegian* (Vol. 27, Issue 2, pp. 150–163). https://doi.org/10.1016/j.colegn.2019.07.007

Panda, S., Dash, M., John, J., Rath, K., Debata, A., Swain, D., Mohanty, K., & Eustace-Cook, J. (2021). Challenges faced by student nurses and midwives in the clinical learning environment – A systematic review and meta-synthesis. *Nurse Education Today*, *101*(February), 104875. https://doi.org/10.1016/j.nedt.2021.104875

Paul VI. (1968). Humanae Vitae. In *Encyclical letter* (pp. 1–11). Libreria Editrice Vaticana. http://www.vatican.va/content/paul-vi/en/encyclicals/documents/hf_p-vi_enc_25071968_humanae-vitae.html

Petty, G. (2009). *Teaching Today: A Practical Guide* (Fourth Edi). Nelson Thornes LTD. http://elearning.fit.hcmup.edu.vn/~longld/References for TeachingMethod&EduTechnology - Tai lieu PPDH & Cong Nghe Day Hoc/(Book) - Sach them Khao - Teaching Method/2010 G.Petty - Teaching Today A Practical Guide 4th Ed.pdf

Phuma-Ngaiyaye, E., Bvumbwe, T., & Chipeta, M. C. (2017). Using preceptors to improve nursing students' clinical learning outcomes: A Malawian students' perspective. *International Journal of Nursing Sciences*, *4*(2017), 169–168.

https://doi.org/10.1016/j.ijnss2017.03.001

Plemmons, C. H. (2016). The relationship between clinical teaching models and perceived clinical self-efficacy and attitude toward team process. [University of Nevanda Las Vegas]. In *UNLV, the University Libraries*. http://search.ebscohost.com/login.aspx?direct=true&db=rzh&AN=124407550&site=ehost-live

Puckett, A. (2011). *Strengthening pre-service education for family planning services in sub-Saharan Africa* [the University of North Carolina at Chapel Hill]. https://doi.org/https://doi.org/10.17615/9k48-x990

Raso, A., Marchetti, A., D'Angelo, D., Albanesi, B., Garrino, L., Dimonte, V., Piredda, M., & De Marinis, M. G. (2019). The hidden curriculum in nursing education: a scoping study. *Medical Education*, *53*(10), 989–1002. https://doi.org/10.1111/medu.13911

Saba, F., Shahriari, M., & Sedigheh, F. (2018). Exploring the challenges of clinical education in nursing and strategies to improve it: A qualitative study. *Journal of Education and Health Promotion*, *7*, 1–6. https://doi.org/10.4103/jehp.jehp

Sadeghi, T., & Bagheri, S. H. (2017). Challenges of teacher-based clinical evaluation from the nursing students point of view: Qualitative content analysis. *Journal of Education and Health Promotion*, *6*(72). https://doi.org/10.4103/jehp_109_16

Salifu, D. A., Gross, J., Salifu, M. A., & Ninnoni, J. P. K. (2019). Experiences and perceptions of the theory-practice gap in nursing in a resource-constrained setting: A qualitative descriptive study. *Nursing Open*, *6*(1), 72–83. https://doi.org/10.1002/nop2.188

Schwandt, H. M., Boulware, A., Corey, J., Herrera, A., Hudler, E., Imbabazi, C., King, I., Linus, J., Manzi, I., Merritt, M., Mezier, L., Miller, A., Morris, H., Musemakweli, D., Musekura,

U., Mutuyimana, D., Ntakarutimana, C., Patel, N., Scanteianu, A., … Feinberg, S. (2021). "… the way we welcome them is how we will lead them to love family planning.": family planning providers in Rwanda foster compassionate relationships with clients despite workplace challenges. *BMC Health Services Research*, *21*(1), 1–11. https://doi.org/10.1186/s12913-021-06282-x

Shoghi, M., Sajadi, M., Oskuie, F., Dehnad, A., & Borimnejad, L. (2019). Strategies for bridging the theory-practice gap from the perspective of nursing experts. *Heliyon*, *5*(9), e02503. https://doi.org/10.1016/j.heliyon.2019.e02503

Solo, J., & Festin, M. (2019). Provider bias in family planning services: A review of its meaning and manifestations. *Global Health Science and Practice*, *7*(3), 371–385. https://doi.org/10.9745/GHSP-D-19-00130

Umubyeyi, B., Babenko-Mould, Y., Hynie, M., Regan, S., & Leipert, B. (2021). A "Co-CREATES" framework to foster a positive learning environment for nursing students' professional development in Rwanda. *Nurse Education in Practice*, *53*(March), 103053. https://doi.org/10.1016/j.nepr.2021.103053

Uwajeneza, P., Babenko-Mould, Y., Evans, M., & Mukamana, D. (2015). Midwives' experience of participating in the Advanced Life Support in Obstetrics® educational program in Rwanda. *Journal of Nursing Education and Practice*, *5*(11). https://doi.org/10.5430/jnep.v5n11p120

Vuso, Z., & James, S. (2017). Effects of limited midwifery clinical education and practice standardization of student preparedness. *Nurse Education Today*, *55*, 134–139. https://doi.org/10.1016/j.nedt.2017.05.014

Walker, S. H., & Davis, G. (2014). Knowledge and reported confidence of final year midwifery

students regarding giving advice on contraception and sexual health. *Midwifery*, *30*(5), e169–e176. https://doi.org/10.1016/j.midw.2014.02.002

WHO. (2016). Nurse educator core competencies. *World Health Organizations*, 1–30. https://www.who.int/hrh/nursing_midwifery/nurse_educator050416.pdf

WHO Expert Group on Nursing and Midwifery Education. (2001). *Nurses and Midwives for Health. WHO European Strategy for Nursing and Midwifery Education* (pp. 1–164). http://www.euro.who.int/__data/assets/pdf_file/0005/125744/E72918.pdf%0Ahttp://www.who.dk/nursing

World Health Organization. (2009). Human Resources for Health: Global standards for the initial education of professional nurses and midwives. In *World Health Organization 2009* (pp. 1–40). https://www.who.int/hrh/nursing_midwifery/hrh_global_standards_education.pdf

Wulifan, J. K., Brenner, S., Jahn, A., & De Allegri, M. (2015). A scoping review on determinants of unmet need for family planning among women of reproductive age in low and middle-income countries. *BMC Women's Health*, *16*(1), 2. https://doi.org/10.1186/s12905-015-0281-3

Yazdani, S., Momeni, S., Afshar, L., & Abdolmaleki, M. (2019). A comprehensive model of hidden curriculum management in medical education. *Journal of Advances in Medical Education & Professionalism, 7*(3), 123–130. https://doi.org/10.30476/JAMP.2019.45010

Appendixes

Appendix A: Example of Data, Initial Codes, Focused Codes, to Category

Data	Initial codes	Focused codes	Sub-category	Category
"The factors limiting my ability to teach FP include: - Insufficient time allocated to FP in the curriculum; - I am the only one that attended the training, but I am not the only one who supervises students in clinical settings; - we do not have some books or resources we should be using when preparing some lessons, which is a big challenge (you cannot find a book about FP on FABM. **[P4]**	Having insufficient time allocated to FP Lacking sufficient prepared nurse/midwife educators to teach all the FP methods Lacking resources/documents to prepare FP lessons Lacking resources on FABM	Lacking resources Facing a high student-teacher ratio in the skills lab Having insufficient time allocated to FP Meeting many students from other schools in clinical settings	**Context**	**Influential factors**
"An essential element that complicates this is the number of students, as it is not only our students that need to be allocated in FP services but also students from other schools" **[P3]**	Meeting many students from other schools in the clinical placement			

"We find many students from other schools in clinical placements all the time, and this is a challenge because many students overcrowd the services, and everyone cannot find sufficient learning opportunities to practice." **[P14]**	Lacking learning opportunities due to many students from other schools in clinical placement			
"FP as unity has 20 hours. The necessary FP content is included in the curriculum. But to me, the time allocated to FP as a unit is not sufficient. We need at least 60 hours to complete both theory and practice" **[P6]**	Needing additional hours on RH module to finish FP unit			
"The Ministry of health and even the RBC (Rwanda Biomedical Center) do not involve us in FP training pieces, and we access the updated FP protocol and procedures when they are posted online." **[P20]**	Lacking FP training Lacking information about the FP new protocols and procedures	Needing FP training to update her/his FP knowledge and skills Lacking information on new updated FP protocols and procedures Having bias and a negative attitude towards some FP methods	**Self**	
"Though I help students, I need some practice regarding long-acting FP to teach students confidently." **[P18]**	Needing to practice long-acting FP methods			
"It challenged me when I started teaching FP because I felt that I had theoretical knowledge without practical skills about FP, especially about implants and IUDs." **[P18]**	Lacking practical FP knowledge and skills when starting teaching FP			
"I was somehow challenged when I began to teach because I did not master the matter very well. In the clinical placement, I was obliged	Starting teaching FP lacking knowledge,			

to rely on the staff you find there" **[P 12]**	skills and confidence in teaching FP Relying on the staff in clinical settings	Having moral conflicts with FP methods against her/his religious beliefs Lacking knowledge, skills and confidence in teaching implants and IUD and FABM before participating in FP training Having improved FP knowledge, skills, attitude and confidence in teaching FP methods		
"I need training on FABM because I did not learn them in detail during my midwifery education, and there is no updated literature on those methods." **[P5]**	Needing training on FABM			
"Teaching FABM is challenging, but we try to explain to help students understand the theory related to these methods." **[P5]**	Having challenges teaching FABM			
"Before becoming a faculty member, I worked in a health center for two years, so I feel very confident in teaching the artificial methods of FP because I used to provide them, but I need training on natural FP methods to teach them confidently." **[P22]**	Being confident in teaching the FP methods, she used to provide as a health care provider Needing training on FABM			
"Natural FP methods are generally good to understand, but as their effectiveness is low, some are on 50% and others on 60%, and the users are at high risk of unwanted pregnancies." **[P9]**	Having a negative attitude/ bias towards FABM			

"I am not against any FP methods, but my self I prefer the natural method that does not have any side effects" **[P23]**	Having a favourable attitude/preference towards FABM	covered during the training Being confident teaching FP when one has experience providing FP services		
"When I am teaching FP, I tell the students that natural FP should not be the first choice of the FP methods because they have a higher failure rate"[**P19]**	Having bias and a negative attitude towards FABM			
"We focus on hormonal and long-acting FP methods because we know that natural methods(NFP) have a higher failure rate in our population." **[P20]**	Focusing on hormonal and long-acting FP methods Having bias on FABM			
"My experience of teaching FP is little. Due to my religious beliefs, there are some FP methods I cannot teach." **[P7]**	Not teaching the FP methods that are against her religious belief			
"Based on my beliefs, I am not comfortable teaching emergency contraception because I do not believe in it. I somehow have a moral conflict because emergency contraception indirectly aims to	Having beliefs and moral values against emergency contraception			

induce abortion, and I believe that when the fecundation happens, a new life starts, and no one has the right to terminate it." **[P18 UR]**				
"I do not have any moral conflict though I am a Catholic. I personally believe that family planning is essential. People need to use FP methods to avoid unplanned pregnancies. However, I would have a problem with a FP method aimed at abortion." **[P15]**	Having personal beliefs favouring the use of any FP methods Having a moral conflict with the method aimed at abortion.			
"You know those artificial methods have adverse effects, which are more dangerous and severe. When I arrive there, I ask myself if I am doing the right thing, but I explain all the side effects to the students." **[P 4]**	Having moral conflicts with artificial methods but teaching them to students			
"I participated in FP training in Musanze in 2017, organized by TSAM. Before the training, I was trying to teach implants, and it was difficult, but after the training, I have performed many procedures and was proud to be able to insert and remove implants.	Having improved knowledge and skills after participating in the FP training Having improved confidence in			

Before attending the workshop, when I was in clinical supervision, I requested the nurse who worked in the FP service to teach my students, and I was there observing Other elements that I highlighted from that workshop are different NFP methods. The workshop upgraded my knowledge and increased my confidence in teaching different FP methods." **[P3]**	teaching FP after participating in FP Having difficulties teaching implants before participating in FP planning Requesting the nurse/midwife staff in a clinical placement to teach the students Gaining knowledge on FABM from participating in FP training			
"Before attending the training, I emphasized artificial FP methods, and when I taught NFP methods, I only highlighted some points. Based on the knowledge I learned there, I included the calendar, cervical mucus methods, and all the knowledge I gained from the training. After the training, I made changes in the	Gaining new knowledge on FABM from the training funded by the TSAM Focusing on artificial FP methods			

content I prepare to teach and in the clinical settings because I can now go with students and see what they do to assist them, but before, I could not." **[P4]**.	because he lacked the knowledge of FABM Improving the FP content and integrating the new knowledge in the updated content			
"Clinical placement in family planning services is a challenge because the students who are allocated to faith-based health facilities cannot practice artificial FP methods because those health facilities provide only NFP methods." **[P 19]**	Practicing only NFP in a Catholic clinical setting	Focusing on long-acting FP methods to align with the national FP policy Focusing on standard days methods because it is well known and accepted in the community Practicing NFP methods in faith-based	**Policy and social norms**	
"Even though this school is faith-based, it does not influence this module's teaching though we teach knowledge and skills against their religious beliefs; this motivates me." **[P2]**	Teaching all the FP methods, including artificial FP methods, at a faith-based Catholic nursing/midwifery school			
"We have some specialized settings in providing some types of FP methods like NFP methods. It is beneficial for students because they can learn and practice those methods when they are allocated to those settings. However, it is not beneficial on the other	Lacking learning opportunities for students to practice all the FP methods in a faith-based clinical setting			

hand because the students miss the opportunity to learn and practice other FP methods" **[P4]**		(Catholic) health canters and artificial methods in public health centres		
"Faith-based health centers only offer NFP methods and do not provide artificial FP methods. Public health centres mainly offer artificial FP methods and the method of standard days." **[P10]**	Lacking learning opportunities to provide all the FP training at one health centre as public health centres provide artificial FP methods and Catholic health centres provide NFP			
"The Ministry of Health is requesting that health care providers promote the use of long-acting methods. When we are teaching students, we refer to those updates and focus on long-term methods and request students to insist on them even if the choice will depend on the client's decision" **[P17]**	Focusing on long-acting FP methods to align with the FP policy			

"We emphasize modern FP methods, mainly hormonal, long-acting methods, and barrier methods, to prepare students to implement the FP policy that emphasizes the use of modern PF methods, mainly long-acting FP methods" **[P18]**	Focusing on Hormonal, long-acting, and barrier methods Preparing students to implement the national FP policy			
"When I teach FABM, I focus on the cycle bead or standard days method because it is the popular FABM provided in faith-based and public health care facilities." **[P19 RWA]**	Focusing on the standard days' method because it is the popular FABM			
"Teaching FABM/NFP has particular challenges because society lacks awareness of those methods, and many people, including the students, associate those methods with religious beliefs, maybe because the Catholic Church promotes the use of those methods." **[P7]**	Being challenged teaching FABM/NFP because society and students associate them with religious beliefs			
"Sometimes, we have students who refuse to provide some contraceptive methods against their religious beliefs. So it is a dilemma in clinical placement as all students have to complete all the teaching and learning activities as indicated in the curriculum. On the other hand, those	Being challenged managing students who refuse to practice FP methods against their religious beliefs	Managing students who have moral conflicts towards FP methods	**Teaching and learning spaces**	

students have the right to maintain and behave according to their moral values." **[P21)**		Being hamble and requesting assistance Accepting her/his weakness and learning from others Involving co-workers in teaching FP in the skills lab and clinical placements		
"The students who have moral conflicts with FP mainly due to their religious beliefs learn with others in the classroom and practice in the skills lab. In the clinical placement, I allow them not to provide the methods against their beliefs, and I encourage them to orient or refer clients to get the desired FP services." **[P15]**	Allowing students who have moral conflicts to not practice FP methods against their beliefs in the clinical placement Teaching students to refer the clients where they can get the services			
"When it is time to demonstrate FP procedures, I need other nurses/midwives to help me teach different procedures as we put students in small groups and teach each procedure at a separate station" [P19]	Involving other educators to help in demonstrating the FP procedures in the skills lab			
"In the skills lab, we work in a team with educators and clinical instructors who help in demonstrating different procedures. The number of students in each group depends on the number of available educators." [P17]	Working in a team in the skills lab to teach the practice of different FP methods			

	Determining the number of students in each group based on the number of available educators			
"I remember a class where I had nuns and ADPR believers, some of them went far and contested even the FABM." **[P6 RWA]**	Being challenged teaching FP to students whose religious beliefs and moral values are against FP methods			
"Before training, when we went for practice in clinical placement, I was obliged to request the staff to teach students on my behalf because I lacked the skills and confidence to teach and mentor students in FP services." **[P12]**	Requesting the staff nurse/midwife in a clinical placement to teach the students			
"When in the clinical placement, I found that what I taught to students was different from the current practice in the clinical placement. I stood, kept quiet and observed how new things were being done without rushing to try them on my own. That time I became a student, and then after, I approached the staff of the clinical area and then tried to ask him or her to teach me on my round how I can teach students."	Taking time to observe changes and how to perform the updated procedures. Being humble and learning from others Collaborating with the staff in a clinical placement to learn updated FP procedures.			

Appendix B: Documents Analyses Chart

School 1	FP Curriculum for Midwifery A0	In this Curriculum, FP is under the unity of reproductive health in the module of Women's health. The topics included are FP methods; FP policies for diverse populations, including adolescents and those with special needs; FP counselling and sexual health and contraception needs.
	FP curriculum for Nursing A0	In this Curriculum, FP is a unity in the Reproductive Health Module. The topics included are: - **Introduction to FP:** Definition of FP; Monitoring and evaluation (trends and demography of population growth); FP National policy in Rwanda; Advantages of FP; Rational of FP; Classification of FP methods; Involvement of men in FP, maternal child health programs; Community based FP - **Consultation in FP:** Overview of medical eligibility criteria; Client assessment for contraception; Health Education about FP; FP counselling - **Natural Methods of FP:** Fertility Awareness Methods (FABM), Lactation Amenorrhea Method (LAM), Withdrawal method; Abstinence; Calendar-based method; Mixed methods - **Modern contraceptive methods:** barrier methods of FP; oral contraceptives; injectable; implants; intrauterine contraceptive device; permanent Methods of FP; emergency contraceptive - **Comprehensive abortion care:** Termination of pregnancy; Definitions of Abortion; public health importance of abortion; Why women find themselves with unwanted pregnancy; why does induce abortion to occur;

		legislation and policies; inadequate services; what can be done about unwanted pregnancies and unsafe abortion; management of abortion (complete and incomplete)
	Midwifery students logbook	The FP procedures included in the midwifery logbook at school 1 are : - FP counselling - implants and IUD insertion and removal. At the end of the program, students must complete: o Witnessed 10 FP consultations; o Perform FP procedures, including 2 IUDs and three implants for ten clients.
	Nursing students logbook	The FP procedures included in the nursing logbook are: Applying the nursing process while providing FP services; counselling related to: - Natural methods (Billings method, calender, Exclusive breastfeeding and basal body temperature) - Oral pills; - Injectables; - Inserting and withdrawing implants; - Insertion and withdrawal of IUD; - Assisting bilateral tubal ligation and - Demonstration of a condom. There is no number of times or frequency that a student has to perform or provide those FP methods or services during her/his nursing education program.

School 2	Midwifery A1: FP curriculum	In this Curriculum, FP is a unity in the Reproductive Health module with these topics: - FP and Contraceptive Technology; - FP National policy in Rwanda; - Consultation in FP; - Assessment of a client requiring contraceptives; - NFP/FABM; - Use of FP methods as protection against pregnancy and sexually transmitted infections; - Barrier methods and Intrauterine device (IUD); - Hormonal Contraception; - Methods and techniques of administering hormonal contraceptives; - Sterilization and contraception following birth; - Contraception for older women; - Contraception for women with medical disorders; - Emergency contraception (EC); - Adolescent Contraception; - Health education and counselling in FP; - Role of Men in FP; - Why are women the most affected by reproductive health The FP curriculum at school 2 is similar to the FP curriculum for midwifery
	Nursing A1: FP curriculum	
	Midwifery students logbook	The midwifery logbook at school 2 is similar to the midwifery logbook at school 1
	Nursing student logbook	The Nursing logbook at school 2 is similar to the nursing logbook at school 1

School 3	Midwifery A1: FP curriculum	At school, 3 FP is mentioned as a topic without content under the unit named introduction in the module of reproductive health
	Nursing A1: FP curriculum	The researcher did not receive this document
	Midwifery A1: student logbook	The FP procedures included in the logbook are: - IUD insertion and removal - Implant insertion and removal. During the Midwifery program of A1, the student must provide: o FP consultations (including at least insertion of 5 IUDs) for 20 clients. o Under appropriate supervision, the midwifery student has to draw up an FP counselling plan for women and their partners, carry out the counselling and evaluate the effectiveness of such guidance. o The midwifery student has to carry out at least 20 FP consultations, including the placement of 5 IUDs.
	Nursing A1: FP curriculum	The researcher did not receive this document
School 4	Nursing A0: FP curriculum	At school 4, FP is a chapter under the reproductive health unit in the Women's health module. The topics included: - FP and counselling - Involvement of men in FP - Concepts in FP - Government policies - Benefits of FP to individual, family, community and society; - Methods of contraception: oral pills, injectables, implants, IUD, barrier methods-condoms, diaphragm, spermicidal agents; voluntary surgical contraception- tubal ligation, vasectomy;

		- Natural methods: cervical mucus, basal body temperature, calendar, withdrawal, standard day methods, lactation amenorrhea method, traditional methods; - Communication skills in FP; - Physical assessment of client for FP, - Identification and prescription of various FP methods - Emergency contraception: Indications, types, mode of action, dosage, guidelines, side effects, counselling messages to clients, - Bridging contraceptive pills to other FP methods and other RH and HIV/AIDS/STI services
	Nursing student logbook	The FP services included in the student logbook are: - Take observation (weight and blood pressure) - Take history - Inform, educate, and communicate as appropriate - Counsel for informed choice for all methods - Perform systematic physical examination, including a demonstration on self-breast examination - Perform a pelvic examination, including speculum examination, bimanual examination - Administer FP to include: IUD, implants, injectables, pills and NFP (Option). - NFP (option)
School 5	Nursing A0 FP curriculum	The FP curriculum at school 5 is similar to the FP curriculum for school 4

	Nursing student logbook	The nursing logbook at school 5 is similar to the nursing logbook at school 1

School 6	Nursing A0 FP curriculum	- Origins and Rationale for FP
		- Procedures and Policies
		- Beliefs and misconceptions
		- Sexual and reproductive rights
		- Programs in Developing Countries
		  o Family Planning methods
		  o Fertility Trends and Contraceptive Use
		  o Men's Attitude towards FP
		- **Contraceptive methods**
		  o Hormonal methods
		  o Natural methods
		  o Barrier methods
		  o Surgical methods
		  o Emergency contraception
		  o Dual protection
		  o Prescription of contraceptive methods
		  o Return to fertility
		- Fertility among Different Groups
		- Counselling in FP
		- Trends in Contraceptive Use in Rwanda
		- FP Delivery StrategiesReasons for Not Using Contraceptives

	Midwifery A0: FP curriculum	Similar to the Nursing FP curriculum
	Nursing student logbook	The procedure included in the logbook are - Counsel for FP - Prescribe the correct FP method to clients according to choice

		- Insertion and withdrawal of implants - Insertion and withdrawal of IUD - Administration of pills and injection - Natural methods (No methods listed) - barrier methods; - emergency contraception; - dual protection, - assist with surgical FP methods).
	Midwifery student logbook	Similar to the nursing student logbook

Appendix C: Letter of Information

Letter of Information

Study Title: Teaching Family Planning in Nursing and Midwifery Schools in Rwanda: A Grounded Theory Study

Principal Investigator

Yolanda Babenko-Mould, RN, BScN, MScN, Ph.D., Associate Professor and Associate Director, Graduate Programs, Arthur Labatt Family School of Nursing, Western University, Ontario, Canada

Co-Investigator:

Marilyn Evans, RN, Ph.D., Professor Emeritus, Arthur Labatt Family School of Nursing, Western University, London, Ontario, Canada

Research committee members:

Deanna Befus, RN, Ph.D.**,** Assistant Professor**,** Arthur Labatt Family School of Nursing, Western University, London, Ontario, Canada

Donatilla Mukamana, RN, Ph.D., Associate Professor, School of Nursing and Midwifery, College of Medicine and Health Sciences, University of Rwanda

Graduate Student Researcher (GSR):

Pauline Uwajeneza, RM, BNE, MScN, Ph.D. Candidate, Arthur Labatt Family School of Nursing, Western University, London, Ontario, Canada

1. Invitation

You are invited to take part in a research study because you are a nurse/midwife educator who is involved in teaching family planning (FP) in pre-service nursing/midwifery education in Rwanda. Twenty-five to thirty participants will be enrolled. This study will contribute to the development of knowledge on FP education in pre-service nursing/midwifery education in Rwanda and may have application for nurse/midwife educators who facilitate this topic with students globally.

2. Purpose of the Letter

The purpose of this letter is to provide you with the information required for you to make an informed decision regarding participation in this research.

3. Purpose of this Study

Although there has been a significant amount of research on sexual and reproductive health in nursing/midwifery education, most of these studies have been conducted in developed countries, and few studies focused on FP. Little research has been conducted in developing countries about FP training or FP curriculum in pre-service nursing/midwifery education. There is a need for research about the facilitators and barriers that impact nurse/midwife educators' ability to teach FP. The purpose of this research is to provide a greater understanding of how nurse/midwife educators understand and enact FP methods in teaching practice to facilitate FP learning for nurse/midwife students in Rwanda.

4. Inclusion Criteria

Inclusion criteria include nurse/midwife educators from the schools of nursing and midwifery who are involved in FP teaching activities in pre-service nursing/midwifery education in Rwanda, with experience in FP teaching for at least one year. Inclusion criteria also include the willingness to participate in an interview and to be audio-recorded.

5. Exclusion Criteria

Nurses and midwives who do not meet the inclusion criteria.

6. Study Procedures

You may contact the GSR by email or telephone, and the GSR will verify if you meet the study's inclusion criteria. If you agree to participate, you will be invited to attend an interview in-person, by telephone, or via Zoom, depending on your preference, the COVID-19 health directives at the time of the interview in your area, and the GSR's location at the time of the interview in either Rwanda or Canada. The interview will take approximately 60-90 minutes to complete. You will be asked permission to have the interview audio recorded. The audio recording from the interviews will be transcribed by a hired transcription service that has signed a confidentiality agreement prior to having access to study data. After the initial interview, the GSR may need to contact you by telephone or Zoom to share the findings and establish the extent to which you feel the findings are accurate, in your opinion. This follow-up discussion will take approximately 15-30 minutes.

7. Possible Risks and Harms

There are no known or anticipated health risks or discomforts associated with participating in this study. Participating in this study will not affect your employment as a faculty member. There is a risk of privacy breach in every study, which involves the collection of personal identifiers. The study's investigators will safeguard all study-related information by keeping the information in a secured location at Western University, as well as provide a unique identifier numerical code to each participant that is only recognizable by the study's investigators.

8. Possible Benefits

You might not directly benefit from participating in this study. This study may contribute to the literature by adding new knowledge about FP education in pre-service nursing/midwifery. Other educators in the health sector and health professionals may use the findings to better inform their practice. The substantive theory that will emerge from the data of this study could be used to guide the development of effective strategies to increase the expertise and

the confidence of nurse/midwife educators in teaching FP in Rwanda and other middle and low-income countries.

9. Compensation

You will be provided with an envelope with 10000 RWF at the beginning of the interview as consideration of providing your time in the study. The envelope with 10000 RWF will be provided regardless of whether you choose to withdraw your participation in the study. If the interview is conducted by telephone or zoom, the 10000 RWF will be sent via electronic transfer.

10. Voluntary Participation

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect. It is important to note that once you have completed your interview, that your responses will be pooled with other responses, so it will not be possible to identify your responses. Thus, it will not be possible to withdraw study responses once the data have been pooled together and the data analysis process is underway. If you have chosen to participate in the interview by telephone or Zoom, data will not be used unless a signed consent form is returned. If the LOI-consent form is returned via email, it is important to be aware that email cannot be guaranteed as a secure form of communication. Once the consent form is returned, similar to those who completed an in-person interview, since your responses become pooled, it will not be possible to withdraw your data at that point. Responses may be withdrawn prior to the data being pooled with other participants' responses. Although not anticipated to be undertaken for this study, the GSR and PI may choose to withdraw a participant if, during the interview, they are behaving in a manner that is deemed by the GSR and PI to be disorderly.

11. Confidentiality

All data collected will remain confidential and accessible only to the investigators of this study. If the results are published or presented, your name will never be used. A numerical code will be used in place of your real name. If you choose to withdraw from this study prior

to initiation of the data analysis phase, your data will be removed and permanently deleted. Only de-identified study data and associated documentation will be stored on a password-protected flash drive. De-identified data on password-protected documents will be uploaded to OneDrive, which is partnered with Western University. Identifiable information (i.e., signed consent forms) sent to the GSR via email will be uploaded and stored in a password-protected study-specific file in Western OneDrive. Identifiable data will be kept for seven years after study completion and then permanently destroyed. Non-identifiable information (i.e., transcribed interview data) collected in this study will be kept for seven years after study completion and then permanently destroyed. During the interview, you are asked to refrain from disclosing information that would identify you or others. Should any identifying information be disclosed during the audio-recorded interviews, it will not be included in the transcript of responses. Since some study interviews might take place in person in Rwanda when permitted, if identifiable study data (i.e., signed consent form) is provided to the researcher, that data will be stored in the private home of the researcher and then will travel with the student researcher to Canada. During transport from Rwanda to Canada, these hardcopy documents will be stored in a locked carry-on bag and will remain with the graduate student research at all times throughout the trip. This bag will not be set in as checked baggage. Upon return to Canada, the identifiable data will be locked in a file cabinet within the study PI's locked faculty University office. Representatives of The University of Western Ontario Health Sciences Research Ethics Board and the University of Rwanda College of Medicine and Health Sciences may contact you or require access to your study-related records to monitor the conduct of the research.

12. Contact for Further Information

If you require any further information regarding this research study, you may contact Dr. Yolanda Babenko-Mould –……. or Pauline Uwajeneza, …….

If you have questions about your rights as a research participant or the conduct of this study, you may contact the administrative assistant of the Institutional Review Board (IRB) at the

College of Medicine and Health Sciences, University of Rwanda at ……. You may also contact the Office of Human Research Ethics, Western University…….

13. Publication

If the results of the study are published or presented, your name and the name of your university or school will not be identified. If you would like to receive a summary of the study findings, please provide your preferred email address to the GSR either prior to or at the conclusion of the interview.

14. Consent

A consent form will be provided for you to sign on to the date of your interview prior to commencing the actual interview. Participants do not waive their legal rights by signing the consent form. If you choose to have the interview by telephone or Zoom, this letter of information and consent form will be sent to your email. The consent form is to be signed and returned to the student researcher. You can scan or take a picture of the signed copy and send it by email to……. The researcher will then upload the signed consent form to a password-protected Western OneDrive study file for storage. If you do not have access to the Internet or a printer at the time of the interview via phone or Zoom, you may provide verbal consent to the researcher so that the interview can be conducted. However, the signed consent form must be sent via email to the researcher as soon as possible after the interview.
Only data associated with participants who have returned signed consent forms will be used in the study. If you do not return a signed consent form, your interview data will be permanently deleted from the study.

Thank you for taking the time to read this letter and for considering participation in this study.

This letter is yours to keep for future reference.

Appendix D: Consent Form

Consent Form

Study Title: Teaching Family Planning in Nursing and Midwifery Schools in Rwanda: A Grounded Theory Study

As the audio recording is mandatory, should the participant not agree to be audio recorded, they would not sign the informed consent to participate in this study.

I have read the letter of information, have had the nature of the study explained to me, and **I agree to Participate**. All questions have been answered to my satisfaction.

I give permission for secondary data analysis of the transcript resulting from my interview to be used for future research by the study PI or future graduate students supervised by the study PI in order to gain a deeper understanding of the data through the perspective of a different research question or theoretical perspective.

_____	_____	_____
Print name of Person	Signature	Date (DD/MM/YY)

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

_____	_____	_____
Print name of Person obtaining consent	Signature	Date (DD/MM/YY)

Appendix E: Email Script Requesting Assistance for Recruitment

Email Subject Line: Requesting Assistance for Recruitment of Potential Research Study Participants

Body of Email Script:

Dear Heads of Nursing and Midwifery Departments,

I am Pauline Uwajeneza, a Ph.D. student in Nursing at Western University in Canada.

I am contacting you regarding my Ph.D. in Nursing dissertation study that is titled: **Teaching Family Planning in Nursing and Midwifery Schools in Rwanda: A Constructivist Grounded Theory Study**.

As a graduate student researcher (GSR), my study supervisor and study Principal Investigator (PI) is Dr. Yolanda Babenko-Mould, Associate Professor and Associate Director, Graduate Programs with the Arthur Labatt Family School of Nursing at Western University.

I am requesting your support in the recruitment process for potential study participants. This study seeks to recruit nurse and midwife educators who are involved in family planning teaching activities (classroom, skills lab, and clinical setting). I have attached the study letter of information and consent form for your review and the recruitment email you may use to send to potential participants. If you agree to support the recruitment process for this study, I will request that when the recruitment email script is sent out, the study letter of information and consent form is attached for potential participants to read. If you have any questions about the study, please do not hesitate to contact me or Dr. Yolanda Babenko-Mould (contact details below). I look forward to hearing from you via email or phone call regarding your decision to support the study.

Thank you,

Principal Investigator:

Yolanda Babenko-Mould, RN, PhD

Associate Professor and Supervisor of Pauline Uwajeneza

Associate Director, Graduate Programs
Arthur Labatt Family School of Nursing
Western University
London, Ontario, Canada
……..

Graduate Student Researcher:
Pauline Uwajeneza, RM, PhD Candidate
Arthur Labatt Family School of Nursing
Western University
London, Ontario, Canada
.....

Appendix F: Email Script for Recruitment

Email Script for Recruitment

Subject Line - Invitation to participate in a research study - Teaching Family Planning in Nursing and Midwifery Schools in Rwanda: A Constructivist Grounded Theory Study

Hello,

You are being invited to participate in a study that Dr. Yolanda Babenko-Mould (Principal Investigator), Dr. Marilyn Evans (Co-Investigator), and Pauline Uwajeneza (Graduate Student Researcher) are conducting. The study involves an audio-recorded individual interview that can be held in person, by telephone or by Zoom audio-video. The researcher will use a semi-structured interview guide which will facilitate a discussion around your experience of teaching family planning (FP) in pre-service nursing/midwifery education. The interview will take a maximum of 90 minutes to complete. All participants will be de-identified, and the data collected will remain confidential.

If you are interested in participating in this research study, kindly **reply directly to the graduate student researcher by email: ……..or contact her by phone at …… to schedule a date and time to conduct the interview.**

A second email reminder regarding this opportunity will be sent a week from today [INSERT SPECIFIC DATE HERE WHEN IT BECOMES KNOWN], followed by one additional email reminder, scheduled to be sent a week apart [INSERT SPECIFIC DATE HERE WHEN IT BECOMES KNOWN].

If you would like more information about this study, please read the study Letter of Information-Consent form attached to this email and please contact the graduate student researcher (Pauline Uwajeneza).

Thank you,

Pauline Uwajeneza, PhD Candidate
Graduate Student Researcher
Arthur Labatt Family School of Nursing
Faculty of Health Sciences
Western University
London, Ontario, Canada
……

Yolanda Babenko-Mould, RN, PhD
Associate Professor
Associate Director, Graduate Programs
Supervisor, Graduate Student Researcher
Arthur Labatt Family School of Nursing
Faculty of Health Sciences
Western University
London, Ontario, Canada
……

Marilyn Evans, RN, PhD
Professor Emeritus
Supervisor, Graduate Student Researcher
Arthur Labatt Family School of Nursing
Faculty of Health Sciences
Western University
London, Ontario, Canada
……

Appendix G: Demographic Questions

Please provide some information about yourself

1. Gender:
   - Female
   - Male
   - Rather not disclose
2. Religion:
   - Catholic
   - Protestant
   - Islam
   - Other (please specify)
     .....
   - No religion
   - Prefer not to disclose
3. Age: …. Years
4. Level of education:
   - Bachelor's Degree
   - Master's Degree
   - PhD Degree
5. Years of experience:
   - In the profession of midwifery……years
   - In the profession of nursing …… years
   - In academic career …… years
   - In teaching family planning: .....years
6. What courses do you teach where FP content is included?

……..

7. Did you participate in FP training for nurse/midwife educators organized and sponsored by TSAM project in September 2017?.....

Appendix H: Semi-structured Interview Guide

Study Title: **Teaching Family Planning in Nursing and Midwifery Schools in Rwanda: A Constructivist Grounded Theory Study**

Points to state prior to beginning the audio- recording: During the audio-recorded interview, you are asked to refrain from disclosing information that will identify you or others. Should any identifying information be disclosed during the interview, it will not be included in the transcript. You have the right to stop participating in the interview at any time and the right to withdraw from the study at any time.

1) Tell me about your experiences in teaching family planning
2) How do you define FP?
3) What do you know about family planning and the different methods?
4) Tell me about the comprehensiveness of FP in the curriculum of nursing/midwifery.
5) Where and how do you retrieve the content of FP when preparing your course syllabus and lesson plans
6) Tell me about your comfort and confidence in teaching FP methods

   Probe: How do you feel when you teach artificial methods of FP

   Probe: How do you feel when you teach natural family planning?

7) Tell me about your beliefs about FP
8) Tell me about the FP training you attended and the project or organization that hosted that/those FP training.

   Probe: What are the most important lessons you learned through participating in FP training?

   Probe: Tell me about the new knowledge or highlights you gained from this/those FP training
9) Tell me about the FP methods you have been teaching and the changes, if any, you made after participating in training.

Probe: Where did you make significant changes? On the content and procedures for each method or the number of the methods? In the classroom, skills lab, and clinical placement?

10) How did FP training influence the content of your lesson plans?
11) What helps you to integrate your new knowledge and skills into FP teaching practice?
12) How did you apply what you learned about FP to teach nurse/midwife students?

    P**robe:** Tell me about the problems or challenges related to applying your FP knowledge into teaching practice.
13) After having these experiences, what advice could you give to administrators of academic programs to improve FP training in pre-service nursing/ midwifery education?
14) Is there anything else you think I should know to better understand the teaching of FP in pre-service nursing/midwifery programs?

Appendix I: Ethics Approvals

UNIVERSITY of RWANDA

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DIRECTORATE OF RESEARCH & INNOVATION

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, the15th /February/2021

Pauline UWAJENEZA
Arthur Labatt Family School of Nursing
Western University, London, Ontario, Canada

Notice of Renewal of Approval for Research Project: No 037 /CMHS IRB/2021

Your Project title ***"Teaching Family Planning in Nursing and Midwifery Schools in Rwanda: A Constructivist Grounded Theory Study"*** has been evaluated by CMHS Institutional Review Board.

Name of Members	Institute	Involved in the decision		
		Yes	No (Reason)	
			Absent	Withdrawn from the proceeding
	UR-CMHS	X		
	UR-CMHS	X		
	UR-CMHS	X		
	UR-CMHS	X		
	UR-CMHS	X		
	UR-CMHS	X		
	UR-CMHS		X	
	UR-CMHS	X		
	Kicukiro district		X	
	UR-CMHS	X		
	UR-CMHS			X
	UR-CMHS		X	
	UR-CMHS		X	
	UR-CMHS	X		
	UR-CMHS		X	
	CHUK	X		
	Centre Psycho-Social	X		

After reviewing your protocol, **Continuation of Approval has been granted to your study.**

Please note that approval of the protocol and consent form is valid for **12 months**.

Email: researchcenter@ur.ac.rw P.O Box 3286 Kigali, Rwanda www.ur.ac.rw

You are responsible for fulfilling the following requirements:

1. Changes, amendments, and addenda to the protocol or consent form must be submitted to the committee for review and approval, prior to activation of the changes.
2. Only approved consent forms are to be used in the enrollment of participants
3. All consent forms signed by subjects should be retained on file. The IRB may conduct audits of all study records, and consent documentation may be part of such audits.
4. A continuing review application must be submitted to the IRB in a timely fashion and before expiry of this approval.
5. Failure to submit a continuing review application will result in termination of the study.
6. Notify the Rwanda National Ethics committee once the study is finished.

Sincerely,

Date of Approval: February 15th, 2021
Expiration date: February15th, 2022

Ag Chairperson Institutional Review Board,
College of Medicine and Health Sciences, UR

Cc:

- Principal College of Medicine and Health Sciences, UR
- University Director of Research and Innovations, UR

Western Research

Date: 21 October 2020

To: Dr. Yolanda Babenko-Mould

Project ID: 115604

Study Title: Teaching Family Planning in Nursing and Midwifery Schools in Rwanda: A Constructivist Grounded Theory Study

Application Type: HSREB Initial Application

Review Type: Delegated

Meeting Date / Full Board Reporting Date: 3/Nov/2020

Date Approval Issued: 21/Oct/2020

REB Approval Expiry Date: 21/Oct/2021

Dear Dr. Yolanda Babenko-Mould

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

Documents Approved:

Document Name	Document Type	Document Date	Document Version
Email Script Requesting Assistance for Recruitment	Email Script	08/Oct/2020	2
Email Script for Recruitment	Email Script	08/Oct/2020	2
Semi-structured Interview Guide	Interview Guide	08/Oct/2020	2
Demographic Questionnaire in English	Other Data Collection Instruments	08/Oct/2020	2
Consent form in Kinyarwanda	Translated Documents	08/Oct/2020	2
Email script to recruit participants - Kinyarwanda	Translated Documents	08/Oct/2020	2
Protocol	Protocol	19/Oct/2020	4
Letter of Information in Kinyarwanda	Translated Documents	19/Oct/2020	4
Letter of Information and Consent	Written Consent/Assent	21/Oct/2020	5

Documents Acknowledged:

Document Name	Document Type	Document Date	Document Version
Ethics Approval from IRB UR	Scientific Review Documents	08/Jul/2020	1
References	References	15/Jul/2020	1
Translation Attestation	Translation Certificate		

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

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

The Western University HSREB operates in compliance with, and is constituted in accordance with, the requirements of the TriCouncil Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2); the International Conference on Harmonisation Good Clinical Practice Consolidated Guideline (ICH GCP); Part C, Division 5 of the Food and Drug Regulations; Part 4 of the Natural Health Products Regulations; Part 3 of the Medical Devices Regulations and the provisions of the

Ontario Personal Health Information Protection Act (PHIPA 2004) and its applicable regulations. The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Patricia Sargeant, Ethics Officer (psargean@uwo.ca) on behalf of Dr. Philip Jones, HSREB Vice-Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Curriculum Vitae

Name:	**Pauline Uwajeneza**
Post-secondary education and degrees	University of Rwanda (Former Kigali Health Institute) 1999-2002: Advanced Diploma in Midwifery
	University of Rwanda (Former Kigali Health Institute) 2006-2007: Bachelor's degree in Nursing Education
	The University of Western Ontario, Canada 2013-2015: Master of Science in Nursing
	Western University, London, Ontario, Canada 2017-2022: Ph.D. in Nursing
Honours and Awards	Western Graduate Research Scholarship 2017-2022
	International Development Research Centre (IDRC) 2020-2021: Doctoral Research Award
Work Experience	Clinical Midwife Kigali University Teaching Hospital, Rwanda 2003-2006
	Faculty Member, School of Nursing and Midwifery University of Rwanda 2008-2016
	Principal, Ruli Higher Institute of Health, Rwanda

2016-2017
Teaching Assistant, Arthur Labatt Family School of Nursing, The University of Western Ontario, Canada
2017-present

Graduate Supervision: Masters Theses Completed

Chief Supervisor:

June 2017: Umubeyi, P. Intra-hospital Neonatal Transport at Muhima District Hospital, Kigali, Rwanda.
School of Nursing and Midwifery, University of Rwanda

June 2017: Umuhoza, C. Assessment of Nurses' Knowledge on Management of Hypothermia in Neonates at Muhima District Hospital, Kigali, Rwanda
School of Nursing and Midwifery, University of Rwanda

Co-supervisor

September 2017**:** Mukanshimiyimana, O. Parents' experience of having a premature newborn in the neonatal unit at the University Teaching Hospital of Butare
School of Nursing and Midwifery, University of Rwanda

Publications and Manuscript in press:

1. Uwajeneza, Pauline, "Continuous Professional Development in Rwanda: The Experience of Midwives who Participated in the Advanced Life Support in Obstetrics (ALSO) Educational Program" (2015). Electronic Thesis and Dissertation Repository. 2810. https://ir.lib.uwo.ca/etd/2810

2. Uwajeneza, P., Babenko-Mould, Y., Evans, M., and Mukamana, D. (2015). Midwives' experience of participating in the Advanced Life Support in Obstetrics education program in Rwanda, *Journal of Nursing Education and Practice* 5(11), 120-130.doi: 10.5430/jnep.v5n11p120.

3. Habimana, A., Tuyizere, M., and Uwajeneza, P. (2016). Clinical Supervision of Nursing Students: Challenges and Alternatives, *Rwanda Journal* 3(1), 42-43.doi: 10.4314/rj.v3i1.7f.

4. Uwajeneza, P., Evans, M., Mukamana, D. Meharry, P.; Babenko-Mould, Y. Mukabaranga, K.A; Munezero, P. (Manuscript in press*). Nurses and midwives experience of providing fertility awareness-based methods, including natural family planning methods in Rwanda*