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Nurses' and Nurse Educators' Experiences of a Pediatric Nursing Continuing Professional Development program in Rwanda

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ABSTRACT

Excellence in pediatric nursing education and practice can significantly impact child health globally. Educated pediatric nurses form a strong foundation for healthcare systems globally. In 2016, a Pediatric Nursing Continuing Professional Development (PNCPD) program was created and implemented in Kigali, Rwanda, through the Training, Support, and Access Model (TSAM) for Maternal, Newborn, and Child Health (MNCH) project. This partnership project between Canada and Rwanda provided pediatric nursing education to forty-one Rwandan nurses and nurse educators in 2018 and 2019. An interpretive descriptive study was conducted to explore the experiences of fourteen nurses and nurse educators applying pediatric knowledge and skills to academic and clinical settings after participating in the six-month PNCPD program. Five themes emerged from inductive content analysis: *Transformations in Pediatric Nursing Practice, Knowledge Sharing, Relationship-Based Nursing, Barriers and Facilitators to Knowledge Implementation, and Scaling-up PNCPD within the Health System.* The findings from this study can serve to inform pediatric nursing and education in Rwanda.

Keywords: Pediatric Nursing, Nurse Educator, Rwanda, Child Health, Continuing Professional Development, nursing education, knowledge translation.

SUMMARY FOR LAY AUDIENCE

Pediatric nurses play a vital role in child health. In 2016, a Pediatric Nursing Continuing Professional Development (PNCPD) program was created for nurses and nurse educators working in child health in Rwanda. This research study sought to explore these nurses' and nurse educators' experiences of applying the knowledge and skills gained in the PNCPD program to their nursing practice. Fourteen nurses and nurse educators who completed the PNCPD program were interviewed in Rwanda. Five themes emerged from the analysis of these interviews: *Transformations in Pediatric Nursing Practice, Knowledge Sharing, Relationship-Based Nursing, Barriers and Facilitators to Knowledge Implementation, and Scaling-up PNCPD within the Health System.* The results indicate that nurses and nurse educators experienced a positive transformation in pediatric nursing practice. They also experienced knowledge sharing with other nurses and health care professionals, and a relationship-based approach to their nursing practice. They shared facilitators and barriers, and provided recommendations for scaling-up the PNCPD program within Rwanda. The findings from this study can inform nursing education in Rwanda.

CO-AUTHORSHIP

Amy Katherine Olson conducted the research for her masters' thesis under the supervision of Dr. Yolanda Babenko-Mould, and committee members Dr. Donatilla Mukamana, Dr. Penny Tryphonopoulos and Dr. Deanna Befus, who will be co-authors on presentations and publication of the manuscripts resulting from this thesis.

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"If you want to go fast, go alone. If you want to go far, go together." – African Proverb

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ABBREVIATIONS

A2: Nurses with secondary school education

A1: Nurses with diploma education

A0: Nurses with baccalaureate education

BCIT: British Columbia Institute of Technology

CMHS: College of Medicine and Health Sciences

CPD: Continuing Professional Development

GAC: Global Affairs Canada

GSR: Graduate Student Researcher

HICs: High-income countries

LOI: Letter of Information

LMICs: Low- and middle-income countries

MoH: Ministry of Health

NCNM: National Council of Nurses and Midwives

NISR: National Institute of Statistics of Rwanda

N&M PM: Nursing and Midwifery Project Manager

In-service nurses: Nurses practicing in clinical settings

OECD: Organization for Economic Cooperation and Development

OWL: Western University's Online Learning Management System

PM: Project Manager

PNCPD: Pediatric Nursing Continuing Professional Development program

PD: Project Director

Pre-service nurses: Nurse educators; nursing faculty

SSA: Sub-Saharan Africa

SDG: Sustainable Development Goal

TSAM: Training, Support, and Access Model

TSAM-MNCH: Training, Support, and Access Model for Maternal, Newborn, and Child Health in Rwanda

UN: United Nations

UR-SONM: University of Rwanda School of Nursing and Midwifery

WHO: World Health Organization

CHAPTER ONE

Introduction

Nurses and midwives form the backbone of health systems, comprising nearly 50% of the world's healthcare workforce (World Health Organization [WHO], 2020b). Nurses are most often the first point of contact for people seeking healthcare, providing 90% of all healthcare services globally (Bvumbwe & Mtshali, 2018b; Crisp et al., 2018; Nowell et al., 2015; Uwizeye et al., 2018). Yet a shortage of both pre-service (academic) and in-service (clinical) nurses contributes to health care system deficiencies, deepens health inequities, and threatens attainability of the United Nation's sustainable development goals (SDGs) (Uwizeye et al., 2018; WHO & Global Health Workforce Alliance, 2014). In particular, child health is affected by a critical shortage of nurses who have specialized education in pediatrics (Hategeka et al., 2017; Uwizeye et al., 2018; WHO, 2016). There is an ongoing need for well-prepared pre-service and in-service nurses to educate a strong nursing workforce to ensure that health care systems are prepared to provide healthcare to children worldwide (Nowell et al., 2015).

In the East African country of Rwanda, the majority of nurses possess the minimum level of nursing education with little to no specialty education (Hategeka et al., 2017). To enhance the quality of nursing in Rwanda, efforts have been made to build capacity among pre-service and in-service nurses through education (Uwizeye et al., 2018). International partnerships have been a key part of capacity building for the nursing workforce in Rwanda, particularly with a focus on building capacity among nursing faculty (Uwizeye et al., 2018). One of these partnerships includes the Training, Support, and Access Model for Maternal, Newborn, and Child Health (TSAM-MNCH) in Rwanda project (TSAM). TSAM-MNCH is a five-year international collaborative

project spanning from April 2016 to March 2021, funded by Global Affairs Canada (GAC), and administered by Western University in London, Ontario (Western University, 2020). As part of the action plan for building nursing capacity in child health, the TSAM-MNCH project funded the development and implementation of a Pediatric Nursing Continuing Professional Development (PNCPD) program in Rwanda (Western University, 2020). The PNCPD is a 6-month program providing post-basic nursing education in pediatrics to nurses teaching and working in child health in Rwanda.

This thesis explores the ways in which nurses and nurse educators in Rwanda experienced applying knowledge and skills gained in the PNCPD program to nursing practice in academic and clinical settings. In this thesis, the term nurse refers to in-service, or clinical nurses, and nurse educator refers to pre-service, or nursing faculty. Chapter One provides a background to the study, an overview of Rwanda's healthcare system, nursing education and nursing in Rwanda, and the development of the PNCPD program under the TSAM-MNCH project in Rwanda.

Background and Significance

Globally, more than five million children die before the age of five, with 80% of these child deaths occurring in sub-Saharan Africa (SSA) and Southern Asia (UN, 2020a). More than 50% of these child deaths are preventable and treatable through simple healthcare (WHO, 2019). A contributing factor to the healthcare system deficiencies in SSA is an estimated shortfall of 600,000 nurses needed to implement the UN's Sustainable Development Goals (SDGs) (Bvumbwe & Mtshali, 2018b). Due to this shortage of human resources for health, low-and-middle-income countries (LMICs) such as Rwanda still linger behind SDG health targets (WHO, 2020b). While Rwanda has worked diligently to build capacity in the healthcare system, the Rwandan Ministry of

Health (MoH) has also partnered with many international organizations in order to attain the health-related SDGs by educating health care professionals, particularly in the area of child health (Republic of Rwanda MOH, 2019a; Uwizeye et al., 2018). Goal three of the SDGs targets good health and well-being, with SDG 3.2 focusing on reducing newborn and under-five mortality and morbidity rates (United Nations (UN), 2020a; WHO, 2019). These SDG targets cannot be met without a well-educated nursing workforce, comprising both pre-service and in-service nurses both in academic and clinical settings (WHO, 2020b).

In particular, strengthening healthcare systems by increasing pediatric nursing education can be a key way to reduce the under-five mortality rate in African nations (North et al., 2019; WHO, 2019). Yet a global shortage of nursing faculty contributes to a lack of nursing education opportunities, and subsequently a lack of nurses (AACN, 2020; Bvumbwe & Mtshali, 2018b; CASN, 2017; Nowell et al., 2015). Additionally, the number of nursing faculty and nurses currently in the workforce continues to decline due to attrition and an aging workforce, outpacing the education of new nurses (AACN, 2020; CASN, 2017). As nursing knowledge is passed on through education, a nursing faculty shortage negatively impacts health system transformation globally (Nowell et al., 2015). SSA is particularly affected by a nursing faculty shortage, as existing nursing faculty, schools, and universities are in critical need of capacity building (Bvumbwe & Mtshali, 2018b).

As one of the most densely populated countries in SSA, Rwanda faces a severe shortage of nurses and nursing faculty, hampering healthcare system development (Uwizeye et al., 2018). In 1994, Rwanda's healthcare system was decimated by the Genocide against the Tutsi, leaving only 346 nurses in a country of 9 million people

(Gitembagara et al., 2015). For the last twenty-six years, Rwanda has worked diligently to rebuild the country and its healthcare system. As of 2018, Rwanda had 12,792 nurses registered with the National Council of Nurses and Midwives (NCNM) for a population of over 12 million people (Republic of Rwanda, MOH, 2019a). While this number shows significant improvement, the nurse to population ratio remains low at 1 per 1,094 people, far short of the OECD average of 9 per 1,000 people (OECD, 2020). In addition to a shortage of general nurses, there are only a few specialty educated pediatric nurses (Hategeka et al., 2017; Republic of Rwanda, MOH, 2019a). The lack of expertise in pediatric nursing contributes to deficiencies in human resources for child health in Rwanda (Hategeka et al., 2017).

Health Care and Nursing in Rwanda

Rwanda is a densely populated, landlocked country in the heart of Africa that is divided into five provinces: Eastern, Northern, Southern, Western, and Kigali City (Gitembagara et al., 2015). Within each of these provinces, the healthcare system comprises five levels, including Health Posts, Health Centres, District Hospitals, Provincial Hospitals, and Referral Hospitals (Republic of Rwanda, MOH, 2019b). At the village level, community health workers (CHWs) provide child health care services such as information, education, and home visits, whereas other activities such as vaccination and health care treatment are provided at Health Posts and Health Centres by nurses (Ndayisenga, 2019; Republic of Rwanda MOH, 2019b). Acutely ill children are referred from Health Posts and Health Centres to District, Provincial, and/or Referral hospitals depending on the severity of illness (Ndayisenga, 2019).

Nursing Education in Rwanda

Over the past twenty years, nursing education in Rwanda has experienced

significant modifications (Uwizeye et al., 2018). Before 2007, nurses were educated at the secondary school level, and nursing students received an A2 certificate upon graduation (Uwizeye et al., 2018). The Rwanda Ministry of Health (MoH) ceased the intake of A2 students in 2007, and started educating Advanced Diploma (A1) nurses at the postsecondary level (Mukamana et al., 2015; Uwizeye et al., 2018). Currently, there are two educational pathways into nursing in Rwanda: Bachelor of Science in Nursing (A0) and A1 (Uwizeye et al., 2018). A0 nurses complete 4 years of education at the university level, and A1 nurses complete 3 years of education at an institute of higher education (Uwizeye et al., 2018). Since 2012, the MOH has instituted significant efforts to upgrade A2 nurses to the A1 level, as the vast majority of the nursing workforce is still comprised of A2 nurses (90% as of 2018) (Mukamana et al., 2015; Uwizeye et al., 2018). A part-time e-learning program has been launched to encourage A2 nurses to upgrade to A1 status (Uwizeye et al., 2018). In 2013, the University of Rwanda (UR) was formed under the Ministry of Education, combining public higher learning institutions into six campuses, including: Kigali, Nyagatare, Byumba, Kabgayi, Rwamagana, and Kibungo, located throughout Rwanda (Uwizeye et al., 2018). Starting in 2015, the University of Rwanda began to offer a Master of Science in Nursing (Uwizeye et al., 2018). Despite these advances in nursing education, there remains a shortage of nursing faculty (Mukamana et al., 2015). In addition to a shortage of faculty, there remains a lack of specialized nurses in clinical practice and specialized nursing courses for nurses to take. There are also few nurse educators with specialized education in topic areas, such as pediatric nursing.

Continuing Professional Development (CPD) Education for Nurses

Continuing Professional Development (CPD) is recognized as an important way

for nurses to maintain ongoing education and remain current with medical practice (Horn et al., 2019). In Rwanda, nurses must complete 60 hours of CPD every three years to maintain their nursing license (National Council for Nurses and Midwives [NCNM], 2013). Despite the need for CPD hours, nurses in Rwanda have limited opportunities for ongoing CPD due to work demands and a lack of CPD opportunities (Bell, 2016; Kasine et al., 2018). The PNCPD program is one such example of an international collaborative project that aims to provide pediatric nursing education and build capacity among pre-service and in-service nurses in Rwanda while providing access to CPD hours. The primary purpose of the PNCPD was to build capacity amongst in-service nurses working in pediatrics at district and referral hospitals in Rwanda, as well as pre-service nurses teaching pediatric nursing at higher learning institutions and universities across Rwanda.

Significance of the Study

The development and implementation of the PNCPD program is only one part of the process of educating in-service nurses and pre-service nurse educators in Rwanda. Studying the experiences of the ways in which nurse educators and nurses apply knowledge and skills learned in the PNCPD program to the practice of nursing was an important next step. Understanding the barriers and facilitators nurses and nurse educators experienced in applying their new knowledge to their academic and clinical practice, and receiving recommendations from the nurses who studied in the program, can benefit the future of the program. The study's findings can provide ongoing refinement of the PNCPD program in Rwanda while contributing to improved pediatric nursing education, which in turn may ultimately decrease child morbidity and mortality in Rwanda. Additionally, findings have the potential to contribute knowledge to other international collaborative nurse education programs and projects. Therefore, an

interpretive descriptive study was designed to explore the experiences that nurses and nurse educators who completed the PNCPD program had in applying pediatric knowledge and skills to their academic and clinical practice in Rwanda.

Research Question

The following overarching question guided this study: (1) What are nurse educators' and nurses' experiences of applying pediatric knowledge and skills to clinical and academic settings in Rwanda after completing a PNCPD program? Sub-questions included: (1) What are the facilitators and barriers of applying the knowledge and skills to the practice of nursing? (2) What are the recommendations that the nurses and nurse educators have for the program?

Declaration of Self

As a researcher for this study, recognizing and reflecting upon my own professional and personal life experiences and their potential influence on my view of the subject under study is important. I received my BScN degree from a university in Western Canada and began my nursing career on a general pediatric unit in Canada in 2004. Several years into practicing as a nurse, I pursued an Advanced Practice certificate in Pediatrics from British Columbia Institute of Technology (BCIT). My first twelve years of nursing were working as an acute care nurse on a general pediatric unit, eventually spending three years working in a busy pediatric emergency department. From 2016-2019, I lived in Rwanda and became involved with the TSAM-MNCH project. In partnership with Canadian and Rwandan project team members, my contribution to the TSAM-MNCH project in Rwanda included deep involvement with the initial planning, editing, contextualizing, and validating of the PNCPD program in Rwanda. I was the Canadian facilitator and instructor for the first cohort of Rwandan

nurses enrolled in the first PNCPD program. While facilitating the first cohort of the PNCPD program, it became apparent that exploration of the program outcomes could occur through graduate-level research. Therefore, I applied and was accepted to Western University, the lead university of the TSAM-MNCH project. Ultimately, the thesis topic grew out of a desire to research the PNCPD program through understanding the experiences of nurses who participated in the program. Therefore, this study's significance is personal and professional, as it allows me to further an understanding of the facilitators and barriers that were perceived by learners in the PNCPD program, and how they applied what was learned to their practice in academic and clinical contexts. As I had close involvement with the development of the PNCPD program, I needed to consistently be aware of any potential preconceived bias that my perspective could bring to the analysis of the data. Additionally, due to my previous relationship with the first cohort of students, I was mindful of how my presence might impact data collection, therefore I opted to utilize an external interviewer to assist with data collection to minimize bias.

Overview of Thesis

This thesis is organized into three chapters. This first chapter provided an introduction and background to the research topic, a general overview of nursing education in Rwanda and CPD in nursing, with a focus on Rwanda. Chapter two is a manuscript of the research, forming the core component of this thesis. Chapter two includes a background and further information on nursing and the health system in Rwanda, a literature review about CPD and pediatric nursing globally and locally in Rwanda, the methodology and methods used, interpretation of research findings, discussion, implications, and study limitations. Chapter three includes an in-depth

summary of the research study, implications, recommendations, and conclusions for the way forward for the PNCPD program and pediatric nursing in Rwanda.

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CHAPTER TWO

Introduction, Background, & Significance

In 2019, an estimated 5.2 million children under-five years of age died from preventable and treatable causes such as sepsis, pneumonia, meningitis, and diarrhea (World Health Organization [WHO], 2020a). These deaths are remarkably unequal globally, with 80% of these deaths occurring in low-and middle-income countries (LMICs) (Brännström, 2012; Kasine et al., 2018; United Nations [UN], 2020). Nursing specialization in pediatrics provides an opportunity to reduce these preventable under-five deaths, as nurses serve as the first point of contact for many seeking healthcare (Crisp et al., 2018; Hockenberry et al., 2020; WHO, 2020b). In countries defined as LMIC by the World Bank (2020), implementation of quality health care services for children can be particularly challenging due to a shortage of health professionals, such as nurses, with limited or no formal education in pediatric theory and practice (Hockenberry et al., 2020; Pantoja et al., 2017). Traditional nursing education programs primarily focus on educating nurses to provide nursing care to adult patients; however, children require specialized nursing care, and nurses caring for children require specialized knowledge and skills (Chiocca, 2016; Forsyth, 2017; Glasper, 2016; Hogewood et al., 2015).

In-service or practicing nurses are critical to delivering quality child health care in acute care settings, but challenges such as a shortage of pre-service, or faculty nurses, with formalized pediatric nursing knowledge and skills ultimately impact this delivery (Bvumbwe & Mtshali, 2018; Nowell et al., 2015; Ruthe & North, 2020). Due to attrition and an aging workforce, the number of nursing faculty in the workforce overall is declining, outpacing the education of new nurses (AACN, 2020; CASN, 2017; Nowell et al., 2015). Additionally, existing nursing faculty may not have formal preparation in

pediatrics. As nurses serve as the bedrock of healthcare systems, global health system transformation is hindered by this nursing faculty shortage (Forsyth, 2017; Nowell et al, 2015; WHO, 2020b).

Rwanda is one such example of a country experiencing a critical shortage of pre-service and in-service nurses (Uwizeye et al., 2018). While Rwanda has worked diligently to rebuild the country and its healthcare system since the Genocide against the Tutsi in 1994, the nurse to population ratio remains critically low with approximately 1 nurse for every 1,094 people (Ministry of Health (MOH), 2011; Uwizeye et al., 2018). Comparatively, in Canada there are approximately 8 nurses for every 1,000 people, while globally the average for high-income countries (HICs) is 9 nurses for every 1,000 people (Canadian Institute for Health Information, 2020; OECD, 2020). In particular, few nurses in Rwanda have formal education in pediatric nursing (Gitembagara et al., 2015). This shortage contributes to health system deficiencies, demonstrating a need for investment in pediatric nursing and nursing education in Rwanda (Uwizeye et al., 2018).

Rwanda requires capacity building in both academic and clinical nursing settings in the specialty area of pediatric nursing. Building educational capacity through continuing professional development (CPD) in LMICs has been shown as an effective way to strengthen healthcare delivery and systems and strengthen the capacity of nursing professionals (Dunleavy et al., 2017; Uwizeye et al., 2018). CPD can be defined in several ways, yet for the purposes of this thesis, CPD refers to ongoing education that healthcare workers, including nurses, complete after basic education and registration to maintain competencies and keep up to date on skills, practices, and knowledge (Feldacker et al., 2017).

Program Development

TSAM-MNCH

In response to the need for pre-service and in-service nurses, Rwandans have worked diligently to rebuild and strengthen their healthcare system (Uwizeye et al., 2018). This includes international partnerships with organizations to build capacity in the health care system (Uwizeye et al., 2018; Western University, 2020). These partnerships have been led by the Rwandan government, creating a model of partnership built upon in-country ownership and coordination, aimed at contributing to sustainable health system change (Uwizeye et al., 2018). One of these partnerships includes the Training, Support, and Access Model for Maternal, Newborn, and Child Health in Rwanda (TSAM-MNCH), a five-year international development partnership project funded by Global Affairs Canada (GAC) and administered by Western University in London, Ontario (Western University, 2020). One of the main goals of TSAM-MNCH Rwanda includes improving specialized care for mothers and children that is provided by nurses, midwives, and physicians (Western University, 2020). As part of the action plan for TSAM-MNCH, a Pediatric Nursing Continuing Professional Development (PNCPD) program was developed (Western University, 2020).

The PNCPD program is a six-month pediatric specialty nursing program for generalist nurses in Rwanda. Partnering with faculty from the University of Rwanda, College of Medicine and Health Sciences, School of Nursing and Midwifery (UR CMHS-SONM), Canadian and Rwandan nurses worked together to edit, contextualize, and develop curriculum originally modified from the British Columbia Institute of Technology's (BCIT) pediatric nursing specialty program to the Rwandan context (Western University, 2020). BCIT is a Canadian institution providing specialty nursing education, and was a contributing member to the TSAM-MNCH project. After validation

by Rwandan nurses and nursing faculty, the PNCPD program was certified as a CPD course by the Rwandan National Council of Nurses and Midwives (NCNM). Pre-service and in-service nurses teaching and/or working in pediatrics were prioritized for enrollment in the PNCPD program. It was anticipated that these individuals could immediately share their knowledge and skills with nursing students and nurse colleagues in pediatric practice contexts. TSAM-MNCH project members collaborated with Rwandan higher institutes of learning, universities, and hospitals to select nurses to undertake study in the PNCPD program. TSAM-MNCH provided funding and support for the first two cohorts in the program, graduating a total of fourteen nurses in 2018 and twenty-seven nurses in 2019.

The PNCPD program consists of two twelve-week theory courses, and one clinical practicum comprised of 100 hours. The two theory courses are taught via distance education, using a modular approach, delivered with a combination of materials on flash drives, along with a combination of real-time and asynchronous online discussions. The courses were delivered primarily online, with an in-person exam and debrief at the end of each course. The three-week, 100-hour clinical practicum was arranged at one of four referral hospitals in Rwanda, providing students with an opportunity to gain acute care pediatric clinical experience. In keeping with the partnership project, five Rwandan nurse faculty were clinical instructors and course facilitators, one Canadian nurse assisted with the facilitation and instruction of the first cohort theory portion, and three Canadian nurses provided support during the clinical practicum.

The hybrid model of curriculum was primarily offered online with reading resources and associated course information accessible through flash drives. An in-

person class was held at the end of both theory courses, where students wrote the final exam and provided feedback on the course. The 100-hour (three-week) clinical practicum was a collaborative effort involving support from institutions and employers which allowed release time from work for nurses to attend. The TSAM-MNCH project provided funding for travel, accommodation, and materials.

Developing the PNCPD program was an important step in capacity building amongst pediatric nurses and nurse educators in Rwanda. As such, exploring nurses' and nurse educators' experience of applying their knowledge and skills to their teaching and/or clinical practice was considered to be an important next step in the path to understanding the ways in which the program influenced pediatric nursing practice. This study provides a rich description of the experiences of nurse educators and nurses applying pediatric knowledge and skills to Rwanda's academic and clinical settings after completing the PNCPD program. This study adds to the existing body of published research regarding CPD, capacity building, and education of pediatric nurse educators and nurses in LMICs.

Background to Nursing Education in Rwanda

The history of nursing education in Rwanda reflects expansive growth within the profession. Prior to 2007, secondary school students could receive what is termed 'A2' certification upon graduation, becoming enrolled nurses (Kasine et al, 2018; Uwizeye et al., 2018). A2 nurses received seven years of secondary school education, with both theory and clinical practice education (Mukamana et al., 2015). Recent estimates note that approximately 90% of the nurses who are registered in Rwanda are A2 nurses, possessing only secondary school education preparation, with little to no post-secondary or specialty education (Hategeka et al., 2017, Kasine et al, 2018). In 2007, A2 nursing

education ceased, and individuals enrolling in nursing education programs could take one of two pathways: (1) a four-year Bachelor of Science in Nursing (A0) degree, or (2) a three-year Advanced Diploma (A1) (Uwizeye et al., 2018). Since 2012, the Rwandan Ministry of Health (MoH) has made significant progress in scaling up A2 nurses to the A1 level (Uwizeye et al., 2018). Nurses are currently educated at one of the six University of Rwanda campuses located throughout the country or one of a handful of private schools offering nursing and midwifery education (Uwizeye et al., 2018). In 2015, the University of Rwanda launched a Masters of Nursing degree program with eight specialty choices: pediatrics, critical care and trauma, nephrology, perioperative, neonatology, medical-surgical, oncology, and leadership and management (Uwizeye et al., 2018). As of this writing, twenty nurses have completed this graduate-level specialization in pediatrics in Rwanda (Ministry of Health, 2019). A small number of nurses hold masters and doctoral degrees from outside of Rwanda (Kasine et al, 2018). While progress has been made, there remains a shortage of qualified nursing faculty, and a lack of specialty nursing education and CPD offerings in Rwanda (Uwizeye et al., 2018).

In Rwanda, licensed nurses must obtain 60 credits of CPD activities every three years to renew their license to practice, yet nurses have difficulty obtaining hours due to work demands and limited course offerings (Bell, 2016; Kasine et al., 2018; Kelly et al., 2017; National Council for Nurses and Midwives, 2013). Recognizing the dual need of pediatric nursing education and CPD offerings, TSAM-MNCH developed the PNCPD Program in partnership with the University of Rwanda School of Nursing and Midwifery (UR-SONM) to meet the needs of both pediatric specialty education and CPD education for nurses.

Rwandan healthcare system

Rwanda is a landlocked country in East Africa of 26,340 square kilometers comprised of five provinces: Eastern, Northern, Southern, Western, and Kigali City (World Bank, 2020). Rwanda's health care system is comprised of five levels: (1) Health Post (cell/village level), (2) Health Centre (sector level), (3) District Hospital (District level), (4) Provincial Hospital (Province Level), and (5) National Referral Hospital (entire country) (Republic of Rwanda MoH, 2019b). According to the latest data from the Republic of Rwanda MoH (2019b), within the five provinces are 885 health posts, 509 health centres, 36 district hospitals, 4 provincial hospitals, and 8 national referral hospitals. Additionally, there are 123 private dispensaries, 149 private clinics and polyclinics, and 8 private hospitals.

Approximately 60,000 Community Health Workers at the village level assist with health communication and behaviour change, referring individuals to Health Posts or Health Centres for preventative and curative services (Republic of Rwanda MoH, 2019a; Uwizeye et al., 2018). Health Posts and Health Centres are staffed by nurses who are responsible for providing care, referring acute cases to district hospitals, and referring specialty level care to national referral hospitals (National Institute of Statistics of Rwanda, Ministry of Health Rwanda, & ICF International, 2015; Uwizeye et al., 2018). In the last four years, the Government of Rwanda has improved geographical accessibility to health facilities by nearly doubling the number of Health Posts, ensuring that the average time to reach a health facility has now nearly halved, to 49.9 minutes (Republic of Rwanda MoH, 2019b). The 36 district hospitals are located within larger towns, and the four provincial and eight referral hospitals are in the major cities in each of the larger provinces within Rwanda (Republic of Rwanda MOH, 2019b).

Consequently, acutely ill pediatric patients arrive at Health Posts and Health Centres first, which are understaffed with primarily A2 level nurses, complicating provision of quality care (Hategeka et al., 2017).

While healthcare system improvements can be measured by the number of educated nurses and access to health services, improvement can also be measured by childhood morbidity and mortality rates. While Rwanda has made significant progress in the fifteen years, decreasing under-five child mortality from 152 (per 1,000 live births) in 2005 to 35 (per 1,000 live births) in 2018, this number is still well above the OECD average of 5 (per 1,000 live births) and the SDG target of 25 (per 1,000 live births) (UNICEF, 2018; UN, 2020; Uwizeye et al., 2018; WHO, 2014, 2016). With a current population of over 12 million people, an annual population growth rate of 2.6%, and a large percentage of the population under the age of 15 (43.4%), the need for quality child health care and specialty educated pediatric nurses in Rwanda is profound (National Institute of Stastics Rwanda [NISR], 2016; Uwizeye et al., 2018).

Literature Review

A literature review was completed to summarize and inform current research on the study topic and identify gaps in the area of research on pediatric nursing and CPD in LMICs. A review of the literature was completed on CPD and pediatric nursing in general and in Sub-Saharan Africa (SSA) and Rwanda specifically. The literature review included the following databases: CINAHL, Nursing and Allied Health, Western Libraries and Affiliates (OMNI), MEDLINE (ProQuest), SCOPUS, COCHRANE, Mendeley, Google Scholar, and the Western thesis repository. The following keywords were used: *Pediatric nursing, Children's nursing, Continuing Professional Development, Lifelong Learning, Continuing Professional Education, Sub-Saharan Africa*, and

Rwanda. The search was limited to peer-reviewed articles published in English from 2010-2020. The ancestry method was also utilized to retrieve further applicable articles. After checking retrieved articles' titles and abstracts, full text was reviewed for pertinent articles focusing on CPD for nursing in pediatrics, particularly in low-and middle-income countries and SSA. A total of twenty-two articles and theses were retained and classified into four categories: (1) CPD in nursing, (2) CPD in pediatrics, (3) CPD in SSA, and (4) Nursing Education in SSA.

CPD in Nursing

CPD education for nurses is recognized as important for ongoing professional development in many high-income countries (HICs) including the UK, USA, and Australia (Horn et al., 2019; Tame, 2013). In Australia, CPD for nurses is mandatory, as it contributes to ongoing competence, introduction of new skills, and up-to-date practice (Ross et al., 2013). To maintain competent nurses, health care organizations need to ensure that nursing staff undergo ongoing CPD (Coventry et al., 2015). Education programs, in particular internet-based learning, developed for healthcare workers in HICs have shown promising results, yet limited studies have been completed in low-resource countries demonstrating similar results (Feldacker et al., 2017; Hockenberry et al., 2020; Opiyo & English, 2015).

One qualitative study of 23 perioperative nurses in the UK found that CPD education increased confidence and knowledge, subsequently increasing inter-professionalism as nurses felt more empowered to work collaboratively with medical colleagues (Tame, 2013). This enhanced communication and inter-professional collaboration had an indirect positive impact on patient care (Tame, 2013). The perioperative nurses who participated in CPD described changes to their nursing practice,

including increased confidence and assertiveness (Tame, 2013). Another large study involving 300 hospitals across nine European countries demonstrated that higher education levels for nurses can have a large impact on patient mortality and health care quality outcomes (Crisp et al., 2018).

A recent trend in CPD education for nurses is online learning, which offers benefits such as reduced cost, no travel time, and flexibility for working nurses (Feldacker et al., 2017; Hockenberry et al., 2020; Ross et al., 2013). Online CPD also allows for access for nurses who work shift work and may have difficulty accessing CPD during usual business hours (Coventry et al., 2015). Barriers to online CPD include the need for a computer and internet access, in addition to computer and technology skills (Ross et al., 2013). Face-to-face CPD educational opportunities have additional costs, including travel, accommodation, and time off work, and the possible need for childcare (Ross et al., 2013). Many nurses in Australia were found to be self-funding their CPD education (Ross et al., 2013). Additionally, CPD education requires employer support as well, as nurses who must be absent from work for CPD education need replacement, as their absence places an increased workload on staff remaining at the workplace (Ross et al., 2013). However, online CPD experiences from low-resource contexts is not well studied (Feldacker et al., 2017).

An integrative review of CPD education in nursing found that CPD education is impacted by the opportunity to attend CPD during work time, personal time, and that organizational culture and leadership have an impact on CPD (Coventry et al., 2015). For example, nurses have difficulty or inability to leave the workplace because of staffing levels, which creates a barrier in attending CPD (Coventry et al., 2015). Shortage of staff can result in an impact to patient safety and quality of care, causing nurses to prioritize

work over CPD attendance (Coventry et al., 2015). Challenges with workload lead to nurses being pressured to attend CPD during personal time, which can lead to resentment (Coventry et al., 2015). This is compounded when taking into account family time, as 75% of nurses indicate family responsibilities are a significant factor in the decision to attend or not attend CPD (Coventry et al., 2015). Employer support also plays a role in staff attendance at CPD education, as clinical managers play a significant role in allowing time off for attending a CPD (Coventry et al., 2015).

CPD in Pediatrics

A qualitative study of a Paediatrics Perioperative Nursing Training Program (PONT) interviewed nine Ethiopian nurses who had received the PONT education (Abebe et al., 2018). The PONT program was a collaborative international nursing education project between Toronto Sick Kids Hospital and Addis Ababa University School of Nursing and Midwifery in Ethiopia (Abebe et al., 2018). Researchers found three themes that emerged, including the use and sharing of new knowledge skills, and confidence, availability of accessible training, and sustainability of changes (Abebe et al., 2018). While this study was completed in Ethiopia, the context of being a LMIC and having few specialty and CPD offerings for nurses means the findings may have implications for this study.

Two recent Cochrane systematic reviews explored health system implementation strategies and in-service education for neonatal and pediatric care in LMICs (Opiyo & English, 2015; Pantoja et al., 2017). The first was a 2015 Cochrane review, which found that there are few well-conducted studies of in-service education for health professionals to improve care of seriously ill children in LMICs (Opiyo & English, 2015). This 2015 Cochrane systematic review found only two studies that demonstrated improved

outcomes for newborns when doctors, nurses, and midwives are given extra professional development education in LMICs (Opiyo & English, 2015). Overall, this review demonstrates a need for further studies designed to understand the effectiveness of both short-and long-term education for healthcare professionals working in LMICs with seriously ill children (Opiyo & English, 2015). Of particular note, the Cochrane review found no studies that looked at the effects of education programs on the care of older children in LMICs (Opiyo & English, 2015).

Furthermore, a 2017 Cochrane systematic review of implementation strategies for health systems in low-income countries found that there is limited evidence about the benefits of further education for nurses practicing in specialty areas in LMICs (Pantoja et al., 2017). This systematic review acknowledged the difficulty in obtaining studies from LMICs, as the majority of studies found were from high-income countries (Pantoja et al., 2017). A meta-analysis that had been identified in this systematic review did find that internet-based learning is associated with positive effects for practicing and student healthcare workers, including nurses (Cook, 2008; Pantoja et al., 2017). Within this systematic review, there was only reference to neonatal education, and no studies were conducted on child health or pediatrics (Pantoja et al., 2017). Both of these Cochrane systematic reviews demonstrate a gap in research about CPD for pediatrics in LMICs.

CPD in Sub-Saharan Africa

Previous research in LMICs has demonstrated strengthening of nurses' capacity to provide quality health care through continuing education and various in-service education courses (Bvumbwe & Mtshali, 2018b; Erlandsson et al., 2017; Heller et al., 2019; Nyiringango, 2019; Opiyo & English, 2015; Uwizeye et al., 2018). CPD through distance-based learning opportunities, including online and offline content, have been

shown to be successful in SSA (Hockenberry et al., 2020). The majority of healthcare workers surveyed about CPD in SSA preferred to access content online or by distance education (Feldacker et al., 2017). Hockenberry et al. (2020) demonstrated the importance of providing CPD for pediatric nurses working in oncology in LMICs, such as Uganda, Botswana, and Malawi, and that capacity building amongst nurses can be a way to successfully improve pediatric care. Nursing students who had participated in online CPD found that online and distance-based learning opportunities were flexible and promoted self-initiated learning (Hockenberry et al., 2020). However, lack of internet access, limited instructor support, and a shortage of technical or computer support were challenges of online CPD (Hockenberry et al., 2020).

A mixed-methods study on the experiences and perceptions of online CPD among clinicians in SSA found several facilitators and barriers (Feldacker et al., 2017). A facilitator for internet-based CPD courses is flexibility and accessibility (Feldacker et al., 2017). One of the largest barriers for healthcare workers was limited or slow internet connection (Feldacker et al., 2017). Others complained that there was no certificate for completion and/or that completion was not recognized locally (Feldacker et al., 2017). In their study, many healthcare workers responded that they also prefer clinical mentorship and group discussion and self-paced online learning to contribute to the quality of CPD education (Feldacker et al., 2017).

The literature review found several qualitative, quantitative, and mixed method studies exploring the impacts of continuing education and professional development on nurses and midwives working in neonatology and maternal health in Rwanda. A qualitative descriptive study by Uwajeneza et al. (2015) found that midwives reported increased knowledge, skills, and confidence, but their ability to change their practice was

influenced by challenges in their work environment, human resource shortages, and a shortage of materials. Another qualitative descriptive study completed by Kasine et al. (2018) found that Rwandan nurses and midwives who received CPD education in neonatology reported improved nursing practice, which they perceived ultimately contributed to a reduction in neonatal deaths. Additionally, a mixed-methods study involving interviews and a cross-sectional survey for healthcare professionals who participated in a short-course CPD on Advanced Life Support in Obstetrics (ALSO) found that knowledge and skills on maternal health improved (Tuyisenge et al., 2018). However, these same participants reported barriers such as high staff turnover, limited refresher trainings, and an inability to train others which hindered knowledge and skill application (Tuyisenge et al., 2018).

A quantitative study about a two-day intensive emergency obstetrics course for Rwandan medical students found that short-course education improved knowledge, and that regular refresher courses and education assisted with knowledge retention (Homaifar et al., 2013). A recent quasi-experimental research study examined changes to Rwandan nurse's and midwives' knowledge and self-efficacy after participation in a mentorship education process and found a statistically significant difference post-mentorship (Nyiringango, 2019). Wellington (2013) created CPD education for orthopedic nurses in Malawi, and concluded that it was important to respond to the local staff's feedback and needs.

Nursing Education in SSA

Bvumbwe and Mtshali (2018b) completed an integrative review of literature on nursing education in SSA, which found that reform in nursing curricula are a priority and necessity to influence the quality of healthcare. Additionally, strengthening specialty and

advanced nursing practice is of utmost importance (Bvumbwe & Mtshali, 2018b). The authors found that it is necessary to increase the number of faculty and clinical educators who have expertise and education in nursing and nursing specialty areas in order to produce high-quality well-educated nurses. These same authors completed a qualitative study of nursing education in Malawi, and the results of the study found that there is a need for capacity building amongst nursing faculty and a need for curriculum reform and transformative teaching (Bvumbwe & Mtshali, 2018a).

More specifically, North et al. (2019) completed a mix-methods study on children's nursing workforce in the five African countries of Kenya, Malawi, Uganda, South Africa, and Zambia. Incorporating quantitative and qualitative components, North et al. (2019) generated data on the size of the pediatric nursing workforce in these five countries. North et al. (2019) found that there is a high need for pediatric nursing specialization, but several countries lack local policies and education plans for pediatric nurses. The authors discovered a need for significant investment in the pediatric nursing education and pediatric nursing workforce for African countries (North et al., 2019).

Literature Review Summary

In summary, the literature review demonstrates the importance of CPD education for pre-service and in-service nurses, particularly in pediatric nursing, and for maintaining current nursing practice. CPD education also supports nurses and other healthcare providers, such as midwives, to deliver high-quality and effective health care. CPD education in LMICs can be a way for nurses to gain further competencies in specialty areas such as pediatrics, and online options allow more nurses with competing demands to access education, provided internet access is available. While previous research has been done on CPD for neonatology, maternal health, and midwifery, there

are limited studies that address the CPD education among pediatric nurses in LMICs, more specifically, Rwanda. Further research is needed to explore the experiences of nurses who participate in pediatric CPD education in Rwanda and their application of knowledge and skills to their pediatric nursing practice.

Statement of Purpose

The primary aim of this interpretive descriptive study was to research nurses' and nurse educators' experiences of applying pediatric knowledge and skills to the practice of nursing in academic and clinical settings after completing the PNCPD program in Rwanda.

Research Question

The following overarching research question guided this study: what are nurses' and nurse educators' experiences of applying pediatric knowledge and skills to clinical and academic settings in Rwanda after completing a PNCPD program? Sub-questions for this study included: (1) What are the facilitators and barriers of applying knowledge and skills to the practice of nursing? (2) What are the recommendations that the nurses and nurse educators have for future offerings of the program?

Study Design

This study was situated within an interpretive descriptive perspective to explore the ways in which knowledge gained during the PNCPD program in Rwanda was applied by nurses and nurse educators in their nursing practice, both academically and clinically. As Thorne et al. (1997) highlight, interpretive description can contribute to understanding a person's experiences and what nursing can do to make a difference. As the researcher's aim is to understand and describe experiences of the learners from the PNCPD program, interpretive description is the appropriate study design of choice (Dowling & Cooney,

2012; Thorne, 2016).

Setting and Sampling Strategy

The research occurred in Rwanda, where nurses and nurse educators who completed study in the PNCPD program were practicing nursing in academic and clinical settings. Interviews were conducted at the TSAM-MNCH office in Kigali, Rwanda in a private conference room which allowed for confidentiality and a separate space from the participant's workplace (Manderson et al., 2006).

Sample

Fourteen nurses and nurse educators enrolled in the first cohort of the PNCPD program, and another twenty-seven enrolled in the second cohort of the PNCPD program for a total of forty-one graduates. Convenience sampling was utilized to recruit participants from the total population of forty-one nurses and nurse educators who successfully completed the PNCPD program in Rwanda (Polit & Beck, 2017; Thorne, 2016). Recruiting the total population of nurses allowed for any sample size loss due to attrition (MacDougall & Fudge, 2001; Morse, 1999). Inclusion criteria included nurses and/or nurse educators who completed the PNCPD program in Rwanda and were currently practicing in the academic and/or clinical setting. Additionally, participants needed to express willingness to participate in the study and be able to speak and read English or Kinyarwanda. A total of fourteen nurses/nurse educators responded to the invitation to participate and all were subsequently interviewed for this study.

Use of an Interviewer

For this study, the graduate student researcher (GSR) recognized the need for an external interviewer other than herself. The rationale for using an alternate interviewer was two-fold. First, the GSR was the facilitator and instructor for the first cohort of

nurses and nurse educators involved in the PNCPD program, and as a result had a previous relationship with many of the potential participants in the study. The relationship was that of teacher and student, and as a result was felt to hold a potential for conflict of interest or bias which could impact the data collected during the interviews (Polit & Beck, 2017). Second, the GSR is not fluent in Kinyarwanda and preferred to offer the participants the option of being interviewed in either Kinyarwanda or English. English is often a second or third language for Rwandans, and it was acknowledged that participants would be able to express themselves more freely in their first language of Kinyarwanda. For these reasons, all interviews were conducted or assisted by a Registered Nurse with qualitative research experience, who is fluent in both Kinyarwanda and English. This enabled participants to respond to questions in both languages if they desired. The interviewer recruited for this study was a PhD in Nursing student at Western University. The PhD student resides in Rwanda and was not known to have any professional affiliation or previous relationship with any of the potential study participants. The GSR's supervisor recommended this interviewer, who is experienced in completing research interviews using a semi-structured interview guide. Additionally, the interviewer was asked to maintain field notes that she shared with the GSR after each interview. According to the TSAM-MNCH policy for graduate student research, the interviewer was compensated for her time to conduct the interviews, and for any transportation and meal expenses associated with travelling to conduct the interviews within Kigali. Compensation came from the GSR's research budget. Rigor and validity related to the use of an alternative interviewer will be discussed in a subsequent section of this paper.

Recruitment

Recruiting participants for the research study required planning to avoid any potential perception of coercion and influence and to ensure participants joined the study voluntarily. The first step the researcher took was to request permission from the TSAM-MNCH Project Director (PD) in Rwanda to conduct the study and to make initial contact with potential participants who had been involved in the PNCPD program. Additionally, all study documents were translated from English to Kinyarwanda by a Western University Master's student who was fluent in both English and Kinyarwanda. Therefore, all correspondence for recruitment was sent in both English and Kinyarwanda, including the letter of information (LOI), consent form, and email text (Appendices A, B, C, & D).

Once permission was received from the TSAM PD to conduct the study and contact participants, the researcher provided the research study LOI and consent form in both English and Kinyarwanda to the TSAM Nursing and Midwifery Project Manager (N&M PM). The TSAM N&M PM sent an initial invitation e-mail in both English and Kinyarwanda, with the LOI and consent form to all nurses and nurse educators who had participated in the PNCPD program. The email contained the researcher and interviewer's contact information so that interested participants could contact the researcher and/or interviewer for further questions, and/or if they would like to participate in the study. When a participant contacted the researcher or interviewer, the researcher or interviewer confirmed whether inclusion criteria were met and answered any questions pertaining to the study. Once these steps were completed, the interviewer asked if the participants would agree to an interview. If they agreed, the interviewer scheduled a date and time for meeting at the TSAM-MNCH office's private conference room in Kigali, Rwanda.

For participants who did not respond to the first email, a follow-up email containing the same message was sent one week after the first email by the TSAM N&M PM. After two weeks, those individuals who still had not responded were sent a third and final email message containing the same information from the TSAM N&M PM. Since many nurses being recruited might have been residing in rural areas where internet connections may be limited, a follow-up phone call was completed by the interviewer or the N&M PM. For persons who were contacted by phone, the interviewer or N&M PM read the email script to the potential participant over the phone. If the contacted participant was interested in the study, the N&M PM directed the potential participant to contact the interviewer via email or telephone. If the interviewer contacted the participants over the phone and they agreed to an interview, the interviewer scheduled an interview with them at that time. As requested, the researcher's full contact information was shared with potential participants by the TSAM N&M PM and interviewer.

Data Collection Method

The primary data collection method was individual interviews with a demographic form completed by each participant prior to the start of the interview in either English or Kinyarwanda (Appendices E and F). Individual interviews were digitally audio-recorded and conducted using a semi-structured interview guide (Appendix G) (Turner, 2010). Each interview lasted between 30 to 60 minutes. Participants had the option to complete the interview in English or Kinyarwanda. If participants chose to complete their interview in English, the GSR conducted the interview provided they were not previous students of the GSR. Since the GSR had previously assisted with facilitating the first cohort of the PNCPD program, she was not present for any interviews that included the first cohort of graduates. For those who chose

Kinyarwanda, the Rwandan interviewer was solely used. The Rwandan interviewer was present at the English interviews as well, to assist with any language barriers and provide clarification in Kinyarwanda if needed.

Prior to beginning the interview, the interviewer first answered any research study related questions the participant might have had. Each participant had received a copy of the LOI and consent form by email. At the interview, the participants were also provided with a hard copy of the LOI and consent form to review and sign before proceeding with the study. After the consent form was signed, the interviewer reminded the participant to refrain from using any real names or other potentially identifying information. Prior to beginning the interview, participants completed an anonymous demographic questionnaire. After the demographic questionnaire was completed, recording began and the interview was initiated. Open-ended questions were asked using a semi-structured interview guide, regarding participants' experiences applying knowledge and skills to academic and/or clinical settings in Rwanda after completing the PNCPD program. As outlined in the LOI, participants could withdraw from the study at any time during the interview, however none did. Field notes were made during and after each interview to note interviewer observations. The GSR was present in Rwanda for the first seven interviews, and the last seven interviews were completed by the local Rwandan interviewer.

Compensation

Participants received compensation for their time and expenses related to participating in this research. Consenting participants were requested to come to the capital city of Kigali for the research interviews. As such, many participants were coming from outside of Kigali and had to travel. Therefore, as per the TSAM-MNCH

policy, participants received allotted travel, meal, and/or accommodation expenses depending upon the provinces they were travelling from. In addition to any transportation, meal allowance, and/or accommodation allowance that the participant received, they were also compensated 5,000 RWF (~$8.00 CDN) for their time participating in this study. From personal experience living in Rwanda, the amount of 5,000 RWF was equivalent to an average day's wage in Rwanda.

Data Analysis Strategy

Inductive content analysis was used for data analysis (Elo & Kyngas, 2007; Erlingsson & Brysiewicz, 2017; Graneheim & Lundman, 2004; Thorne et al., 1997). After the interviews were conducted, the de-identified audio-recordings, demographic forms, and field notes were uploaded into OWL to allow for secure storage and transfer to the translator and transcriptionist, and the GSR. The audio-recordings were then transcribed verbatim by a hired transcriptionist and translator who signed a study confidentiality agreement prior to starting the transcription and translation process. The transcribed and translated interviews were then also uploaded into OWL by the transcriptionist. The GSR then uploaded the transcripts and audio recordings to NVivo 12 Plus (QSR International, 2019). The GSR listened to the interviews that were completed in English, while reading along with the transcripts. As suggested by Erlingsson et al (2017), all transcribed data- interviews and field notes- were read several times to have a sense of the whole. Through this process, the GSR became immersed in the data by reading the transcriptions several times (Elo & Kyngas, 2007; Erlingsson & Brysiewicz, 2017; Thorne et al., 1997). The researcher identified important meaning units, or main points that participants expressed, dividing them up into parts within NVivo 12 Plus (Erlingsson & Brysiewicz, 2017). Codes were identified through these

meaning units, which were then put into categories, and further distilled into themes (Erlingsson & Brysiewicz, 2017). Field notes also provided additional information and context to the analysis process. The GSR consulted with her supervisor at several points in the data analysis process to ensure that coding and content analysis procedures were being done according to selected content analysis methods, and to communicate about themes being noted in the data. Additionally, after the initial set of interviews in Rwanda, the GSR also met with her Rwandan co-supervisor, Dr. Donatilla Mukamana, at the University of Rwanda School of Nursing and Midwifery to discuss early themes that were emerging from the interviews. Dr. Mukamana was also consulted once themes began to emerge during the coding process.

Rigor, Validity, and Reflexivity

Several steps were taken to ensure that rigor was achieved in this research study. Thorne et al., (1997) notes the importance of recognizing potential for bias in the interview process. In this study, potential for bias was attended to by having an external interviewer, who was not connected to the participants by a previous relationship, complete the interviews. The GSR met with the interviewer prior to commencing the interviews to orient the interviewer to the research and review the interview questions. During this meeting, the GSR also reviewed the research proposal to ensure the interviewer was aware of the important aspects of the research and would be able to guide the interviews in a way that fit within the research questions and goals. Consequently, the interviewer was able to become aligned with the GSR's goals for the research and develop prompts for use in the semi-structured interview process. The GSR was present for the interviews in which she did not have a previous relationship with the participants. This included interviews with the participant who were in the second cohort

of the PNCPD program, and who chose to conduct their interview in English. After the initial interviews that the GSR was not a part of, the GSR and the interviewer met to debrief. During this debrief, the interviewer shared field notes with the GSR, as well as general impressions of the interview. The above processes ensured that although the data was not collected directly by the GSR, the GSR remained involved and engaged throughout the process of data collection.

Validity occurred through member checking to promote credibility (Cho & Trent, 2006; Lincoln & Guba, 1985). Member checking entails the researcher taking the data back to the participants once themes begin to emerge, to cross check that the participants do not have any information to add and that there are no areas that require adjustment (Cho & Trent, 2006; Lincoln & Guba, 1985; Thorne et al., 1997). The GSR emailed participants individually with a summary of the initial themes and findings to ensure that the findings resonated with their experiences. Participants were offered the option of responding by email or video call to discuss the findings further if they desired. Seven participants responded by email, confirming that the initial findings corresponded to their experiences.

Reflexivity was promoted by using field notes and a reflexive journal (Thorne et al., 1997). The GSR maintained a journal throughout the data analysis process. As the GSR is in a hybrid position of having both an insider and outsider perspective of the PNCPD program, it was important for the GSR to continually reflect upon potential biases and assumptions that may influence the data analysis (Jootun, McGhee, & Marland, 2009). The GSR continually debriefed with the interviewer after each interview, which allowed the opportunity to review field notes and promote a dialogue of reflexivity between the interviewer and GSR during the research process. As the

interviewer was also an experienced qualitative researcher and doctoral student, her field notes confirmed the GSRs findings, as the GSR returned to them after developing initial themes.

Ethical Considerations

Ethics was obtained from Western University Health Science Research Ethics Board (Appendix H) and the University of Rwanda College of Medicine and Health Sciences Institutional Review Board (Appendix I) prior to data collection. The GSR also received research affiliation with the University of Rwanda along with a permit to conduct research in Rwanda (Appendices J and K). Participants were given the letter of information and consent form prior to the interview by email and were provided with an opportunity to clarify any questions they had about the study and consent before the interview commenced. Participants were asked to sign a consent form before participating in the interview.

Potential participants also received a copy of the study letter of information and consent form via email from the TSAM N&M PM. Additionally, when a potential participant contacted and informed the GSR or interviewer that they were interested in being involved in the study, the GSR or interviewer reviewed the study letter of information and consent form with the participant to ensure all study related questions were addressed and that the participant had reviewed the consent form. Finally, immediately prior to the start of the interview, the interviewer reviewed the study letter of information and consent form with the participant, and once it was determined that study related questions were addressed at that time, the participant signed and dated the consent form and initialed the study letter of information.

Findings

Participant Demographics

This study explored how nurse educators and nurses experienced applying pediatric knowledge and skills to their clinical and/or academic settings after completing a PNCPD program in Rwanda. In October of 2019, fourteen nurse educators and nurses were interviewed in Kigali, Rwanda. All participants reported working full-time. Five of the participants were nurse educators from academic institutions, and nine were clinical nurses from hospitals. Four participants were from the first cohort of the PNCPD program, and eleven were from the second cohort. The average age of participants was 37 years, with a median age of 35.5 years and a range of 26 to 52 years of age. Eight of the participants were female, and six were male. Six reported having a diploma in nursing, seven reported having a bachelor's degree, and one reported holding a master's degree. For those that worked in hospital, the average number of years of experience was eleven years, with a median of nine years. Six nurses reported practicing in pediatrics, five in neonatology, and one in accident and emergency. For those teaching, they reported an average of 5.4 years of teaching experience, with a median of 4 years, and an average of 4.6 years teaching pediatrics. See Appendices L and M for tables containing summary and detailed demographic information.

Thematic Findings

The analysis of the interviews resulted in the emergence of five themes and several subthemes. The first theme is **Transformations in Pediatric Nursing Practice**, with three subthemes of *(1) Pediatric Assessment, (2) Clinical Decision Making, and (3) Efficiency and Prioritization.* The second theme is **Knowledge Sharing**, with two subthemes: *(1) Empowered to Collaborate Inter-professionally*, and *(2) Supporting Professional Development of Other Health Professionals*. The third theme is

Relationship-Based Nursing, with the subthemes of *(1) Caregiver Centred Care and (2) Relationship with the child.* Theme Four speaks to the **Barriers and Facilitators to Knowledge Implementation**, including the barriers of *(1) Human Resources, (2) Materials, and (3) Workplace Culture*, with facilitators of *(1) Institutional Support and (2) Internal Motivation*. Theme Five is **Scaling-up PNCPD within the Heath System.**

Theme One: Transformations in Pediatric Nursing Practice.

The first overarching theme is characterized by the nurses and nurse educators sharing about transformative change in their nursing practice. Transformations in pediatric nursing practice included many positive changes, which were categorized into three subthemes: *(1) pediatric assessment, (2) clinical decision making, and (3) efficiency and prioritization.*

Sub-Theme 1: Pediatric Assessment

Many participants shared how the knowledge gained around pediatric assessment improved their nursing care and ability to assess a child, and subsequently transformed their nursing practice. One participant shared how, "*I am now competent to perform advanced pediatric assessment, and I got those skills from this course" (Participant M).* Another participant said that their nursing practice was transformed as they recognized the importance of nurses performing pediatric assessment as it could improve the care for the child, as "*it is through assessment that you identify problems" (Participant E).* Participants spoke of the change and improvement in their clinical and academic practice. One participant notably shared how now, *"I can do something for a dying child. No child would die under my arms. I would have to do everything possible to avoid that" (Participant N).*

Several participants spoke about how prior to the PNCPD program, they thought

the role of assessment belonged solely to the physician. One participant said that, "*we learned about physical assessment. We used to think that it is for doctors to do the pediatric physical assessment. But we learned that we could do the assessment and help the child*" *(Participant F)*. Another participant shared that "*before this training, I was really poor in child assessment, but after I went through this course, I feel more comfortable assessing a child" (Participant A).*

Since taking the PNCPD program, participants reported understanding the important role that nurses can have in performing pediatric assessment. One participant shared how prior to taking the PNCPD program,

> "*We [are not] used to using stethoscope. [In the course], having the confidence to do physical examination is also something that we emphasize on, to check that [we] have enough materials, how do they operate, doing a proper physical assessment, taking vital signs and knowing how to interpret them and how to help a child depending on the vital signs. Before we used to think that our job is just to give medication" (Participant F).*

Sub-Theme 2: Clinical Decision Making

Transformation in pediatric nursing practice also affected clinical decision making, which led to the nurses being able to make decisions about acting upon a child's care. Participants related how they used their new knowledge to make clinical decisions. Participant G gave this example:

> "*When a child has gastroenteritis, I start by assessment. I check whether the child has signs of dehydration, then I would provide fluid without waiting for [the doctor]. Especially in district hospitals, it takes long to have a doctor come to see the child. When I receive a child with severe dehydration, the first thing I do is to*

provide fluids while waiting for the doctor to come. I also take samples to check the electrolytes."

Another participant spoke about the shift in mindset: *"My mindset has changed when it comes to a child. The way I used to see a child before is completely different than the way I see them now" (Participant C)*. This same participant gave the example of pain, sharing that their understanding of how children demonstrate and experience pain has improved their treatment and management of pain in children. Nurses also learned how pediatric care differs from adult care, and said that "*after I learned in this course, I learned that it is different, that a child is not a small adult" (Participant A).*

An improvement in clinical decision making was reflected in statements that participants made about their nursing practice:

"From the time we started until the day we finished, I feel that there is something that has been improved in my day to day practice as a pediatric nurse. It helped me in triage, because most of the time I am in the triage, I get allocated in triage room of accident and emergency. It helped me in problem solving and to get new skills in problem solving, especially in triage, to give more attention on children, so it helped me in quick assessment for child and to prioritize a child during triage" (Participant A)

Similar to the nurse who shared about providing fluids to a child with dehydration due to gastroenteritis, other participants shared how their clinical decision making had shifted since participating in the PNCPD program:

"At my workplace we have lots of cases of pneumonia. In most cases we receive children who need to be put on oxygen because they have respiratory problems. Before the CPD course I would receive a child and just read the doctor's

prescription. But we learned about oxygen supply and demand and I now know when to put a child on oxygen support" (Participant G).

"In terms of essential medicine in case of emergency, there are doctors at the hospital level, but they work in different services. I used to call the doctor, sometimes it would take long in case they are busy with other patients. Now I would provide essential care while I am waiting for the doctor to come" (Participant L).

These examples from the participants demonstrate how the PNCPD program led nurses to make clinical decisions and acting based upon their new knowledge.

Subtheme 3: Efficiency and Prioritization

The third subtheme under transformations in pediatric nursing is efficiency and prioritization. Nearly all the participants spoke about an increase in efficiency and an ability to prioritize nursing care because of the knowledge they gained in the PNCPD program. Participant A put it well in saying,

"We are the ones to give the first care. We are the ones who have what we call ***gold minutes*** *in our hands because if the child is in shock before giving IV or [needs to] be admitted, we are the first people to receive her or him".*

Participant I agreed:

"Other things I can add is to have punctuality, not, I can say lazy, to have laziness or to be lazy in doing something. The baby's health is so fragile and I realized that punctuality is key in pediatric care provision".

Participant A also added, *"I can even intervene quickly, I can even prioritize a child. I can tell others please wait this child has more priority, it's more urgent than others".* Participant B shared, *"I cannot delay, because the child is very vulnerable. I*

have to intervene quickly, in case of hypoxia, I tell the students, we have to work quickly, because if we delay, the child may lose [life]".

Participants spoke of how the PNCPD program taught them about how their speed of care could have a positive impact on a child:

> *"We learned that if you don't take the decision early, the child can die for example, or fall in the critical case, the critical condition. So, making decision is very quick, you do the assessment, you collaborate with the child, with the mother or caregiver, but you do quickly" (Participant C).*
>
> *"As you are doing assessment, you see this one should be prioritized [more] than others. It depends on the vital signs, how you see the children, there are so many things. You can say 'this would be the first, then this other one will be second', even according to their age, they are different from adults" (Participant D).*
>
> *"We can find baby in incubator with wet diaper of one kg. This baby has prematurity, no other problem, now he has hypothermia because of urine, because of stool. You find baby with obstructed nose due to clothes of sleeper; baby has asphyxia... it is why I have learned something and how I can change this in nurses" (Participant F).*
>
> *"What I can relate to the CPD course is rapidity, to be very quick, to put pressure on someone and more supervision to someone to whom I have allocated the child. But nowadays after knowing that the child can lose life quickly and then I act quickly, because if I delay the child can get damaged or even die. That's what helped me to be quick and more active. I was slower, but now I do things quickly" (Participant A).*
>
> Others mentioned, *"If you delay to avail or to make sure they are getting enough*

oxygen, it can be more difficult, or it can be worse compared to adult people" (Participant E), and *"after the CPD course I learned many things about assessment and prioritization of their needs" (Participant H)*.

Theme Two: Knowledge Sharing

The second overarching theme of this study is knowledge sharing. Participants spoke to how the PNCPD program led to knowledge sharing with physicians, nurses, students, and other healthcare colleagues: *"this CPD course is helping me to share with others – students, colleagues" (Participant K)*. Within this theme were the subthemes of (1) *Empowered to Collaborate Inter-professionally*, and *(2) Supporting Professional Development of Other Health Professionals.*

Sub-Theme: Empowered to Collaborate

Many participants indicated that the PNCPD program led them to feel empowered to collaborate with physicians, other nurses, and healthcare professionals. Empowerment can be defined in several ways, but participants in this study expressed a psychological empowerment, in reference to motivation. Conger and Kanungo (1988) describe empowerment as a "motivational construct", which further leads to enhanced feelings of self-efficacy (p. 474). According to the most recent Merriam-Webster, empowered means "having the knowledge, confidence, means, or ability to do things or make decisions for oneself" (Merriam-Webster, 2020, p. 1).

In keeping with these definitions, participants explained how the knowledge from the program led to them being empowered to collaborate with colleagues because of their improved confidence, means, and ability. One participant shared that the new knowledge led them

"to tell the doctor, 'I have a child in this room, he is more urgent. Please can you

stop whatever you are doing and first see the child'. It is helping me because I push, I tell the doctor or the allocated nurse because when I'm triage nurse, I am the one to allocate the nurse to take care of the child. I also call the doctor to check the child" (Participant A).

Another participant shared a potent example:

"*after coming to this course, my knowledge comes to the ground and I am responsible to discuss it. I can assess, I can explain, and I give what I know...If I see it is very complicated, or if I do not understand, I ask the doctor, 'why this? You can change for this?' I confirm with the doctor" (Participant C).*

The new knowledge empowered the nurses to collaborate with other colleagues, not just with the physicians, for improved care of the pediatric patient. Participant F noted:

"For example, how to do resuscitation for a child in shock. We had to call doctors to ask what to do [before], sometimes the doctor won't be available because they are not that many, but when we know what to do in collaboration with the team, we discuss about what to do and it would go well and help the child, even when we present the case to colleagues they would show support and appreciation in what we do".

This collaboration extended beyond the time limit of the program, as Participant F reiterated, "*I gained new friends whom I can ask for support in order to help my patients",* and another said, "*now if I have a challenging case, I can call some of my colleagues who have attended the CPD program" (Participant I).* One participant, who works in a rural area of Rwanda, describes collaborating with pediatricians at the referral

hospitals after doing the PNCPD program clinical practicum in a major city:

> "*when I finished the practicum, I took their contact details. It happens that I get a case and would call a pediatrician and they would say for example, that from what you are describing, I would suggest to request these kinds of tests to be taken and discuss with the general practitioner, and if you find this and that in the test, then you should refer the child to our referral hospital. In that case, since I am a nurse and not a general practitioner, I would connect the pediatrician with the general practitioner, so that it follows the proper route and that way we get to discuss about it" (Participant J).*

Sub-Theme: Supporting Professional Development of Other Health Professionals

Many of the participants in this study are nurse educators or teach nursing students in the clinical setting, thereby already supporting professional development of nurses. However, this study found that both the pre-service nurse educators and in-service practicing nurses improved their ability to teach and share with other nurses. Participants discussed how they not only taught students, but also their colleagues. There was a general sense that the learners in the PNCPD program had the opportunity to educate others and felt a responsibility to educate and mentor others. One nurse summarized it this way: "*you [are] changing, and you are also empowering other nurses. You are mentoring them" (Participant D).*

The graduates of the PNCPD program described their opportunities to coach others:

> "*after this course, we schedule in-service training. It will help me to help my colleagues who did not come to this course, because I ask them to schedule me at least once a month so that I can take some subjects and share with them. In the*

morning we have one hour after report that we can bring something, and I shared. So, each month I have one session and in nine months I have covered many things, and I will be helping my colleagues. As I share with them, I go deeper because it is what we learned, but when I teach, I get better by helping others" (Participant A).

Participant A shared that the teaching is for day and night shift nurses, as well as the management team, such as the director, and students from nursing schools. Another participant who is a nurse educator spoke of how when returning to their institution, they have what is called a pedagogical day, and that it was an expectation for them to pass on to their colleagues the knowledge they have gained from the PNCPD. Participant G reported sharing the knowledge from the PNCPD program with other nurses and colleagues on a day to day basis. Another nurse said that "*I get to help my colleagues, in case there is something they do not know. I give them guidance, and by working with them, they learn from me" (Participant L).*

Nurse educators shared how their teaching had improved after taking the PNCPD program: "*Before there are things I did not know, and I would tell them that I don't know" (Participant L).* Participant B commented, "*after this CPD I have seen that there is many information I did not give my students, but now after the CPD program I think there is a good improvement of my teaching".* This same participant shared that "*I was confident because I know delivered information to provide to the students. I know what I am saying is current, and I am able to explain and to show to my students the case".* Another participant, speaking to the child health modules that they taught prior, stated that "*attending this CPD program was very rich for me, because the course we teach was not very rich" (Participant K).* As such, this participant used the knowledge from the

PNCPD program to

> "*arrange my course outline according to the evidence I get on this CPD course, because I have many books I can consult it and get evidence on this CPD course, to give my students this knowledge, to give them those skills I have gained in this CPD course".*

While not everyone had a direct opportunity to teach others, they felt a responsibility to educate others. Participant M said, "*by coaching them, I use that knowledge gained from that course, and I transferred my knowledge to them".* Participant N stated, "*my responsibility is to learn more and share with my colleagues about my knowledge".* During the interview, one participant emphasized the importance of bringing the PNCPD education to health centres, so their nursing practice can also be improved.

Regarding teaching students, Participant N said that,

> "*when students are doing their practicums, I make sure that I should trust students to be able to provide me with care in the future, so it is my responsibility to ensure that they know as much as possible, so that if I happen to get treated by them, I would have trust in their knowledge".*
>
> "*I have found that is the good method to teach the students, not to tell them verbally, but we go to the bedside, we identify the case, we make a holistic assessment, and we discuss and I give correction to the students. If there is any problem, we call the senior nurses or other [nurses]"* (*Participant B).*

Another participant said that when student supervision occurs,

> "*I get to assess what the children needs or ask more explanation during the presentations on the cases, and provide comments on what should have been done*

and tell them what should be included in the nursing care" (Participant F).

Many of the graduates of the PNCPD program had opportunities to teach, educate, and coach others, which they took advantage of:

"*I have been involved in teaching the nurses from the Rwanda association of nurses and midwifery whereby I coach them in order to pass the exam. By coaching them, I use that knowledge I gained from that course and I transferred my knowledge to them" (Participant M).*

Ultimately, the participants were happy to help with improving pediatric nursing care,

"*because most of the nurses are working in district hospitals and health centres. Most of them, also, they were having a fear of pediatric patients, especially in their assessment, because it is somehow complicated. So I have been the one who trains them" (Participant M).*

Theme Three: Relationship-Based Nursing

The third theme is relationship-based nursing. All of the participants shared that taking the PNCPD program improved their relationship and communication with the families and children they were caring for. Many of them expressed how prior to taking the PNCPD program, they did not communicate with or involve the family much in the care of the child. However, through the PNCPD program, they learned the importance of (1) *Caregiver centred care* and (2) *Relationship with the Child.*

Sub-Theme: Caregiver-centred care

Participants shared how after taking the PNCPD program, they understood the importance of including the caregiver in the child's nursing care. Participant D put it succinctly in saying, "*because if you are a friend with the children you are also friend*

with the mother". This was given value, because if "*the mother sees that the nurse loves her children, they can tell anything. If they have a problem, they can come and contact you because you are showing love to their children".* Participant A described how in a critical situation, with a severely ill child, the decision on what and how to communicate with the parents depends on a multitude of factors, but emphasized the importance of explaining as much as possible to the parents. Rather than judging the mother, the participants learned to understand that the mother may be scared that their child is sick, so it is important to talk to them in a polite way and be patient with them. Other nurses described the importance of integrating the family and the child into the treatment, and that they paid attention how they behaved as the nurse in front of the family.

Participants learned how to think holistically about the child within the family situation. Several participants shared examples of how they learned the importance of incorporating the family and the family's home situation into the healthcare of the child:

> "*The people come to hospital thinking that the health professionals are very big people and they have to respect them and accept whatever they tell them to do, even if it was not something good, or something that would have an impact on them. I would say that the knowledge from CPD increased my level of interaction with the family in a way that we really emphasize on family centred care as the centre of successful care to the child, being humble and explaining everything to the parent about their child's health condition. Most importantly, to tell them about prevention. Without this, it would be useless, because the child may be brought back. Prevention is very important" (Participant G).*

Participants expressed the importance of knowing about the family, "*because if there is a problem in the family, we may provide the care to the child, but the problem*

may reoccur if we do not get to know what may be happening within their families" (Participant F).

An example that this participant gave was,

"*if a mother comes with malnutrition, it is not time to start yell[ing] at the mother about her inadequate ways of feeding health nutrition to her child. It is important to know if she is aware of what to feed a child. How she gets the food, how to improve things" (Participant F).*

One nurse articulated the following story:

"We received a child who was accompanied by his maternal aunt, but we did not know that. The child was a twin and lost his mother right after he was born. The aunt has three sets of twins. She has six children, plus the two children of her late sister. The child we received got sick because he was not getting any attention. We are treating him for septic arthritis. You can imagine the size of the family in which he is raised in. Six children, plus two – that's a total of eight children. We may receive that child and wonder what happened for the child to get that sick. But by talking to the aunt, we got to know the family situation. Even the education we provide to her has to be based on that. We explain what caused the illness, and explain how she could manage that situation. To know if they have health insurance – they were placed in category one of Ubudehe. And the family does their best to get the child to the health facilities. But there are times that the family may not be able to know what's going on with every child for them to receive proper care because they are too many. And for the family, they may not get why the child got sick, or understand that it is because of malnutrition that the child's health got at that stage. I really got interested in families, it helps me to

understand the illness I am treating and where it could be coming from. And the advantage to this is that it helps to provide health education to the families" (Participant N).

Participant D talked about something as simple as learning the child's name was an important aspect of family-centred care and would make the parents happy and friendly toward the nurse:

"*I learned a lot of things, even to be patient with the mothers, because sometimes they are worried about their children who are sick. You have to be patient and also come and explain to them to they can understand" (Participant D).*

Prevention was recognized as something that parents could play a role in:

"*like hyperthermia or hypothermia that the mother also may prevent. After the CPD course, as we learned how to manage the children's problems and their mother, we taught the mothers not only to wait for the medical employees, but also them, they have to prevent as the mother. So I learned how to communicate and how to prepare the mothers, the management of some problems in the children" (Participant H).*

Participants emphasized the importance of family-centred care:

"*Communication with the parents is very important to increase patient family centred care" (Participant I).*

"I got to know what kind of information I should share with the parents and how" (Participant J).

"If a child has diarrhea, I discuss with the mother to see if it may be caused by poor lactation, and I provide education about the benefits of breastfeeding" (Participant L).

> *"Now, when I provide healthcare to the child, the parents are with me and I get to talk to them and I would explain what's happening in the same time, why we are doing it, so that they know whether the child is improving or not; if we need to transfer the child to the referral hospital. I keep them informed, so I think that my ways of communication has improved" (Participant J).*

Prior to the program, Participant C described how they would take the child from the mother to do the IV line, but in the program "*we learned that the mother also must be here... and to distract the child"*. Participants shared *"[before] we would take a child away from the family to provide care, but I learned through the CPD program that the family has to be involved. It was something new to me, to focus on the family" (Participant N),* and *"as you keep them informed of what's happening and involve them in the process, they understand better how much you are helping them, and they get more involved" (Participant J)*.

Subtheme: Relationship with the Child

Nurses also spoke of the PNCPD program helping them understand the importance of having a relationship with the child they were caring for, and how the course improved their communication and collaboration with the child. Participant C reported, *"after getting the knowledge from the CPD… you can collaborate with [the child] in practice; whether you are going to access the IV line, or are going to assess the child".* This same participant also shared how,

> *"now when I see a child on the road or on the street, I approach him and say hi, how are you? How is everything? And I pay attention to the child. What are the child's needs, because if the child is sick, what does he need?"*

Participant D similarly said that they learned, *"how to be a friend with children",*

and,

"I learned a lot of things… we need to be close to the children, talk to them, show them love. Before we were trained [to tell] children [when you are] about to give an injection, that there is no pain. But if you are lying the children cannot have trust in you. So [now] I tell them to trust".

Participant E expressed that they were taught in the course to *"spend time with [the children], to make conversation. This is where you can also identify other problems that they might be having that you did not find in the beginning of the assessment, like therapeutic play".*

Participant E shared this story:

"there was a client who was in somewhere who had a suprapubic catheter, and that client was not collaborating well [the nurses said]. And he doesn't want anyone to touch him, anyone to do any care. They say that the client is complicated, but I went there confidently and of course I tried to first introduce myself to him, and I asked him to introduce himself, and we discussed, and provided all information needed before I changed the suprapubic catheter. And finally, I changed it successfully, and the client was not complaining as the nurses who were telling so before I went there, and I have found that being able to establish a therapeutic relationship with pediatric client also somehow increases the way of communicating… and I have found other benefits that I have got from pediatric CPD."

Participant F agreed that,

"what has changed is that we now prioritize to listen to the child. We used to work and feel the stress, because the child does not get what you are doing, and is

> *not cooperating, and we would not think of how to interact with the child. The training helped to increase that knowledge, that while working with a child, depending with their age, we have to collaborate with them, include them, give them toys. It is like putting them at ease, to gain their trust as someone who is helping them. That is something that we were not used to. We used to talk to the mothers, and not include the child in what we are doing. We used to think that the interaction should be with the mother. But we learned that we have to include the child in the care provision, and make sure that they are on board. If they are fearful, we need to make sure that we put them at ease, depending on the procedure. But we learned about including the child in the process."*

Participants spoke of how they "*learned that nurses working with pediatric population should emphasize on communication"* (Participant G). Participants also shared that they learned the importance of play, and worked to put the child at ease while in the hospital, by speaking kindly to the child and making a game of the assessment.

> "*For example, to start from what the child likes based on their age. Creating a relationship with a child so that they trust you because you have prepared them to approach you, or to use the colours that are child friendly, so that the child can trust you" (Participant H).*
>
> *"When a child gets to the hospital, there are those who are fearful of the white scrubs and would start crying… it is important to build a relationship so they trust you" (Participant G).*

Theme Four: Barriers and Facilitators to Knowledge Implementation

All of the participants spoke of the barriers and facilitators to implementing the knowledge and skills gained in the PNCPD program. Barriers included *human resources,*

materials, and workplace culture. Facilitators included *institutional support and internal motivation.*

Barriers: Human Resources

In terms of human resources, one participant reported a barrier to implementing knowledge learned in the PNCPD program because,

> "*the fact that I am the only one trained, that also is not a good thing. If you are the only one, other people may say, 'ah, this guy demands, or what he is asking to do, I don't know where he's coming from'. For example, in the district I am from, if we were five or six or ten and we discuss together, others can complete or can learn from you all, but when you are the only one trained, people may be like, 'why are you bringing these new ideas?" (Participant C).*

One nurse educator reported that, "*because we are the only one, you are two or three if I can say in a hundred students that you need to help, so that's a [barrier]" (Participant E).* Participant F shared that a barrier is, "*poor human resources, there comes when we don't get enough time when taking care of many patients, and that makes it hard to provide proper care to each patient as needed".*

In another example, Participant G answered,

> *"there is over workload, for example, one nurse to care for 30 children in a night. For the level of care, there is not enough time for every client, or every family. It is impossible to interact with them the way we would want, so because of that challenge, we don't really go deep in our care provision"*.

Several other participants added the challenge of continually being poorly staffed, and not having enough colleagues for the number of children needing care.

Barriers: Materials

In relation to materials, many participants mentioned that, "*another challenge is the lack of materials. It is common in hospitals not to have all of the materials" (Participant F).* Participant I disclosed that *"in hospital they have one thermometer for sixteen babies".* Other participants told of a lack of materials, such as bed sheets, clothing, and linens contributes to infection control challenges and an inability to properly care for children. Others talked of a lack of learning materials, and lack of books, which hindered their ability to continue learning and teaching others. Additionally, participants spoke of a lack of play items for children, which hindered their ability to engage with child and family centred care.

Barriers: Workplace Culture

Several participants expressed that another barrier to implementing the knowledge they learned in the PNCPD program was the *workplace culture.* Participant H shared, "*I would say that in some hospitals, they have their own ways of doing things. It is hard to bring change and showing them that the new knowledge should be applied".* Another participant dislocsed that there is resistance to change within clinical settings. Many participants talked about the challenge of "*changing the mindset"* of the nurses (Participants C, H, I, & M).

Facilitators: Institutional Support

Institutional support was mentioned by nearly all of the participants as a facilitator to implementing knowledge from the PNCPD program. Several participants reported that they had been selected by their institution to study in the program,

> "*because they chose people who they thought would put into practice the new knowledge... it means that there is a facilitation in making sure that the knowledge and skills gained are put into practice, and it also motivates other*

nurses to also take the courses" (Participant F).

Many participants told of how their institution provided them with opportunities to present the information they had learned, either at the nursing school where they worked, or at the hospital as an in-service teaching opportunity. Participant B shared, "*they [the institution] recognise me as someone who has been trained and has knowledge to transfer to the students".* Additionally, Participant H voiced that "*the management, when they are aware of the courses that we took, like this CPD, they do their best to help you so that you could apply the new knowledge".* Several of the participants spoke of how management had moved them to working in pediatrics after taking the PNCPD, instead of neonatology, so they could apply their new knowledge. Participants also acknowledged that being provided with release time from their work to attend the PNCPD, and having allocated time from work for studying, was a big facilitator in being able to fully participate in the program.

Facilitators: Internal Motivation

Participants also expressed how internal motivation was a facilitator for learning in the PNCPD program. Many mentioned being "*curious"* and "*internally motivated"* to learn more about child health and improve pediatric nursing *(Participants A, E, G, H, I, J, and M).* One nurse spoke of being motivated "*in order to prevent those problems that I used to see in the community" (Participant E).* Many participants expressed a desire to further their studies and continue to improve outcomes for pediatric patients and their families, as a result of this program, with one saying "*after being involved in that course, I am now interested so that I decided to follow a masters of pediatrics" (Participant M)*.

One participant told of her internal motivation by saying, "*being a mother also helps me, because I consider the child as if the child was mine… how could I be running?*

Would I go slow or would I be running?" (Participant A). Another participant added how the program made them realize that they have an ability to further help children: "*of course I have the will of not seeing pediatric client's conditions get worse, yet [now] I have something that can help, so that is also another motivation"* (Participant E). Participant N shared that *"participating in the CPD gave me a sense that I have something to give. I have more knowledge, and my responsibility is to learn more."*

Theme Five: Scaling-Up PNCPD within the Health System

Many of the nurses had strong recommendations for ways to utilize the PNCPD program in the future in order to have a larger impact on pediatric healthcare in Rwanda. Every single participant said that the education needed to be expanded to include nurses in health centres and district hospitals. Participants disclosed that there were too few pediatricians and nurses educated in pediatrics compared to the size of the Rwandan population. Many of the participants spoke of the importance of education at the Health Centre and community level:

> "*the health professionals in health centres at the community level, they are the ones who receive the patient in the first place. If the patient gets proper care at the primary level, they may not need to get to the district hospital, so if possible, the knowledge should be provided to nurses in health centres" (Participant F).*

> *"We see that the big problem is for the health centre. The nurses of health centre – if the health centre does not work well, the problem comes to the hospital. In the severe condition, can I say critical condition, the child can die. Because in health centre the management is not well, or the transfer is too late. So, the suggestion for that [is] to go to educate the nurses of health centre, I can say mentorship. If I*

say to the general director he can accept very quickly, but you, you can suggest to the Ministry of Health, say that the nurses who took this course can mentor, because in health centres it is very complicated there, they take the child and give and give, so the child comes to the hospital in critical condition" (Participant C).

"I am sure that when you do a presentation about this course, there will be someone from the Ministry of Health. There should be more training, the nurses who work in pediatric wards should receive this training, and the issue that would remain to be solved would be the one from health centres. Like I said, most of the complicated cases happen in the health centres, by the time the child gets to [district or referral hospital], the situation has gotten worse. Why? Because they are too busy, or because of other reasons, but there are nurses who receive such cases and they don't really pay attention to the assessment...so this course is very helpful, that's the message I have for you to transmit to the Ministry" (Participant C).

Participant L: "I would say that another challenge, in terms of child mortality, I think there is a way to improve child health outcomes, and reduce child mortality. Like in referral hospitals, children should not die, unless they were in a really bad condition and nothing could save them. I think there are things you could do to improve that, for example the nurses in health centres, they receive cases but by the time they transfer the patients, it is sometimes too late to do any intervention. They do not have doctors to check with cases they receive. It would be good to provide training to them, I think it would have a big impact on child health outcomes, that way cases would be managed on time and adequately, in health centres or at the hospital if the referral is done on time".

Summary

In summary, nurse educators and nurses reported that their academic and clinical pediatric nursing practice was transformed through the PNCPD program. They also expressed how the PNCPD program led to increased knowledge sharing with colleagues and how their new knowledge led them into better relationships with families and the children for whom they provided care. While there are barriers to implementing the knowledge from the PNCPD program, the facilitators of institutional support and internal motivation have allowed for improved outcomes of the knowledge application. Nurse educators and nurses have wonderful ideas on how the PNCPD program could be scaled-up to have a larger impact on Rwandan pediatric healthcare, which will be discussed further below.

Discussion

This qualitative interpretive descriptive study set out to explore nurse educators' and nurses' experiences of applying pediatric knowledge and skills to the clinical and academic settings after participating in a six-month PNCPD program. Five main themes emerged, including a transformation of pediatric nursing practice that led to positive changes and improved outcomes for children, knowledge sharing with colleagues and other healthcare professionals, relationship-based nursing involving families and children, facilitators and barriers to implementing knowledge, and scaling up the PNCPD program.

Nurse educators and nurses voiced how their pediatric assessment skills transformed. The study results suggest that this transformation of pediatric nursing practice improved their ability to care for children. These study results are similar to other research done on CPD in nursing education in LMICs, which also showed a

positive change in assessment skills and knowledge after education (Abebe et al., 2018; Kasine et al., 2018; Hockenberry et al., 2020; Taylor, 2015; Tuyisenge et al., 2018; Uwajeneza et al., 2015). For example, Uwajeneza et al. (2015) found an increase in knowledge and skills in maternal and newborn care after midwive's participated in a CPD course, which led to an improvement in midwifery practice.

This transformation in pediatric nursing practice also included an improvement in clinical decision making. Participants from the PNCPD program noted how their new knowledge led them to make clinical decisions that improved pediatric care. Similarly, participants in Kasine et al.'s (2018) study reported how they felt more autonomous in making decisions after completing the Helping Babies Breath (HBB) CPD course, as it increased their confidence in making clinical decisions regardless of whether or not the physician was around. North et al. (2019) also found qualitative reports of specialist pediatric nurses making autonomous clinical decisions after specialty training.

Participants from this study on the PNCPD program also reported an improved efficiency and prioritization in pediatric nursing practice, which has direct impacts on a child's health. Comparably, another study found that pediatric specialty education improved triage efficiency and reduced care delays in pediatric settings in Malawi (North et al., 2019). Additionally, CPD education improved the efficiency of newborn and maternal nursing and midwifery care, improving health outcomes (Kasine et al., 2018; Uwajeneza, 2015). A child's health can change from a stable condition to one that is life-threatening very quickly because they have immature body systems which differ from adults (Chiocca, 2016; McCaskey, 2007). Since children are likely to decompensate rapidly when ill, nursing care administered in the first few minutes can be critically important (McCaskey, 2007). Improving timely nursing care has far-reaching

implications, as nurses working with children learn to understand the importance of intervening quickly to prevent deterioration.

Participants from PNCPD program reported empowerment to collaborate inter-professionally and support the mentorship of other healthcare professionals. As mentioned previously, this feeling of empowerment led the nurses to be motivated to collaborate (Conger and Kanungo, 1988). This feeling of empowerment allows participants to recognize that the knowledge is not for them alone, but also to pass along to other healthcare professionals. Previous studies have also demonstrated that inter-professional collaboration and mentorship can be a way to strengthen health care providers working and teaching in pediatric, maternal, and neonatal health (Abede et al., 2018; Kasine et al., 2018; Ndayisenga, 2019; Nowell et al., 2016; Tuyisenge et al., 2018). A study by North et al. (2019) found that specialist pediatric nurses in Malawi were empowered through their education. Additionally, Nowell at al. (2016) found that mentorship among nursing academia led to increased psychological empowerment. An increase in psychological empowerment led to mentees expressing a desire to mentor others, and 80.6% of mentees went on to mentor others (Nowell et al., 2016). This suggests that PNCPD program participants' feelings of empowerment to collaborate may continue to contribute to the mentorship of other healthcare professionals working in pediatrics, thereby spreading the knowledge from the PNCPD program further.

Participants disclosed that barriers to applying knowledge from the PNCPD program included a shortage of human resources, materials, and challenges with the workplace culture both in hospital and academic settings. Similar to other studies, a shortage of skilled healthcare providers and lack of materials and equipment in both in-service and pre-service areas can hamper application of knowledge from CPD education

(Kasine et al., 2018; Ndayisenga, 2019; Uwajeneza et al., 2015). Kasine et al. (2018) found that inadequate infrastructure was a barrier for nurses to apply knowledge and skills from a Helping Babies Breathe (HBB) course. Participants from Kasine et al. (2018)'s study reported similar challenges as the participants from the PNCPD program did, including being moved to units where their new skills and knowledge were no longer needed.

Contrasting this, facilitators to applying knowledge from the PNCPD program were identified as institutional support and internal motivation. Participants shared how having support from their institution led to greater success in applying knowledge from the PNCPD program, particularly as some institutions recognized their specialized knowledge and chose to utilize them in pediatric areas of teaching and practice. This finding is similar to Hockenberry et al. (2020), who reported how institutional support provided facilitation to nurses undertaking study in a pediatric oncology education program in Malawi.

Internal motivation was recognized in what participants said about their personal motivations for applying knowledge from the PNCPD program. Similarly, Kasine et al. (2018) found that midwives who participated in a CPD felt a desire to continue to learn as they played an important part in contributing to improved health outcomes for families. Horn et al. (2019) found that pediatric nurse's motivation to pursue professional development activities was to provide safe, quality, competent care. Comparably, participants from the PNCPD program reported that their internal motivation led to their desire to provide high quality pediatric nursing care.

Recommendations for Nursing Practice, Education, Policy, and Research

This study highlights the importance of pediatric specialty education for nurses

working in pre-service and in-service pediatric settings in Rwanda. This research study provides preliminary direction for the support of the PNCPD as an educational intervention for capacity building amongst pre-service and in-service nurses working in pediatric specific academic and clinical settings in Rwanda. Therefore, there are several recommendations for pediatric nursing practice, nursing education, nursing policy, and nursing research in Rwanda that will be addressed briefly in this chapter, with more detailed implications and recommendations provided in Chapter three.

Nursing Practice

This study demonstrates the positive impact that the PNCPD program can have on pediatric nursing practice in Rwanda. Therefore, it is recommended that nurses who are practicing in pediatrics in Rwanda be enrolled in the PNCPD program to improve their practice. Additionally, nurses who have completed the PNCPD program should be prioritized for employment in pediatric specific settings, either in pre-service or in-service areas.

Nursing Education

Recommendations for nursing education also includes ongoing offering of the PNCPD program for nurses working in pre-service and in-service pediatric settings in Rwanda. Nurse educators expressed positive change to their teaching practice after studying in the PNCPD program. In-service nurses expressed a positive transformation of their clinical practice. Therefore the PNCPD program can continue to be used to build capacity amongst pre-service and in-service nurses in Rwanda. Additionally, the PNCPD program could continue to be offered as a CPD program for nurses needing hours for renewal. As suggested by the participants of this study, the PNCPD program can also be scaled up to other nurses working in pediatrics throughout Rwanda, specifically at Health

Centres and District Hospitals. The UR-SONM is encouraged to develop a long-term plan for sustainability of the program after the cessation of the TSAM-MNCH project in 2021.

Nursing Research

As this study was the first of its kind on the PNCPD program in Rwanda, there is much opportunity for ongoing research on the PNCPD program and pediatric nursing in Rwanda. For example, further quantitative research could explore any long-term impact the PNCPD program might have on child morbidity and mortality rates in Rwandan settings where nurses have received this education. Additionally, longitudinal studies could explore experience of PNCPD graduates in subsequent years of study.

Nursing Policy

A recommendation for policy is for NCNM to provide regulation for pediatric nurses who complete the PNCPD program. Regulating pediatric nurses can assist with effective utilization of specialist nurses in academic and clinical settings. Regulation would also allow for effective data tracking of human resources for child health in Rwanda (North et al., 2019). Additionally, the barriers such as lack of materials and human resources could be addressed by the Rwanda MoH, to improve the structural conditions under which pediatric nurses are working and teaching.

Strengths and Limitations

To our knowledge, this study is the first qualitative study of nurse educators' and nurses' experiences applying pediatric knowledge and skills after completing a PNCPD program in Rwanda. This study used a qualitative interpretive descriptive design where participants provided a rich description of their experiences after participating in the PNCPD program. This research study contributes to the current limited body of literature

on pediatric nursing education in LMICs. Fourteen nurse educators and nurses participated in this research study, thus findings could be transposed to similar settings and other LMICs looking to provide pediatric nursing education through CPD.

Participants were interviewed at one specific point in time, and their perceptions and experiences may differ at different points in time. Future studies would benefit from a longitudinal approach. Another limitation is that the graduate student researcher for this research was the former facilitator of the first PNCPD program and was involved in data collection and analysis. As mentioned by Erlandsson et al. (2017), this can pose a challenge of credibility of the student as researcher, as the researcher may have preconceptions as to the effectiveness of the education. To avoid the participants potentially being influenced to give positive responses to the questions, the GSR did not participate in interviewing any of the former students but instead used an external researcher who had no previous relationship with the participants.

While there are several recent studies citing the importance of CPD education in SSA, this study adds to the specific context of Rwanda, of pediatric nursing, and the importance of educating nurses and nurse educators specialized in pediatrics to enhance and improve pediatric nursing care. Few studies specifically evaluate online CPD for nurses working in LMICs, and this study adds to the growing body of literature (Feldacker et al., 2017).

Conclusion

This study explored nurse educators' and nurses' experience of applying pediatric knowledge and skills to academic and clinical settings after participating in a PNCPD program in Rwanda. The study's findings suggest that the PNCPD program positively transformed pediatric nursing and teaching practice, contributing to improved pediatric

nursing care. Nurse educators and nurses also expressed a spreading of knowledge to colleagues, students, and other healthcare professionals, implying a larger reach to the PNCPD program outside of the direct learners alone. Nurse educators and nurses also experienced a change in their relationships with families and children that contributed to more holistic healthcare for children. However, nurse educators and nurses were limited by human resources, materials, and workplace barriers that impacted their ability to incorporate their knowledge into practice. Facilitation was provided by institutional supports and internal motivation. Findings from this study can be used to inform pediatric nursing and pediatric nursing education throughout Rwanda. The results of this study have the potential to inform positive changes to child health care in Rwanda. Further studies could evaluate the broader impact of the PNCPD program on the Rwandan health care system and child health within the country.

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CHAPTER THREE

IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSION

Summary of Key Findings

This interpretive descriptive study aimed to explore nurse educators' and nurses' experience of applying knowledge and skills from the Pediatric Nursing Continuing Professional Development (PNCPD) program to their academic and clinical nursing practice in Rwanda. This study found that participants experienced a transformation in pediatric nursing practice, which they reported as contributing to improved pediatric assessment, clinical decision making, and efficiency and prioritization. Nurses also voiced how the PNCPD program led to a sense of empowerment to collaborate inter-professionally and support other health professionals' development. Nurses shared that the PNCPD program led them to engage in relationship-based nursing care, including caregiver-centred care and an improved relationship with the child. Nurses experienced some barriers to applying their knowledge, namely extent of available human resources, materials, and challenges with the workplace culture. At the same time, facilitators included institutional support and internal motivation. Participants ultimately conveyed how the PNCPD program could be scaled-up within the Rwandan health system.

Implications and Recommendations

As a result of the findings of this research study, there are implications and recommendations to four areas of pediatric nursing in Rwanda including: (1) nursing practice, (2) nursing education, (3) nursing research, and (4) nursing policy. Chapter three addresses these four main categories for implications and recommendations by speaking to: (1) ongoing offering of the PNCPD program; (2) scaling-up of the PNCPD program; (3) regulation of pediatric nurses by the Rwandan National Council of Nurses

and Midwives (NCNM); and (4) addressing the barriers and facilitators to knowledge and skills implementation.

Nursing Practice

Ongoing offering of the PNCPD program

The implications and recommendations from this study address nursing practice both academically and clinically in Rwanda. The study reveals the positive transformation that the PNCPD program can have on pediatric nursing in Rwanda, demonstrating the need to continue to offer the PNCPD program.

The first implication is the impact that the PNCPD program can have on pediatric nursing practice in Rwanda. Nurses who completed the PNCPD program reported a transformed pediatric nursing practice, an increase in knowledge sharing, and relationship-based nursing care with caregivers and children. Benefits of continuing professional development (CPD) for families and newborns was also a theme found in Kasine et al.'s study in 2018. A focus on relationship-based nursing often leads to health promotion, as it involves the whole family, and not just the single patient (Doane & Varcoe, 2007a, 2007b). Caregiver-centred care leads to families feeling empowered to take the lead in their child's care, resulting in improved patient outcomes (Doane & Varcoe, 2007a, 2007b). Therefore, the PNCPD program can lead to optimized nursing care and more preventative measures for the children and families in Rwanda.

The first recommendation is to continue to offer the PNCPD program to build capacity amongst pediatric nurses in Rwanda. One suggestion is for employers to fund specialty education for nurses working and teaching in pediatrics. Employer funding has been a successful way to ensure that nurses in South Africa and neighboring East African countries complete specialty education, contributing to human resources in child health

(Ruthe & North, 2020). Providing scholarships can also be a way to allow nurses to have access to pediatric nursing education (Ruthe & North, 2020). Another recommendation is to then utilize the nurses who complete the PNCPD program in pediatric specific work areas. The specifics of recognizing pediatric nurses in Rwanda will be addressed below, in the section on nursing policy.

Barriers to knowledge and skills implementation

Barriers to implementing the knowledge and skills from the PNCPD program to the practice area need to be addressed, including the shortage of human resources and materials. Hategeka et al. (2017) found in their assessment of district hospitals, that a shortage of human resources and materials hinders the ability to provide effective, efficient, and high quality care to pediatric patients in Rwanda. The Rwandan Ministry of Health could work together with Health Centres and District and Referral Hospitals to improve access to necessary materials and address staffing shortages to help improve nurses' ability to implement pediatric knowledge and skills from the PNCPD program.

Another barrier to address is human resources and workplace culture. Several participants shared that a challenge to implementing knowledge was that they were the only ones with specialty education, so it was difficult to bring new ideas. Supporting other nurses to complete the PNCPD program can add to the number of nurses who have pediatric specialty education, allowing change to be implemented more readily.

Nursing Education

Ongoing offering of the PNCPD program

The second implication of this study is the impact the PNCPD program can have on nursing education in Rwanda. Nurse educators in this study expressed an improvement in their teaching, and how they were better able to deliver and explain

information to their students. As a result, graduates from the PNCPD program can have an impact on nursing education, building pre-service capacity.

Additionally, the PNCPD program is one of a few CPD offerings for nurses in Rwanda. CPD offerings in Rwanda are not readily available, particularly in the area of child health, and the PNCPD program offers significant learning opportunities for nurses who are trained as generalists to upgrade their knowledge in pediatrics. One of the benefits of the PNCPD program is that it is primarily distance education, which increases accessibility for nurses and requires little infrastructure (Bvumbwe & Mtshali, 2018b; Hockenberry et al., 2020). The PNCPD program focuses on addressing pediatric nursing care and is accessible for nurse educators and nurses working in primary care.

As the PNCPD program was part of a collaborative international project between Canada and Rwanda, sustainability of the program needs to be addressed (Western University, 2020). With the conclusion of the Training Support and Access Model for Maternal Newborn and Child Health (TSAM-MNCH) in Rwanda project in 2021, long-term planning on the part of the University of Rwanda School Of Nursing and Midwifery (UR-SONM) can allow the PNCPD program to continue. It is recommended that the PNCPD program could continue to be offered as a CPD program at UR-SONM, generating revenue while contributing to capacity building amongst pediatric nurses in clinical and academic settings in Rwanda.

Scaling-up the PNCPD program

Another recommendation, and one supported strongly by the course participants, is to scale up the PNCPD program to nurses working in Health Centres, as this is often the first point of care for children and their families. Many of the nurses in this study communicated the importance of speaking to entities such as the MoH regarding the

importance of scaling-up pediatric nursing education to the Health Centres. Participants shared the challenges with the provision of pediatric care at Health Centres, due to a limitation among health professionals with formal pediatric nursing education. Since many children arrive at Health Centres as the first point of contact due to the structure of the Rwandan health system, the participants urged that the education be scaled-up to the nurses at the Health Centre. In their own words, one said,

> *"I am sure that when you do a presentation about this course, there will be someone from the Ministry of Health. There should be more training… most of the complicated cases happen in the health centres. By the time a child gets to [district or referral hospital], the situation has gotten worse. So this course is very helpful, that's the message I have for you to transmit to the ministry" (Participant C).*

North et al. (2019) also found that specialist pediatric nurses should be working at the primary care levels of health care, such as health centres and district hospitals, as they are the "hearts and brains" of service (p. 6).

Addressing the facilitators to knowledge and skills implementation

As institutional support and internal motivation were both recognized as strong facilitators to applying knowledge from the PNCPD program, a recommendation is for nursing employers to provide release time for nurses who undertake study in the PNCPD program. As reported in the findings, having a supportive institution, in the form of an employer or supervisor, meant that nurses were able to successfully complete their studies in addition to their own work and personal life demands. When employers recognize the importance of the PNCPD program, they can sacrifice for the short-term the time that their employees would spend working in order to support ongoing

professional development that will encourage improved pediatric healthcare in the long-term. Additionally, employers that provided opportunities for PNCPD graduates opportunities to then present that knowledge to colleagues promoted positive impacts such as knowledge sharing.

Nursing Research

Ongoing offering of the PNCPD program

The PNCPD program is at an early stage in its implementation. This is the first known research study about pediatric nursing in Rwanda. Therefore there are several recommendations regarding future research on pediatric nursing and the PNCPD program in Rwanda. Given the investment in this program by both Rwandan and Canadian partners, the findings from this study indicate its effectiveness and support the continuation of the program. Ongoing research can support decision making for the future of the PNCPD program.

As this study used a qualitative interpretive description design, further quantitative research may be able to highlight the impact that the PNCPD program might have on child mortality and morbidity rates in ways that are in addition to the participants' perspectives. While participants expressed that they felt their new knowledge meant a child would not die under their care, the findings cannot determine if their transformation in nursing practice directly impacted child mortality and morbidity rates. A quantitative or mixed-method study about child health outcomes at hospitals and institutions where nurses have complete the PNCPD program in Rwanda may determine a quantiative association between the knowledge developed through participation in this course and child/family health outcomes.

This study was conducted within a short period of time after participants

completed the PNCPD program. Research using a longitudinal design could be conducted to understand how application of knowledge and skills extended over a longer period of time to impact child health. Additionally, further research could be conducted about future graduates of the PNCPD program, to see if new graduates continue to experience similar transformations, barriers, and facilitators as the first and second cohort of the PNCPD program. As Rwanda is rapidly making improvements to the health care system, studying how the PNCPD program graduates are utilized in the health care system could also be beneficial.

Findings from this study may be used for application to other pediatric nursing education programs in LMICs. Additionally, findings from this study may inform other international collaborative nurse education projects with a focus on child health.

Nursing Policy

Regulation of pediatric nurses by NCNM

The findings from this study have implications for nursing policy in Rwanda. A recommendation would be to continue to include nurses at the policy and planning level in Rwanda, enabling them to continue to speak to how human resources, health needs, and system changes can occur through initiatives that are based in health professional education post-graduation.

Importantly, this study highlights the need for nurses who have completed specialty education to be recognized as specialist nurses by the National Council of Nurses and Midwives of Rwanda (NCNM). A recommendation is for NCNM, the regulatory body for nurses in Rwanda, to recognize specialist pediatric nurses. Regulating specialist nurses has a two-fold strategy, as it has been shown as an effective way to utilize nurses for their specialized skills, as well as strengthen and track human

resources for health. In a study on specialist children's workforces in Sub-Saharan Africa, North et al. (2019) found that regulation was an effective way to build pediatric nursing capacity. Graduates of pediatric specialty programs in South Africa and Malawi were able to register with their country's Nursing Council, receiving recognition and employment as a pediatric nurse (North et al., 2019). A nursing report by Crisp et al., (2018) found that it is a waste of talent and resources to not let nurses use their education and experience to their full potential. Nurses report feeling "undervalued, taken for granted, and low status" (Crisp et al., 2018, p. 23) if they are not used to their full potential. Providing regulation can be a way to utilize pediatric nurses to their full potential.

Additionally, registering pediatric nurses with the regulatory body is a way to strengthen and track human resources for health. Currently, there is no published data on the number of pediatric nurses in Rwanda. North et al. (2019) suggest that "intelligent development and deployment" of pediatric nurses requires accurate data on the available workforce (p. 7). Since the majority of the health workforce for children are nurses or community health workers, monitoring data on the number of pediatric nurses can be a way for Rwanda to track child health indicators (Forsyth, 2017; North et al., 2019; Ruthe & North, 2020).

It is important for all stakeholders – the Rwanda MoH, NCNM, the UR-SONM and all other nursing educational institutions – to consider and act upon this study's findings. The findings have the potential to positively impact pediatric care, and reduce child mortality and morbidity rates in Rwanda. With ongoing implementation, the PNCPD program could be one way to address child health in Rwanda. As Rwanda strives to decrease child mortality and morbidity rates to be in alignment with Sustainable

Development Goals (SDGs), the benefits of the PNCPD program cannot be overstated.

Conclusion

As part of the TSAM-MNCH Rwanda project, a PNCPD program was developed and implemented to educate nurse educators and nurses practicing nursing academically and clinically in Rwanda. The primary objective was to discover nurse educators' and nurses' experiences of applying knowledge to their practice setting after participating as learners in the PNCPD program. Participants experienced a transformation of pediatric nursing practice, knowledge sharing amongst other nurses and colleagues, and developed a relationship-based nursing practice. The findings also revealed barriers to implementing the knowledge, including a shortage of human resources and materials, and facilitators, which included institutional support and internal motivation. Participants expressed a need for the PNCPD program to be scaled-up to other nurses working in the Rwandan health care system, in order to improve pediatric nursing at the first point of care. The study's findings have the potential to improve pediatric nursing care in Rwanda by educating more pediatric nurses, thereby improving the quality of health service delivery to children and families. The findings from this study can influence policy at the government and educational institution level, as it demonstrates the power of educating and potentially regulating pediatric nurses. This research has the potential to contribute to other international development projects with a focus on improving child health.

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TABLE 1

Summary of Demographics of Participants

Age (years)		
	Range	26 - 52
	Mean	37.25
	Median	35.5
Gender		
	Female	8
	Male	6
Study Group		
	First Cohort	4
	Second Cohort	10
Level of Education		
	Diploma	6
	Bachelors	7
	Masters	1
Place of Work		
	Academics	5
	Hospital	9
Experience Teaching (years)		
	Mean	5.4
	Median	4
Experience Clinically (years)		
	Mean	4.625
	Median	5
Unit of Work		
	Pediatrics	6
	Neonatology	5
	Emergency	1

TABLE 2

Detailed Demographics of Study Participants

Courses Taught by Participants who are Nurse Educators	
Child Health	
Pediatric Nursing	
Fundamentals of nursing	
Human anatomy and physiology	
Health system and organization in Rwanda	
Communication and therapeutic relationship	
Abnormal midwifery	
Reproductive health	
Clinical placement	
Neonatology	
General Pharmacology	
Unit of Work for Participants who are In-service Nurses	
Neonatology/NICU	
Pediatrics	
Emergency	
Infectious Diseases	
Ophthalmology	
Internal Medicine	
Non-communicable Diseases	
Experience in Pediatrics (yrs)	
Range	0.5 – 7
Mean	4.1
Median	5
Experience Teaching Pediatrics (yrs)	
Range	0.5-1
Mean	4.4
Median	4

APPENDICES

Appendix A

Letter of Information and Consent (English Version)

Study Title: Rwandan nurse educators' and nurses' experience of applying pediatric knowledge and skills to academic and clinical practice settings after involvement in a Pediatric Nursing Continuing Professional Development Program.
Document Title: Letter of information and consent for graduates of the pediatric nursing continuing professional development program.
Principal Investigator: Dr. Yolanda Babenko-Mould, RN, PhD, Associate Professor and Thesis Supervisor of Amy K. Olson

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Letter of Information

1. **Background:** In Rwanda, the infant and under-5 childhood mortality rates remain high at 20/1,000 and 50/1,000 respectively, compared to the OECD average of 3.9/1,000 and 5/1,000 respectively. Research has identified that providing specialty nursing education can in turn improve childhood mortality and morbidity rates, yet a gap still remains in specialty nursing training in Rwanda. Academic and health care settings in Rwanda partnered with the Training, Support, and Access Model for Maternal, Newborn, and Child Health in Rwanda (TSAM-MNCH) project to develop and implement a Pediatric Nursing Continuing Professional Development (CPD) Program to strengthen the knowledge and skills of nurse educators in academic settings and nurses in clinical practice. In January 2018, the Pediatric Nursing CPD Program was launched, and 14 nurses subsequently received specialty pediatric nursing education. Currently, an additional 27 nurses are completing the CPD program
2. **Purpose of this Study:** This study's purpose is to examine nurse educators' and nurses' lived experiences of applying pediatric knowledge and skills to academic and clinical settings in Rwanda after participating as learners in a Pediatric Nursing CPD Program. The study findings will enable leaders in academic and practice settings to

understand the challenges and facilitators of applying knowledge into practice after an educational experience. Additionally, the responses of participants involved in the Pediatric Nursing CPD Program in Rwanda can inform future pediatric nursing education needs in Rwanda.

3. **Purpose of the Letter:** The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.
4. **Invitation to Participate:** As a nurse who participated as a learner in the Pediatric Nursing CPD Program in Rwanda, you are being invited to voluntarily participate in this research study. This study aims to understand your experience of applying pediatric knowledge and skills to academic and clinical settings after undertaking study in the Pediatric Nursing CPD Program.
   The purpose of this letter is to provide you with the information needed to make an informed decision about whether you would like to participate in the study. It is important to know and understand what the research involves. Please take the time to read this letter carefully and should you have any questions, please do not hesitate to contact the Graduate Student Researcher or the Principal Investigator. Please note that this research study will satisfy the requirements for the Graduate Student Researcher's Master of Science in Nursing program at Western University in London, Ontario.
5. **Eligibility:** Individuals are eligible to participate in this study if they are nurse educators from academic settings or nurses from practice settings who participated as learners in the Pediatric Nursing CPD Program provided by the University of Rwanda School of Nursing and Midwifery, in collaboration with the TSAM-MNCH project in Rwanda. In addition, they must speak and read English or Kinyarwanda, be over 18 years of age, and they must agree to be audio-recorded during the interview.
6. **Study Procedures:** Nurses who agree to participate in this study will take part in a face-to-face individual interview at a time and location that is convenient to both the participant and the interviewer. Given that the GSR is not fluent in Kinyarwanda, the interviews will be conducted by a nurse who is fluent in both English and Kinyarwanda so that you may respond to questions in either one or both languages. The interview will be conducted using a semi-structured interview guide, will be a maximum of 90 minutes in length, and will be digitally audio-recorded. Participants will also be asked to refrain from using any real names or other potentially identifying information, such as hospital site locations, during the interview to maintain confidentiality. Participants will be asked to complete a demographic information form immediately prior to the start of the audio-recording for the interview. All data will be de-identified and remain confidential.
7. **Possible Risks and Harms:** Given that it is not possible to guarantee that a privacy breach would never occur, a potential risk of study participation includes a breach of privacy. However, every effort will be made to protect participants' privacy in this study. There are no other known or anticipated risks or discomforts associated with participating in this study.
8. **Possible Benefits:**

   Personal – Although participants may not directly benefit from the study, involvement in this study provides an opportunity for participants to share their experiences with a health professional, who will share those experiences broadly with educators, health professionals, and policy makers.

   Societal - Grouped responses may inform future Pediatric Nursing CPD program

development, health professional educational development, and health human resources policy and planning that has the potential to address pediatric nursing education needs and health service delivery in Rwanda.

Institutional – The study findings will enable leaders in academic and practice settings to understand the challenges and facilitators of applying knowledge and skills into academic and clinical practice after an educational experience. Additionally, the responses of participants involved in the Pediatric Nursing CPD Program in Rwanda can inform future pediatric nursing education needs in Rwanda.

9. **Compensation**

If the interviewer is able to meet the participant at their place of work, study, or home and no transportation, meal, or accommodation allowances are needed, each participant will receive 5,000 Rwanda Francs (RWF) in compensation for their time participating in this study. This amount is approximately $8.00 Canadian.

If the participant is required to travel to Kigali for the interview to meet with the interviewer, they will be compensated according to the TSAM research policy guidelines. TSAM research policy guidelines outline transportation, meal, and accommodation allowances based upon the district that the participant is travelling from to Kigali, as this determines the amount of time required and whether an overnight stay is required.

As such, depending upon the district they are travelling from, the participant will receive either 6,000, 10,000, or 16,000 RWF for roundtrip transportation (~$10, $16.67, or $26.67 Canadian). For accommodation allowance as per TSAM policy guidelines, based upon the district they are travelling from, the participant may also receive 20,000 RWF (~$33.33 Canadian) if an overnight stay in Kigali is required. Finally, depending again upon TSAM policy and the district they are travelling from, the participant will also receive a per diem of 22,000 RWF/day (~$36.67 Cdn) for breakfast, lunch and/or dinner. If breakfast is included in the accommodation (bed and breakfast), the participant will receive 17,000 RWF for meals (~$28.33 Canadian). If only some of the meals are required and/or the participant does not need overnight accommodation based upon their travel time, the participant will receive 5,000 RWF for breakfast (~$8.33 Canadian), 7,000 RWF for lunch (~$11.67 Canadian), and 10,000 RWF for dinner (~$16.67 Canadian).

In addition to any transportation, meal allowance, and/or accommodation allowance that the participant receives, they will also be compensated 5,000 RWF (~$8.00 Canadian) for their time participating in this study, as noted above.

10. **Voluntary Participation:** Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions and withdraw your data prior to the start of the data analysis process, or refuse to answer any questions.
11. **Confidentiality:** All data collected will remain confidential and accessible only to the researchers of this study. If you choose to withdraw from this study prior to initiation of the data analysis phase, your data will be removed and permanently destroyed from the study database. For this study, personal information (name, email address, and phone number) will be noted on a master list in hardcopy format, which will be kept locked in a file cabinet in the graduate student researcher's locked home office. Further, the signed consent form will be kept in a locked filing cabinet in the graduate student researcher's locked home office, in a locked file cabinet that is separate from the master list. Only the

graduate student researcher will have access to this information. At the conclusion of the study, the master list and signed consent forms will be given to the study Principal Investigator in Canada for secure storage in separate file cabinets in her locked faculty office at Western University.

De-identified transcribed and numerically coded data will be stored electronically on the password protected OWL system in password protected word documents. OWL is a secure online data sharing platform hosted by Western University. Transcription will be done by the Graduate Student Researcher for all interviews conducted in English. Interviews that are conducted in Kinyarwanda will be transcribed and translated by a hired professional, who will sign a confidentiality agreement prior to undertaking work. De-identified audio-recordings will be permanently deleted from the audio-recording device and from the electronic OWL site as soon as possible following transcription verification for accuracy. As NVivo software will be used to manage and support analysis of data, de-identified and numerically coded transcribed data will also be stored in an electronic password protected NVivo file. The password protected NVivo file will be stored on the PI's University hard-drive, which is located in the PI's locked university office in Canada. The password protected NVivo file will also be stored on an encrypted memory stick that is securely stored in the graduate student researcher's locked home office in a locked file cabinet. Hardcopy information will be stored in locked filing cabinets in the graduate student researcher's locked home office. The digital audio-recording device will be stored in the graduate student researcher's and transcriptionist's house in a locked filing cabinet, which is located in a locked room in each of their home offices.

Extensive efforts will be made not to use participant names during interviews, so that all audio-recorded data is de-identified.

As per Western University policy identifiable data will be retained for 7 years after completion of the study. At that time, all data that has not yet already been permanently destroyed or deleted (i.e. de-identified audio-recordings destroyed after transcription accuracy process is complete), whether in hardcopy or electronic format, will be permanently destroyed or deleted. In particular, all paper copies will be securely shredded, and all electronic information will be permanently deleted.

Representatives of the Western University Office of Human Research Ethics may contact you or require access to your study-related records to monitor the conduct of the research.

12. **Future use of data**: By consenting to participate in this study, you are agreeing that your data can be used beyond the purposes of this present study by either the current or other researchers (e.g., to answer a new research question).

    Any data shared for subsequent analysis will be de-identified, and a future researcher will not be able to identify you as a research participant.
13. **Publication:** If the results of the study are published or presented, your name will not be used and the name of the health facility and/or teaching institution where you are employed will not be used.
14. **Consent:** You will be asked for your written consent to participate in the interview and for the audio-recording of the interview. Your consent indicates that you have read the letter of information and have had the nature of the study explained to you and what is expected of you. All questions have been answered to your satisfaction. Your consent also indicates that you agree to participate in the study and have been informed that you

can refuse to answer any or all questions. You have also been informed that you can change your mind and withdraw your consent to participate at any time and may withdraw your data up until the start of the data analysis process by notifying Amy Olson at_____.

15. **Right to withdraw from study:** Participation in this study is voluntary and you may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no penalty. Upon your request, your data may be withdrawn from the study up to the point immediately prior to the data analysis stage. Given the iterative and qualitative method of analysis, data withdrawal is not possible once the analysis process is initiated. By consenting to participate in the study, you are not waiving any of your legal rights as a research participant.
16. **Contacts for Further Information**

    If you require any further information regarding this research project or your participation in the study, you may contact the graduate student researcher, Amy K. Olson, at _____. You may also contact Dr. Yolanda Babenko-Mould, the Principal Investigator of this study. She may be reached by phone in Canada at _____. If you have any questions about your rights as a research participant or the conduct of this study, you may contact the Chairperson of the University of Rwanda College of Medicine and Health Sciences IRB at _____ or the Deputy Chairperson at _____. You may also contact the Western University Office of Human Research Ethics at _____ or email: _____. The office oversees the ethical conduct of research studies and is not part of the study team. Everything that you discuss will be kept confidential.

This letter is yours to keep for future reference.

Consent Form for Interviews

Study Title: Rwandan nurse educators' and nurses' experience of applying pediatric knowledge and skills to academic and clinical practice settings after involvement in a Pediatric Nursing Continuing Professional Development Program.

Principal Investigator:

Dr. Yolanda Babenko-Mould, RN, PhD
Associate Professor and Thesis Supervisor of Amy K. Olson
Arthur Labatt Family School of Nursing
Nursing & FIMS Building, Room 2311
Faculty of Health Sciences
Western University
London, Ontario, Canada
Email:_____
Phone: _____

Graduate Student Researcher:

Amy K. Olson, RN, BScN, MScN Student,
Arthur Labatt Family School of Nursing,
Faculty of Health Sciences
Western University
London, Ontario, Canada
Email:_____

Phone:_____

I have read the study Letter of Information, have had the nature of the study explained to me, all questions have been answered to my satisfaction, and I agree to participate in the study.
I agree to the use of my data for a future study.
I agree to have the study interview digitally audio-recorded.
Participant's Name (please print): _____
Participant's Signature:_____
Date: _____
Name of Person Obtaining
Informed Consent (Please print): _____
Signature of Person Obtaining
Informed Consent: _____
Date:_____

Appendix B

Letter of Information and Consent (Kinyarwanda Version)

IBARUWA IMENYEKANISHA AMAKURU K'UBUSHAKASHATSI NA IFISHI YO GUTANGA UBURENGANZIRA

Umutwe wa Ubushakashatsi: Ibyabaye bishingirwaho ku barimu bigisha abaforomo na abaforo mo mu gukoresha ubumenyi na ubumenyingiro ku mivurire ya abana mu mashuli na mavuriro mu Rwanda nyuma yo guhugurwa nka abigishwa muri gahunda ikomeza y'inyongerabumenyingiro b wa umwuga mu mivurire y'abana.

Umutwe wa Inyandiko: Ibaruwa Imenekanisha Amakuru k'Ubushakashatsi na Ifishi yo Gutang a Uburenganzira **igenewe Abanyeshuli ba Kaminuza ba icyiciro cya gatatu mu ishami ry'aba foromo bari muri gahunda y'abahuguriwe gukomeza gukuza ubushobozi bakurikirana aba na**

Ukuriye Ubushakashatsi: Dr. Yolanda Babenko-Mould, RN,
PhD, Umwarimu muri Kaminuza
Akaba na ukurikirana Amy K. Olson

Aho Abarizwa: Arthur Labatt Family School of Nursing
Nursing & FIMS Building, Room 2311
Faculty of Health Sciences
Western University
London, Ontario, Canada
Email:_____
Phone:_____

Umushakashatsi w'Umunyeshuli muri Kaminuza: Amy Katherine Olson, RN, BScN, MScN Student
Arthur Labatt Family School of Nursing,
FIMS & Nursing Building, 2311
Faculty of Health Sciences
Western University
London, Ontario, Canada
Email:_____
Phone: _____

Ibaruwa Imenyekanisha Amakuru k'Ubushakshatsi

1. **Uko ikibazo giteye: mu**

Rwanda infu za abana n'abari munsi ya imyaka 5 zikomeje kuba nyishi ku kigero cya 2 0/1,000 na 50/1,000 nkuko bikurikirana, tugereranije n' ingano yatangajwe n' ikigo cya OE CD ya 3.9/1,000 na 5/1,000 nkuko bikurikirana. Ubushakashatsi bwagaragaje ko gutanga ab arimu bigisha abaforomo ba inzobere bishobora kugabanya infu ndetse na ubwiyongere bwa i

ndwara, nubwo icyuho kiliri kinini mu myigishirize na imiugurire ya abaforomo mu Rwanda.

Ibigo by' amashuli n' amavuliro byafatanije na umushinga TSAM-MNCH (Training, Support, and Access Model for Maternal, Newborn, and Child Health) mu ndimi za amahanga mu Rwanada mu gushyiraho gahunda yokongera ingufu mu ubumenyi na ubumenyingiro bw' Abalimu bigisha ubuforomo mu mashuli ya za kami nuza na abaforomo mu mavuliro.

Mu mwaka wa 2018, gahunda yo guhugura abalimu bigisha abaforomo muri kaminuza y aratangijwe, abaforomo 14 bahuguwe mu buryo bwa inzobere ndetse n' abaforomo 27 ba giye kurangiza iyo gahunda.

2. **Intego y'ubushakashatsi:** Intego ya ubu bushakashatsi ni ugusuzuma ibyabaye bishingi rwaho ku baforomo ba abalimu na abaforomo bavura mu gushyira mu bikorwa ubumenyi na ubumen yingiro mu mashuli ya a kaminuza na amavuriro mu Rwanda nyuma yo kubihugurirwa nk'abigishwa muri gahunda ikomeza ya y'iyongerabumenyingiro mu gukuza umwuga.

Biteganyijwe ko ibizava muri ubu bushakashatsi bizafasha abayobozi bo mu myigishilize na imi vurire kumva imbogamizi ndetse na ibyiza byo gushyira ubumenyi mu bikorwa nyuma yo kugira ubunararibonye mu myigishirize . Ikiyongereyeho, ibisubizo bitaruka k'uwagize uruhare m'ubus hakashatsi wahuguwe ku bavuzwe muri iyi gahunda mu Rwanda bishobora kwifashishwa muri gahunda itaha (y'ejo hazaza) y'ibizakenerwa mu kwigisha abalimu b'abaforomo muri kaminuza mu Rwanda.

3. **Intego ya Ibaruwa**: Intego y'uru rwandiko ni ukuguha amakuru akenewe ngo uh itemo mu bujyanye no kugira uruhare kuri ubu bushakshatsi

4. **Ubutumire bwo kugira uruhare mu bushakashatsi:** Nka umuforomo wabaye umw igishwa witabiriye gahunda yo amahugurwa akomeza mu kongererwa ubumenyi na ubume nyingiro, utumiriwe ku kugira uruhare muri ubu bushakashatsi ku bushake. Ubu bushakashat si bugamije gusobanukirwa na imibereho yo gushyira mu bikorwa ubumenyi bikorewe ku ma shuli na amavuriro nyuma yo kwigishwa muri gahunda ya iyongerabumenyingiro igamije gu kuza umwuga (CPD).

Intego y'uru rwandiko ni ukuguha amakuru akenewe ngo uhitemo mu bujyanye no kugira uruhare kuri ubu bushakshatsi. Ni ibya agaciro kumenya no kumva icyo ubushakashatsi bugamije. Turagusaba gufata umwanya ugasoma iyi baruwa mwitonze kandi mugize ikibazo mwakibaza igihe icyo aricyo cyose. Umunyeshuli wa umushakashatsi cg uhagarariye ubushakash atsi. Mumenye ko ubu bushakashatsi buhagije mu kuzuza ibisabwa ku munyeshuli wa umushakas hatsi uri gukora ikiciro cya gatatu cya kaminuza muri gahunda ya siyansi ya ubuforomo muri kam inuza ya Western ihereye London, Ontario.

5. **Ibiranga Abemerewe Kugira Uruhare muri ubu Bushakashatsi**: abemerewe kugira uruhare muri ubu bushakshatsi ni abaforomo mu bigo bya amashuli na abaforomo mu mavu riro bigisha bitabiriye nk abanyeshuli muri gahunda ikomeza y'ubuvuzi bwa abana ya umush inga wa TSAM-MNCH mu Rwanda. Hiyongereyeho ko bagomba kuba bashobora gusoma no kwandika icyongereza na i kinyarwanda, bafite hejuru ya imyaka 18.

6. **Uko Ubushakashatsi Buzakorwa**: Abaforomo bazemera kugira uruhare muri ubu bushakashatsi, azagirana ikiganiro na umushakashatsi ushinzwe gukusanya amakuru imbonankubone ku gihe na ahantu habereye bombi ukoresha ikiganiro nukigiramo uruhare. Ikiganiro kizakorwa hakoreshejwe urupapuro rwa ibibazo, ikiganiro kizamara iminota mirongo icyenda (90) kandi kizafatwa amjwi. Abazagira uruhare muri ubu bushakashatsi bazasabwa kugakoresha izina na rimwe cyangwa gutanga amakuru ashobora kumuranga nka ibitaro mu gihe cya ikiganiro, ku bw'impamvu ya ibanga. Abazitabira bazasabwa kuzuza urupapuro bazahabwa ruberekeyeho mbere ya ikiganiro. Ibizava mu bushakashatsi bizahabwa kode ituma biguma ari ibanga.

7. **Ingaruka/Ingorane Zaturuka kuri ubu** B**ushakashatsi:** bitewe nuko tutahamya ijan a ku ijana ko ibyavuye mu bushakashatsi bitasohoka, ingaruka ishobora kuboneka ni ukumen a ibanga. Uretseko Uretseko hahazashyirwamo imbaraga mu kwirinda ko uwatanze amakuru muri ubu bushakashatsi yamenyekana hakaba hamenyekana na amakuru yatanze. Nta ngaruka cyangwa ing orane zizwi cyangwa ziteganijwe zaturuka ku kugira uruhare muri ubu bushakahatsi.

8. **Inyungu Zishingiye kuri ubu Bushakashatsi:**

Inyungu Bwite – Ushobora kutagira inyungu za ako kanya mu kugira uruhare muri ubu b ushakashatsi.
Ariko uzagira amahirwe yo kuganiriza umuvuzi wabigize umwuga mu rwego rwa ubusha kashatsi, akazasangiza amakuru abandi muri rusange hamwe n' abigisha, abanyamwuga n detse n'abanyamategeko.

Inyungu Rusange – ibisubizo bishyizwe hamwe bizafasha mu gutegura gahunda ya ubu taha ya amahugurwa akuza umwuga , gukuza imyigishirize ya ubuvuzi bwa umwuga, aba shyiraho amategeko agenga abakozi ba ubuzima no gutegura bifite umumaro mu gukemu ra ibibazo mu bikenewe mu myigishirize ya ubuforomo bugamije kuvura abana ndetse na itangwa rya servisi za ubuzima mu Rwanda.

Inyungu Zishingiye ku Bigo – ubu bushakshatsi buzafasha abayobozi mu mashuli no m avuriro kumva ibifasha na ibibangama mu gushyira ubumenyi na ubumenyingiro mu bigo bya amashuli na amavuriro nyuma yo kugira uburambe mu kubyigishwa. Nanone, ibisub izo bya abagize uruhare mu'ubushakashatsi bahawe amahugurwa muri gahunda ikomeje i kuza umwuga wo kuvura abana mu
Rwanda bizafasha abazakora ubushakashatsi mu gihe kizaza kuzamenya ibizakenerwa m u Rwanda.

9. **Insimburamubyizi**

Ukoresha ikiganiro (umukusanyamakuru) naramuka ageze ku ugira umruhare muri ubu b ushakashatsi, aho akorera, aho yiga cyangwa mu rugo, nta mafaranga ya urugendo, ifung uro, cyangwa ya icumbi azakenerwa,
buri muntu uzagira uruhare mu bushakshatsi azahabwa ibihumbi bitanu ya amanyarwand a (5000frw) y insimburamubyizi kubera igihe cye kiba cyagenewe kugira uruhare muri u bu bushakshatsi.
Aya mafaranga ajya kungana na amadolari umunani ya amanyakanada (8.00 CAD).

Nibiba ngombwa ko uwagize uruhare muri ubu bushakshatsi ajya I
Kigali kugirana ikiganiro na umukusanyamakuru, bagenerwa insimburamubyizi hakurikij we amategeko ngenderwaho ya umushinga wa TSAM.
Ayo mategeko ngenderwaho ya TSAM agena amafaranga ya urugendo, ifunguro, na icu mbi hagendewe ku karere uwagize uruhare mu bushakashatsi aturukamo aza mu bushaks hatsi kugera I Kigali, kuko bigaragaza igihe gisabwa ndetse niba kurara bikenewe.

Ku bw'ibyo, bitewe n'akarere baturutsemo, uwagize uruhare azahabwa 6,000; 10,000; cyangwa 16,000 amujyana akanmugarura (~$10, $16.67, cyangwa $26.67 y'amanyakanada). Kubyerekeye amafaranga agaenewe icumbi, nkuko amategeko ya TSAM abigena bitewe n'akarere baturukamo, uwagize uruhare aza habwa 20,000 RWF (angina na $33.33 y'amanyakanada) kurara biramutse bikenewe. Mu gusoza, bitwe nanone na amategeko TSAM igenderaho ndetse n'Akarere baturukamo, azahabwa amafaranga 22,000 frw ku munsi ajya kungana na$36.67 y'amanyakanada ku ifunguro rya mugitondo saa sita na nimugoroba. Ifunguro rya mugitondo riramutse riteganijwe,mu kuryama (uburiri na ifunguro rya mugitondo), uwagize uruhare azahabwa 17,000frw ya ibiryo ajya kungana na 28.33 y'amanyakanada. Niba hkenewe ifunguro gusa, nta kurara bikenewe bitewe na igihe yaziye uzagira uruhare mu bushakashatsi azahabwa 5,000 y'amayarwanda ya iunguro rya mugitondo ajya kungana na 8.33 y'amanyakanada, 7,000 RWF ya ifunguro rya saa sita ajya kungana na $11.67 y'amanyakanada, 10,000 RWF ya ifunguro rya nijoro ajya kungana na $16.67 y'amanyakanada. Na none ku mafaranga ya urugendo, ifunguro, n'icumbi uwagize uruhare yahawe, uzahabwa 5,000 y'amanyarwanda ajya kungana na $8.00 amanyakanada kubera igihe cyabo batakaje mukugirs uu
Uruhare muri ubu bushakshatsi nkuko byavuzwe haruguru.

10. **Ubushake ku Kugira Uruhare muri ubu Bushakshatsi:** Nta gahato kukugira ur uhare muri ubu bushakashatsi, ni ubushake. Ushobora kubyanga , kwanga gusubiza ikibazo i cyo aricyo cyose, kuvana amakuru watanze mu bushakashatsi mbere ya isesengurwa cg kwan ga gusubiza ibibazo.

11. **Ibijyanye na Ibanga**
rya Ibiva m' Ubushakashatsi: Amakuru k' ubushakashatsi yose azabikwa ku buryo bwa ib anga ku buryo azajya agirwaho uruhare na umushakashatsi gusa. Nuhitamo kuva muri ubu bu shakashatsi mbere ya isesengurwa ryabwo amakuru watanze azakurwamo anasibwe muri mu dasobwa.
Kuri ubu bushakashatsi, ibiranga umuntu (izina, aderesi mudandasi, nomero ya telefoni) biza shyirwa kuri liste nini mu buryo bwa impapuro izabikwa ifungiranye mu kabati ka umunyesh uli wa umushakashatsi gaherereye mu biro bye.

Nyuma impapuro zihamya kugira uruhare k' ubushakashatsi zizafungiranwa mu kabati ka umunyeshuli wa umushakashatsi mu biro bye bifungwa, mu kabati bitandukanye nan a listi nini. Umushakshatsi niwe wenyine wemerewe kugera kuri aya makuru.
Ku musozo wa ubu bushakashatsi, lisiti nini na impapuro zisinye zitanga uburenganzira z izashyikirizwa ukuriye ubushakashatsi muri

Canada kugirango mu mutekano uhamye mu kabati mu biro bye
muri kaminuza ya Western.

Inyandiko zikubiyemo amakuru zizabikwa neza hakoreshejwe ikoranabuhanga rya kode hamwe na ibanga. Aya makuru azabikwa ku buryo bwihariye muri mudasobwa ya ishuli rikuru rya Western mu ndimi za amahanga bita: “Western University’s password protected OWL system”azabikwa ku buryo bwa ibanga. OWL bivuga ni system ifasha mu guhurira ku makuru ibarizwa muri kaminuza ya Western.ishyirwa mu nyandiko rya amajwi ya ikiganiro rizakorwa na umunyeshuli wa umushakashatsi ku majwi yafashwe mu cyongereza.ikiganiro kizafatwa mu Kinyarwanda kizandikwa kinahindurwe mu cyongereza na umukozi wabigize umwuga uzasinyana amasezerano na umunyeshuli wa umushakshatsi agamije kwemeza kubika ibanga mbere yo gutangira ako kazi. Amajwi yafashwe nk’amakuru y’ububushakashatsi kandi atagaragaza uwayatanze azasibwa burundu mu utwuma dufata amajwi ndetse no kurubuga rwa Interineti rwa OWL vuba hashoboka nyuma yo kugenzura ko yandukuwe neza. Nkuko NVivo ariyo izifashishwa mu isesengurwa rya ubu bushakashatsi, Ibizabikwa mu mashini bizabikwa muri sofutiweya bita Nvivo irinzwe na ibanga. Ububiko bwa sofutiweya buzabikwa ku idisiki ibarizwa mu biro bya uhagarariye ubushakashatsi muri Canada. Ububiko bwa ibanga nanone buzabikwa ku idisiki mu kabati gakingiranye mu biro bya umunyeshuri . Imapuro zifite amakuru zizabikwa mu kabati gafungwa ka umunyeshuli na uzashyira munyandiko amajwi mu kabati, gaherereye mu cyumba gifungiranye iwabo mu rugo.

Hazakoreshwa ingufu zishoboka ngo hadakoreshwa amazina ya abagize uruhare k’ubush akashatsi mu buryo bwo kubika ibanga.

Hashingiwe ku mabwiza ya Kaminuza ya Wester, amakuru yagaragajwe azabikwa mu gihe kingana n’imyaka irindwi ubushakashatsi busojwe. Nyuma y’icyo gihe, amakuru yose azaba Atari yangirizwa cynagewa ngo asibwe burundu(urugero. Amajwi yafashwe atagaragaza uwatanze amakuru,akangirizwa nyuma yokugenzuro uko yashizwe mu nyandiko), haba mu mpapuro cyangwa abitswe mu byuma bya elektroniki, azangirizwa burundu cyangwa asibwe. Byumwihariko, impapuro zose zizashwanyaguzwa, n’amakuru yose abitswe mu buryo bwa elektroniki azasibwa burundu. Iki gihe, ibyo mu mpapuro bizashanyurwa na ibyo mu nyandiko bisibwe burundu.

Ikindi nuko abahagarariye ishami rya ubushakashatsi muri kaminuza ya Western Ontario muri
Canada bashobora kuzacyenera kureba zimwe munyandiko zizaba zarakoreshejwe hakus anywa amakuru kuri ubu bushakashatsi kugirango hakurikiranwe niba byarakozwe mu nz ira zuzuje ibisabwa.

12. **Ikoreshwa rya Ibizakusanywa m’ Ubushakashatsi mu Gihe Kizaza**: **: i**Mu kw emerera ukanasinya ko wemeye kugira uruhare mu bushakashatsi uba wemeye ko ibyavu yemo byakoreshwa no mubundi bushakashatsi (nko gusubiza ikibazo cya ubushakashatsi bushayshya runaka). Amakuru yose ajyanye na umwirondoro wa uwagize uruhare ku bu shakashatsi azaba yasangijwe kugirango asesegurwe azabikwa ku buryo bwa ibanga buta ndukanye n’andi makuru yose azaba yaratanze, Kuburyo n’ umushakashatsi wo

mu gihe kizaza cyangwa undi wese atabasha kumenya uwagize uruhare mu bushakashatsi ..

13. **Gutangazwa:** Ibizava muri ubu Bushakashatsi birmutse bitangajwe, amazina ya we na a'ivuriro, ikigo cy'amashuli ukoreraho ntikizavugwa.

14. **Uburengazira ku Kugira Uruhare m'Ubushakashatsi:** uzasabwa gusinya icye mezo cya uko wagize uruhari mubushakshatsi kubushake, ndetse no gufatwa amajwi

Ugutanga uburenganzira kwawe bivuga ko wasomye urwadiko rwa amakuru kandi ukaba wamenye umwimerere k'ubushakashatsi wasobanuriwe na ibyo witezweho. Ibiazo byose byasubijwe ku buryo bukunyuze. Nanone, bivuga ko wemeye kugira uruhari kuri ubu bu shakshatsi,

ko ushobora kuva cg guhagarika kujya mu bushakashatsi igihe icyo aricyo cyose n'uko u shobora gukuzamo amakuru watanze mbere y'uko isesengura ritangira ndetse ukabimeny esha Amy Olson (email).

15. **Uburenganzira ku kuva m' Ubushakshatsi:** kugira uruhare muri ubu bushaksha tsi ni ubushake, ushobora cg kubivamo nta zindi nkurikizi. Igihe wabisabira, amakuru yawe y akurwa byihuse mu bushakashatsi mbere ya isesengurwa ryayo. Dushingiye ku misesengurir we ya ibizava mu bushakshatsi, kwivana mu bushakshatsi ntibishoboka igihe cyose isesengur wa rizaba ryatangiye. Kwemera kugira uruhare muri ubu bushakashatsi ntibivuze kubangami ra uburenganzira bwawe nka uwagize uruhari ku bushakashatsi.

16. **Aho Wabariza andi Makuru**

Ufite ikindi kibazo kuri ubu bushakashatsi, wambaza njyewe umunyeshuli wa umushakas hatsi ushinzwe gukusanya amakuru ariwe**,** Amy K. Olson, at _____. ushobora no kubaza Dr. Yolanda Babenko-Mould, uhagarariye ubushakshatsi. Yaboneka kuri telefone muri Canada at _____cyangwa kuri murandasi at _____.

Uramutse ugize ikibazo kubyerekeye uburenganzira bwawe nk'uwagize uruhare muri ubu bushakashatsi,ushobora guhamagara Umuyobozi ushinzwe wa IRB muri Kaminuza y'u Rwanda kuri nimero sa telephone zikurikira: _____ cyangwa Uwumwungirije kuri nimero _____. Ushobora no guhamagara Umuyobozi ushinzwe Iyubahirizwa ry'Amahame y'Ubushakashatsi Ku bantu muri Kaminuza ya Western kuri nimero _____ cyangwa kuri email:_____. Ibyo uzababwira byose bizagirirwa ibanga

.

Uru Rwandiko ni Urwawe Ushobora Kurukenera mu Gihe Kizaza

Urwandiko Rwemeza Kugira Uruhare mu Ubushakashatsi

Umutwe w' Ubushakashatsi: Ibyabaye bishingirwaho ku barimu bigisha abaforomo na abaforomo mu gukoresha ubumenyi na ubumenyingiro ku mivurire ya abana mu mashuli na mavuriro mu Rwanda nyuma yo guhugurwa nka abigishwa muri gahunda ikomeza y'inyongerabumenyingiro bwa umwuga mu mivurire y'abana.

Umutwe wa Inyandiko: Ibaruwa Imenekanisha

Ukuriye Ubushakashatsi:

Dr. Yolanda Babenko-Mould, RN, PhD
Associate Professor and Thesis Supervisor of Amy K. Olson
Arthur Labatt Family School of Nursing
Nursing & FIMS Building, Room 2311
Faculty of Health Sciences
Western University
London, Ontario, Canada
Email:_____
Phone: _____

Umunyeshuli wa Umushakashatsi:
Amy K. Olson, RN, BScN, MScN Student,
Arthur Labatt Family School of Nursing,
Faculty of Health Sciences
Western University
London, Ontario, Canada
Email:_____
Phone:_____

Nasomye urwandiko rukubiyemo amakuru yose ajyanye n'ubu bushakashatsi, namenye kandi nasobanukiwe ireme ry' ubushakashatsi, na ibibazo nari mfite byasubijwe kuburyo nyuze, nkaba nemeye kugira uruhare muri ubu bushakashatsi.

Nemeye ko amakuru ntanga muri ubu bushakashatsi yakoreshwa no mubundi bushakashatsi

Nemeye gufatwa amajwi igihe ntanga amakuru

Amazina ya Uwagize Uruhare
m'Ubushakashatsi
Umukono wa Uwagize Uruhare mu
Bushakashatsi
Itariki: _____

Amazina y' Uwakiriye uru
Rwandiko (Andika mu Cyapa)
Umukono w' Uwakiriye uru
Rwandiko
Itariki: _____

Appendix C

Email Script for Recruitment (English version)

Subject Line: Invitation to participate in research study: Rwandan nurses' experience of translating pediatric knowledge and skills to the practice of teaching in the academic and clinical setting after involvement in a pediatric continuing professional development course.

Dear Mr/Ms [INSERT NAME HERE],

With permission from the Training, Support, and Access Model (TSAM) Project Director, Dr. Desiree Ndushabandi, I am contacting you regarding a research study that is to be conducted regarding nurses who have completed study in the Pediatric Nursing Continuing Professional Development (CPD) Program in Rwanda. As a learner who has completed study in this program, we would like to invite you to participate in a study about nurses' lived experiences of translating knowledge and skills to the practice of teaching in academic and clinical settings after undertaking study in the Pediatric Nursing CPD Program. This study is being conducted by Dr. Yolanda Babenko-Mould (Principal Investigator) and Amy K. Olson (Graduate Student Researcher) from Western University in London, Ontario, Canada.

Briefly, the study involves an in-person, face-to-face interview using a semi-structured interview guide which will facilitate a discussion around your experiences translating knowledge and skills from the Pediatric Nursing CPD Program to your practice of teaching. The interview will provide you with the opportunity to share your insights about the Pediatric Nursing CPD Program, limitations of the program, areas for improvement, as well as the benefits of the program which allows the course to work well. The interview will take a maximum of 90 minutes to complete. All participants will remain anonymous and data collected will remain confidential.
Attached you will find a letter of information and consent form. If you are interested in participating, you may contact the graduate student researcher, Amy K. Olson, to indicate your interest. Her contact information is _____. You may also contact her research assistant, Benoite Umubyeyi at _____-

If we do not hear from you, a second email reminder regarding this opportunity will be sent a week from today on September 27, 2019, followed by one additional email reminder, two weeks from today, October 4, 2019. Taking into consideration internet connectivity issues, if you have not responded to these emails, follow-up will be done with a telephone call (if necessary) to ensure that all nurses wishing to participate have the opportunity to do so.

If you would like more information about this study, please read the study letter of information attached to this email. You may also contact the graduate student researcher directly at the contact information given below.

Sincerely,

KAZOZA Golbert
TSAM Project Manager for Nursing and Midwifery
TSAM Project Office

Amy K. Olson, BScN, MScN Student
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
Supervisor, Graduate Student Researcher
Arthur Labatt Family School of Nursing
Faculty of Health Sciences
Western University
London, Ontario, Canada

Appendix D

Email Script for Recruitment (Kinyarwanda version)

Inyandiko yo Gutumira Abazitabira Ubushakashatsi

Ikigamijwe: Ubutumire bwa Abazitabira ubu Bushakashatsi :
Ibyabaye bishingirwaho ku barimu bigisha abaforomo na abaforomo mu gukoresha ubum enyi na ubumenyingiro ku mivurire ya abana mu mashuli na mavuriro mu
Rwanda nyuma yo guhugurwa nka abigishwa muri gahunda ikomeza y'inyongerabumeny ingiro bwa umwuga mu mivurire y'abana.

Banyakubahwa [Amazina y'Uzitabira Ubushakashatsi],

Duhawe uruhushya n' uhagarariye umushinga wa TSAM (Training Support and Access Model) ari we Muganga (Dr.) Desirée Ndushabandi, Nkwandikiye nkumenyesha ibya ub ushakashatsi kugirango bukorerwe ku Abaforomo bahuguwe nk'abigishwa muri gahunda y'inyongerabumenyingiro bwa umwuga mu mivurire y'abana. Nka umwishwa wahuguw e muri iyi gahunda, twifuje kugutumirira kugira uruhare mu bushakashatsi bugamije kure ba ibyabaye bishingirwaho ku barimu bigisha abaforomo na abaforomo mu gukoresha ub umenyi na ubumenyingiro ku mivurire y'abana mu mashuli na mavuriro mu
Rwanda nyuma yo guhugurwa nka abigishwa muri gahunda ikomeza y 'inyongerabumenyingiro mu mivurire y'abana. Ubu bushakashatsi buzakorwa na Mugan ga Yolanda Babenko-Mould (Principal Investigator) na Amy K. Olson (\umunyeshuli wa umushakashatsi) guturuka muri Kaminuza ya Western
mu mugi wa London, Ontario ho muri Canada.

Muri
make, ubu bushakashatsi buzahuza ukora n' ukorerwa ikiganiro imbonankubone hakores hejwe urupapuro rwa ibibazo bizaganirwaho bikagufasha kuvuga imibereho yawe muri iy o gahunda yo gushyira ubwo bumenyi na ubumenyingiro mu bikorwa mu mashuli no mu mavuriro mu
Rwanda nyuma yo guhugurwa muri gahunda ikomeza ya iyongerabumenyingiro bwa um wuga. Ikiganiro kizaguha amahirwe yo gusangiza ibyiyumviro byawe ku isomo rya gahu nda ikomeza ya amahugurwa ku mivurire ya abana-
imbogamizi za isomo, ahahindurwa cyangwa hakitabwaho, ndetse na inyungu zagendewe ho zigatuma isomo rigenda neza. Ikiganiro kizamara iminota mirongo icyenda (90) kugir ango irangire. Abazitabira ubushakashatsi ntibazagaragazwa n' ibyavuyemo bizaba ibang a.
Ku mugereka, urahasanga urwandiko rwa amkur ku bushakshatsi na urwandiko rutanga u burenganzira kugira uruhare kuri ubu bushakshatsi.
Niba wishimiye cyangwa ushaka kwitabira ubu bushakashatsi, wasubiza umunyeshuli w a umushakshatsi, Amy K.
Olson, kugirango uhamye ubushake bwawe. Abarizwa kuri aderesi ya murandasi ya:
____

Nitutabona igisubizo cyawe, ubu butumwa bwa kabiri bujyanye na ibi buzoherezwa nyu ma ya icyumweru uhereye ubu [ITARIKI IGIHE IZABA YAMENYEKANYE]. Ibi bizakurikirwa na ubundi butumwa bwibutsa buteganijwe kohe rezwa nyuma ya ibyuweru bibibri na none bwibutsi [ITARIKI IGIHE IZABA YAMENYEKANYE].
Tugendeye ku bibazo bya interneti, ubu butumwa bwo kwibutsa buzajya bukurikirana na telephone nibiba ngombwa kugirango abaforomo bose bifuje kwitabira ubu bushakashatsi badacikanwa.

Nukenera amakuru yisumbuyeho, wasoma ibaruwa ikubiyemo amakuru k' ubushakashats i iri ku mugereka w' iyi baruwa cyangwa ukabaza umunyeshuli wa umushakshatsi kuri a deresi zavuzwe hepfo.

Murakoze,
KAZOZA Golbert
TSAM Project Manager for Nursing and Midwifery
TSAM Project Office

Amy K. Olson, BScN, MScN Student
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
Supervisor, Graduate Student Researcher
Arthur Labatt Family School of Nursing
Faculty of Health Sciences
Western University
London, Ontario, Canada

Appendix E

Demographic Information (English Version)

Study Title: Rwandan nurse educators' and nurses' experience of applying pediatric knowledge and skills to academic and clinical practice settings after involvement in a Pediatric Nursing Continuing Professional Development Program.

1. Age: _____ years

2. Gender:
   - ☐ Female
   - ☐ Male
   - ☐ Other
   - ☐ Prefer not to answer

3. Highest level of education completed:
   - ☐ High school
   - ☐ College Diploma
   - ☐ Bachelor's Degree
   - ☐ Master's Degree
   - ☐ Doctorate

4. Employment Status
   - ☐ Employed Part-time
   - ☐ Employed Full-time
   - ☐ Unemployed

5. Do you work in an academic institution or a hospital, or both?
   - ☐ Academic Institution
   - ☐ Hospital
   - ☐ Both

6. If you work in an academic institution, what courses have you taught during the past 6 months? If not applicable, write 'NA'.

_____
_____
_____

7. If you work in an academic institution, how many years have you been teaching nursing in the classroom, simulation, lab, and/or clinical setting? (If not applicable, select 'NA')
   - ☐ Classroom setting: Years _____
   - ☐ Clinical setting: Years _____

- Simulation setting: Years_____
- Lab setting: Years _____
- NA

8. If you work in a hospital, how many years of experience do you have working as a nurse in a hospital? If not applicable, select 'NA'
   - Years _____
   - NA _____

9. If you work in a hospital, which unit do you work on at your hospital? (If you work in several units, write the names of all of the units you work on. Please place an * next to the unit you work on the most. If not applicable, write 'NA'.

_____ _____
_____ _____

10. If you work in a hospital, how many years of experience do you have working as a nurse in **a pediatric unit** in a hospital? If not applicable, select 'NA'.
    - Years _____
    - NA _____

11. If you work in an academic institution, please indicate how many years of experience you have teaching pediatrics in:
    - Classroom: Years _____
    - Simulation: Years _____
    - Lab: Years _____
    - Clinical: Years _____

Appendix F

Demographic Information (Kinyarwanda Version)

Umutwe wa Ubushakshatsi: Ibyabaye bishingirwaho ku barimu bigisha abaforomo na abaforomo mu gukoresha ubumenyi na ubumenyingiro ku mivurire ya abana mu mashuli na mavuriro mu Rwanda nyuma yo guhugurwa nka abigishwa muri gahunda ikomeza y'inyongerabumenyingiro bwa umwuga mu mivurire y'abana.

Amakuru Amuranga

1. Ingano: Imyaka _____

2. Igitsina
   - Gore
   - Gabo
   - Ikindi
   - Ndifashe

3. Amashuli makuru warangije
   - Ayisumbuye
     - Kaminuza icyiciro cya 1
     - Kaminuza icyiciro cya 2
     - Kaminuza icyiciro cya 3
     - Kaminuza icyiciro cya 4

4. Imikorere
   - Akora igice (rimwe na rimwe)
   - Akora igihe cyuzuye (igihe cyose)
   - Ntacyo akora

5. Ukora mu kigo cya amashuli cyangwa ikigo cya ubuvuzi cyangwa hombi ?
   - Mu kigo cya amashuli
   - Mu kigo cya ubuvuzi
   - Hombi

6. Niba ukora mukigo cya amashuli, nayahe masomo wigishije mu mezi 6 yahise ? niba bitakureba, andika 'NA'.

_____
_____
_____

7. Niba ukora mukigo cya amashuli, 'ni imyaka ingahe wigishije ubuforomo mu ishuli, mu cyumba cya imenyerezamwuga no mu ivuliro? Niba bitakureba andika 'NA')
    - Mu ishuri: Imyaka _____
    - Mu ivuriro: Imyaka _____
    - Icyumba cya imenyerezamwuga: Imyaka_____
    - Mu cyumba cya imenyerezabumenyingiro: Imyaka _____
    - NA
8. Niba ukora mu bitaro, ni imyaka ingahe umaze ukora nka umuforomo mu bitaro? Niba bitakureba hitamo 'NA'
    - Imyaka _____
    - NA _____

9. Niba ukora mubitaro, ni mu kihe gice cya ibitaro ukoramo? Niba ukora mu bice byinshi, andika amazina ya ibice byose ukoramo. Hanyuma ushyire akanyenyeri *ku gice ukoramo cyane. Niba bitakureba andika'NA'

_____ _____
_____ _____

10. Niba ukora mu bitaro, nimyaka ingana iki by' uburambe umaze ukora nk'umuforormo mu gice cya ubuvuzi bwa abana mu bitaro? Bitakureba hitamo 'NA'.
    - Imyaka _____
    - NA _____

11. Niba ukora mu kigo cya amashuli, nimyaka ingahe , by' uburambe umaze wigisha isomo rijyanye na imivurire ya abana:
    - Ishuri: imyaka _____
    - Icyumba cya imenyerezamwuga: Imyaka _____
    - Icyumba ya imenyerezabumenyingiro: Imyaka _____
    - Ivuliro : Imyaka__

Appendix G

Semi-structured Interview Guide

Study Title: Rwandan nurse educators' and nurses' experience of applying pediatric knowledge and skills to academic and clinical practice settings after involvement in a Pediatric Nursing Continuing Professional Development Program

Directions for the Interviewer: *Ask participant if they have any further questions regarding the study LOI/consent form. Ensure informed consent process is completed and form is signed. Ensure participant is fully aware of the purpose of the study. Provide participant with compensation (in amount as per TSAM project directives) in envelope. Thank the participant for agreeing to participate. Ask participant to complete the coded Demographic Questionnaire. Once the participant completes and returns the Demographic Questionnaire, read the 'Interviewer Script' to the participant and begin the interview. Audio-recording begins after the participant completes and returns the Demographic Questionnaire to the interviewer. Please note the date and time of the audio-recording by recording it at the start of the interview once you hit "record".* **Interviewer Script:** *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. If you do not wish to answer a question, you may skip it by saying "pass".*

1. In what ways did your participating in the Pediatric Nursing CPD Program increase your knowledge/skills/attitude/judgment about managing pediatric nursing care?
2. In what ways did your participation in the Pediatric Nursing CPD Program increase your problem-solving and decision-making skills for pediatric patients?
3. How have you been able to use your new knowledge and skills gained from the Pediatric Nursing CPD Program to clinical practice?
4. How have you been able to use your new knowledge and skills gained from the Pediatric Nursing CPD Program to the practice of teaching in the classroom?
5. How have you been able to use your new knowledge and skills gained from the Pediatric Nursing CPD Program to the practice of teaching in the clinical setting?
6. What are the facilitators you encountered in your workplace to put into practice the knowledge and skills gained from the Pediatric Nursing CPD Program?
7. What are the barriers you encountered in your work place to put into practice the knowledge and skills gained from the Pediatric Nursing CPD Program?
8. How do you think using your new knowledge and skills gained from the Pediatric Nursing CPD Program has positively changed your teaching practice? Your clinical practice?
9. In what ways have you been able to mentor or coach other nurses or students to improve their knowledge and skills of caring for pediatric patients?
10. In what ways do you think your new knowledge and skills have been able to change the professional relationship you have with children and families in clinical practice?
11. Is there anything else that you would like to share with me about your experience of applying what you learned during the Pediatric Nursing CPD Program into your nursing practice?
12. Have you completed any other trainings related to pediatric health care since or during your participation in the Pediatric Nursing CPD Program?

Appendix H

Ethical Approval from Western University Health Science Research Ethics Board

Western Research

Date: 22 May 2019

To: Dr. Yolanda Babenko-Mould

Project ID: 112064

Study Title: Rwandan nurse educators' and nurses' experience of applying pediatric knowledge and skills to the academic and clinical practice settings after involvement a Pediatric Nursing Continuing Professional Development Program.

Application Type: HSREB Initial Application

Review Type: Delegated

Full Board Reporting Date: 04June2019

Date Approval Issued: 22/May/2019 12:55

REB Approval Expiry Date: 22/May/2020

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
Final - Demographic Questionnaire - May 14, 2019 - English	Other Data Collection Instruments	14/May/2019	2
Final - Demographic Questionnaire_May 14, 2019-Kinyarwanda	Translated Documents	14/May/2019	2
Final - E-mail Script - May 14, 2019 - English	Email Script	14/May/2019	2
FInal - E-mail script-May 14, 2019-Kinyarwanda	Translated Documents	14/May/2019	2
FInal - Letter of Information May 14_2019—Kinyarwanda	Translated Documents	14/May/2019	2
Final - Letter of Information May 20, 2019 - Kinyarwandan	Translated Documents	20/May/2019	3
Final - Semi-structured Interview Guide - May 14, 2019	Interview Guide	14/May/2019	2
Letter of Information and Consent -May 20, 2019 - English	Written Consent/Assent	20/May/2019	3

Documents Acknowledged:

Document Name	Document Type	Document Date	Document Version
Translation Attestation - April 8, 2019	Translation Certificate	08/Apr/2019	1

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,

Nicola Geoghegan-Morphet, Ethics Officer on behalf of Dr. Joseph Gilbert, HSREB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Appendix I

Ethical Approval from University of Rwanda Institutional Review Board

UNIVERSITY of RWANDA

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DIRECTORATE OF RESEARCH & INNOVATION

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 25th /06/2019

Amy Olson
Western University, CANADA

Approval Notice: No 311/CMHS IRB/2019

Your Project Title ***"Rwandan Nurse Educators' And Nurses' Experience Of Applying Pediatric Knowledge And Skills To Academic And Clinical Practice Settings After Involvement In A Pediatric Nursing Continuing Professional Development Program"*** has been evaluated by CMHS Institutional Review Board.

		Involved in the decision		
		Yes	No (Reason)	
Name of Members	**Institute**		**Absent**	**Withdrawn from the proceeding**
Prof Kato J. Njunwa	UR-CMHS	X		
Prof Jean Bosco Gahutu	UR-CMHS	X		
Dr Brenda Asiimwe-Kateera	UR-CMHS	X		
Prof Ntaganira Joseph	UR-CMHS	X		
Dr Tumusiime K. David	UR-CMHS	X		
Dr Kayonga N. Egide	UR-CMHS	X		
Mr Kanyoni Maurice	UR-CMHS		X	
Prof Munyanshongore Cyprien	UR-CMHS	X		
Mrs Ruzindana Landrine	Kicukiro district		X	
Dr Gishoma Darius	UR-CMHS	X		
Dr Donatilla Mukamana	UR-CMHS			X
Prof Kyamanywa Patrick	UR-CMHS		X	
Prof Condo Umutesi Jeannine	UR-CMHS		X	
Dr Nyirazinyoye Laetitia	UR-CMHS	X		
Dr Nkeramihigo Emmanuel	UR-CMHS		X	
Sr Maliboli Marie Josee	CHUK	X		
Dr Mudenge Charles	Centre Psycho-Social	X		

After reviewing your protocol during the IRB meeting of where quorum was met and revisions made on the advice of the CMHS IRB submitted on 25th June 2019, **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 enrolment of participants.
3. All consent forms signed by subjects should be retained on file. The IRB June conduct audits of all study records, and consent documentation June 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 IRB committee once the study is finished

Sincerely,

Date of Approval: The 25th June 2019

Expiration date: The 25th June 2020

[redacted]

Professor GAHUTU Jean Bosco
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 Postgraduate Studies, UR

Appendix J

Affiliation for Research with the University of Rwanda

UNIVERSITY of RWANDA

OFFICE OF THE DEPUTY VICE CHANCELLOR
FOR ACADEMIC AFFAIRS AND RESEARCH

Kigali, 29 /07 / 2019
Ref. No: DVC-AAR...539/ 2019

Amy K. Olson,
Arthur Labatt School of Nursing,
Western University, London, Ontario

Dear Olson,

RE: RESEARCH AFFILIATION

Reference is made to your application letter to the Directorate of Research and Innovation requesting for Affiliation to University of Rwanda.

On behalf of the UR, I am pleased to inform you that you are accepted to UR as a Research Associate to enable you to conduct a study entitled "***Rwandan nurse educators' and nurses' experience of applying pediatric knowledge and skills to academic and clinical practice settings after involvement in a Pediatric Nursing Continuing Professional Development Program***". The affiliation will be from 22nd July 2019 to 25th June2020

Your supervisor will be Prof Donatilla Mukamana, Dean from the School of Nursing and Midwifery , College of Medicine and Health Sciences (email: [redacted], Tel: [redacted]

At the end of your study, you will deposit two copies of research results to the Directorate of UR Research and Innovation.
The University of Rwanda wishes you a successful research undertaking in Rwanda

[redacted]

Prof Nelson Ijumba
Deputy Vice Chancellor for Academic Affairs and Research
University of Rwanda

Cc:
- Vice Chancellor, UR
- Principal, College of Medicine and Health Sciences
- Director of Research and Innovation, UR

Appendix K

Research Permit for Rwanda

UNIVERSITY of RWANDA

OFFICE OF THE DEPUTY VICE CHANCELLOR
FOR ACADEMIC AFFAIRS AND RESEARCH

Kigali, 29 / 07 / 2019
Ref. No: DVC-AAR.361./ 2019

Director General of Immigration and Emigration
Kigali, Rwanda

Dear Director General,

RE: Temporary Permit for Amy K. Olson

On behalf of the University of Rwanda, I am pleased to recommend to you Amy K. Olson, a PhD student from Western University, London, Ontario affiliated to the University of Rwanda to carry out a research study entitled "***Rwandan nurse educators' and nurses' experience of applying pediatric knowledge and skills to academic and clinical practice settings after involvement in a Pediatric Nursing Continuing Professional Development Program***" from 22nd July to 25th June 2020.

The objective of this research study is to understand the lived experiences of nurses' who studied in a Pediatric Nursing CPD Program in Rwanda and examine the way they applied pediatric knowledge and skills learned from the course to their practice of nursing in academic and clinical settings. This study has the potential to highlight benefits of specialty education, and the importance of ensuring nurses are qualified to practice in the area where they are situated. The results could also lead to improvements in the Pediatric Nursing CPD program for future participants and instructors of the program.

Her supervisor will be Prof Donatilla Mukamana, Dean from the School of Nursing and Midwifery , College of Medicine and Health Sciences (email: [redacted] Tel: [redacted]

Kindly accord Amy Olson the necessary assistance to facilitate her research study.

Kind regards,

[redacted]

Prof Nelson Ijumba
Deputy Vice Chancellor for Academic Affairs and Research
University of Rwanda

P.O Box 4285 Kigali, Rwanda | dvc.aar@ur.ac.rw | www.ur.ac.rw

CURRICULUM VITAE

Name Amy Olson

Post-secondary Education and Degrees

Western University, Arthur Labatt Family School of Nursing, London, ON
Master of Science in Nursing, Nursing Education & Leadership
2018 - Present

British Columbia Institute of Technology (BCIT)
Advanced Practice Certificate in Pediatrics, with Distinction
September 2006- April 2007, March 2016

Trinity Western University
Bachelor of Science in Nursing
2001- 2004

Related Work Experience

British Columbia College of Nurses and Midwives (BCCNM), Vancouver, BC
Education Advisor
September 2020 – Present

British Columbia Institute of Technology (BCIT), Burnaby, BC
Instructor
September 2019 – June 2020

Fraser Health Authority, Surrey Memorial Hospital, Pediatric Emergency, Surrey, BC
Registered Nurse
July 2013-July 2016; September 2019-September 2020

Western University, Arthur Labatt Family School of Nursing, London, ON
Tutorial Assistant – N3310 – Health in a Global Context
September 2018 - December 2019

Partners in Health (PIH), Kigali, Rwanda
Nurse Consultant - Neonatal curriculum development
January 2018 – April 2018

Training, Support and Access Model (TSAM) for Maternal, Newborn and Child Health (MNCH) in Rwanda, Kigali, Rwanda
Volunteer Assistant Project Manager, Pediatric Nursing
August 2016-August 2018

Iranzi Clinic, Kigali, Rwanda

Registered Nurse
August 2016 – December 2016

Fraser Health Authority, Abbotsford Regional Hospital, Pediatrics, Abbotsford, BC
Registered Nurse, Pediatrics
January 2005- September 2015

Publications

Olson, Amy. (2019). Cultural sensitivity: A personal reflection. *Canadian Nurse.* https://www.canadian-nurse.com/en/articles/issues/2019/july-2019/cultural-sensitivity-a-personal-reflection

Olson, Amy & Oudshoorn, Abe. (2020). Knowledge translation: A concept analysis. *Nursing Forum*, 55, 157-164. https://doi.org/10.1111/nuf.12410

Licenses and Certifications

Registered Nurse, British Columbia College of Nurses and Midwives, Practicing

Advanced Practice in Pediatrics Certificate, BCIT, with Honors May 2016

PALS (Pediatrics Advanced Life Support) Certification, August 2019

BLS & AED training, Heart & Stroke Foundation, August 2019

ENPC (Emergency Nursing Pediatric Course) September 2013

Conferences and Workshops

Emergency Medicine in the Tropics, Rwanda Emergency Care Association, May 2017

2nd International Nursing Conference, University of Rwanda, Kigali, Rwanda, September 27-29, 2017 - Participant

COINN – Council of International Neonatal Nurses, Kigali, Rwanda, October 5-6, 2018 - Poster Presentation

Africa Western Collaborations Day 2020: Nurturing Excellence by Advancing Academic Diversity – Presenter, November 18, 2020