



Interprofessional mentoring of pharmacy students in South African primary healthcare settings: Nurses' experiences

MJ Mmoloke

 **orcid.org/0000-0002-6956-8839**

Dissertation accepted in fulfilment of the requirements for the award of
a degree of Master of Health Sciences in Health Professions Education
at the North-West University Potchefstroom Campus

Supervisor: Prof. C Christmals

Co-supervisor: Mrs. M Vorster

Graduation: June 2026

PREFACE

This Master's dissertation is presented in article format according to the North-West University's 2020 guidelines and in adherence to academic rule HSC.3.8 of the Faculty of Health Sciences postgraduate yearbook. The master's student, Mrs. MJ Mmoloke, conducted the research under Prof. Christmal Dela Christmals and co-supervisor Mrs. Martine Vorster. The student wrote the dissertation on Interprofessional mentoring of pharmacy students in South African primary healthcare settings: Nurses' experiences.

Permission was obtained from Prof. Christmals and Mrs. Vorster to submit the dissertation for examination in fulfilment of the degree Master of Health Sciences in Health Professions Education at the North-West University.

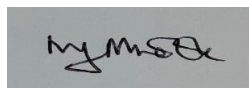
Although the dissertation has been formatted according to the NWU requirements, the components of the paper (reference style, tables and figures) remain as published to ensure consistency and cross-referencing.

DECLARATION AND STUDENT CONTRIBUTION TO ARTICLES

I declare that the dissertation with the title “Interprofessional mentoring of pharmacy students in South African primary healthcare settings: Nurses’ experiences” is my work and that all the sources used or quoted have been indicated and acknowledged, employing complete references, and that this work has not been submitted previously for any other degree at any other institution.

Madile Joconita Mmoloke

Signature:



Date: 26/11/2025

(Student)

Prof. Christmal Dela Christmals

Signature:

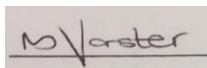


Date: 26/11/2025

(Supervisor)

Mrs. Martine Vorster

Signature:



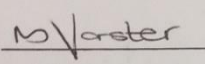
Date: 26/11/2025

(Co-supervisor)

AGREEMENT OF CO-AUTHORS

Professor Christmal Dela Christmals (promoter) and Mrs. Martine Vorster, who co-authored the paper in chapter four of the Dissertation, have granted permission for the student, Madile Mmoloke (12892157), to use the paper as part of the dissertation, acknowledging that the paper emanated out of the student's research for the degree of Master of Health Sciences in Health Professions Education. The student is the principal author of the paper titled "Interprofessional Mentoring of Pharmacy Students in Primary Healthcare Settings in South Africa: Nurses' experiences." She led the conceptualisation, design, scientific and ethical approval processes, data collection and analysis and the compilation of the manuscript and dissertation.

Prof. Christmal Dela Christmals Signature:  Date: 26/11/2025
(Promoter)

Mrs. Martine Vorster Signature:  Date: 26/11/2025
(Co-supervisor)

DEDICATION

This dissertation is dedicated to several people who have played a pivotal role in my life:

It is dedicated to the memory of my beloved father, Nyere Samuel Masilo, and my lovely sister, Eki Dimakatso Patricia Masilo, who passed away. Their memories gave me an urge to study further.

My mother, Manke, Mankoni Cornelia Masilo, for her strength, love, hardworking spirit, and inspiration, ensuring that all her children accomplish what she did not.

My husband, Pule, and my sons, Basinki and Tshegofatso, thank you for your continuous support, prayers, and understanding that made this path easier for me to accomplish.

To my three brothers, Thekiso-Buti, Sobi-Daddy, and Madule-Opo, and their families, for their support and being pillars of my strength.

Finally, to all my well-wishers, friends, neighbours, and colleagues who encouraged and kept me going everywhere I have been.

I love you.

ACKNOWLEDGEMENTS

I thank the Almighty, God El Emunah (the faithful God), for always being with us. I would like to express my deepest gratitude to my supervisor, Professor Christmal Christmals. This endeavour would not have been possible without you. You broadened my research writing skills and increased my will to succeed.

I sincerely thank my co-supervisor, Mrs. Martine Vorster, for her unwavering support and belief in my potential. Your ability to always wish the best for me, including introducing me to Prof. Gerda Reitsma, motivated me to do better each time. I really appreciate all you did for me.

Prof. Gerda M. Reitsma, thank you for introducing me to the Centre of Health Professions Education. It helped me realise that a change in my career was possible. I am also grateful for connecting me with Prof. Christmals, whose guidance and patience made this journey achievable.

I would like to thank the School of Pharmacy for giving me the opportunity to explore my capabilities and bring them out into the open. I also want to thank Clinical Pharmacy for recognising my worth and making me part of your family.

Christell Scheepers, thank you for carrying me on your shoulders everywhere I went for data collection and for being an excellent independent person. I will always admire you.

I also wish to thank Prof. Yolande Heymans (my co-coder). I sincerely appreciate your flexibility and willingness to help. I could not have made it without your valuable contributions. May God bless you all.

I thank the small panel reviewers, CHPE Scientific Committee, NWU-HREC, NWDoH, Dr Kenneth Kaunda district, the pharmacy students, and professional nurses.

Lastly, my family. Pule my husband, and my sons Basinki and Tshegofatso for your encouragement, support, and presence in my life, also my siblings Thekiso, Sobi, and Madule and their families.

ALL GLORY AND PRAISE BE TO GOD.

SUMMARY

Keywords: Interprofessional mentoring, professional nurses, pharmacy students, primary healthcare setting, work-based learning.

Interprofessional mentoring, though not the traditional norm, has become necessary due to a shortage of pharmacists in primary healthcare settings, leading to professional nurses assuming mentoring responsibilities for pharmacy students. This study explored and described the experiences, challenges, and needs of professional nurses mentoring pharmacy students during their Work-Based Learning placements in primary healthcare settings in the North West province of South Africa.

A qualitative, descriptive study design was used. A total of 35 professional nurses across 18 primary healthcare settings were selected using purposive sampling. Data were collected through semi-structured individual interviews and analysed using thematic analysis.

Consent to conduct the study was obtained from the North-West University Health Research Ethics Committee, North West Department of Health, Dr. Kenneth Kaunda district Research committee and the primary health care facilities. Informed consent was obtained from all the participants. Data were collected by the researcher and verified by the supervisors. Measures to ensure trustworthiness included independent co-coding, member-checking, and supervisor validation of findings.

The professional nurses shared their experiences and perspectives about the mentoring of pharmacy students. Three themes emerged from the interview data: (1) experiences of professional nurses mentoring pharmacy students, (2) challenges encountered during interprofessional mentoring, and (3) identified needs for effective mentoring. The results showed that while professional nurses found the students helpful in clinical activities, they also faced difficulties such as increased workload, unclear mentoring roles, language barriers, and a lack of preparation and support from the university. Many professional nurses expressed a strong willingness to support student learning but highlighted the need for formal training, better communication, and clearer guidance from the university.

Among the recommendations was that collaboration between the university and the professional nurses in primary healthcare facilities must be improved, equipping professional nurses with structured orientation and training for mentoring pharmacy students, and providing ongoing support and recognition for their educational contributions. Addressing these needs is critical to enhancing the quality and sustainability of interprofessional mentoring in PHC settings.

OPERATIONAL DEFINITIONS OF TERMS USED

Below is a list of terms used throughout this dissertation and their operational definitions to provide contextual meaning, understanding, and clarification.

TERM	DEFINITION
Professional nurse	The Nursing Act 33 of 2005 stipulates that “A professional nurse is a person who is qualified and competent to independently practice comprehensive nursing in the manner and to the level prescribed and who is capable of assuming responsibility and accountability for such practice” (National Department of Health, 2020).
Roles	Professional nurses are central to primary health care, responsible for holistic nursing care, treating minor and chronic illnesses, prescribing treatments, and referring critical cases for further hospital care (Zambodla et al., 2022; Singh & Mathuray, 2018). They also perform administrative tasks, educate staff, promote preventive measures, and supervise students (Barbiani et al., 2016). Professional nurses are tasked with facilitating the education and professional development of students, encouraging them to work independently (National Department of Health, 2020). Building strong relationships with students is vital for their clinical learning and the achievement of excellent patient outcomes (Bos et al., 2012).
Facilitation	Facilitation is a leadership role involving an interactive process where facilitators create a positive learning environment by collaborating with learners and using tools and activities to support making decisions and solving problems (Downing & Chipu, 2024). In the context of pharmacy education, facilitation has been demonstrated through supervised role-taking experiences in clinical settings. For example, fourth-year pharmacy students visited health care facilities for role-taking, under indirect pharmacist supervision (McCartney & Boschmans, 2018; Bheekie & Bradley, 2016). Professional nurses orientated students and supported both pharmacy and nursing students during clinical activities (Bobbins et al., 2020). These nurses facilitated learning by ordering medication, performing clinical tests, and enabling pharmacy students to observe procedures and interact with patients (Bobbins et al., 2020).
Challenges	Kautzky and Tollman (2008) highlight the need for primary health care training to focus on appropriate orientation, training, support, and mentoring for students, as undergraduate curricula often prioritise theoretical knowledge over practical experience. According to Bos et al. (2012), while supervisors should oversee clinical placements, challenges arise from professional nurses' work environments. New nurses in primary healthcare struggle with skill application and interpersonal development due to a lack of senior role models (Zambodla et al., 2022). Factors like high workload, poor infrastructure, and subpar conditions hinder effective patient care (Mutshatshi & Munyai, 2022). Bos et al. (2012) also note nurse shortages, stress, and extra administrative duties affecting nurses' functions. These factors compromise supervision and complicate interprofessional mentoring for pharmacy students, whose training is impacted by nurses' overloaded schedules and their lack of mentoring knowledge.

TERM	DEFINITION
Primary healthcare	Primary healthcare focuses on people's health needs, including maintaining good health and lifestyle, preventing diseases from getting worse, diagnosing and treating illness, and helping individuals recover and restore their abilities after injury or sickness. According to the Alma Ata Declaration, "Primary health care is essential health care based on practical, scientifically sound, and socially acceptable methods and technology made universally accessible to individuals and families in a community through their full participation and at a cost that the community and the country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination" (World Health Organization [WHO] & [UNICEF], 2018).
Mentor	A mentor is a leader who functions as a facilitator for students' individual and career enhancement. They can be influential in conveying the clear educational information needed to understand the course content (Henry-Noel et al., 2019).
Interprofessional mentoring	Interprofessional mentoring is a phenomenon in which healthcare professionals mentor students from different professions in clinical placement for learning or role-taking (Lait et al., 2011a).
Mentoring	Mentoring is a lifelong connection between a highly experienced mentor and an inexperienced mentee (Jones et al., 2016).
Pharmacist	In terms of the Pharmacy Act, 53 of 1974, a pharmacist is a qualified health professional registered with the SAPC and an expert in medicine knowledge and continually gathers and provides information related to new medical treatment development (SAPC, 2018b).
Pharmacy student	A pharmacy student refers to a person enrolled in a South African Pharmacy Council-approved programme for pharmacist registration. "Based on their year of study, they may perform services within the scope of a pharmacist's assistant (basic or post-basic) or a pharmacy technician, under the direct supervision of a registered pharmacist and as part of an approved training programme" (SAPC, 2018a).
Work-Based Learning	Work-based learning for pharmacy students is learning through work in a pharmacy or in any workplace under a supervisor approved by the South African Pharmacy Council (SAPC, 2017b).

LIST OF ABBREVIATIONS

The following abbreviations and acronyms have been used in various parts of the dissertation.

BPharm	Bachelor of Pharmacy
CHC	Community health centres
COREQ	Consolidated criteria for reporting qualitative research
HELTASA	Higher Education Learning and Teaching Association of Southern Africa
HPEd	Health Professions Education
TSAM	Training, Support, Access Model
NHREC	National Health Research Ethics Council
NSC	National Senior Certificate
NQF	National Qualification Framework
NWDoH	North West Department of Health
NWU	North-West University
NWU-HREC	North-West University Health Research Ethics Committee
PHC	Primary Health Care
SA	South Africa
SAPC	South African Pharmacy Council
SAQA	South African Qualifications Authority
STEM	Science, Technology, Engineering, and Mathematics
UNICEF	United Nations International Children's Emergency Fund
WBL	Work-Based Learning
WHO	World Health Organization

TABLE OF CONTENTS

PREFACE	II
DECLARATION AND STUDENT CONTRIBUTION TO ARTICLES	III
AGREEMENT OF CO-AUTHORS	IV
DEDICATION	V
ACKNOWLEDGEMENTS	VI
SUMMARY	VII
OPERATIONAL DEFINITIONS OF TERMS USED	IX
LIST OF ABBREVIATIONS	XI
TABLE OF CONTENTS	XII
LIST OF TABLES	XIX
LIST OF FIGURES	XX
CHAPTER 1: OVERVIEW OF THE STUDY	1
1.1 INTRODUCTION	1
1.2 BACKGROUND	1
1.2.1 Mentoring	1
1.2.2 Interprofessional mentoring	3
1.2.3 Pharmacy Education in South Africa	7
1.2.4 Clinical placement in the PHC Setting	8
1.3 PROBLEM STATEMENT	9
1.4 PURPOSE OF THE STUDY	11
1.5 OBJECTIVES, RESEARCH QUESTION AND SUB-QUESTIONS	11
1.5.1 Research question and sub-questions	11
1.5.2 Research objectives	11
1.6 ETHICAL CONSIDERATIONS	12
1.7 SIGNIFICANCE OF THE STUDY	13
1.8 STRUCTURE OF THE DISSERTATION	13
1.9 SUMMARY	14
1.10 REFERENCES	14
CHAPTER 2: RESEARCH DESIGN AND METHODOLOGY	22
2.1 INTRODUCTION	22

2.2	RESEARCH PARADIGM.....	22
2.3	RESEARCH STRATEGY OF INQUIRY	22
2.3.1	Research design	23
2.3.2	Study context	23
2.3.3	Population, Sampling and Sample.....	23
2.3.4	Inclusion and Exclusion Criteria	24
2.3.4.1	Inclusion criteria:	24
2.3.4.2	Exclusion criteria:	24
2.3.5	Recruitment and written informed consent	25
2.3.5.1	Advocating the intended research.....	25
2.3.5.2	Obtaining informed consent	25
2.3.6	Data collection	26
2.3.6.1	Data collection instrument.....	26
2.3.6.2	The interview process	26
2.3.7	Data analysis.....	27
2.3.7.1	Phase 1: Familiarising yourself with your data	27
2.3.7.2	Phase 2: Generating initial codes.....	27
2.3.7.3	Phase 3: Searching for themes.....	28
2.3.7.4	Phase 4: Reviewing themes	28
2.3.7.5	Phase 5: Defining and naming themes	28
2.3.7.6	Phase 6: Producing the report.....	28
2.4	QUALITY AND RIGOUR OF RESEARCH.....	28
2.5	ETHICAL CONSIDERATIONS	29
2.5.1	Ethical Approval.....	29
2.5.2	The role of the Researcher (Student), Principal Investigator (Supervisor) and Co-Investigator (Co-supervisor).....	30
2.5.3	Data gathering.....	31
2.5.3.1	Anonymity	31
2.5.3.2	Right to Privacy	31

2.5.3.3	Confidentiality	31
2.5.4	Risk and benefit relating to this study	32
2.5.4.1	Anticipated risks and precautions taken	32
2.5.4.2	Anticipated benefits	33
2.5.4.3	Risk/benefit analysis	33
2.5.4.4	Reimbursement	33
2.6	DATA MANAGEMENT, STORAGE, AND DESTRUCTION	33
2.6.1	Hard copy data	33
2.6.2	Electronic data (eData)	33
2.6.3	Data monitoring	34
2.7	LIMITATIONS OF THE STUDY	34
2.8	DISSEMINATION OF THE RESULTS	34
2.9	SUMMARY	34
2.10	REFERENCES	34
CHAPTER 3: LITERATURE REVIEW		37
3.1	INTRODUCTION	37
3.2	LITERATURE SEARCH	37
3.2.1	Inclusion and exclusion criteria	37
3.2.2	Analysis and reporting	37
3.3	SUMMARY OF FINDINGS	37
3.3.1	Mentoring	38
3.3.1.1	Evolution of mentoring	39
3.3.1.2	Types of mentoring	39
Traditional mentoring		40
Formal mentoring		40
Informal mentoring		40
Peer mentoring		41

Reverse mentoring.....	41
E-mentoring	42
3.3.2 Interprofessional Mentoring	42
3.3.2.1 Benefits of interprofessional mentoring	44
3.3.2.2 Challenges	45
3.3.2.3 Needs	46
3.4 REFERENCES	47
CHAPTER 4: ARTICLE: INTERPROFESSIONAL MENTORING OF PHARMACY STUDENTS IN PRIMARY HEALTHCARE SETTINGS IN SOUTH AFRICA	55
4.1 ABSTRACT	55
4.2 INTRODUCTION	56
4.3 MATERIALS AND METHODS.....	57
4.3.1 Study Design.....	57
4.3.2 Study Setting.....	57
4.3.3 Population, Sampling and Sample.....	57
4.3.4 Data Collection	58
4.3.5 Data Analysis.....	59
4.3.6 Ethical Considerations	59
4.4 RESULTS	59
4.4.1 Demographic Characteristics.....	59
4.4.2 Themes.....	59
4.4.2.1 Experiences of Professional Nurses Mentoring Pharmacy Students.....	60
Impressions About Students.....	60
Orientation to the Workplace	61
Active Mentoring Practice	61
4.4.2.2 Challenges Faced by Professional Nurses Mentoring Pharmacy Students	62
Heavy Workload of Professional Nurses	62
Language Barrier.....	63

Patients' Privacy Concerns.....	63
Lack of Clarity on Mentoring Role and University Support.....	63
Passive Student Engagement.....	64
4.4.2.3 Needs of Professional Nurses	65
The Need for Adequate Information	65
Guidance and Feedback	65
Knowledge and Skills Needed	66
Deeper University Involvement	66
4.5 DISCUSSION.....	67
4.6 CONCLUSIONS.....	69
4.7 POLICY IMPLICATIONS	69
Author Contributions:	69
Funding: 70	
Institutional Review Board Statement:	70
Informed Consent Statement:	70
Data Availability Statement:	70
Acknowledgments:	70
Conflicts of Interest:.....	70
4.8 REFERENCES	70
CHAPTER 5: SUMMARY, CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS	78
5.1 INTRODUCTION	78
5.2 SUMMARY	79
5.3 OVERALL CONCLUSIONS	80
5.3.1 Conclusion on Objective 1	80

5.3.2	Conclusion on Objective 2	81
5.3.3	Conclusion on Objective 3	82
5.4	CONTRIBUTIONS OF THIS STUDY.....	83
5.5	LIMITATIONS OF THE STUDY	83
5.6	RECOMMENDATIONS	84
5.6.1	Recommendations for future research	84
5.6.2	Recommendations for practice	84
5.6.3	Recommendations for education	84
5.7	REFERENCES	85
ADDENDUM A: APPROVAL FOR SUBMISSION TO SCIENTIFIC COMMITTEE		88
ADDENDUM B: APPROVAL HEALTH PROFESSIONS EDUCATION SCIENTIFIC COMMITTEE		89
ADDENDUM C: SEMI-STRUCTURED INDIVIDUAL INTERVIEW GUIDE FOR PROFESSIONAL NURSES		91
ADDENDUM D: INFORMED CONSENT FOR PROFESSIONAL NURSES		93
ADDENDUM E: LETTER TO DEPARTMENT OF HEALTH NORTH WEST PROVINCE		98
ADDENDUM F: LETTER TO THE OPERATIONAL MANAGER.....		100
ADDENDUM G: INFORMATION LEAFLET FOR PROFESSIONAL NURSES.....		101
ADDENDUM H: CONFIDENTIALITY AGREEMENT		103
ADDENDUM I: APPROVAL NWU HEALTH RESEARCH ETHICS COMMITTEE ..		106
ADDENDUM J: APPROVAL NORTH WEST DEPARTMENT OF HEALTH		108
ADDENDUM K: APPROVAL DR KENNETH KAUNDA DISTRICT.....		110
ADDENDUM L: EVIDENCE OF ARTICLE PUBLISHED		111
ADDENDUM M: PROOF OF LANGUAGE EDITING		112
ADDENDUM N: PLAGIARISM CHECK – SUMMARY OF TURNITIN REPORT.....		113
ADDENDUM O: CODE OF ACADEMIC CONDUCT		123

ADDENDUM P: DECLARATION OF AI USE.....	124
---	------------

LIST OF TABLES

Chapter 2:

Table 1:	Anticipated risks and precautions taken.....	53
----------	--	----

Chapter 4:

Table 2:	Semi-structured interview guide.....	80
----------	--------------------------------------	----

LIST OF FIGURES

Chapter 4:

Figure 1:	Themes and sub-themes.....	82
-----------	----------------------------	----

CHAPTER 1:

OVERVIEW OF THE STUDY

1.1 INTRODUCTION

Nurses are the primary caregivers in primary health care (PHC) settings in the South African health system. Beyond their caregiving job is clinical facilitation and mentoring of nursing students (Nachinab & Armstrong, 2024). Pharmacy and other health professions students are also placed in PHC settings in South Africa for learning and role taking, based on the level of their training (Mosiane et al., 2022; Van Staden, 2021). Pharmacy students are expected to cover 80 of their recommended 400 clinical placement hours at PHC settings for role-taking or learning, where they are to be mentored and supervised by the resident pharmacist. Unfortunately, due the critical shortage of pharmacists, nurses take on the clinical mentoring and supervision roles for pharmacy students in PHC settings.

Mentoring pharmacy students poses a challenge for nurses, as they have not received formal training to undertake this role. It is imperative, therefore, to explore and describe the experiences, challenges, and needs of professional nurses mentoring pharmacy students during their Work-Based Learning (WBL) in PHC settings in South Africa. The findings of this study will contribute to evidence-informed WBL policies and interventions addressing the needs of nurses practising in PHC settings in South Africa.

This study is organised into five chapters. The current chapter offers the introduction and background of the study, outlines the problem statement, states the aim and objectives, and explains the significance of the research.

1.2 BACKGROUND

Mentoring

The mentoring relationship was first found in *The Odyssey* in which the goddess Pallas Athena worked as a mentor and supported Odysseus' son without revealing her identity (Homer et al., 1997). Mentoring was introduced and is related to someone who facilitates a novice person's personal and career development (Capello & Sprunt, 2020). The Merriam-Webster's dictionary defines mentor as "a trusted counsellor or guide, tutor, coach." Mentors, are therefore, critical figures in the development of an individual (Byars-Winston & Dahlberg, 2019).

Mentoring, in general, refers to a formal or informal relationship between a mentor (experienced) and a mentee (usually younger and inexperienced) in which the mentor positively influences the mentee's attitude, skills, or behaviour to improve the mentee's competence (Williams-Nickelson, 2009). As such, mentoring enables the mentee to voice the challenges they experience with their mentor in any given situation (Diack et al., 2014). Furthermore, the goal of mentoring is to help the mentee develop the requisite skills, knowledge, and attitudes (Martin et al., 2011). While Jones et al. (2016) state that mentoring is a lifelong relationship between a highly experienced mentor and a novice mentee, they also recognise that mentoring can take place over a shorter duration, depending on its specific objectives. In a similar vein, Williams-Nickelson (2009) describes mentoring as a process of personal and professional development between mentor and mentee that unfolds within suitable timeframes.

Mentoring could be official or unofficial (Wu & Olagunju, 2024). Official mentoring, which takes the form of a structured institutional programme, occurs in different organisations, including academic institutions (McLaughlin 2010) and may be at different levels in educational institutions, for example, between young inexperienced academics and experienced academics, postgraduate students and their supervisors, senior students and junior students, and between health professions educators and health professions students - usually in clinical settings (Bryant-Shanklin & Brumage, 2011).

In Science, Technology, Engineering, and Mathematics (STEM), mentors are perceived as experienced experts who guide the next generation of experts to succeed in their fields (Byars-Winston & Dahlberg, 2019). Mentoring, therefore, is a valuable instrument for enhancing successful development of health care professionals, especially in clinical practice (Freedman, 2009). Similarly, in health sciences, mentoring is broadly seen as a valuable career aspect of upcoming health care professionals in health professions education institutions (Wu & Olagunju, 2024; Desselle et al., 2021). Mentoring occurs between expert and novice professionals, thus between health professionals and interns, and between health professionals and health professions' students (Leck & Wood, 2013), providing the opportunity for health professions' students to improve their knowledge, skills, and attitudes toward patient care (Burgess et al., 2018). According to Efstathiou et al. (2018), mentoring has become a widespread method of deriving knowledge and skills in diverse health professions. Other researchers state that mentoring in health sciences has an imperative mutual connection, as the mentee is not a clueless recipient of the mentor's guidance

and training but takes part in enhancing the relationship (Ssemata et al., 2017). Mentors, in the health sciences context, are considered leaders who function as facilitators for students' individual and career enhancement and can be influential in carrying over clear educational information needed to understand course content (Henry-Noel et al., 2019).

Mentoring success relies on nurturing inherent characteristics between mentor and mentee such as accessibility, willingness to listen, and other relational strengths (Straus et al., 2013). Mentoring has been a vital component in academic and healthcare settings, supporting personnel from various professions in advancing their careers by strengthening their skills, expanding their knowledge, refining their professional roles, and gaining new insights and learning that enhance overall professional satisfaction (Hill et al., 2022). Mentors are critical in helping a health sciences faculty balance the unique challenges of clinical service expectations and providing guidance for clinical scholarship (San Miguel, 2019)

1.2.2 Interprofessional mentoring

In the past, mentoring was done by a person, a preceptor, or a tutor from the same profession. Previously, mentors used to guide or support students who were in the same field or profession as the mentors themselves (O'Brien et al., 2019), but as collaboration advances, mentoring can be done by a qualified person with expertise in the field, not necessarily having the same professional qualifications as the mentees in the programme (Choi et al., 2021). Although mentoring in the health professions is typically provided by experienced clinicians or academic faculty, a mentor does not necessarily work in the same field as the mentee (Kline et al., 2022). Generally, students receive guidance from a mentor within their own profession as well as from mentors representing other professions, all of whom support the functioning of the interprofessional student team (Brewer & Flavell, 2020; Oosterom et al., 2019). Mentoring focuses on resolving problems and developing strategies to achieve goals (Mikkonen, 2020). Education for health care workers should be inclusive and intentionally structured to help people from different professional backgrounds learn how to collaborate effectively. Training programs need to purposefully design and integrate activities that build teamwork and interprofessional skills, so that students and professionals understand each other's roles, communicate clearly, and coordinate patient care smoothly (Deutschlander & Suter 2011).

The phenomenon in which health professionals mentor students from different disciplines is termed interprofessional mentoring (Lait et al., 2011; Marshall & Gordon, 2010). Interprofessional mentoring enables health professions students to develop their ability to work together with other professionals in a healthcare team and to gain the clinical skills and knowledge needed for a particular clinical placement period (Lait et al., 2011). The literature is replete on interprofessional education, but only a few studies were published on interprofessional mentoring. The paragraphs below present an overview of the work done in interprofessional mentoring.

Lait et al. (2011) interviewed 34 students and 52 clinical providers to evaluate an interprofessional mentoring programme they implemented to improve the interprofessional skills of health care providers and students in Canada. They reported that interprofessional mentoring is effective for students' experiences without disturbing their discipline objectives, and there is no need to change the curriculum. They also stated that interprofessional mentoring must be included during all interactions and not as a temporary involvement, as such, the institution must be an integral part of the interprofessional mentoring programme and not make it the mentors' responsibility. They also reported that interprofessional mentoring fosters relationships for students to be part of the real working environment. Regarding the format of interaction, they found that the clinical interaction does not have to be formal, and it can be about what the students learned and observed, and the providers may also not have the discipline knowledge context.

Wahab and colleagues (2016) carried out a review of the literature to investigate the relationship, the importance of different methods, the role of mentee and mentor, the benefits, gender, and culture of mentorship, together with interprofessional collaboration. They concluded that mentorship is crucial and beneficial for work satisfaction because it enables a good attitude between mentor, mentee, and other healthcare professionals. They also found that different mentoring approaches are available that can be utilised to remove mentoring obstacles and improve the needs of special groups.

In another study, conducted to examine the support and professional growth of qualifying health professionals, Heidari (2007) found that interprofessional mentoring promotes new students' personal and professional growth and helps the interprofessional mentors develop professionally. Similar to interprofessional education, interprofessional mentoring encourages the mentors and mentees to gain understanding of the responsibilities and contributions of other professionals in healthcare, which promotes the development of good interprofessional team building and

collaboration in patient care. Heidari (2007) further stated that interprofessional mentoring enables the participants to build confidence, team communication, and cope with stress due to work. It was recommended that interprofessional mentoring commence with clear instructions for mentors, mentees, and other health care workers. It is essential to ensure time for the training of mentors. Also, the backing of hospital management is crucial to the success of an interprofessional mentoring programme. Furthermore, the study reported that implementing diverse learning strategies for clinical practice, encouraging mentoring for all categories, and its purpose must have reasonable expectations. The management must take ownership of the process and time for the mentor and mentee interaction and interprofessional mentoring to be included in the hospital policy.

Jingting et al. (2016) performed a systematic review of mentoring programs at the undergraduate and postgraduate levels in medicine, surgery, nursing, and social work, to develop implementable guidelines for a joint mentoring programme in palliative care. They found 33 definitions of mentorship, mostly from medicine and nursing, and none that defined mentoring for social work. They further stated that to prevent uncertainties, the guidelines for effective mentoring should entail the following:

- Mentoring to be started, controlled, and cared for by management.
- The mentees choose their mentors, and the online and technological mentoring to be available for facilitation.
- The resources to be provided for Mentors and learning time to be allocated for the mentees.

Tay et al. (2020) conducted a systematic scoping review to examine what is lacking and done wrong in workplaces during interprofessional mentoring implementation in palliative care and how it could be improved to positively impact a multidisciplinary health team. They thematically synthesised 14 articles and identified four themes, including characterising, implementing, evaluating, and obstacles to interprofessional mentoring. They found that professional mentors of various disciplines and knowledge are needed for interprofessional mentoring to have value. They further stated that the proper guidelines be set for the mentees with different learning needs. The guidelines include intensive teaching, a work schedule, objectives, and a timetable (Tay et al., 2020).

Marshall and Gordon (2010) also conducted interviews with health professionals and students exploring the role of an interprofessional mentor. They asked the mentors about their support to the students from their own profession and the other professions while asking the students how they perceive mentoring and what can be done for effective mentoring. They found that the components in the model of interprofessional mentoring used in 2005, which are facilitation, supervision and assessment, was relevant for interprofessional mentoring and assisted the students to gain skills and knowledge. Again, it was found that the mentors use their patient care knowledge and experience to guide students from different professions.

Earlier, Marshall and Gordon (2005) conducted a study on interprofessional mentoring about “taking on the challenge to explore the idea of interprofessional mentorship and explore ways this role could be expanded to support interprofessional learning during practice placements”. They concluded by describing interprofessional mentorship as the times when an expert supervises, guides, and evaluates students in a clinical environment during interprofessional interaction. They further stated that interprofessional mentorship cannot exchange the original programme but can be recommended and be continued. They reported that institutions have to consider a mentor's roles as important and provide them with resources and support to carry on with the mentoring of inexperienced personnel. Furthermore, they stated that existing knowledge be incorporated into the developments, set common goals, and invest in making interprofessional mentoring universal rather than specific.

Banneheke et al. (2017) studied “the student preparedness characteristics important for clinical learning supervisors' perspectives from medicine, pharmacy, and nursing, to learn about the supervisors' views about the students' readiness in practical settings”. They also stated that:

- Interprofessional mentoring is important for better communication and teamwork.
- During the development of clinical placements, the mentors with different expertise should be considered for students' expectations, teaching, and learning outcomes, time, and assessments.
- Professional conduct should be regarded as avoiding student and mentor uncertainties and allocating time for induction.

In Deutschlander and Suter (2011), interprofessional mentoring is conceptualized as a “strategy” that motivated the students and staff of different entities to learn “with, from, and about each

other.” It was a programme that enhanced purposeful and mutual interactions between disciplines, intended to develop another. Everyone is an interprofessional mentor and forms a platform where they can teach and learn from each other to achieve their learning objectives and excellent patient outcomes. The students participated in their learning objectives and participated in activities that improved their skills with their counterparts. The mentors facilitated and evaluated the role-taking (Deutschlander & Suter, 2011).

Goldbach (2017) did a study on “improving employee engagement and retention through an Interprofessional Mentorship Model” and found that the organisation that used an interprofessional programme tends to have good emotional support and positive networking because the employees could be creative and grow in their work. It enabled a good working atmosphere, alleviating exhaustion, sick leave, and injuries. Leaders were developed formally or informally to be powerful and capable of serving as interprofessional mentors for the organisation. Team leaders who were instructors in the support groups were keen to learn from different disciplines and colleagues to foster the importance of interprofessional mentoring (Chatalalsingh and Reeves, 2014).

In the study by Rohatinsky and Ferguson (2013) about challenges and opportunities in mentorship in rural health care organisations, they concluded that interprofessional mentoring helped organisations employ and maintain the personnel because it improved team working spirit and cleared the uncertainties for novice personnel, rendering quality patient care results.

Finally, Idler et al. (2016) did a study on Mentoring Next Generation Care Providers, an interprofessional senior mentor programme that found that the programme offered students new thinking by learning in a different environment and unique experiences except for their usual field of study. They learnt interpersonal and communication skills, allowing the mentors to educate students and other health care personnel about health conditions and other behavioural patterns throughout life. Health professionals of different disciplines could not help with the exam scope. However, they could develop professionalism and a teamwork atmosphere that helped the students fit in and improved their clinical skills and confidence (Tan, 2016).

1.2.3 Pharmacy Education in South Africa

Pharmacy, as a professional field, plays a vital role in a country's healthcare system. It is a discipline that creates a distinctive bridge between the broad areas of basic sciences and pharmaceutical sciences. Through pharmacy, developments in modern science and technology

are translated into the tools and products used to prevent, diagnose, and treat disease (Koshman & Blais, 2011). According to the South African Pharmacy Council (SAPC), for a candidate to be admitted to a university to study pharmacy, he or she needs to obtain university entrance results of grade 12, with:

- A minimum Admission Points Score of 38, Minimum National Senior Certificate (NSC) requirements for degree entry must be met.
- At least level 3 (40-49%) score for home or first additional language.
- NSC achievement rating of at least 5 (60-69%) for Mathematics and Physical Sciences.
- Applicants with an admission point score between 35 and 37 may be required to write the Access Assessment before making admission decisions (SAPC, 2018a). This may vary from university to university and year after year.

The duration of a Bachelor of Pharmacy (BPharm) programme is four years and students are required to complete a minimum of 400 clinical hours. Students must register with SAPC at the beginning of the second year of the BPharm programme (SAPC, 2018b).

The BPharm programme at North-West University (NWU) is divided into five major subject areas: Pharmaceutics; Pharmacology, Pharmaceutical Chemistry; Clinical Pharmacy; and Pharmacy Practice. This may vary, slightly, from university to university. Also, the BPharm degree is registered under the national qualifications framework (NQF) level 8 (SAQA, 2012). After completing a BPharm degree and registering with the Pharmacy Council of South Africa, graduates can work in a community, institutional pharmacy, manufacturing and compounding of medicines; and in the higher education sector (SAQA, 2012b).

1.2.4 Clinical placement in the PHC Setting

National, statutory and regulatory institutional policies are aligned on the clinical placement of BPharm students - pharmacists in training must acquire work-based skills to make them work-ready upon graduation. The South African Qualification Authority (SAQA) requires universities to include WBL experiences in their BPharm curriculum to be accredited (SAQA, 2012a). Similarly, the SAPC (2017) policy requires pharmacy students to undergo a structured clinical placement, supervised by pharmacists or a delegated person, covering a minimum of 400 hours, and across the different levels of health care in South Africa. Further, the facilities that offer WBL experience to students must comply with the Council's guidelines (SAPC, 2018). The various

levels of care, according to the Department of Health classification of health care settings in South Africa, include primary healthcare (PHC) settings (clinics, community health centres, sub-district pharmacies), district hospitals, regional hospitals, tertiary hospitals, nursing homes, and public and private hospitals (Simelane, 2001). Primary healthcare settings are the most likely to encounter first into the health care system by patients, are one of the most important clinical training facilities required for the WBL for BPharm students.

Primary healthcare facilities treat minor ailments and refer difficult ones to District hospitals for comprehensive treatment (MKalipi, 2018). The World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) (2018) define PHC as 'a whole-of-society approach to health that aims to ensure the highest possible level of health and well-being and its equitable distribution by focussing on people's needs and as early as possible along the continuum from health promotion and disease prevention to treatment, rehabilitation, and palliative care, and as close as possible to people's everyday environment'.

Unfortunately, most PHC settings do not have qualified pharmacists in post (Bheekie & Bradley, 2016), leading to other health professionals, such as nurses, mentoring pharmacy students who need to complete their compulsory WBL in a PHC setting. The training of nurses does not include mentoring of pharmacy students, and there is no structured on-the-job training for nurses who mentor pharmacy students in clinical settings. Hence, it is expected that there will be some difficulties in the nurses providing such mentoring and the students who needed the support of a pharmacist.

1.3 PROBLEM STATEMENT

Work-based learning is a critical component of the training of pharmacy students in South Africa (SAPC, 2017). Therefore, the need for pharmacy students to experience WBL during their training cannot be overemphasised. According to the Good Pharmacy Education Standards (SAPC 2018) of the SAPC, BPharm students should be placed in clinical settings for 400 hours during their training. BPharm students at NWU undergo 455 hours of work-integrated learning, which is a little more than the 400 hours prescribed by the SAPC. Students complete 40 hours in retail pharmacies during the first year, 60 hours in the second year, and 120 hours in public health sector pharmacies, including PHC clinics during the third year. In the final year, they undertake 235 hours across community pharmacies, private hospitals, public hospitals, pharmacy industries, and symposium-

related activities. To ensure the success of WBL, pharmacy students need to be placed in different clinical settings and under the supervision of experienced pharmacists or other health care professionals, although some Council policy documents define a supervisor as a registered pharmacist, excluding other health professionals from serving in the delegated role (SAPC, 2017).

The PHC setting is one of the accredited facilities for the training and placement of pharmacy students. According to Bobbin et al. (2020) the pharmacist's role in the PHC setting is to render pharmaceutical services and pharmaceutical care to patients and provide support to students and post-basic assistants. However, because of the shortage of pharmacists in the PHC setting (Bheekie & Bradley, 2016), it is impossible for registered pharmacy personnel to supervise and mentor BPharm students who must have PHC setting experience as part of their WBL (Naudé, 2016). From the researcher's observation, out of the 42 primary healthcare units in which BPharm students are placed, only one has a pharmacy assistant, while the others only have pharmacists visiting once or twice a month. However, in some instances, the pharmacist accompanies the students on their first day of placement and hands them over to the professional nurses on duty for direct mentoring and supervision. The pharmacist then supervises the students indirectly from the sub-district pharmacy.

However, professional nurses are only trained and obliged to mentor and supervise nursing students in health facilities (National Department of Health, 2020). In addition to their roles in clinical nursing education, challenges such as shortages of personnel and insufficient resources culminate in heavy clinical and administrative workloads (Lindgren & Athlin, 2010, Attrill et al., 2016; Bobbins et al., 2020), which interfere with their ability to mentor or interact with other health professions' students. Seemingly, nurses in PHC are not provided any form of on-the-job training regarding mentoring students from other professions, nor are there any future plans for training them for the supervision or mentoring of pharmacy students. Furthermore, recent studies (De Swardt et al., 2017; De Swardt, 2019; Mathe et al., 2021) conducted in South Africa have shown many weaknesses in nurses who supervise and mentor nursing students. These weaknesses are even expected to be profound when nurses mentor and supervise other health professions' students.

Although interprofessional mentoring benefits students and the professionals (Banneheke et al., 2017; Heidari, 2007; Marshall & Gordon, 2005, 2010), the planning and implementation of such programmes must be evidence-based and well-structured. Unfortunately, this is not the case in PHC settings. Moreover, little is known about the experiences, challenges, and needs of

professional nurses mentoring pharmacy students in PHC settings. Therefore, this study aims to explore and describe the experiences, challenges, and needs of professional nurses who mentor pharmacy students in PHC settings in the North West province of South Africa to provide empirical evidence for the planning and implementation of interprofessional mentoring in the province.

1.4 PURPOSE OF THE STUDY

The purpose of this study is to explore and describe the experiences, challenges, and needs of professional nurses mentoring pharmacy students during their WBL visits in PHC settings in the North West province of South Africa.

1.5 OBJECTIVES, RESEARCH QUESTION AND SUB-QUESTIONS

1.5.1 Research question and sub-questions

The research question explored in this study was, ‘What are the experiences, challenges, and needs of nurses mentoring pharmacy students during their WBL visits in primary health care settings in the North West province of South Africa?’

Three sub-questions that were posed in this study are:

- i. What are the experiences of professional nurses mentoring pharmacy students in primary health care settings in the North West province of South Africa?
- ii. What challenges do professional nurses encounter in mentoring pharmacy students in the North West province?
- iii. What do professional nurses mentoring pharmacy students in primary health care settings in the North West province of South Africa need to enable them to provide quality mentoring?

1.5.2 Research objectives

The following research objectives were defined:

- i. To explore and describe the experiences of professional nurses mentoring pharmacy students in primary health care settings in the North West province of South Africa.
- ii. To explore and describe the challenges that professional nurses encounter in mentoring pharmacy students in PHC settings in the North West province,

- iii. To explore and describe the needs of professional nurses mentoring pharmacy students in primary healthcare settings in the North West province of South Africa.

1.6 ETHICAL CONSIDERATIONS

Conducted in fulfilment of a formal degree, this study requires some statutory processes to be followed. In the faculty of Health Sciences of the NWU, all postgraduate research proposals must go through small group review, scientific review, internal ethics review, external ethics (depending on the setting of the study) and approval from the study settings.

In this study, the researcher submitted the proposal to three experts within the field of study for critical review, and the comments and suggestions were incorporated into the proposal. The finalised proposal was then submitted to the Health Professions Education (HPed) Scientific Committee for review. The researcher received scientific approval from the HPEd Scientific Committee and then submitted the proposal to the North-West University Health Research Ethics Committee (NWU-HREC) for review.

A conditional approval was granted on condition that approval was received from the North West Department of Health (NWDoH) and the Dr. Kenneth Kaunda District Committees before the final approval. An application was made to the North West Provincial Department of Health Ethics Committee for review.

Approval from the North West Provincial Department of Health was submitted with the proposal to the Dr. Kenneth Kaunda District for review. The approval from the Dr. Kenneth Kaunda District and the North West Provincial Department of Health was then submitted to the NWU-HREC for final approval.

After final approval, all the ethics approval letters and the advertisement were sent to the operational managers to ask their permission to conduct the study at their facilities.

During the study, the researcher and an independent person signed the informed consent with the participants and assured them of confidentiality and anonymity in the study. The participants were assured that their identities would not be linked to their data and that the information would be used solely for the purposes of this study. Coding and bracketing were used in this study to ensure the researchers' biases were checked.

A year into the ethics approval, an active monitoring was initiated by the HREC on this study. The findings were very satisfactory

1.7 SIGNIFICANCE OF THE STUDY

Interprofessional mentoring among health professions during student clinical placements is essential equipping students to smoothly enter the job market once they graduate.

This study sought to foster a mutual understanding between the university and stakeholders to better equip students with resources that help link theoretical knowledge with practical experience in clinical settings.

The study aimed to encourage professional nurses to share their experiences, challenges, and needs, thus informing the university about potential areas of awareness. The findings may benefit nurses by addressing uncertainties and expectations, thereby enhancing their ability to mentor students effectively. The findings could aid the university in better preparing for clinical visits, benefiting the students significantly. Recommendations may also lead to further studies regarding interprofessional mentoring experiences in various clinical settings. In terms of educational implications, the study's findings could help identify issues in clinical placements and mentoring, facilitating collaboration and the creation of effective guidelines for implementing a successful interprofessional mentoring programme.

1.8 STRUCTURE OF THE DISSERTATION

The study is structured as follows:

Chapter 1 provides an overview of the study. It introduces the background, followed by the problem statement, purpose, research questions, research objectives, ethical considerations, and the significance of the study. The structure of the study and a summary of the chapter are also presented.

Chapter 2 outlines the research methodology. The study adopted a qualitative descriptive research design, situated within the interpretivist paradigm. The research strategy of inquiry, the quality and rigour of the research, ethical considerations, study limitations, and the dissemination of the findings are discussed.

Chapter 3 provides a review of the literature relevant to the topic of this study. It includes a traditional review of interprofessional mentoring in PHC settings, as well as the experiences, challenges, and needs of professional nurses who mentored pharmacy students.

Chapter 4 consists of an article titled: Interprofessional Mentoring of Pharmacy Students in Primary Healthcare Settings in South Africa. This article was submitted to, and published in, the Journal of International Medical Education. It addresses the objectives of the study and was prepared in accordance with the journal's author guidelines. The references are listed at the end of the chapter.

Chapter 5 presents the summary; the conclusions drawn from both the literature review and the study; and the contributions, limitations, and recommendations.

1.9 SUMMARY

In this chapter, an introduction and background to the study were given. The problem statement, purpose, the objectives, significance of the study, the ethical considerations, and the structure of the study were presented. Chapter 2 addresses the research design and methodology.

1.10 REFERENCES

- Attrill, S., Lincoln, M., & McAllister, S. (2016). Supervising international students in clinical placements: Perceptions of experiences and factors influencing competency development. *BMC Medical Education*, 16(1), 180. <https://doi.org/10.1186/s12909-016-0702-5>
- Banneheke, H., Nadarajah, V. D., Ramamurthy, S., Sumera, A., Ravindranath, S., Jeevaratnam, K., Efendie, B., Chellamuthu, L., Krishnappa, P., & Peterson, R. (2017). Student preparedness characteristics important for clinical learning: Perspectives of supervisors from medicine, pharmacy and nursing. *BMC Medical Education*, 17(1), 130. <https://doi.org/10.1186/s12909-017-0966-4>
- Bheekie, A., & Bradley, H. (2016). Re-engineering of South Africa's primary health care system: Where is the pharmacist? *South African Family Practice*, 58(6), 242–248. <https://doi.org/10.1080/20786190.2016.1186365>

- Bobbins, A. C., Burton, S., & Fogarty, T. L. (2020). Different models of pharmaceutical services and care in primary healthcare clinics in the Eastern Cape, South Africa: Challenges and opportunities for pharmacy practice. *African Journal of Primary Health Care and Family Medicine*, 12(1), 1–11. <https://doi.org/10.4102/PHCFM.V12I1.2323>
- Brewer, M. L., & Flavell, H. L. (2020). Teamwork, collaboration and networking: Self-reported behavioural change following pre-licensure interprofessional clinical learning. *Journal of Interprofessional Care*, 34(2), 184–192. <https://doi.org/10.1080/13561820.2019.1645649>
- Bryant-Shanklin, M., & Brumage, N. W. (2011). Collaborative responsive education mentoring: Mentoring for professional development In higher education. *Florida Journal of Educational Administration & Policy*, 5(1), 43–52.
- Burgess, A., van Diggele, C., & Mellis, C. (2018). Mentorship in the health professions: A review. *Clinical Teacher*, 15(3), 197–202. <https://doi.org/10.1111/tct.12756>
- Byars-Winston, A., & Dahlberg, M. L. (2019). *The Science of Effective Mentorship in STEMM. Consensus Study Report*. ERIC. <https://eric.ed.gov/?id=ED600039>
- Capello, M. A., & Sprunt, E. (2020). *Mentoring and Sponsoring: Keys to Success*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-59433-6>
- Chatalalsingh, C., & Reeves, S. (2014). Leading team learning: What makes interprofessional teams learn to work well. *Journal of Interprofessional Care*, 28(6), 513–518. <https://doi.org/10.3109/13561820.2014.900001>
- Choi, J. A., Kim, O., Park, S., Lim, H., & Kim, J.-H. (2021). The Effectiveness of Peer Learning in Undergraduate Nursing Students: A Meta-Analysis. *Clinical Simulation in Nursing*, 50, 92–101. <https://doi.org/10.1016/j.ecns.2020.09.002>
- De Swardt, H. C. (2019). The clinical environment: A facilitator of professional socialisation. *Health SA Gesondheid*, 24. <https://doi.org/10.4102/hsag.v24i0.1188>

- De Swardt, H. C., van Rensburg, G. H., & Oosthuizen, M. J. (2017). Supporting students in professional socialisation: Guidelines for professional nurses and educators. *International Journal of Africa Nursing Sciences*, 6, 1–7. <https://doi.org/10.1016/j.ijans.2016.11.002>
- Deutschlander, S., & Suter, E. (2011). *Interprofessional mentoring guide*. (No. November; pp. 1–26). Alberta Health Services.
<http://www.albertahealthservices.ca/careers/docs/WhereDoYouFit/wduf-stu-sp-ip-mentoring-guide.pdf>
- Diack, L., Gibson, K., Munro, K., & Strath, A. (2014). Experiences of Supervision at Practice Placement Sites. *Education Research International*, 2014, 1–6.
<https://doi.org/10.1155/2014/764519>
- Efstathiou, J. A., Drumm, M. R., Paly, J. P., Lawton, D. M., O'Neill, R. M., Niemierko, A., Leffert, L. R., Loeffler, J. S., & Shih, H. A. (2018). Long-term impact of a faculty mentoring program in academic medicine. *PLoS ONE*, 13(11), 1–12.
<https://doi.org/10.1371/journal.pone.0207634>
- Freedman, S. (2009). Effective Mentoring. *IFLA Journal*, 35(2), 171–182.
<https://doi.org/10.1177/0340035209105672>
- Goldbach, M. (2017). Improving employee engagement and retention through an Interprofessional Mentorship Model. *Scholar Archieve*, 1–40.
- Heidari, F. (2007). *Interprofessional mentoring: Exploration of support and professional development for newly qualified staff*. June, 265. <http://0-search.ebscohost.com/brum.beds.ac.uk/login.aspx?direct=true&db=ddu&AN=63B7820105AEA454&site=ehost-live&scope=site>
- Henry-Noel, N., Bishop, M., Gwede, C. K., Petkova, E., & Szumacher, E. (2019). Mentorship in Medicine and Other Health Professions. *Journal of Cancer Education*, 34(4), 629–637.
<https://doi.org/10.1007/s13187-018-1360-6>

- Hill, S. E. M., Ward, W. L., Seay, A., & Buzenski, J. (2022). The Nature and Evolution of the Mentoring Relationship in Academic Health Centers. *Journal of Clinical Psychology in Medical Settings*, 29(3), 557–569. <https://doi.org/10.1007/s10880-022-09893-6>
- Homer, Fagles, R., & Knox, B. (1997). *The odyssey*. Penguin Books. <https://stacollege.org/wp-content/uploads/2024/04/Odyssey-Robert-Fagles-Translation-Numbered-1.pdf>
- Idler, B. E., Goldberg, E., Stewart, E., Dillard, R., Wilson, J., Patient-, H., & Care, C. (2016). *Mentoring the Next Generation of Health Care Providers: An Interprofessional Senior Mentor Program Background of the Senior Mentor Program*. June, 1–5.
- Jingting, W., Wahab, M. T., Bin Mohamad Ikbali, M. F., Wesley, L. T. W., Kanesvaran, R., & Radha Krishna, L. K. (2016). Toward an Interprofessional Mentoring Program in Palliative Care—A Review of Undergraduate and Postgraduate Mentoring in Medicine, Nursing, Surgery and Social Work. *Journal of Palliative Care & Medicine*, 06(06), 1–15. <https://doi.org/10.4172/2165-7386.1000292>
- Jones, R. J., Woods, S. A., & Guillaume, Y. R. F. (2016). The effectiveness of workplace coaching: A meta-analysis of learning and performance outcomes from coaching. *Journal of Occupational and Organizational Psychology*, 89, 249–277. <https://doi.org/10.1111/joop.12119>
- Kline, C. C., Riganti, P., Moller-Hansen, A., Godolphin, W., & Towle, A. (2022). Patients benefit from mentoring students in an interprofessional health mentors program: A contextual-developmental analysis. *Medical Teacher*, 44(7), 730–736. <https://doi.org/10.1080/0142159X.2021.2020737>
- Koshman, S. L., & Blais, J. (2011). What is Pharmacy Research? *The Canadian Journal of Hospital Pharmacy*, 64(2), 154. <https://doi.org/10.4212/CJHP.V64I2.1002>

- Lait, J., Suter, E., Arthur, N., & Deutschlander, S. (2011). Interprofessional mentoring: Enhancing students' clinical learning. *Nurse Education in Practice*, 11(3), 211–215.
<https://doi.org/10.1016/j.nepr.2010.10.005>
- Leck, D. J., & Wood, M. P. (2013). Forming trust in E-mentoring: A research Agenda. *American Journal of Industrial and Business Management*, 03(01), 101–109.
<https://doi.org/10.4236/ajibm.2013.31013>
- Lindgren, B., & Athlin, E. (2010). Nurse lecturers' perceptions of what baccalaureate nursing students could gain from clinical group supervision. *Nurse Education Today*, 30(4), 360–364. <https://doi.org/10.1016/j.nedt.2009.09.008>
- Marshall, M., & Gordon, F. (2005). Interprofessional Mentorship: Taking on the Challenge. *Journal of Integrated Care*, 13(2), 38–43. <https://doi.org/10.1108/14769018200500016>
- Marshall, M., & Gordon, F. (2010). Exploring the role of the interprofessional mentor. *Journal of Interprofessional Care*, 24(4), 362–374. <https://doi.org/10.3109/13561820903275001>
- Martin, A., Rees, M., & Edwards, M. (2011). *Work Integrated Learning A Template for Good Practice: Supervisors' Reflections*. www.akoaootearoa.ac.nz/wil
- Mathe, T. L., Downing, C., & Kearns, I. (2021). South African student nurses' experiences of professional nurses' role-modelling of caring. *Journal of Professional Nursing*, 37(1), 5–11. <https://doi.org/10.1016/j.profnurs.2020.10.010>
- McLaughlin, C. (2010). Mentoring: What Is It? How Do We Do It and How Do We Get More Of It? *Health Services Research*, 45(3), 871–884. <https://doi.org/10.1111/j.1475-6773.2010.01090.x>
- Mikkonen, K., Tomietto, M., Cicolini, G., Kaucic, B. M., Filej, B., Riklikiene, O., Juskauskienė, E., Vizcaya-Moreno, F., Pérez-Cañaveras, R. M., De Raeve, P., & Kääriäinen, M. (2020). Development and testing of an evidence-based model of mentoring nursing students in

- clinical practice. *Nurse Education Today*, 85, 104272.
<https://doi.org/10.1016/j.nedt.2019.104272>
- Mkalipi, T. D. (2018). *A theoretical study on primary healthcare services within a South African context*. 1–87.
- National Department of Health. (2020). *NURSING ACT, 2005 (ACT No. 33 OF 2005)* (No. 43305; pp. 3–21). www.gpwonline.co.za
- Naudé, A. (2016). *The Opinions on and Use of Simulation in Undergraduate Pharmacy Education At South African Universities* (Issue January) [PhD Thesis].
- O'Brien, A. (Tony), McNeil, K., & Dawson, A. (2019). The student experience of clinical supervision across health disciplines – Perspectives and remedies to enhance clinical placement. *Nurse Education in Practice*, 34, 48–55.
<https://doi.org/10.1016/j.nepr.2018.11.006>
- Oosterom, N., Floren, L. C., Ten Cate, O., & Westerveld, H. E. (2019). A review of interprofessional training wards: Enhancing student learning and patient outcomes. *Medical Teacher*, 41(5), 547–554. <https://doi.org/10.1080/0142159X.2018.1503410>
- Rohatinsky, N., & Ferguson, L. (2013). Mentorship in Rural Healthcare Organizations: Challenges and Opportunities. *Online Journal of Rural Nursing and Health Care*, 13(2), 149–172. <https://doi.org/10.14574/ojrnhc.v13i2.273>
- San Miguel, S. F. (2019). Challenges and Issues Surrounding Promotion and Tenure of Faculty with Clinical Service Responsibilities in Veterinary Medicine. *Journal of Veterinary Medical Education*, 46(2), 163–171. <https://doi.org/10.3138/jvme.0717-090r1>
- SAPC. (2017). *Good Pharmacy Education Standards: Higher Education and Training*. 41256, 172–208. https://www.gov.za/sites/default/files/gcis_document/201711/41256bn183.pdf
- SAPC. (2018a). *Bachelor Of Pharmacy—SA Study*.

- SAPC. (2018b). *The South African Pharmacy Council hereby publishes for implementation the 2018 Competency South African Pharmacy Council* (No. 10505; Vol. 33, pp. 1–46).
- SAQA. (2012). *Registered qualification: Bachelor of Pharmacy*.
- Simelane, N. (2001). *Definitions of Health Facilities*. Kwazulu- Natal Department of Health,.
<https://www2.kznhealth.gov.za/definitions.htm>
- Ssemata, A. S., Gladding, S., John, C. C., & Kiguli, S. (2017). Developing mentorship in a resource-limited context: A qualitative research study of the experiences and perceptions of the makerere university student and faculty mentorship programme. *BMC Medical Education*, 17(1), 123. <https://doi.org/10.1186/s12909-017-0962-8>
- Straus, S. E., Johnson, M. O., Marquez, C., & Feldman, M. D. (2013). Characteristics of Successful and Failed Mentoring Relationships: A Qualitative Study Across Two Academic Health Centers. *Academic Medicine*, 88(1), 82–89.
<https://doi.org/10.1097/ACM.0b013e31827647a0>
- Tan, T. S. E. (2016). Interprofessional mentorship for final-year medical students. *The Clinical Teacher*, 13(2), 166–166. <https://doi.org/10.1111/tct.12452>
- Tay, K. T., Tan, X. H., Tan, L. H. E., Vythilingam, D., Chin, A. M. C., Loh, V., Toh, Y. P., & Krishna, L. K. R. (2021). A systematic scoping review and thematic analysis of interprofessional mentoring in medicine from 2000 to 2019. *Journal of Interprofessional Care*, 35(6), 927–939. <https://doi.org/10.1080/13561820.2020.1818700>
- Ti-enkawol Nachinab, G., & Armstrong, S. J. (2024). The development of a framework for clinical education programme of undergraduate nursing students in Ghana. *BMC Nursing*, 23(1), 263. <https://doi.org/10.1186/s12912-024-01915-y>
- Van Staden, D. (2021). Investing in health professions education: A national development imperative for South Africa. *South African Journal of Higher Education*, 35(1), 231–245.
<https://doi.org/10.20853/35-1-2916>

- Wahab, T., Muhammad, Bin Mohamad Ikbāl, M. F., Jingting, W., Wesley, L. T. W., Kanesvaran, R., & Radha Krishna, L. K. (2016). Creating Effective Interprofessional Mentoring Relationships in Palliative Care- Lessons from Medicine, Nursing, Surgery and Social Work. *Journal of Palliative Care & Medicine*, 06(06).
<https://doi.org/10.4172/2165-7386.1000290>
- Williams-Nickelson, C. (2009). Mentoring Women Graduate Students: A Model for Professional Psychology. *Professional Psychology: Research and Practice*, 40(3), 284–291.
<https://doi.org/10.1037/a0012450>
- World Health Organization [WHO], & [UNICEF], T. U. N. C. F. (2018). A vision for Primary health care in the 21st Century. *World Health Organisation*, 1–64.
http://www.who.int/docs/default-source/primary-health/vision.pdf?sfvrsn=c3119034_2
- Wu, J., & Olagunju, A. T. (2024). Mentorship in medical education: Reflections on the importance of both unofficial and official mentorship programs. *BMC Medical Education*, 24(1), 1233. <https://doi.org/10.1186/s12909-024-06248-7>

CHAPTER 2: RESEARCH DESIGN AND METHODOLOGY

2.1 INTRODUCTION

This chapter presents the research paradigm, research design, quality and rigour of research, ethical considerations, and the limitations of the study.

2.2 RESEARCH PARADIGM

This study was underpinned by the interpretivist paradigm, which “interprets context, world, or phenomena from the perspective of the individuals who have experienced the context, phenomenon or the world” (Cohen et al., 2017). Interpretivism assumes that phenomena have multiple realities, which can only be understood through the interaction between the researcher and the participants (Kivunja & Kuyini, 2017). Reality in this paradigm is the meaning and interpretation participants give to their context, experiences or phenomena, implying that qualitative methods are essential for studies conducted within the interpretivist paradigm (Kivunja & Kuyini, 2017; Yilmaz, 2013).

This study focused on exploring and describing professional nurses’ experiences of mentoring pharmacy students during their clinical placements, as well as understanding the challenges that they encountered and their needs in implementing the interprofessional mentoring programme correctly. Describing the experiences, challenges and needs of the professional nurses who live the experiences requires interacting with and understanding the concepts from their perspectives as per the interpretivist paradigm selected.

2.3 RESEARCH STRATEGY OF INQUIRY

This section covers the research design, study context, population and sampling, recruitment, data collection and data analysis.

The research methods included in the design of this study included a traditional literature review and a qualitative descriptive study (Mmoloke et al., 2025b). The details of the methods are presented below.

2.3.1 Research design

A research design is a framework that logically integrates all parts of a study to meet the research objectives of the study (Lambert & Lambert, 2013). A qualitative descriptive research design was employed to explore and describe the experiences of professional nurses mentoring pharmacy students in PHC settings. A qualitative descriptive study enables a comprehensive exploration and the provision of an explicit account of the phenomenon under study (Kim et al., 2017). This study (Mmoloke et al., 2025b) sought to describe the experiences, challenges, and needs of professional nurses mentoring pharmacy students in PHC settings, hence a qualitative descriptive study design was chosen.

2.3.2 Study context

The study was conducted in PHC settings within the North West province in South Africa. These facilities serve as the first point of contact for community members seeking health services.

As part of their BPharm curriculum, pharmacy students are required to complete WBL placements in PHC facilities to gain clinical experience. During these placements, students are expected to engage in a range of activities relevant to pharmaceutical care under supervision.

Due to a shortage of pharmacists in many PHC settings, professional nurses often assume the role of supervising and mentoring pharmacy students. Their responsibilities include providing mentoring and supporting learning through activities such as ordering medication, packaging, health education, and conducting diagnostic tests.

This study focused on the experiences of professional nurses who have mentored pharmacy students during their WBL placements. Their perspectives offer valuable insights into the implementation of interprofessional mentoring in contexts where pharmacists are not consistently available.

2.3.3 Population, Sampling and Sample

A population is defined as the entire group of persons or objects that are of interest to the researcher (Brink et al., 2018). The target population was professional nurses working in PHC settings in the North West province. About 100 professional nurses work in PHC settings where the NWU

BPharm students are placed for their WBL. Of those, approximately 50 are involved in mentoring the students. The 50 professional nurses constituted the population for this study.

Purposive sampling occurs if the researcher “intentionally selects participants who have experienced the central phenomenon or key concept being explored in the study” (Creswell & Clark, 2018). In this study, professional nurses who mentored pharmacy students during clinical placement visits in PHC settings in the North West province of South Africa were purposively selected as participants.

Minimum sample size recommendations for qualitative studies range from six to fifteen (Vasileiou et al., 2018). Due to the small number of professional nurses who mentored pharmacy students during WBL clinical placement in PHC settings in the North West province, an all-inclusive purposive sample was used for the study. Only the participants who did not meet the inclusion criteria were excluded from participating in the study. The researcher ensured enough participants were interviewed and terminated the inclusion of participants when data saturation was reached. Saturation refers to the point where major themes were identified, and no new information is being added to the list of themes or to the detail of existing themes (Brink et al., 2018).

There was no agreed-upon maximum sample size in this study, although some studies had attempted to establish a minimum sample size (Vasileiou et al., 2018). Sampling continued to the point of saturation.

2.3.4 Inclusion and Exclusion Criteria

2.3.4.1 Inclusion criteria:

- Only nurses in the professional nursing category were included in this study.
- Only professional nurses who mentored pharmacy students during the clinical placement programme of the School of Pharmacy at the NWU were included.
- Professional nurses with at least one year of clinical mentoring experience of pharmacy students were included in this study.

2.3.4.2 Exclusion criteria:

- The professional nurses who met the criteria but were appointed after the pharmacy students' clinical placement visits ceased were excluded.

- Enrolled and auxiliary nurses were excluded because even if they were present and worked with the students during clinical placement, they did not mentor them.

2.3.5 Recruitment and written informed consent

A formal letter (Addendum F) was sent to the operational managers of the facilities to inform them about the research study. The professional nurses received an information leaflet (Addendum G) at their staff meetings after approval from the NWU-HREC and the NWDoH.

2.3.5.1 Advocating the intended research

After receiving ethical clearance from NWU-HREC (Addendum I) and the NWDoH (Addendum J), the researcher sought an official meeting with the gatekeepers (operational managers) of the PHC settings to explain the study and deliver official letters (Addendum F) informing them of the intended study and its purpose. The information leaflet (Addendum G) about the research was attached to the letter. Operational managers were encouraged to post the information leaflet on their notice boards and discuss it during the staff meetings. The information leaflet included the contact details of the independent person, whom the interested participants were asked to contact and to go through the consent process. The independent person was responsible for the recruitment and signing of informed consent forms (Addendum D) with the participants. The researcher's contact information was also included so that interested participants could contact her to seek any clarifications on the study. The independent person ensured that the participants received information on the study before signing the informed consent form.

2.3.5.2 Obtaining informed consent

Leedy and Ormrod (2016) refer to informed consent as informing participants about the nature of a research study and obtaining written permission for participation. Participation in this study was voluntary, and the informed consent form was written in English, the language of proficiency of professional nurses. There was no undue influence and anyone who wished to withdraw was free to do so. During the interview, confidentiality was maintained, and consent was obtained to take notes and for audio recordings.

The independent person sent the informed consent form to the professional nurses interested in the study by email. They were asked to sign and email it to the independent person - all the participants can read and write. Upon receipt of the signed informed consent, the independent person ensured

the researcher read and countersigned the informed consent in her presence before giving the participant's information to the researcher for planning of the data collection.

2.3.6 Data collection

2.3.6.1 Data collection instrument

A researcher-developed and pretested semi-structured interview guide (Addendum C) was used to collect data on the experiences of nurses mentoring pharmacy students in PHC settings (Adams, 2015; Boyce & Neale, 2006). The tool was developed to elicit responses to meet the objectives of the study. The interview guide was sent to five researchers in the field of study for review. The inputs of these persons were considered for the redesign of the instrument and were pretested before the study interviews.

The pre-test ensured that the interview questions were clear, concise, and without errors and that the participants understood the intended meaning of the questions. Professional nurses from the school of nursing were asked to pre-test the interview questions because they accompanied students during clinical visits and were familiar with PHC settings. Comments from the participants were used to finalise the tool for final ethics review and approval.

2.3.6.2 The interview process

The interviews took place in the PHC settings and were carried out by the researcher at the time scheduled by the participants.

On the day of the interview, the researcher ensured all COVID-19 protocols, especially hand hygiene and social distancing, were adhered to. The researcher met the participants individually in the PHC facilities and introduced herself and the purpose of the interview, asked individual participants if they had questions, set the rules (see rules of engagement), and also told them that refreshments would be served after the session. The researcher then asked permission to record the interviews with two audio recorders and to take notes. Each participant was reminded about confidentiality and that she or he could freely withdraw from the interview as she or he wished. Anonymity and privacy were assured about the collected data so that no names would be used or mentioned and a password will be generated when stored and analysed. Individual participants could contact the researcher, the study supervisor or the ethics committee with the numbers provided in the invitation letter if he or she had questions or concerns.

Participants were reminded of the right to freely withdraw during the interview, and they were given ample time to respond to the questions. They had the chance to ask for clarity if they did not understand the questions. The interviews took between 30-45 minutes per participant.

The researcher adhered to the following rules of engagement:

- Participation consent forms were reviewed and confirmed as correct and signed.
- Duration: Approximately 30-45 minutes.
- Participation is voluntary and is based on informed consent.
- The researcher will ensure that the participants have a chance to talk.
- The researcher will be sensitive to any signs of distress.
- The researcher and the participant will have to respect each other's privacy
- The participant will be reminded that there are no right or wrong answers, only differing points of view.
- The researcher will not oppose the participant's views and will listen respectfully.
- Participant will be asked to turn off their phones (If you cannot and if you must respond to a call, please do so as quietly as possible and rejoin as quickly as you can).

2.3.7 Data analysis

Thematic analysis was chosen for its flexibility and ability to provide a rich, detailed account of qualitative data, particularly suited to exploring the experiences of professional nurses in mentoring pharmacy students. The six stages of thematic analysis, as developed by Braun & Clarke (2012), were employed to analyse data in this study. These are: familiarising yourself with your data; generating initial codes; searching for themes; reviewing themes; defining and naming themes; producing the report (Braun & Clarke, 2012).

2.3.7.1 Phase 1: Familiarising yourself with your data

The researcher immersed herself in the raw data by reading transcripts and studying notes to get a general idea about the participants' views and experiences. The researcher and the co-coder listened to the recordings and read the transcripts multiple times to reinforce their understanding of participants' perspectives.

2.3.7.2 Phase 2: Generating initial codes

The researcher identified the key issues and concepts based on the research questions and objectives of the study for detailed examination and referencing of the data. The researcher and the co-coder coded three transcripts independently. A meeting between the researcher, the co-coder and the co-supervisor was organised to review and compare the codes generated to reach consensus on the coding system. The researcher then coded all the scripts using the coding system agreed upon.

2.3.7.3 Phase 3: Searching for themes

The researcher annotated the transcripts using the index numeric codes with the aid of ATLAS.ti. Codes were then categorised into sub-themes, supported by verbatim quotes from the participants. Related sub-themes were constituted into themes. All the themes originated from the responses of the participants, which produced the results of the study.

2.3.7.4 Phase 4: Reviewing themes

The researcher had a meeting with the supervisors to review the themes for appropriateness and methodological rigour.

2.3.7.5 Phase 5: Defining and naming themes

Each theme and sub-theme was carefully defined, named, and described in alignment with the research objectives and participant narratives.

2.3.7.6 Phase 6: Producing the report

These themes were subsequently used to structure the findings section of the journal article and dissertation, ensuring alignment between data and reporting. The researcher wrote a journal article for publication (Mmoloke et al., 2025b) and the dissertation in fulfilment of the degree of Master of Health Sciences in Health Professions Education.

2.4 QUALITY AND RIGOUR OF RESEARCH

Trustworthiness is the adoption of techniques to guarantee the accuracy of the findings in a qualitative study (Brink et al., 2018). Central to ensuring the trustworthiness of qualitative studies are credibility, confirmability, dependability, and transferability (Polit & Beck, 2014).

Credibility refers to the congruity of findings to reality (Lincoln & Guba, 1985). To ensure the credibility of the literature review, the researcher followed all the steps of the research process. The instruments used were pretested before use. Member checking was done by sending the recording and the transcripts to four participants to verify the correctness. During the data analysis process, the researcher and the supervisor, doubling as the co-coder coded three transcripts independently, compared codes, reached consensus, and refined the codes to be applied by the researcher in coding all transcripts. Moreover, the transcripts and codes were submitted to the independent coder of the study to verify their appropriateness.

Confirmability ensures that the study's findings are free from the researcher's personal biases and prejudices (Brink et al., 2018). The researcher asked to record the individual semi-structured interviews, and the data were transcribed verbatim and handed to the co-coder for coding. The final themes were identified after consensus was reached.

Dependability ensures arriving at almost the same findings if the methodology, techniques, and participants were replicated in a different setting (Brink et al., 2018). The researcher planned the study according to published and accepted research methods commonly used in qualitative research studies. The researcher adhered to the research protocol and maintained an audit trail of the entire research process. Any departure or modifications of the research protocol are documented in this dissertation and were reported in the monitoring reports for the NWU-HREC.

Transferability is the possibility of applying the research results to a different setting and subjects (Lincoln & Guba, 1985). Purposive sampling helps to enhance transferability by selecting participants according to their knowledge regarding the research problem (Brink et al., 2018). The researcher purposively recruited participants for this study from the PHC facilities in the North-West province. Therefore, the researcher ensured that the transferability of the findings may be applicable in South Africa.

2.5 ETHICAL CONSIDERATIONS

Ethical considerations are discussed below.

2.5.1 Ethical Approval

Approval from the following divisions was obtained before the data-collection process commenced:

- Approval to conduct the study was obtained from the Health Professions Education (HPEd) Scientific Committee (Addendum B).
- Ethical approval was obtained from North-West University Human Research Ethics Committee (NWU-HREC) (Addendum I).
- Permission was obtained from the North West Province Department of Health Research Committee (Addendum J).
- Goodwill permission was obtained from Dr Kenneth Kaunda District Department of Health Research Committee (Addendum K).

2.5.2 The role of the Researcher (Student), Principal Investigator (Supervisor) and Co-Investigator (Co-supervisor)

The role of the researcher included conducting the literature review, preparing the protocol and obtaining ethical clearance, ensuring informed consent was obtained from participants, conducting semi-structured interviews and writing an article and the dissertation. The researcher designed the search strategy and conducted the search for the literature review; then the researcher and supervisor evaluated and validated the retrieved articles with the assistance of the co-supervisor; and finally the researcher extracted the relevant literature and wrote up the review.

The researcher prepared the protocol and worked to obtain ethical clearance and permission letters for the study. The researcher tasked an independent person to moderate the signing of informed consent forms by participants purposefully selected for the study. The researcher conducted the semi-structured interview at a time convenient to the participants. The research analysed the data and obtained findings which the researcher wrote into a paper (Mmoloke et al., 2025b) and the dissertation.

The supervisor and co-supervisors provided adequate supervision and ensured that the research was of high quality. They ensured that the student followed and adhered to university requirements. The supervisor and co-supervisor planned the timelines for the research process with the student and ensured that the ethics committee and other approvals were obtained. The supervisor ensured that the student submitted all progress reports and arranged for the submission of the dissertation.

Operational managers served as gatekeepers of PHC settings where the researcher collected data. The role of the gatekeepers was to permit or refuse access to the facility, establish a good rapport, and ensure a smooth data collection process. Concerns or complaints were directed to the gatekeepers or the NWU Ethics Committee for remediation.

An independent person assisted with participant recruitment and the signing of informed consent forms to minimise bias. This individual also supported the recording process and ensured the accuracy of the verbatim transcripts.

2.5.3 Data gathering

The following ethical principles were applied to protect participants during data gathering:

2.5.3.1 Anonymity

To protect the identity of participants, no personal identifiers were collected during the interview. Participants were assigned codes; no participant's name was mentioned in any part of the research process. No coercion was used. An independent person facilitated the recruitment process and managed the signing of informed consent forms, which included the participants' information.

2.5.3.2 Right to Privacy

The privacy of individuals participating in research studies must be respected (Leedy & Ormrod, 2016). Participants were not asked to identify themselves, and no information that may identify them was disclosed. The researcher ensured that the place where the interviews took place was private and that the participants felt safe and comfortable.

2.5.3.3 Confidentiality

Confidentiality is defined as the non-disclosure of participant information or responses to a third party without the consent or permission of the participant (Guraya et al., 2014). Participants could withdraw from the study without obligation or prejudice after starting the interview. Participants were assured that confidentiality would be maintained by assigning codes to their names during data transcription. The data would be locked and protected with a password. The data collected would be used by the research team. The research team (independent person, principal investigator, supervisor and co-supervisor) signed confidentiality agreements (Addendum H) and a code of conduct (Addendum O). The hard copies and the recordings were transferred from the settings in

a lockable briefcase, and they were locked with codes and locked in a cupboard for five years in the supervisor's office, after which they will be permanently destroyed in compliance with NWU disposal policy. Furthermore, all the transcripts and other hard copies of the data will be shredded, and recordings will be deleted from the recorders accordingly.

2.5.4 Risk and benefit relating to this study

A risk-benefit analysis was done before the conduct of the study. The benefits should outweigh the risks if a study is conducted (National Health Research Ethics Council (NHREC), 2015). This research poses minimal risk to the participants because they were only asked to share their experience in clinical mentoring. During the interview, they felt little discomfort in answering or commenting on some of the questions when asked to criticise the interprofessional mentoring of pharmacy students in PHC settings. Although the research was conducted after the peak of the COVID-19 pandemic, implementing precautionary measures remained a prerequisite. All necessary precautions were observed to minimise risk during individual face-to-face interviews. The interviews were anonymous; only codes were used for data analysis. Participants were informed that they could refuse to answer any questions with which they were uncomfortable.

2.5.4.1 Anticipated risks and precautions taken

Proper steps were taken to avoid risks. Remedial interventions could be undertaken should harm occur (NHREC, 2015). The anticipated risks and precautions taken are listed in Table 1.

Table 1: Anticipated risks and precautions taken

Anticipated risks	Precautions
Individual face-to-face interviews	• Anonymity was ensured by providing codes instead of names. • The right to withdraw was ensured. • Ground rules were set to maintain respect for privacy. • Data were protected with a password and would only be shared with relevant stakeholders.
Psychological harm: Experience possible boredom or inconvenience.	• The participants were reminded that it was voluntary and that they could withdraw at any point. • Interviews with professional nurses in their offices
Covid 19	• Covid-19 safety protocol was followed-: • Wear a face mask, • Ensured that you were two metres apart. • Social distancing. • Sanitise your hands and surfaces before and after contact. • Wash hands

2.5.4.2 Anticipated benefits

There were no direct benefits of participating in the study. The study derived an understanding of professional nurses' attitudes towards the programme, and the findings of the study will be shared with the participants to enhance their professional practice.

2.5.4.3 Risk/benefit analysis

The data collected during the study consisted primarily of professional opinions and reflections, rather than sensitive personal information, thus minimising potential risks. All ethical safeguards such as maintaining confidentiality, ensuring privacy, and using participant codes were strictly adhered to. These measures significantly reduced any potential harm or discomfort to participants. Given the minimal risk and the potential to inform future interprofessional mentoring practices and policy development, the anticipated benefits of this study outweighed the risks involved.

2.5.4.4 Reimbursement

Participants were not financially compensated for their participation; however, refreshments were provided during the interviews, including 500 ml of still water, one muffin, and one sachet of hot chocolate.

2.6 DATA MANAGEMENT, STORAGE, AND DESTRUCTION

2.6.1 Hard copy data

The researcher, the supervisor, and the co-coder were the only people who had access to the hard copies, and they transferred it from the settings in a lockable briefcase to the principal investigator's office, where it was locked in a cupboard. Hard copies will be destroyed five years after the study, according to the NWU disposal policy.

2.6.2 Electronic data (eData)

Electronic data was stored and locked with codes, and a link was created and shared with the supervisor to keep it confidential and protected by a password-protected file. Data was also stored on an external hard drive for backup.

2.6.3 Data monitoring

The researcher conducted the interviews personally. The supervisor was informed of any unforeseen problems that arose during the interviews, such as a delayed schedule and a problem with the recorder. The supervisor ensured that ethical considerations were followed and maintained. Discussions and feedback about study progression were held monthly or more frequently with the supervisor.

2.7 LIMITATIONS OF THE STUDY

The study was contextual, reflecting on the experiences of professional nurses working in PHC in the North-West province performing interprofessional mentoring of pharmacy students, which could limit the generalisation of the findings of this study. The NWU WBL programme started in 2017, and the study was done only in the Dr Kenneth Kaunda district municipality. It would have been comprehensive if the views and experiences of the students were also sought.

2.8 DISSEMINATION OF THE RESULTS

The results of this research have been disseminated in a research article (Mmoloke et al., 2025b) and are reported in this dissertation. The findings were presented at the Higher Education Learning and Teaching Association of Southern Africa (HELTASA) unconference 2025 (Mmoloke et al., 2025a) at the Walter Sisulu Campus and the Dr Kenneth Kaunda District Municipality research day in 2024. This dissertation will be submitted to the NWU research repository and be shared with the participants by email and will also be published in electronic databases. The primary healthcare settings will be given the results of the study in the form of policy briefs to enhance their practice.

2.9 SUMMARY

In this Chapter, the researcher described the research paradigm, research strategy of inquiry, quality and rigour of research, ethical considerations, limitations of the study, and dissemination of findings. The next chapter presents the literature review.

2.10 REFERENCES

Adams, W. C. (2015). Conducting Semi-Structured Interviews. *Handbook of Practical Program Evaluation: Fourth Edition, August 2015*, 492–505.
<https://doi.org/10.1002/9781119171386.ch19>

- Boyce, C., & Neale, P. (2006). *Conducting in-depth interviews*.
- Braun, V., & Clarke, V. (2012). Thematic analysis, APA handbook of research methods in psychology. In *APA handbook of research methods in psychology, Vol 2: Research designs: Quantitative, qualitative, neuropsychological, and biological*. (Vol. 2, pp. 57–71).
- Brink, H., Van der Walt, C., & Van Rensburg, G. H. (2018). *Fundamentals of research methodology for health care professionals* (Fourth edition). Juta and Company (Pty) Ltd.
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8TH ed.). Routledge.
- Creswell, J. W., & Clark. (2018). *Qualitative inquiry and research design* (Fourth edition). SAGE.
- Guraya, S., London, N. J. M., & Guraya, S. (2014). Ethics in medical research. *Journal of Microscopy and Ultrastructure*, 2(3), 121. <https://doi.org/10.1016/j.jmau.2014.03.003>
- Kim, H., Sefcik, J. S., & Bradway, C. (2017). Characteristics of Qualitative Descriptive Studies: A Systematic Review. *Research in Nursing and Health*, 40(1), 23–42. <https://doi.org/10.1002/nur.21768>
- Kivunja, C., & Kuyini, A. B. (2017). Understanding and Applying Research Paradigms in Educational Contexts. *International Journal of Higher Education*, 6(5), 26. <https://doi.org/10.5430/ijhe.v6n5p26>
- Lambert, V. a., & Lambert, C. E. (2013). Qualitative Descriptive Research: An Acceptable Design. *Pacific Rim International Journal of Nursing Research*, 16(4), 255–256. <http://antispam.kmutt.ac.th/index.php/PRIJNR/article/download/5805/5064>
- Leedy, Paul. D., & Ormrod, Jeanne. E. (2016). *Practical research: Planning and design* (11th ed.). Pearson.
- Mmoloke, M., Vorster, M., & Christmals, C. D. (2025c). Interprofessional Mentoring of Pharmacy Students in Primary Healthcare Settings in South Africa. *International Medical Education*, 4(4), 37. <https://doi.org/10.3390/ime4040037>
- National Health Research Ethics Council (NHREC). (2015). *Guideline on principles, processes and structures on ethics in health research*.
- Polit, D., & Beck, C. (2014). Qualitative Descriptive Studies. *Essentials of Nursing Research: Appraising Evidence for Nursing Practice*, 1, 1–2. http://downloads.lww.com/wolterskluwer_vitalstream_com/sample-content/9781451176797_Polit/samples/CS_Chapter_14.pdf

- Vasileiou, K., Barnett, J., Thorpe, S., & Young, T. (2018a). Characterising and justifying sample size sufficiency in interview-based studies: Systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology*, 18(1), 148. <https://doi.org/10.1186/s12874-018-0594-7>
- Vasileiou, K., Barnett, J., Thorpe, S., & Young, T. (2018b). Characterising and justifying sample size sufficiency in interview-based studies: Systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology* 2018 18:1, 18(1), 1–18. <https://doi.org/10.1186/S12874-018-0594-7>
- Yilmaz, K. (2013). Comparison of Quantitative and Qualitative Research Traditions: Epistemological, theoretical, and methodological differences. *European Journal of Education*, 48(2), 311–325. <https://doi.org/10.1111/ejed.12014>

CHAPTER 3: LITERATURE REVIEW

3.1 INTRODUCTION

Chapter 2 provided the detailed methodology applied in this study. This chapter presents a narrative review of the literature on interprofessional mentoring across global contexts. It describes the database search strategy, inclusion and exclusion criteria, and the method of data extraction and synthesis. The chapter also summarises key themes emerging from previous studies and highlights recent publications identified during dissertation preparation. Further, new papers that appeared during the course of the research and preparation of the dissertation were sourced and used in this review.

3.2 LITERATURE SEARCH

A basic database search was conducted in PubMed, Scopus EBSCOhost (CINAHL and Medline) electronic databases using the keywords “*interprofessional mentoring*” OR “*mentoring*”. Additionally, Google Scholar and the reference lists of eligible articles were reviewed to identify additional relevant studies for inclusion.

3.2.1 Inclusion and exclusion criteria

Papers were included if they were published in English language and reported interprofessional mentoring or mentoring. Studies were excluded if they only reported outcomes on patient mentoring.

3.2.2 Analysis and reporting

The papers were read repeatedly to gain a deeper understanding and link similar findings together. The contrasting findings and corroborative findings were also identified, and the findings of the studies were combined and written out narratively. Headings and subheadings representing the levels of synthesis were used to present the results below.

3.3 SUMMARY OF FINDINGS

The most common methodology among the reviewed studies was the systematic review, followed by qualitative descriptive studies. Other methodologies included ethnographic studies,

interprofessional approaches, and medication reviews. The sample consisted of a diverse group of health professionals such as doctors, nurses, anaesthetic officers, social workers, counsellors, psychiatrists, clinical psychologists, physiotherapists, occupational therapists, dieticians, physiotherapists, occupational therapists, paramedics, dieticians, speech language pathologists and undergraduate students.

3.3.1 Mentoring

From Chapter 1, mentoring was considered as a relationship where an individual with greater experience or knowledge assists in guiding someone with less experience or knowledge (Byars-Winston et al., 2019). It is portrayed as a partnership focused on learning and growth, involving someone with extensive experience and someone eager to learn (Hill et al., 2022). Mentorship is a multifaceted relationship where an experienced individual offers psychosocial support, career advice, role modelling, and communication to aid a less experienced person (DeMaria, 2020). The mentor supports the mentee's objectives by providing emotional and psychological support, aiding in career development, and serving as a role model (Arnesson & Albinsson, 2017). Mentoring is the mentor sharing knowledge, skills, and experiences to help the mentee reach his or her full potential (Rubbi Nunan et al., 2023).

Mentoring is broadly accepted as a flexible learning approach in modern workplaces owing to the evolving, intricate, and demanding characteristics of the professional environment (Davey et al., 2020). “Mentoring is a formalised process based on a developmental relationship between two persons in which one person is more experienced (mentor) than the other (mentee). The mentor provides support, more specifically career, emotional, psychosocial, psychological, and academic support, to promote and facilitate student success, competence development, and career development” (Nuis et al., 2023).

Mentorship is a professional relationship in which individuals work together over time to support each other's personal and professional growth and success through career and psychosocial support (Byars-Winston et al., 2019). Mentoring may be described as a dynamic, context-specific, goal-oriented, and mutually advantageous relationship between an experienced clinician and junior clinicians or undergraduate students, aimed at promoting the mentee's professional development (Khrishna et al., 2019).

3.3.1.1 Evolution of mentoring

The word “mentor” comes from the character Mentor in Homer's *Odyssey*. When Odysseus, king of Ithaca, went off to fight in the Trojan War, he asked his trusted friend Mentor to advise and teach his son, Telemachus. Over time, the term mentor came to refer to someone who is a guide and educator, and a mentoring relationship was seen as a relationship between a teacher and student. The notion of mentorship is largely idealised as a positive thing, though original Greek conceptions painted a more complex picture of the relationship between Mentor and Telemachus (Garvey, 2023).

The concept of mentoring was initiated and associated with a person who facilitates a novice person's personal and career development (Capello & Sprunt, 2020). The Oxford English Dictionary defines “mentor” as “one who fulfils the office which the supposed Mentor fulfilled towards Telemachus. Hence, a common noun: An experienced and trusted adviser.” Merriam-Webster’s dictionary provides two definitions: “a friend of Odysseus entrusted with the education of Odysseus’ son Telemachus” and “a trusted counsellor or guide, tutor, or coach.”

3.3.1.2 Types of mentoring

Mentoring benefits organisations because careers and learning opportunities improve (Leck & Wood, 2013). It is used to build student relationships, serve as a support strategy for students to learn from each other, and foster professional identity (Lunsford et al., 2017). Abdollahi & Nabavi (2022), Desselle et al. (2021) and Dirks (2021) all say that mentoring is seen as an approach to assist experienced professionals in increasing their advanced skills. Thus, its benefits and various purposes have been studied for years (Rops, et al., 2022).

There are many definitions for different forms of mentoring or models used for promoting access and success that extend beyond academia (Montgomery, 2017), such as traditional mentoring where new or junior employees learn from their seniors as functions of career development, psychological support, and role modelling (Chen, 2013). Formal or classic mentoring programmes are organised with a specific duration and include designated mentors who commit to aiding protégés in their growth and adaptation to new roles (Lumpkin, 2011).

In an educational context, it is defined as a supportive relationship where two individuals of similar age and experience work together to achieve a mix of career and educational goals. Peer mentors

emphasise sharing information and planning, while also offering emotional support, personal feedback, and friendship (Terrion & Leonard, 2007). The different forms of mentoring to be discussed in this section are traditional, formal, informal, peer, reverse, and electronic.

Traditional mentoring

Traditional mentoring is an interaction between a more experienced mentor and a less experienced mentee (Balu & James, 2016). The relationship is one-sided, where the mentee always acquires wisdom and expertise from the mentor (Mullen, 2016). The mentor provides knowledge, guides future careers, and supports the mentee's progress (Morris, 2017). The relationship can occur across an arranged schedule, and the mentor focuses on the mentee's success (Rowland, 2012). The organisation provides the mentee with information about the specialised mentor (Abdollahi & Nabavi, 2022). In a university, older members are responsible for leading new members on what is to be taught to students (Goerisch et al., 2019). The benefits of traditional mentoring are evident in organisations due to improved working relationships and career growth (Lumpkin, 2011).

Formal mentoring

Formal mentoring was an organised and planned encounter that focuses on organisational needs (Mullen & Klimaitis, 2021). In the study by Hayati et al. (2020) on workplace mentoring, they aimed to provide a review of the literature on formal mentoring in organisations and examine the concept of formal and informal mentoring. They found that many organisations tried to implement formal mentoring with the expectation that these activities would benefit the achievement of organisational goals by developing a mentoring system according to each organisation's situation, providing adequate support and commitment. The mentors in formal mentoring were different from the informal mentors. The organisations had to select, assign, and assess the skills of prospective mentors with high emotional intelligence to have a formal mentoring programme. Mentoring was expected to instil a positive impact on mentees.

Informal mentoring

Balu and James (2016) conducted a study on facilitating employees' careers through mentoring methods, aimed at developing the human resources department to develop future employees' careers. They illustrated informal mentoring as the occasional relationship between a mentor and a mentee, which was not managed and was usually started by a mentee for guidance, support or

advice. It was developed and established during the work routine because they were common and felt comfortable with each other, which benefited professional development. They were generally more effective when mentors offered time and were committed to helping mentees from the induction period to the intense career development achievement.

They concluded that mentoring methods would assist organisational performance better by promoting mutual learning, challenge, stimulate employees at all levels, and allowing the mentors and mentees to come together to make mentoring a reality for achieving one's career success and organisational achievements.

Peer mentoring

Peer mentoring emerged with a focus on psychosocial support and reciprocal learning, being defined as a supportive and developmental relationship between students of similar ages and experiences, where senior students (mentors) provide junior students (mentees) with career-related functions, such as giving feedback on academic work and sharing information, and psychosocial functions, such as emotional support and friendship (Mullen & Klimaitis, 2021). Peer mentoring is often used as a valuable support system in the initial phases of a student's academic path, aimed at promoting growth and decreasing dropout intentions (Gehreke et al., 2024). Peer mentoring supports early career scholars through emotional, logistical, and professional development (Dickson et al., 2021).

Peer mentorship involves informal, supportive relationships between individuals of similar age or experience, typically among colleagues with shared interests or goals. These relationships, while not officially structured, require active engagement and can produce many benefits for individuals with different careers (Cree-Green et al., 2020). The Peer Mentoring Model is acknowledged for its adaptability and benefits across different settings, enhancing emotional intelligence and essential skills among new registrants, and facilitating their transition from students to professionals (Fisher & Stanyer, 2018).

Reverse mentoring

Reverse mentoring is an innovative mentoring approach adopted by organisations worldwide to foster employee development and broaden their opportunities (Chen, 2013). It is a model where a less experienced individual serves as a mentor, offering specific expertise (often technological or generational insights) to a more experienced mentee. This differs from traditional hierarchical

mentoring, as reverse mentoring is a reciprocal relationship that benefits both participants and supports mutual growth. It is particularly relevant for professional development and facilitating the transition from student to professional by promoting knowledge exchange across experience levels (Clarke et al., 2019). As with traditional mentoring, the goal is to foster success in the workplace, in academic and career pursuits, and in social and emotional aspects. (Morris, 2017).

Reverse mentoring involves a younger employee with technical skills guiding an older, experienced employee, facilitating mutual knowledge exchange (Li et al., 2024). In research, it promotes responsible practices, integrity, and open science by making research accessible. Both mentor and mentee benefit and grow in their roles (Pizzolato & Dierickx, 2022). An experienced mentee can expect to receive exceptional benefits from an effective reverse mentoring partnership (Israni, 2022).

E-mentoring

E-mentoring has been defined as “a computer mediated, mutually beneficial relationship between a mentor and a protégé which provides learning, advising, encouraging, promoting, and modelling that is often boundaryless, egalitarian, and qualitatively different from traditional face-to-face mentoring” (Bierema & Merriam, 2002; Williams et al., 2012). By leveraging information technology, such as e-mail, videoconferencing, voice mail, and other electronic tools, e-mentoring serves as a method for linking mentors with protégés, enabling their interaction and collaboration regardless of where they are located (Rowland, 2012). Online mentoring benefits students to feel less isolated by providing social contact, and it offers flexibility and access to mentoring for individuals who might face discrimination in traditional mentoring settings due to factors such as gender, ethnicity, disability, or where they live (Jan & Mehboob, 2022).

E-mentoring offers numerous advantages, including enhanced accessibility, career growth opportunities, and improved communication abilities. It allows mentees to pose questions anytime and from anywhere, serving as a resource for professional advancement. It encourages teamwork and accessibility, facilitating diverse collaboration and breaking down sociocultural barriers (Mutiarin et al., 2023).

3.3.2 Interprofessional Mentoring

Most studies described interprofessional mentoring for mentors among different healthcare professionals and they had seen it as a source of collaboration among professionals (Gulla et al.,

2019; Heidari, 2007; Henry-Noel et al., 2019; Juntunen et al., 2024; Lait et al., 2011a; Marshall & Gordon, 2010a; Tay et al., 2021; Yamuragiye et al., 2023), the other studies described experiences about the competencies (Juntunen et al., 2024; Lait et al., 2011a; Mubuuke et al., 2024), support and training for health professionals and students (Heidari, 2007; Jingting et al., 2016; Lait et al., 2011a; Marshall & Gordon, 2010a; Mubuuke et al., 2024).

Interprofessional mentoring is a collaborative approach where students from one profession learn from, with and are supervised by a professional or professionals from a different profession, improving their appreciation of collaborative healthcare (Wahab et al., 2016). It fosters non-hierarchical relationships (Heidari, 2007; Henry-Noel et al., 2019; Jingting et al., 2016; Juntunen et al., 2024; Wahab et al., 2016). Experienced professionals guide less experienced colleagues, focusing on interprofessional support within a healthcare team (Gulla et al., 2019; Heidari, 2007; Henry-Noel et al., 2019; Jingting et al., 2016; Marshall & Gordon, 2010; Yamuragiye et al., 2023). It involves guiding students during clinical practice, fostering collaboration and understanding among healthcare roles (Juntunen et al., 2024). Mentors arrange learning encounters, supervise, and assess students to build their interprofessional skills (Marshall & Gordon, 2010a). Effective mentoring aligns expectations, roles, and goals, mitigating malpractice risks and improving care experiences (Tay et al., 2021). It integrates various perspectives and expertise, enriching professional growth and patient outcomes (Henry-Noel et al., 2019). Where there are two or more mentors, they support and guide each other, enhancing decision-making and communication in healthcare facilities, leading to better clinical outcomes and cohesive healthcare teams (Gulla et al., 2019).

It has been reported that health professionals and students depended on each other for support, and collaboration, learning and enhancing their skills (Gulla et al., 2019; Heidari, 2007; Henry-noel et al., 2018; Jingting et al., 2016; Lait et al., 2011; Tay et al., 2020). Challenges such as lack of formal training, inadequate time, limited knowledge about each other's roles and a lack of policies and guidelines on interprofessional mentoring were reported (Yamuragiye et al., 2023; Mubuuke et al., 2024; Heidari, 2007; Gulla et al., 2019). Student-wise, mentoring supports their growth, improves job satisfaction of newly qualified graduates, and helps them manage their own learning and maximise their potential (Heidari, 2007).

3.3.2.1 Benefits of interprofessional mentoring

Interprofessional mentoring benefits mentees by enhancing skills, confidence, and job satisfaction; assists mentors by promoting personal growth, gaining new perspectives, and deriving satisfaction from giving back; and aids organisations by improving retention, culture, and collaboration through fostering teamwork and shared learning (Deutschlander & Suter, 2011). Enhanced patient care is achieved through improved collaboration among healthcare professionals, resulting in better patient outcomes (Tay et al., 2016; Lait et al., 2011; Heidari, 2007). Mentees often feel supported and value networking chances and connections with others, which boosts staff satisfaction (Heidari, 2007; Barlow & Thomforde, 2021). Effective collaboration between different professions can enhance the efficient use of resources in clinical environments (Heidari, 2007). Mentoring fosters new networks that can lead to future professional collaborations (Barlow & Thomforde, 2021). It promotes a culture of mutual respect and open communication among team members from diverse professional backgrounds (Tay et al., 2021; Mubuke et al., 2023).

Mentees develop through acquiring new competencies for collaborative practice with mentors from different fields (Deutschlander & Suter 2011; Hill et al., 2022). Mentorship enhances confidence through support, guidance, and practical advice, helping to build professional identity (Hill et al., 2022). It contributes to well-being by reducing stress, easing isolation, and fostering empowerment and belonging. For mentors, personal and professional growth includes personal transformation, greater self-efficacy, and improved interpersonal skills (Yamuragiye et al., 2023; Heidari, 2007).

Organisations benefit from mentoring programmes as they cultivate a supportive culture, increase employee satisfaction, and improve retention rates. They bolster collaboration by enhancing teamwork, improving interdepartmental communication, and creating a more collaborative atmosphere (Cavanaugh et al., 2022). Succession planning is supported by identifying and developing future leaders, ensuring a pipeline of skilled individuals prepared for new challenges. Mentoring enhances productivity by boosting employee motivation, engagement, and task completion. In healthcare, such programmes lead to higher quality care and improved patient outcomes (Deutschlander & Suter 2011).

Interprofessional mentoring enriches education by fostering collaboration among students from diverse health and social care disciplines. It supports the sharing of perspectives and expertise, enhancing understanding of each profession's role in patient care (Marshall & Gordon, 2005a). Interprofessional mentoring strengthens interdisciplinary learning by promoting collaboration and communication, which is crucial for clinical practice. This approach supports students' development, leading to improved healthcare delivery (Juntunen et al. 2024).

Marshall and Gordon (2010) state that interprofessional mentoring involves providing mentees with learning opportunities from multiple professional perspectives, enhancing their group collaboration skills. Mentors guide the process and ensure that mentees gain essential interprofessional skills, especially in healthcare (Ramani et al., 2024). This mentoring promotes cross-disciplinary learning and support within teams. The review identifies mentoring features from fields such as medicine, nursing, and surgery, which can be adapted to various healthcare contexts. (Jingting et al. 2016).

The Training, Support, Access Model (TSAM) model mentorship programme in Rwanda enhances interprofessional collaboration by improving communication and teamwork among healthcare workers. Participants gained confidence and clarity in their roles, strengthening professional relationships. This environment promotes shared learning and knowledge exchange, leading to better patient outcomes in emergency obstetric and neonatal care (Yamuragiye et al., 2023).

3.3.2.2 Challenges

Challenges identified in interprofessional mentoring included limited training and a lack of guidelines for faculty mentors, which led to inconsistent mentoring practices. Students reported having limited knowledge and feedback provided by mentors about competencies (Mubuuke et al., 2023).

Mentors frequently face challenges in getting ready for and engaging in interprofessional clinical practice, in accommodating a wide range of learning approaches, and in shaping a unified interprofessional mentor identity (Juntunen et al., 2024). Barriers such as potential lack of confidence, inadequate training, and institutional biases hinders interprofessional mentoring support (Klein et al., 2025).

It is difficult to evaluate the effectiveness of interprofessional mentoring programmes because of varied settings and participant career stages, requiring customised programme design and evaluation (Tay et al., 2020; Jingting et al., 2016). The process is complicated by mentor power misuse, mentee overdependence, and insufficient recognition and compensation for mentors, time constraints, and evolving goals (Wahab et al., 2016). Lack of time was a major barrier, affecting training, patient evaluation, and documentation and curriculum knowledge discrepancies (Gulla et al., 2019; Marshall and Gordon, 2010). The mentors' attitudes, understanding of interprofessional learning, and the culture of the learning environment, communication and misalignment understanding and expectations can impact the effectiveness of mentoring (Marshall & Gordon 2010). The uncertainties brought forward the need to consider implementing successful interprofessional mentoring (Henry-noel et al., 2018; Jingting et al., 2016; Juntunen et al., 2024; Lait et al., 2011; Tay et al., 2020; Wahab et al., 2016).

3.3.2.3 Needs

Implementing interprofessional mentoring programmes requires careful alignment of expectations, roles, and responsibilities among mentors and mentees. This involves defining specific objectives and schedules, as well as providing robust supervision of mentoring programmes (Tay et al., 2020; Heidari, 2007). Developing comprehensive mentorship frameworks and providing targeted training for mentors can enhance the effectiveness of interprofessional mentoring. Additionally, fostering humanistic values and creating safe environments for student engagement can further support the development of interprofessional competencies (Heidari, 2007).

The integration of interprofessional mentorship into existing curricula poses logistical and structural hurdles, requiring commitment from educational institutions and practitioners to overcome these barriers and enhance the interprofessional workforce in health and social care. (Marshall & Gordon, 2005). Host organisations play a critical role in facilitating these relationships, and their support is essential to mitigate the drawbacks and enhance the effectiveness of interprofessional mentoring (Wahab et al., 2016). Incorporating interprofessional mentoring into hospital policies and support systems can solidify its importance (Heidari, 2007; Lait et al., 2011) and encouraging open exchanges and collaborative practice may help to build the necessary competencies for effective teamwork. (Deutschlander & Suter 2011).

3.4 REFERENCES

- Abdollahi, M., & Nabavi, F. H. (2022). Mentoring as an Appropriate Strategy for Medical Faculty Member Development in Higher Education: A Systematic Review. *Journal of Advances in Medical Education and Professionalism*, 11(1), 3–14.
<https://doi.org/10.30476/jamp.2022.97103.1740>
- Arnesson, K., & Albinsson, G. (2017). Mentorship – a pedagogical method for integration of theory and practice in higher education. *Nordic Journal of Studies in Educational Policy*, 3(3), 202–217. <https://doi.org/10.1080/20020317.2017.1379346>
- Balu, L., & James, L. (2016). Facilitating employees career through mentoring methods. *European Journal of Business and Management*, 8(7), 57–63.
- Barlow, K., & Thomforde, D. (2021). International Interprofessional Mentorship for New Clinicians. *International Journal of Integrated Care*, 21(S1), 343.
<https://doi.org/10.5334/ijic.ICIC20585>
- Bierema, L. L., & Merriam, S. B. (2002). E-mentoring: Using Computer Mediated Communication to Enhance the Mentoring Process. *Innovative Higher Education*, 26(3), 211–227. <https://doi.org/10.1023/A:1017921023103>
- Byars-Winston, A., Dahlberg, M. L., Policy and Global Affairs, & National Academies of Sciences, Engineering, and Medicine. (2019). *The Science of Effective Mentorship in STEMM* (A. Byars-Winston & M. L. Dahlberg, Eds.; p. 25568). National Academies Press. <https://doi.org/10.17226/25568>
- Capello, M. A., & Sprunt, E. (2020). *Mentoring and Sponsoring: Keys to Success*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-59433-6>
- Cavanaugh, K., Cline, D., Belfer, B., Chang, S., Thoman, E., Pickard, T., & Holladay, C. L. (2022). The positive impact of mentoring on burnout: Organizational research and best

- practices. *Journal of Interprofessional Education & Practice*, 28, 100521.
<https://doi.org/10.1016/j.xjep.2022.100521>
- Chen, Y.-C. (2013). Effect of reverse mentoring on traditional mentoring functions. *Leadership and Management in Engineering*, 13(3), 199–208.
[https://doi.org/10.1061/\(ASCE\)LM.1943-5630.0000227](https://doi.org/10.1061/(ASCE)LM.1943-5630.0000227)
- Clarke, A. J., Burgess, A., Van Diggele, C., & Mellis, C. (2019). The role of reverse mentoring in medical education: Current insights. *Advances in Medical Education and Practice*, Volume 10, 693–701. <https://doi.org/10.2147/AMEP.S179303>
- Cree-Green, M., Carreau, A.-M., Davis, S. M., Frohnert, B. I., Kaar, J. L., Ma, N. S., Nokoff, N. J., Reusch, J. E. B., Simon, S. L., & Nadeau, K. J. (2020). Peer mentoring for professional and personal growth in academic medicine. *Journal of Investigative Medicine*, 68(6), 1128–1134. <https://doi.org/10.1136/jim-2020-001391>
- Davey, Z., Jackson, D., & Henshall, C. (2020). The value of nurse mentoring relationships: Lessons learnt from a work-based resilience enhancement programme for nurses working in the forensic setting. *International Journal of Mental Health Nursing*, 29(5), 992–1001.
<https://doi.org/10.1111/inm.12739>
- DeMaria, A. N. (2020). Mentorship. *Structural Heart*, 4(6), 451–452.
<https://doi.org/10.1080/24748706.2020.1832407>
- Desselle, S. P., Chang, H., Fleming, G., Habib, A., Canedo, J., & Mantzourani, E. (2021). Design fundamentals of mentoring programs for pharmacy professionals (Part 1): Considerations for organizations. *Research in Social and Administrative Pharmacy*, 17(2), 441–448. <https://doi.org/10.1016/j.sapharm.2020.04.015>
- Deutschlander, S., & Suter, E. (2011). *Interprofessional mentoring guide*. (No. November; pp. 1–26). Alberta Health Services.

<http://www.albertahealthservices.ca/careers/docs/WhereDoYouFit/wduf-stu-sp-ip-mentoring-guide.pdf>

Dickson, K. S., Glass, J. E., Barnett, M. L., Graham, A. K., Powell, B. J., & Stadnick, N. A. (2021). Value of peer mentoring for early career professional, research, and personal development: A case study of implementation scientists. *Journal of Clinical and Translational Science*, 5(1), e112. <https://doi.org/10.1017/cts.2021.776>

Dirks, J. L. (2021). Alternative Approaches to Mentoring. *Critical Care Nurse*, 41(1), e9–e16. <https://doi.org/10.4037/ccn2021789>

Fisher, M., & Stanyer, R. (2018). Peer mentoring: Enhancing the transition from student to professional. *Midwifery*, 60, 56–59. <https://doi.org/10.1016/j.midw.2018.02.004>

Garvey, B. (2023). Chapter 1- Mentoring Origins and Evolution. *Empower Teaching Open Access Book Series*, 1–29. <https://digitalcommons.usu.edu/makingconnections>

Gehreke, L., Schilling, H., & Kauffeld, S. (2024). Effectiveness of peer mentoring in the study entry phase: A systematic review. *Review of Education*, 12(1), e3462. <https://doi.org/10.1002/rev3.3462>

Goerisch, D., Basiliere, J., Rosener, A., McKee, K., Hunt, J., & Parker, T. M. (2019). Mentoring with: Reimagining mentoring across the university. *Gender, Place and Culture*, 26(12), 1740–1758. <https://doi.org/10.1080/0966369X.2019.1668752>

Gulla, C., Flo, E., Kjome, R. L. S., & Husebo, B. S. (2019). Implementing a novel strategy for interprofessional medication review using collegial mentoring and systematic clinical evaluation in nursing homes (COSMOS). *BMC Geriatrics*, 19(1), 130. <https://doi.org/10.1186/s12877-019-1139-6>

Hayati, N. R., Ahugrah, R. R., Aziz, Z. A., & Sinaga, O. (2020). Mentoring in a workplace: A literature review. *Journal Of Archaeology Of Egypt / Egyptology*, 17(5), 875–881.

- Heidari, F. (2007). *Interprofessional mentoring: Exploration of support and professional development for newly qualified staff*. June, 265. <http://0-search.ebscohost.com/brum.beds.ac.uk/login.aspx?direct=true&db=ddu&AN=63B7820105AEA454&site=ehost-live&scope=site>
- Henry-Noel, N., Bishop, M., Gwede, C. K., Petkova, E., & Szumacher, E. (2019). Mentorship in Medicine and Other Health Professions. *Journal of Cancer Education*, 34(4), 629–637. <https://doi.org/10.1007/s13187-018-1360-6>
- Hill, S. E. M., Ward, W. L., Seay, A., & Buzenski, J. (2022). The Nature and Evolution of the Mentoring Relationship in Academic Health Centers. *Journal of Clinical Psychology in Medical Settings*, 29(3), 557–569. <https://doi.org/10.1007/s10880-022-09893-6>
- Israni, B. (2022). *Reverse Mentoring (RM) an Effective Way to Advance the Principles of Equality, Diversity, and Inclusion Across Universities: A Systematic Review of Literature (SLR)*. <https://doi.org/10.21427/W5TS-4K96>
- Jan, S., & Mehboob, U. (2022). Online mentoring: Challenges and strategies. *Pakistan Journal of Medical Sciences*, 38(8), 2272–2277. <https://doi.org/10.12669/pjms.38.8.5804>
- Jingting, W., Wahab, M. T., Bin Mohamad Ikbali, M. F., Wesley, L. T. W., Kanesvaran, R., & Radha Krishna, L. K. (2016). Toward an Interprofessional Mentoring Program in Palliative Care—A Review of Undergraduate and Postgraduate Mentoring in Medicine, Nursing, Surgery and Social Work. *Journal of Palliative Care & Medicine*, 06(06), 1–15. <https://doi.org/10.4172/2165-7386.1000292>
- Juntunen, J., Tuomikoski, A., Pramila-Savukoski, S., Kaarlela, V., Keinänen, A., Kääriäinen, M., & Mikkonen, K. (2024). Healthcare professionals' experiences of required competencies in mentoring of interprofessional students in clinical practice: A systematic review of qualitative studies. *Journal of Advanced Nursing*, jan.16347. <https://doi.org/10.1111/jan.16347>

- Klein, T. A., Graves, J. M., DeWitt, D., Paine, M., & Pearce, P. (2025). Barriers to interprofessional mentorship in the health sciences. *Mentoring & Tutoring: Partnership in Learning*, 33(2), 198–210. <https://doi.org/10.1080/13611267.2025.2456749>
- Krishna, L., Toh, Y. P., Mason, S., & Kanesvaran, R. (2019). Mentoring stages: A study of undergraduate mentoring in palliative medicine in Singapore. *PLoS ONE*, 14(4), 1–16. <https://doi.org/10.1371/journal.pone.0214643>
- Lait, J., Suter, E., Arthur, N., & Deutschlander, S. (2011). Interprofessional mentoring: Enhancing students' clinical learning. *Nurse Education in Practice*, 11(3), 211–215. <https://doi.org/10.1016/j.nepr.2010.10.005>
- Leck, D. J., & Wood, M. P. (2013). Forming trust in E-mentoring: A research Agenda. *American Journal of Industrial and Business Management*, 03(01), 101–109. <https://doi.org/10.4236/ajibm.2013.31013>
- Li, M., Guo, J., Zou, C., & Yin, J. (2024). The Impact of Reverse Mentoring on Employees' Innovative Behavior: Evidence from Chinese Technology Enterprises. *Sustainability*, 17(1), 6. <https://doi.org/10.3390/su17010006>
- Lumpkin, A. (2011). A Model for Mentoring University Faculty. *The Educational Forum*, 75(4), 357–368. <https://doi.org/10.1080/00131725.2011.602466>
- Lunsford, L. G., Crisp, G., Dolan, E. L., & Wuetherick, B. (2017). Mentoring in Higher Education. In *The SAGE handbook of Mentoring* (D. A. Clutterbuck, pp. 316–334). SAGE Publications Ltd. <https://doi.org/10.4135/9781526402011.n20>
- Marshall, M., & Gordon, F. (2005). Interprofessional Mentorship: Taking on the Challenge. *Journal of Integrated Care*, 13(2), 38–43. <https://doi.org/10.1108/14769018200500016>
- Marshall, M., & Gordon, F. (2010). Exploring the role of the interprofessional mentor. *Journal of Interprofessional Care*, 24(4), 362–374. <https://doi.org/10.3109/13561820903275001>

- Montgomery, B. L. (2017). Mapping a Mentoring Roadmap and Developing a Supportive Network for Strategic Career Advancement. *Sage Open*, 7(2), 2158244017710288. <https://doi.org/10.1177/2158244017710288>
- Morris, L. V. (2017). Reverse Mentoring: Untapped Resource in the Academy? *Innovative Higher Education*, 42(4), 285–287. <https://doi.org/10.1007/s10755-017-9405-z>
- Mubuuke, A. G., Nawagi, F., Nalugo-Mbalinda, S., Musoke, D., & Nekaka, R. (2024). *Development of a mentorship framework guide to promote the acquisition of interprofessional education and collaborative practice competencies during undergraduate training: A mini-Delphi cross-sectional study*. In Review. <https://doi.org/10.21203/rs.3.rs-3923664/v1>
- Mullen, C. A. (2016). Alternative Mentoring Types. *Kappa Delta Pi Record*, 52(3), 132–136. <https://doi.org/10.1080/00228958.2016.1191901>
- Mullen, C. A., & Klimaitis, C. C. (2021). Defining mentoring: A literature review of issues, types, and applications. *Annals of the New York Academy of Sciences*, 1483(1), 19–35. <https://doi.org/10.1111/nyas.14176>
- Mutiarin, D., Manaf, H. A., Man, M. N. S., Kasiwi, A. N., & Nurjanah, A. (2023). Analysis of E-mentoring Platform for Future Leaders' Development: A Comprehensive Literature. *E3S Web of Conferences*, 440, 03021. <https://doi.org/10.1051/e3sconf/202344003021>
- Nuis, W., Segers, M., & Beausaert, S. (2023). Conceptualizing mentoring in higher education: A systematic literature review. *Educational Research Review*, 41, 100565. <https://doi.org/10.1016/j.edurev.2023.100565>
- Pizzolato, D., & Dierickx, K. (2022). Reverse mentoring to enhance research integrity climate. *BMC Research Notes*, 15(1), 209. <https://doi.org/10.1186/s13104-022-06098-w>
- Ramani, S., Kusurkar, R. A., Lyon-Mariss, J., Pyörälä, E., Rogers, G. D., Samarasekera, D. D., Taylor, D. C. M., & Ten Cate, O. (2024). Mentorship in health professions education – an

- AMEE guide for mentors and mentees: AMEE Guide No. 167. *Medical Teacher*, 46(8), 999–1011. <https://doi.org/10.1080/0142159X.2023.2273217>
- Rops, B., VanHove, C., VanHove, L., Chandra, S., Durant, A., & Dirks, S. (2022). *Mentorship Program Offers Insight to Students' Self-Efficacy Interested in Medicine*. 3(2), 1–10. <https://red.library.usd.edu/aesculapius>
- Rowland, K. N. (2012). E-mentoring: An innovative twist to traditional mentoring. *Journal of Technology Management and Innovation*, 7(1), 228–237. <https://doi.org/10.4067/S0718-27242012000100015>
- Rubbi Nunan, J. L., Ebrahim, A. B., & Stander, M. W. (2023). Mentoring in the workplace: Exploring the experiences of mentor–mentee relations. *SA Journal of Industrial Psychology*, 49. <https://doi.org/10.4102/sajip.v49i0.2067>
- Tay, K. T., Tan, X. H., Tan, L. H. E., Vythilingam, D., Chin, A. M. C., Loh, V., Toh, Y. P., & Krishna, L. K. R. (2021). A systematic scoping review and thematic analysis of interprofessional mentoring in medicine from 2000 to 2019. *Journal of Interprofessional Care*, 35(6), 927–939. <https://doi.org/10.1080/13561820.2020.1818700>
- Terrion, J. L., & Leonard, D. (2007). A taxonomy of the characteristics of student peer mentors in higher education: Findings from a literature review. *Mentoring & Tutoring: Partnership in Learning*, 15(2), 149–164. <https://doi.org/10.1080/13611260601086311>
- Wahab, T., Muhammad, Bin Mohamad Ikbāl, M. F., Jingting, W., Wesley, L. T. W., Kanesvaran, R., & Radha Krishna, L. K. (2016). Creating Effective Interprofessional Mentoring Relationships in Palliative Care- Lessons from Medicine, Nursing, Surgery and Social Work. *Journal of Palliative Care & Medicine*, 06(06). <https://doi.org/10.4172/2165-7386.1000290>

Williams, S., Sunderman, J., & Kim, J. (2012). *E-mentoring in an Online Course: Benefits and Challenges to E-mentors*. 10(1), 1–15.

<http://www.business.brookes.ac.uk/research/areas/coachingandmentoring/>

Yamuragiye, A., Ndayisenga, J. P., Nkurunziza, A., Bazirete, O., & Uwimana, M. C. (2023). Benefits of a Mentorship Program on Interprofessional Collaboration in Obstetric and Neonatal Care in Rwanda: A Qualitative Descriptive Case Study. *Rwanda Journal of Medicine and Health Sciences*, 6(1), 71–83. <https://doi.org/10.4314/rjmhs.v6i1.9>

CHAPTER 4:

ARTICLE: INTERPROFESSIONAL MENTORING OF PHARMACY STUDENTS IN PRIMARY HEALTHCARE SETTINGS IN SOUTH AFRICA

Madile Mmoloke ¹, Martine Vorster ² and Christmal Dela Christmals ^{1*}

¹ Centre for Health Professions Education, Faculty of Health Sciences, North-West University, 11 Hoffman Street, Potchefstroom, Northwest, South Africa, 2531 Potchefstroom Campus, South Africa; madile.mmoloke@nwu.ac.za

² Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, North-West University; 11 Hoffman Street, Potchefstroom, Northwest, South Africa, 2531 martine.vorster@nwu.ac.za

* Correspondence: christmal.christmals@nwu.ac.za; Tel.: +27-182852117

This article has been published in *International Medical Education*

(<https://doi.org/10.3390/ime4040037>). The paper presented below is in accordance with the

Instructions for Authors which can be found at <https://www.mdpi.com/journal/ime/instructions>.

Font size, line spacing, margins, table formats and figure formats were edited to conform to the NWU dissertation presentation to ensure easy reading.

4.1 ABSTRACT

Professional nurses assume clinical mentoring roles for pharmacy students in Primary healthcare (PHC) settings in South Africa due to the chronic shortage of pharmacists in these settings. This study sought to describe the experiences, challenges and needs of professional nurses mentoring pharmacy students within the primary healthcare settings of South Africa. A descriptive qualitative study design was employed and 35 semi-structured, individual interviews in 18 primary healthcare settings were conducted. Data was analyzed using thematic content analysis. While some professional nurses are supportive of mentoring pharmacy students during healthcare delivery, others believe it increases workload and slows down healthcare delivery. The professional nurses enjoyed mentoring pharmacy students but indicated a lack of confidence due to non-preparation and not being involved during the planning or preparation for the pharmacy students' clinical placement visits. They needed short courses to train them to perform better in mentoring pharmacy students in PHC settings. To facilitate the successful implementation of interprofessional

mentoring of pharmacy students, deeper collaboration between the university and the professional nurses in primary healthcare facilities is needed to improve interprofessional mentoring of students in primary healthcare settings. Universities must provide clear information, guidance, and feedback on students' clinical placements, while professional nurses require in-service training on interprofessional mentoring and recognition from universities for their educational contributions.

Keywords: professional nurse; pharmacy student; primary healthcare setting; work-based learning; inter-professional mentoring

4.2 INTRODUCTION

Work-based learning (WBL) is critical in preparing work-ready pharmacists; therefore, the South African Pharmacy Council (SAPC) requires pharmacy students to complete 400 h of clinical placement, for learning and role taking, to qualify as pharmacists (Blom, 2014; SAPC, 2017a; South African Pharmacy Council, 2019). Work-based learning in pharmacy education takes place across all levels of health services in South Africa, including Primary Healthcare (PHC). North-West University pharmacy students are required to undertake 80 h of structured and supervised compulsory WBL in PHC settings in South Africa to qualify for registration with the SAPC (SAPC, 2018c). Primary healthcare settings, known as PHC clinics and community health centres or community centres, treat minor conditions and refer patients to hospitals (MKalipi, 2018).

Although South Africa ranks among the top five countries in the African region in terms of density of health workers per 1000 population, with 78.19 doctors, nurses, midwives, dentists and pharmacists per 10,000 population in 2022 (Asamani et al., 2024), further analysis shows that South Africa was among the countries with the least improvement in the density of pharmacists between 2018 and 2022 (Asamani et al., 2024).

Furthermore, the country faces a growing paradox of health workers' unemployment (Asamani et al., 2024; Hlayisi, 2022) amidst a shortage of pharmacists in practice settings as a result of fiscal space constraints (Mflathelwa Dube & Memory Zuma, 2022). As such, many PHC settings in South Africa do not have dedicated pharmacists, as indicated on their organograms. Instead, a single pharmacist is assigned to oversee and support a group of clinics. Consequently, professional nurses who serve as the primary caregivers in these PHC settings take on patient consultations, diagnosis, medication dispensing and referral roles (National Department of Health, 2020).

In addition, professional nurses double as clinical mentors for pharmacy students who are placed in PHC settings for learning, as there are no pharmacists to do so. Although mentoring normally takes place between mentors and mentees from the same profession, there are occasions where health professionals mentor students from different professions, a phenomenon termed interprofessional mentoring (Lait et al., 2011b; Marshall & Gordon, 2005b, 2010b). Some studies (Lait et al., 2011b; Marshall & Gordon, 2005b, 2010b) published on interprofessional mentoring have shown that it provides the opportunity for health professions' students to learn how to collaborate with other professionals in a professional team and acquire the necessary clinical skills and knowledge required for a specific clinical placement period.

Unfortunately, the experiences, challenges and needs of the nurses mentoring pharmacy students in the South African PHC setting have not been explored nor described to provide empirical evidence for the improvement of pharmacy education; this study sought to close this gap in the literature.

4.3 MATERIALS AND METHODS

4.3.1 Study Design

The study employed a qualitative descriptive design (Doyle et al., 2020), which enabled a thorough and comprehensive exploration of the phenomenon under study (Kim et al., 2017) in order to provide an explicit account of the phenomenon. The design and reporting of the study were guided by the consolidated criteria for reporting qualitative research (COREQ) (Tong et al., 2007).

4.3.2 Study Setting

This study was conducted in 18 PHC settings, comprising five community health centres (CHC) and 13 community centres, in the North West province of South Africa. The CHCs operate 24 hours a day, while community centres are open eight hours a day.

4.3.3 Population, Sampling and Sample

Professional nurses, working in PHC settings in the Dr Kenneth Kaunda district of the North West province of South Africa, who were involved in mentoring pharmacy students from 2017 to 2023, constituted the population of this study. After obtaining all the necessary scientific and ethics approvals, permission was obtained from the PHC settings to recruit and enrol nurses into the study. Purposive sampling was employed to recruit 35 professional nurses from the 18 PHC

settings. Only professional nurses who had been involved in clinical mentoring of pharmacy students for at least a year were included in the sample to ensure the participants had the required experience to share.

4.3.4 Data Collection

With the aid of an independent research assistant, informed consent was signed by the participants. The first author conducted semi-structured individual interviews with participants at a conducive place, selected by the participants, with the aid of a researcher-developed semi-structured interview guide. The interview guide was developed by the first author (MM), in English, reviewed by two co-authors (MV and CC) and pretested with three professional nurses prior to the interviews. Comments from the pretest were used to finalize the interview guide, and data from the pretest was excluded from the main study. The semi-structured interview guide comprised seven main questions with probes and a concluding question (see Table 1).

The interviews took between 30 and 45 min and were audiotaped. The audiotaped interviews were listened to several times by the researcher to ensure clarity before transcription. The transcription was verbatim and emailed to four participants for member checking, after which they were transferred onto Atlas.ti for analysis. Data was collected from 10 October to 20 November 2023.

Table 1. Semi-structured interview guide

No.	Question
1.	Please tell me the importance of students' clinical visits to primary health care settings.
2.	Please tell me how you assist students in having purposeful and meaningful clinical learning experiences.
3.	Could you share your experience as a professional nurse mentoring pharmacy students?
4.	Please tell me how you facilitate student learning in the PHC setting. [probe student involvement, teaching methods, assessment methods, any debriefing or clinical conference sessions].
5.	What, in your opinion, are the challenges of interprofessional mentoring of pharmacy students? [Probe: To what extent did the interprofessional mentoring programme affect your day-to-day activities?]
6.	Do you think you are well prepared for the interprofessional mentoring job? [Probe: (a) What about your competencies? (b) What are your training needs for the interprofessional mentoring programme? (c) Discuss the support received from the University regarding your involvement in training the pharmacy students.]

7.	Concluding question: Do you have anything you would like to share concerning interprofessional mentoring of pharmacy students that we have not discussed or talked about?
----	---

4.3.5 Data Analysis

The six steps of data analysis derived from Braun & Clarke (Braun & Clarke, 2012) were used to analyse the data with the aid of Atlas.ti, version 24. The scripts were read thoroughly by researchers. The researcher and an independent co-coder coded three scripts, and a research meeting was organized to compare the codes for consensus building. After consensus, the researcher coded all the transcripts with the coding system. Similar codes were combined and described as sub-themes. Similar, related sub-themes were combined under a theme and described.

4.3.6 Ethical Considerations

Scientific approval was received from the Health Professions Education (HPed) Scientific Committee. Ethics approvals were received from the North-West University Health Research Ethics Committee (NWU-HREC), the North West Province Department of Health Research Committee, and the Dr Kenneth Kaunda District Ethics Committee. Permission letters were received from the nurse managers of all 18 PHC facilities involved in the study. All participants completed the informed consent form before taking part in the study. Anonymity, privacy and confidentiality were strictly adhered to by the research team. The researcher used member checking, independent co-coding, accurate note taking, and an independent research assistant to improve the trustworthiness of the study (Brink et al., 2018).

4.4 RESULTS

4.4.1 Demographic Characteristics

Most of the participants (28 of 35) were female, and seven were male. Three participants served as operational managers in PHC settings. In terms of racial distribution, only two (2) of the 35 participants were white, while the remaining participants were African.

4.4.2 Themes

Three main themes were identified and described: (a) experiences of professional nurses mentoring pharmacy students, (b) challenges faced by professional nurses mentoring pharmacy students, and (c) needs of professional nurses mentoring pharmacy students (Figure 1).

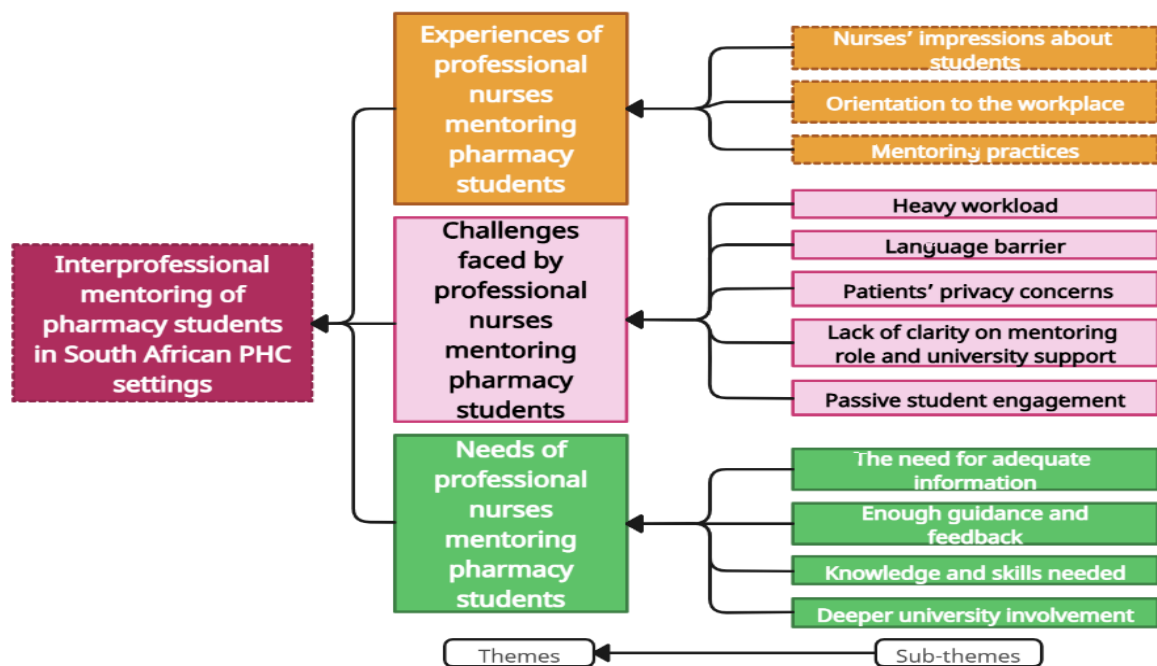


Figure 1. Themes and sub-themes

4.4.2.1 Experiences of Professional Nurses Mentoring Pharmacy Students

The experiences of the participants were conceptualized around their day-to-day encounters with pharmacy students in clinical settings. They discussed their experiences with respect to (i) nurses' impressions about students, (ii) orientation to the workplace, and (iii) mentoring practices.

Impressions About Students

The nurses had positive impressions regarding the presence of pharmacy students in their institutions. Most of the participants stated that students' presence positively impacted their workload, making their work easier and providing them with more time to interact with patients. The senior students took on pharmacy duties, such as organising medication cupboards, labelling medications, and providing health education to patients, which nurses often could not complete due to their heavy workload. The participants also found that the students were easy to mentor, as they were hands-on, friendly and eager to help and learn.

"It helps a lot because they help us. Because sometimes we don't have time, especially in the morning...."—Participant 5

“I think it positively affected us because when the students come, they are very hands-on, so they help us with the pharmacy, packing it well, and stuff like that....”—Participant 1

“So, it was very nice for me because the students I got were willing to learn, asking questions when necessary....”—Participant 11

Orientation to the Workplace

Before the students' arrival, the supervising pharmacist attended an orientation meeting with the university to plan the clinical placement. The pharmacist then informed the nurses in the PHC settings that there would be pharmacy students coming for clinical placement. The nurses indicated that upon the arrival of the students, they reviewed the accompanying folder, which contained the students' year of study and the learning objectives for the clinical placement for the specific period during which the students were placed in the setting. The professional nurses stated that they orientated and provided activities according to the clinical objectives provided by the university upon the students' arrival. Some of the PHC settings in the study had no stationed pharmacists, and nurses served as the first point of contact when students arrived.

“The first thing to do is ask about their objective for their current study level and then provide activities related to that objective....”—Participant 2

“Yes, we do. We delegate them according to their objectives. They must do what they should do. They must learn from what they are studying that year. We don't just delegate them personally. So, they must do their objectives....”—Participant 12

Active Mentoring Practice

Most of the participants shared their experiences about their mentoring activities, which included ensuring active supervision and active participation of the students. The participants stated that they continually guided and supervised students throughout the tasks assigned to them. They gave the students the opportunity to observe while the nurses performed their roles related to the students' learning objectives. Some activities the nurses mentioned included the use of medications and the observation of consultation sessions and provision of prompt feedback.

“Yes, we do involve them[students]. First, we show them [students] how we examine patients, let them [students] do it on their own, assist them[students] where they

*[students] go wrong, and then show them[students] the correct thing.....” —
Participant 5*

*“Before dispensing, I take out medication and do the quality test [with the
students].” —Participant 2*

*“Mostly, it’s a one-on-one conversation because they’ll be asking there and then,
and you’ll be answering where you can....” —Participant 8*

4.4.2.2 Challenges Faced by Professional Nurses Mentoring Pharmacy Students

Participants faced challenges regarding interprofessional mentoring of pharmacy students, which included heavy workload, language barrier, patients’ privacy concerns, lack of clarity on mentoring role and university support, and passive student engagement.

Heavy Workload of Professional Nurses

All the participants expressed immense work pressure caused by their heavy clinical workload. The professional nurses stated they were overworked due to numerous patients, limited resources, and staff shortages at their workplace. They reported long patient queues, particularly during the morning shift. Further, the additional responsibility of mentoring students, including pharmacy students, during clinical placements, exacerbated their clinical workload. Nurses expressed that the pharmacy students on clinical placement slowed down their completion of clinical duties to their patients, as they had to allocate part of their time for the students’ engagement with patients to enable them to meet their learning objectives successfully.

*“Of course, we work under pressure; there are always many people. Overworked,
we have too many patients.....” —Participant 4*

*“You still need to give the student time to interview. So, we move a little bit slower
on the days when we have students....” —Participant 11*

*“They want to go deeper. And then you don’t have time. The queue is too long. We
only highlight all the most important things. So, the challenge is that they expect you
to go deeper. So, we normally tell them, you know what, can I kindly finish with this
patient” ... Participant 3.*

“Our clinic is hectic, especially in the morning. So, when they are here, they help us with checking the expiry date and then packing the cupboard and organizing the medication appropriately” Participant 4

Language Barrier

Four participants stated that language was a barrier to pharmacy student mentoring during clinical placements and added to their workload, as engagements with patients often required translation. Most of the patients spoke Setswana and most students spoke Afrikaans. One participant explained that she had to translate for both students and patients to ensure mutual understanding during their interaction.

“Yes, yes. I’m sorry if I’m a bit out of line. Most of them[students] are white or Afrikaans and most patients are Setswana.”—Participant 9

“The challenge may be that some are struggling to understand English. They prefer Afrikaans, and then, you see, I’m not fluent in Afrikaans, so I’ll struggle to explain something they don’t understand well. So, they’ll need... but sometimes I have some good Afrikaans interpretation when Dr. N is here....”—Participant 12

Patients’ Privacy Concerns

Twenty-one participants stated that the presence of pharmacy students in the consulting rooms created some uncertainties regarding patient privacy and confidentiality issues. They mentioned it was difficult to know when to dig deeper into a patient’s condition or illness while students were in the consulting room.

“In our case, the only risk is the confidentiality and privacy of the patient. Some patients care when there is a third person present; if you forget to introduce them, it can create tension....” Participant 2

Lack of Clarity on Mentoring Role and University Support

Half of the participants reported understanding their responsibilities as nurses but expressed uncertainty regarding their role as mentors. Many indicated a lack of clarity on student expectations and felt inadequately informed about the clinical placement process. The information provided about the clinical placement of pharmacy students in PHC settings was viewed as insufficient, given the students’ different professional and educational backgrounds. Participants

believed that they had received limited information regarding the students' learning objectives, the rationale for their placement, placement schedules and whether their learning expectations were being met.

"When they come, it is like there is a gap between a professional nurse and a pharmacist You don't actually know what you need to teach them...." Participant 1

"If we have been told earlier and given the expectations, what do they expect from us and their objectives...." Participant 7

'We don't know when to do this; please, let us have a schedule where we know that our students will come at this time. They must not just pop out of nowhere. Maybe someone knows, but the professional nurses don't know when they come. But if we can have a schedule to know at this time....' Participant 1

Half of the participants said they did not receive university support. The professional nurses who mentored the pharmacy students felt that the university did not support them; the pharmacists were the only ones they saw during clinical visits, and with these interviews, they hoped they would receive more support and information in the future.

The university? I don't know; maybe they contacted the primary healthcare managers, but we have nothing to do with them...."—Participant 4

Currently, there is none, but you're coming here, which shows that something may be done...."—Participant 1

Passive Student Engagement

Two participants reported a lack of student engagement. The professional nurses noticed that some of the students did not pay full attention to what they were supposed to do and were reluctant to participate in the activities carried out in the facilities. Participants recognised the importance of clinical learning and ensured that they did not leave reluctant students behind. These students were given opportunities to engage and provided with additional time to reach their learning objectives.

"Okay, some of them are not interested. They arrive early in the morning, two hours before. The others stay up until four. So, there's a different kind of student. Not all of them are 100%...."—Participant 4

“Yes, most of the time. I guess some of them will not show interest when they show interest” ... Participant 12.

4.4.2.3 Needs of Professional Nurses

Twenty-eight participants felt that, due to the challenges they experienced during the interprofessional mentoring of pharmacy students, the university needed to consider their needs regarding the mentoring programme. Four needs were identified: the need for adequate information, enough guidance and feedback, required knowledge and skills, and deeper university involvement.

The Need for Adequate Information

Many (21) participants mentioned that they needed to acquire adequate information from the university on the students’ objectives before they arrived. Although the PHC centres were informed prior to the students’ clinical placement, this information did not get passed on to the practising nurses. Those who may have been aware of the dates seemed not to have the details of the clinical placement objectives to enable them to provide the needed mentorship. They also indicated a lack of capacity to mentor the pharmacy students, as their knowledge base in pharmacy was limited. The participants indicated their need for information on the clinical placement process, how to mentor, what was expected of them, their roles and responsibilities, more about the learning objectives, and placement schedule.

... Please, let’s have a schedule [objectives] where we know our students will come at this time. They [students] must not just pop out of nowhere. Maybe someone knows, but the professional nurses don’t know when they[students] will come.”—Participant 1

“For us, what we know is that when we just come to the pharmacy, we only know about the stock cards and then about the medication....”—Participant 5

Guidance and Feedback

Most of the participants believed that if the university provided them with guidance, learning outcomes and feedback, the mentoring provided to the pharmacy students would improve. The professional nurses requested guidance on mentoring for the pharmacy students’ clinical placement, as well as feedback on previous encounters to assess whether their mentorship met expectations and how they could improve their practices.

“... if we can know what the objectives and the outcomes are for the students. What is required? How can we help them? If we are taught how we can help the students, then we can help them. I think it will also help us know exactly what we should get them on....”—Participant 1

“I would suggest that the [university] make a small programme yearly where they take us for a week or so to give us briefs and whatever we need to know about pharmacy because things change....”—Participant 8

“I think the continuous evaluation from the personnel of the university...”—Participant 6

Knowledge and Skills Needed

Most of the participants touched on the need to receive basic skills training on what was expected of them when the students visited the facilities, for them to perform their duties successfully.

“We don’t have much knowledge about pharmacy. Perhaps getting some basic training will be better if we can get some basic training....”—Participant 7

“But generally, I don’t know exactly, I don’t know exactly what to do. The pharmacy department can start offering a dispensing course if the university can do so....”—Participant 1

“I would like to be trained in pharmacy because we are usually not trained with pharmacists. So, how do they work, what is their scope of practice, and what procedures do they follow in pharmacy? Because we know that when we just come to the pharmacy, we only know about the stock cards and the medication....”—Participant 5

Deeper University Involvement

Half of the participants stated that although university representatives occasionally checked on the students, greater institutional involvement in the clinical mentoring was needed. They suggested appointing someone permanently at the PHC facility to oversee clinical placement. Additionally, they stated the importance of regular visits by university representatives to evaluate what they were doing and provide constructive feedback.

“Being more present when the students are there and then being able to reach out to the other categories[professionals] that are in contact with the students....”—

Participant 2

“As they bring students, they should come and check how they are doing. Are they managing or coping? Do they have any challenges? They should not wait until students return to the university and ask them questions. Between them being here, they should come and assess. It will also help us know exactly what we should get them on.”—Participant 6

4.5 DISCUSSION

This study sought to describe the experiences, challenges and needs of professional nurses mentoring pharmacy students in PHC settings in the North West Province of South Africa. We found mixed perceptions regarding student presence in primary healthcare settings. While some practitioners saw students as additions to the health workforce, others perceived them as distractors who ate into practice time, increasing workload. The professional nurses found that students presented positively towards their work.

Both perspectives have been confirmed by existing literature: some authors (Wilbur & Pelletier, n.d.) found that pharmacy students contribute their expertise to the interprofessional team in caring for clients, while others (Rudland et al., 2025) viewed the time taken to plan and supervise students in the health care setting as enormous and resulted in increased workload.

Further, the nurses tasked with clinical mentoring of pharmacy students reported feeling uncertainty in their roles, citing insufficient pharmaceutical knowledge and skills to effectively support the students' learning. It was found that communication between the university and the PHC settings was not inclusive, as many professional nurses mentoring the pharmacy students did not have the objectives of the clinical placement programme. Additionally, nurses indicated not being aware of when students were arriving at the facility for training. Further, professional nurses were not certain or aware of how the university clinical placement programme of the pharmacy students in the PHC setting was run. The participants recommended that the university provide them with feedback and closely evaluate the clinical placement programme.

Although it is well established in the literature that pharmacy students' presence in health facilities increases pressure on practitioners (Fejzic et al., 2013), Rudland et al. (Rudland et al., 2025) argued

that the contributions of pharmacy students on clinical placement outweighed the pressure they placed on the clinical workload of practitioners; however, higher education institutions should invest more in the planning, funding and implementation of clinical placement for pharmacy students.

Research has shown that clinical mentors who were not prepared for the role were likely to base their supervision on intuition and their own experiences, which could cause feelings of insecurity due to a lack of confidence in their performance (Andrews & Ford, 2013). Other studies have shown that nurse mentors often feel uncertain of their teaching abilities, highlighting the need for additional training (Mubeezi & Gidman, 2017); this intervention has been associated with increased professional pride and a sense of dignity (Halcomb et al., 2012).

The professional nurses indicated a willingness to capacitate themselves but required some collaboration from the university in organizing short courses to upskill them into the role of clinical mentors for pharmacy students. Providing such training opportunities would be essential. Further, Juntunen et al. (Juntunen et al., 2025) found that interprofessional mentoring required some specific competencies that differed from profession-specific mentoring, hence health professionals engaging in interprofessional mentoring would need training to fulfil their roles adequately (Juntunen et al., 2025; Peters et al., 2013).

Research conducted by nurses [28] indicated a desire for more in-depth discussions and enhanced communication with universities concerning the distribution of student placements. Additionally, it was essential for stakeholders to collaborate in order to optimize clinical placement opportunities for students (Barnett et al., 2008). Other studies found that clinical mentors saw clarity in their roles as critical in helping students achieve their clinical placement objectives (Averlid & Salinas, 2023; Knott et al., 2022).

Lastly, it has been highlighted that poor communication between educational and clinical settings is a global challenge in the nursing profession (De Swardt, 2019; Salifu, n.d.). A potential cause of the theory–practice gap could be a lack of mentorship training (Klein et al., 2025), which often leads to feelings of unpreparedness to take on the clinical teaching role (Amod et al., 2024), which is contributed to by factors such as lack of organisational support, the absence of a learning culture and mentors (Nowell et al., 2017). Juntunen et al. (Averlid & Salinas, 2023) posit that joint

planning of the clinical education curricula is essential in effective interprofessional mentoring, as the clinicians have the chance to contribute to the programme and have buy-in from the start.

4.6 CONCLUSIONS

Interprofessional mentoring of pharmacy students by professional nurses is inevitable within the primary healthcare settings of South Africa. Critical challenges, such as the inadequate involvement of professional nurses in the planning of clinical placements by the higher education institution and the uncertainty of the professional nurses in taking on the mentoring roles, pose risks to the realization of the aim of clinical placement of pharmacy students, which will, in turn, affect their preparedness for clinical practice.

Although pharmacy students contribute to clinical practice activities, priority must be given to their clinical placement objectives and monitored carefully to ensure they realise them. Training of the professional nurses who mentor pharmacy students in PHC must be given urgent attention for the pharmacy students' goals of clinical placement to be realized. Further, students' experiences on their clinical placement and learning in the PHC should be constantly monitored to provide them with the necessary support.

4.7 POLICY IMPLICATIONS

Although interprofessional mentoring provides a useful clinical environment for students to learn from and collaborate with health professionals from different health professions, the planning and implementation of the programme is critical in realizing these outcomes. Institutions already implementing or intending to implement interprofessional education should consider collaborative planning and implementation of the programme with the clinical setting and providing the opportunity for health professionals to acquire the necessary competencies needed for facilitation.

Author Contributions:

Conceptualization, M.M., M.V. and C.D.C.; methodology M.M., M.V. and C.D.C.; software, M.M.; validation, M.V. and C.D.C.; formal analysis, M.M., M.V. and C.D.C.; investigation, M.M.; resources, M.M., M.V. and C.D.C.; data curation, M.M.; writing—original draft preparation, M.M.; writing—review and editing, M.M., M.V. and C.D.C.; visualization, M.M., M.V. and C.D.C.; supervision, M.V. and C.D.C.; project administration, M.M. All authors have read and agreed to the published version of the manuscript.

Funding:

This research received no external funding.

Institutional Review Board Statement:

North-West University Health Research Ethics Committee (N W U-0 0 1 8 7-2 2-A 1), the North West Province Department of Health Research Committee, and the Dr Kenneth Kaunda District Ethics Committee (no number given).

Informed Consent Statement:

Written informed consent was received from all participants included in this study.

Data Availability Statement:

Anonymized transcripts are available upon request.

Acknowledgments:

We acknowledge Janet Gross, Alhassan Abukari and David Deegbe for critically reviewing this manuscript.

Conflicts of Interest:

The authors have no conflicts of interest regarding this study.

4.8 REFERENCES

- Amod, H. B., Ndlovu, L., & Brysiewicz, P. (2024). Clinical mentorship of midwifery students: The perceptions of registered midwives. *Health SA Gesondheid*, 29. <https://doi.org/10.4102/hsag.v29i0.2492>
- Andrews, C. E., & Ford, K. (2013). Clinical facilitator learning and development needs: Exploring the why, what and how. *Nurse Education in Practice*, 13(5), 413–417. <https://doi.org/10.1016/j.nepr.2013.01.002>
- Asamani, J. A., Bediakon, K. S. B., Boniol, M., Munga'tu, J. K., Christmals, C. D., Okoroafor, S. C., Ahmat, A., Titus, M., Moussounda, J. B., Kipruto, H., Mwinga, K., Cabore, J. W.,

- & Moeti, M. R. (2024). State of the health workforce in the WHO African Region: Decade review of progress and opportunities for policy reforms and investments. *BMJ Global Health*, 7(Suppl 1), e015952. <https://doi.org/10.1136/bmjgh-2024-015952>
- Averlid, G., & Salinas, D. (2023). Expectations of the nurse teacher's role in clinical placements – a literature review. *Sykepleien Forskning*, e-90913. <https://doi.org/10.4220/Sykepleienf.2022.90913en>
- Barlow, K., & Thomforde, D. (2021). International Interprofessional Mentorship for New Clinicians. *International Journal of Integrated Care*, 21(S1), 343. <https://doi.org/10.5334/ijic.ICIC20585>
- Barnett, T., Cross, M., Jacob, E., Shahwan-Akl, L., Welch, A., Caldwell, A., & Berry, R. (2008). Building capacity for the clinical placement of nursing students. *Collegian*, 15(2), 55–61. <https://doi.org/10.1016/j.colegn.2008.02.002>
- Blom, R. (2014). The African journal for work-based learning. *The African Journal for Work-Based Learning*, 2(1), 37–39.
- Bos, E., Alinaghizadeh, H., Saarikoski, M., & Ivi Kaila, P. (2012). Validating the “clinical learning environment, supervision and nurse teacher” CLES+T instrument in primary healthcare settings using confirmatory factor analysis. *Journal of Clinical Nursing*, 21, 1785–1788. <https://doi.org/10.1111/j.1365-2702.2011.04030.x>
- Braun, V., & Clarke, V. (2012). Thematic analysis, APA handbook of research methods in psychology. In *APA handbook of research methods in psychology, Vol 2: Research designs: Quantitative, qualitative, neuropsychological, and biological*. (Vol. 2, pp. 57–71).
- Brink, H., Van der Walt, C., & Van Rensburg, G. H. (2018). *Fundamentals of research methodology for health care professionals* (Fourth edition). Juta and Company (Pty) Ltd.
- Byars-Winston, A., & Dahlberg, M. L. (2019). *The Science of Effective Mentorship in STEMM. Consensus Study Report*. ERIC. <https://eric.ed.gov/?id=ED600039>
- Cavanaugh, K., Cline, D., Belfer, B., Chang, S., Thoman, E., Pickard, T., & Holladay, C. L. (2022). The positive impact of mentoring on burnout: Organizational research and best practices. *Journal of Interprofessional Education & Practice*, 28, 100521. <https://doi.org/10.1016/j.xjep.2022.100521>
- De Swardt, H. C. (2019). The clinical environment: A facilitator of professional socialisation. *Health SA Gesondheid*, 24. <https://doi.org/10.4102/hsag.v24i0.1188>

- Deutschlander, S., & Suter, E. (2011). *Interprofessional mentoring guide*. (No. November; pp. 1–26). Alberta Health Services.
<http://www.albertahealthservices.ca/careers/docs/WhereDoYouFit/wduf-stu-sp-ip-mentoring-guide.pdf>
- Doyle, L., McCabe, C., Keogh, B., Brady, A., & McCann, M. (2020). An overview of the qualitative descriptive design within nursing research. *Journal of Research in Nursing: JRN*, 25(5), 443–455. <https://doi.org/10.1177/1744987119880234>
- Fejzic, J., Henderson, A., Smith, N. A., & Mey, A. (2013). Community pharmacy experiential placement: Comparison of preceptor and student perspectives in an Australian postgraduate pharmacy programme. *Pharmacy Education*, 13.
<https://pharmacyeducation.fip.org/pharmacyeducation/article/view/218>
- Gulla, C., Flo, E., Kjome, R. L. S., & Husebo, B. S. (2019). Implementing a novel strategy for interprofessional medication review using collegial mentoring and systematic clinical evaluation in nursing homes (COSMOS). *BMC Geriatrics*, 19(1), 130.
<https://doi.org/10.1186/s12877-019-1139-6>
- Halcomb, E. J., Peters, K., & McInnes, S. (2012). Practice nurses experiences of mentoring undergraduate nursing students in Australian general practice. *Nurse Education Today*, 32(5), 524–528. <https://doi.org/10.1016/j.nedt.2011.08.012>
- Henry-Noel, N., Bishop, M., Gwede, C. K., Petkova, E., & Szumacher, E. (2019). Mentorship in Medicine and Other Health Professions. *Journal of Cancer Education*, 34(4), 629–637.
<https://doi.org/10.1007/s13187-018-1360-6>
- Hill, S. E. M., Ward, W. L., Seay, A., & Buzenski, J. (2022). The Nature and Evolution of the Mentoring Relationship in Academic Health Centers. *Journal of Clinical Psychology in Medical Settings*, 29(3), 557–569. <https://doi.org/10.1007/s10880-022-09893-6>
- Hlayisi, V.-G. (2022). Increasing unemployment rate amongst health professionals: Will there be jobs for newly graduated South African audiologists post-COVID-19? *The South African Journal of Communication Disorders*, 69(2), 909. <https://doi.org/10.4102/sajcd.v69i2.909>
- Homer, Fagles, R., & Knox, B. (1997). *The odyssey*. Penguin Books. <https://stacollege.org/wp-content/uploads/2024/04/Odyssey-Robert-Fagles-Translation-Numbered-1.pdf>
- Jingting, W., Wahab, M. T., Bin Mohamad Ikbali, M. F., Wesley, L. T. W., Kanesvaran, R., & Radha Krishna, L. K. (2016). Toward an Interprofessional Mentoring Program in Palliative Care—A Review of Undergraduate and Postgraduate Mentoring in Medicine,

- Nursing, Surgery and Social Work. *Journal of Palliative Care & Medicine*, 06(06), 1–15.
<https://doi.org/10.4172/2165-7386.1000292>
- Jones, R. J., Woods, S. A., & Guillaume, Y. R. F. (2016). The effectiveness of workplace coaching: A meta-analysis of learning and performance outcomes from coaching. *Journal of Occupational and Organizational Psychology*, 89, 249–277.
<https://doi.org/10.1111/joop.12119>
- Juntunen, J., Tuomikoski, A., Pramila-Savukoski, S., Kaarlela, V., Keinänen, A., Kääriäinen, M., & Mikkonen, K. (2024). Healthcare professionals' experiences of required competencies in mentoring of interprofessional students in clinical practice: A systematic review of qualitative studies. *Journal of Advanced Nursing*, jan.16347.
<https://doi.org/10.1111/jan.16347>
- Juntunen, J., Tuomikoski, A.-M., Pramila-Savukoski, S., Kaarlela, V., Keinänen, A.-L., Kääriäinen, M., & Mikkonen, K. (2025). Healthcare professionals' experiences of required competencies in mentoring of interprofessional students in clinical practice: A systematic review of qualitative studies. *Journal of Advanced Nursing*, 81(2), 701–729.
<https://doi.org/10.1111/jan.16347>
- Kim, H., Sefcik, J. S., & Bradway, C. (2017). Characteristics of Qualitative Descriptive Studies: A Systematic Review. *Research in Nursing and Health*, 40(1), 23–42.
<https://doi.org/10.1002/nur.21768>
- Kivunja, C., & Kuyini, A. B. (2017). Understanding and Applying Research Paradigms in Educational Contexts. *International Journal of Higher Education*, 6(5).
<https://doi.org/10.5430/ijhe.v6n5p26>
- Klein, T. A., Graves, J. M., DeWitt, D., Paine, M., & Pearce, P. (2025). Barriers to interprofessional mentorship in the health sciences. *Mentoring & Tutoring: Partnership in Learning*, 33(2), 198–210. <https://doi.org/10.1080/13611267.2025.2456749>
- Knott, G. J., Mylrea, M., & Glass, B. (2022). What do preceptors want? A mixed methods study exploring pharmacist preceptor perceptions of their training and support needs at a regional Australian University. *Pharmacy Education*, 22(4), Article 4.
<https://doi.org/10.46542/pe.2022.224.718>
- Lait, J., Suter, E., Arthur, N., & Deutschlander, S. (2011a). Interprofessional mentoring: Enhancing students' clinical learning. *Nurse Education in Practice*, 11(3), 211–215.
<https://doi.org/10.1016/j.nepr.2010.10.005>

- Lait, J., Suter, E., Arthur, N., & Deutschlander, S. (2011b). Interprofessional mentoring: Enhancing students' clinical learning. *Nurse Education in Practice*, 11(3), 211–215. <https://doi.org/10.1016/j.nepr.2010.10.005>
- Leedy, Paul. D., & Ormrod, Jeanne. E. (2016). Practical research: Planning and design (11th ed.). Pearson.
- Marshall, M., & Gordon, F. (2005a). Interprofessional Mentorship: Taking on the Challenge. *Journal of Integrated Care*, 13(2), 38–43. <https://doi.org/10.1108/14769018200500016>
- Marshall, M., & Gordon, F. (2005b). Interprofessional Mentorship: Taking on the Challenge. *Journal of Integrated Care*, 13(2), 38–43. <https://doi.org/10.1108/14769018200500016>
- Marshall, M., & Gordon, F. (2010a). Exploring the role of the interprofessional mentor. *Journal of Interprofessional Care*, 24(4), 362–374. <https://doi.org/10.3109/13561820903275001>
- Marshall, M., & Gordon, F. (2010b). Exploring the role of the interprofessional mentor. *Journal of Interprofessional Care*, 24(4), 362–374. <https://doi.org/10.3109/13561820903275001>
- Mflathelwa Dube, E., & Memory Zuma, S. (2022). Professional nurses' challenges regarding drug supply management in the primary health care clinics. *International Journal of Africa Nursing Sciences*, 16, 100398. <https://doi.org/10.1016/j.ijans.2022.100398>
- MKalipi, T. D. (2018). *A Theoretical Study On Primary Health Care Services Within A South African Context*.
- Mmoloke, M., Vorster, M., & Christmals, C. (2025a, October 14). Interprofessional Mentoring of Pharmacy Students in Primary Healthcare Settings in South Africa. *HELTASA-2025 (Un)Conference 2025*. HELTASA-2025 (Un)Conference 2025, Walta Sisulu University. https://heltasa.org.za/wp-content/uploads/2025/10/NEW_UPDATED_PROGRAMME-FINAL-HELTASA-2025-UNCONFERENCEB_-8THOCTOBER-2025Heltasa_program.pdf
- Mmoloke, M., Vorster, M., & Christmals, C. D. (2025b). Interprofessional Mentoring of Pharmacy Students in Primary Healthcare Settings in South Africa. *International Medical Education*, 4(4), 37. <https://doi.org/10.3390/ime4040037>
- Mubeezi, M. P., & Gidman, J. (2017). Mentoring student nurses in Uganda: A phenomenological study of mentors' perceptions of their own knowledge and skills. *Nurse Education in Practice*, 26, 96–101. <https://doi.org/10.1016/j.nepr.2017.07.010>
- Mutshatshi, T. E., & Munyai, V. (2022). Challenges Experienced By Primary Health Care Nurses Rendering 24 Hours Service at Designated Clinics in Musina Local Area,

- Limpopo Province. *The Open Public Health Journal*, 15(1), 1–7.
<https://doi.org/10.2174/18749445-v15-e2202241>
- National Department of Health. (2020). *NURSING ACT, 2005 (ACT No. 33 OF 2005)* (No. 43305; pp. 3–21). www.gpwonline.co.za
- National Health Research Ethics Council (NHREC). (2015). *Guideline on principles, processes and structures on ethics in health research*.
- Naudé, A. (2016). *The Opinions on and Use of Simulation in Undergraduate Pharmacy Education At South African Universities* (Issue January).
- Nowell, L., White, D., Benzies, K., & Rosenau, P. (2017). Factors that impact implementation of mentorship programs in nursing academia: A sequential-explanatory mixed methods study. *Journal of Nursing Education and Practice*, 7(10), 1.
<https://doi.org/10.5430/jnep.v7n10p1>
- Peters, K., Halcomb, E. J., & McInnes, S. (2013). Clinical placements in general practice: Relationships between practice nurses and tertiary institutions. *Nurse Education in Practice*, 13(3), 186–191. <https://doi.org/10.1016/j.nepr.2012.09.007>
- Polit, D., & Beck, C. (2014). Qualitative Descriptive Studies. *Essentials of Nursing Research: Appraising Evidence for Nursing Practice*, 1, 1–2.
- Rudland, J., Ash, J., Barclay, L., Bloomfield, J., Bogossian, F., Byrne, K., Butler, M., Chur-Hansen, A., Clark, S., Edgar, A., Fotheringham, P., Forbes, R., Green, E., Haworth, N., Hays, R., Judd, B., Martin, P., Macdiarmid, R., McNally, C., ... Chróinin, D. N. (2025). Rethinking clinical placements: A response to changing healthcare demands. *Focus on Health Professional Education: A Multi-Professional Journal*, 26(1), Article 1.
<https://doi.org/10.11157/fohpe-vol26iss1id782>
- SAPC. (2017a). *2017 Good Pharmacy Education Standards Higher Education and Training* (No. 41256; pp. 172–208).
- SAPC. (2017b). *GOOD P HARMACY E DUCATION S TANDARDS Higher Education and Training*. 41256, 172–208.
https://www.gov.za/sites/default/files/gcis_document/201711/41256bn183.pdf
- SAPC. (2018a). *Bachelor Of Pharmacy—SA Study*.
- SAPC. (2018b). *The South African Pharmacy Council hereby publishes for implementation the 2018 Competency South African Pharmacy Council* (No. 10505; Vol. 33, pp. 1–46).
- SAPC. (2018c). *The South African Pharmacy Council hereby publishes for implementation the 2018 Competency South African Pharmacy Council* (Vol. 33, Issue 10505).

- South African Pharmacy Council. (2019). *Good Pharmacy Education Standards (Occupational Qualification Sub-Framework).pdf* (pp. 1–41). South African Pharmacy Council.
[https://www.pharmcouncil.co.za/Media/Default/Documents/Good%20Pharmacy%20Education%20Standards%20\(Occupational%20Qualification%20Sub-Framework\).pdf](https://www.pharmcouncil.co.za/Media/Default/Documents/Good%20Pharmacy%20Education%20Standards%20(Occupational%20Qualification%20Sub-Framework).pdf)
- Tay, K. T., Tan, X. H., Tan, L. H. E., Vythilingam, D., Chin, A. M. C., Loh, V., Toh, Y. P., & Krishna, L. K. R. (2021). A systematic scoping review and thematic analysis of interprofessional mentoring in medicine from 2000 to 2019. *Journal of Interprofessional Care*, 35(6), 927–939. <https://doi.org/10.1080/13561820.2020.1818700>
- Ti-enkawol Nachinab, G., & Armstrong, S. J. (2024). The development of a framework for clinical education programme of undergraduate nursing students in Ghana. *BMC Nursing*, 23, 263. <https://doi.org/10.1186/s12912-024-01915-y>
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 349–357.
<https://doi.org/10.1093/intqhc/mzm042>
- Van Staden, D. (2021). Investing in health professions education: A national development imperative for South Africa. *South African Journal of Higher Education*, 35(1), 231–245. <https://doi.org/10.20853/35-1-2916>
- Vasileiou, K., Barnett, J., Thorpe, S., & Young, T. (2018). Characterising and justifying sample size sufficiency in interview-based studies: Systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology* 2018 18:1, 18(1), 1–18. <https://doi.org/10.1186/S12874-018-0594-7>
- Wahab, T., Muhammad, Bin Mohamad Ikbāl, M. F., Jingting, W., Wesley, L. T. W., Kanesvaran, R., & Radha Krishna, L. K. (2016). Creating Effective Interprofessional Mentoring Relationships in Palliative Care- Lessons from Medicine, Nursing, Surgery and Social Work. *Journal of Palliative Care & Medicine*, 06(06).
<https://doi.org/10.4172/2165-7386.1000290>
- Wilbur, K., & Pelletier, T. (n.d.). Training for Collaborative Care: How Hospital Team Members View Pharmacy Students. *The Canadian Journal of Hospital Pharmacy*, 76(3), 228–233.
<https://doi.org/10.4212/cjhp.3283>
- World Health Organization [WHO], & [UNICEF], T. U. N. C. F. (2018). A vision for Primary health care in the 21st Century. *World Health Organization*, 1–64.
http://www.who.int/docs/default-source/primary-health/vision.pdf?sfvrsn=c3119034_2

- Wu, J., & Olagunju, A. T. (2024). Mentorship in medical education: Reflections on the importance of both unofficial and official mentorship programs. *BMC Medical Education*, 24(1), 1233. <https://doi.org/10.1186/s12909-024-06248-7>
- Yamuragiye, A., Ndayisenga, J. P., Nkurunziza, A., Bazirete, O., & Uwimana, M. C. (2023). Benefits of a Mentorship Program on Interprofessional Collaboration in Obstetric and Neonatal Care in Rwanda: A Qualitative Descriptive Case Study. *Rwanda Journal of Medicine and Health Sciences*, 6(1), 71–83. <https://doi.org/10.4314/rjmhs.v6i1.9>
- Yilmaz, K. (2013). Comparison of Quantitative and Qualitative Research Traditions: Epistemological, theoretical, and methodological differences. *European Journal of Education*, 48(2), 311–325. <https://doi.org/10.1111/ejed.12014>
- Zambodla, A., Williams, M., & Ricks, E. (2022). Community service nurses in primary healthcare clinics: Experiences of supervision and support from professional nurses. *Health SA Gesondheid*, 27, 1–10. <https://doi.org/10.4102/hsag.v27i0.1738>

Disclaimer/Publisher’s Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.

CHAPTER 5:

SUMMARY, CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

Interprofessional mentoring refers to learning that occurs when professionals and students from different disciplines or health professions work together (Lait et al., 2011). Students and staff from different disciplines are encouraged to learn ‘with, from, and about each other’ (Deutschlander & Suter, 2011). Interprofessional mentoring has many valuable advantages (Lait et al., 2011), which includes learning how to work with students and professionals from different fields, helping professionals become more confident and collaborate more effectively (Lait et al., 2011; Yamuragiye et al., 2023), and personnel who took part in a mentoring relationship reported feeling less burned out (Cavanaugh et al., 2022). Interprofessional mentoring offers significant advantages of collaborating as a team and sharing a variety of viewpoints and specialised knowledge (Huerta et al., 2022).

Interprofessional mentoring necessitates a healthcare professional who can serve as an "interprofessional mentor" to guide the approach and provide opportunities for students to engage with and learn from other health disciplines (Deutschlander & Suter, 2011). Mentors are leaders who facilitate students' personal and professional development and have the power to impart the clear educational knowledge required to comprehend course material (Henry-Noel et al., 2019).

Challenges in interprofessional mentoring include teaching methods, placement issues, workload, and supervision time (Hall et al., 2012; Towle et al., 2014). Increased health student numbers lead to a shortage of clinical placements, adding to nurses' workloads and resulting in poor performance (Grealish & Smale, 2011; Neshuku & Amukugo, 2015). Power dynamics, communication issues, role confusion, and diverging patient care approaches hindered interprofessional relationships (Zwarenstein et al., 2009). Health professionals struggled with collaboration in clinical settings (Croker et al., 2016).

Mentors need motivation and support to engage with mentoring students (Khunou & Matlhaba., 2023). Clear guidelines and comprehensive student information are essential (Goodyear & Goodyear, 2018; Kramer et al., 2021). Orientation and workshops for nurse mentors are crucial (Bennett & McGowan, 2014; Khunou, 2019), as is education on roles in clinical supervision

(Neshuku & Amukugo, 2015). Organisations should provide policies and guidelines (Fong et al., 2021; Panzavecchia & Pearce, 2014;), and stakeholders must collaborate in resource sharing and information exchange (McIntosh et al., 2014; Rakhudu et al., 2016; Tuomikoski et al., 2020).

In this chapter, the summary of the results for all the objectives of the study are discussed. The recommendations, limitations of the study and conclusion follow.

5.2 SUMMARY

This section presents a summary of the various chapters of the dissertation, highlighting the main findings in each chapter in relation to the research objectives.

Chapter 1 offered an introduction to the field of study and some background information on interprofessional mentoring of pharmacy students by professional nurses. It outlined the problem statement, which focused on understanding how professional nurses interact with pharmacy students during clinical placements. The purpose of the study was to explore the experiences, challenges, and needs of professional nurses mentoring pharmacy students at the PHC settings in the North West province of South Africa, in order to provide empirical evidence for the development and implementation of interprofessional mentoring programmes in the province. The study had three objectives: (i) to describe the experiences of professional nurses mentoring pharmacy students in PHC settings in the North-West province of South Africa, (ii) to describe the challenges the professional nurses, encounter during the training of pharmacy students and (iii) to describe the needs of the professional nurses mentoring pharmacy students in the primary healthcare settings in the North West province of South Africa.

Chapter 2 outlined the methodology adopted in the study. A qualitative descriptive study design was used, underpinned by the interpretivist paradigm, to explore the experiences, challenges, and needs of professional nurses mentoring pharmacy students in 18 PHC settings in the North West province. Data were collected through semi-structured interviews with 35 purposively selected professional nurses and analysed using Braun and Clarke's six-phase thematic analysis. Ethical considerations, including informed consent, anonymity, and risk/benefit analysis, were observed. The study ensured rigour through credibility, confirmability, dependability, and transferability. Limitations related to the study's context and participant scope were acknowledged, and dissemination plans were outlined.

Chapter 3 provided a narrative literature review on interprofessional mentoring, outlining global perspectives and recent findings. The search strategy, inclusion/exclusion criteria, and methods

of synthesis were explained. It explored various types of mentoring (traditional, formal, informal, peer, reverse, and electronic), highlighting their roles in supporting professional development. A focus was placed on interprofessional mentoring, its benefits for healthcare teams, organisations, and patient care, as well as challenges such as a lack of training, institutional support, and time constraints.

Chapter 4 is the results of the study, presented as a published article reporting on the results of the study exploring the interprofessional mentoring of pharmacy students by professional nurses in PHC settings in South Africa. Using a qualitative descriptive approach, data were collected through 35 semi-structured interviews across 18 PHC facilities. The chapter outlined the study background, methodology, ethical considerations, and key findings, structured around three central themes: the experiences, challenges, and needs of professional nurses involved in mentoring pharmacy students

5.3 OVERALL CONCLUSIONS

Conclusions of this study are drawn from the results of the empirical research juxtaposed with the existing literature used in the discussions as presented in the preceding chapters. The thematic analysis, which yielded three themes, was presented in the published paper reported in Chapter 4 of this dissertation. The three themes addressed each objective set out at the proposal phase of this study. Being a qualitative study embedded in the interpretivist paradigm, the researcher's conclusions are to be applied within the framework of qualitative descriptive outcomes, which are limited in terms of generalizability. This section of the dissertation highlights the main conclusion and how the study met each of the objectives.

5.3.1 Conclusion on Objective 1

The first objective of the study was to explore and describe the experiences of professional nurses mentoring pharmacy students in PHC settings in the North West Province of South Africa. This objective was comprehensively tackled in the qualitative descriptive study presented in Chapter 4, comprising the first theme, experiences of the professional nurses mentoring pharmacy students, which was described in three subthemes: (i) nurses' impressions about students, (ii) orientation to the workplace, and (iii) mentoring practices.

The professional nurses conceptualised their experiences around their daily encounters and personal reflections around the pharmacy students in a PHC. Despite the slowing of their pace of work in the setting secondary to student presence and the need to explain procedures in detail

during teaching sections, the professional nurses were very impressed with the students' contribution to health care services in PHC settings. They indicated their support in packaging and quality assurance in the medication processes, a role which is expected to be played by qualified pharmacist but left for nurses as a result of the shortage of pharmacists in PHC settings.

The professional nurses' mentoring role was characterised by one-on-one interactions, teaching during clinical practice, responding to students' questions, and providing feedback on hands-on activities, all of which collectively made the mentoring experience meaningful. In addition to their routine nursing responsibilities, nurses were required to supervise and guide students, often serving as their first point of contact in the PHC setting. However, there was no direct engagement between the university and the professional nurses regarding the purpose and objectives of the students' placement. Instead, communication was typically channelled through the supervising pharmacist, who attended university meetings and relayed the information to nursing staff. This indirect approach often resulted in the nurses feeling overwhelmed and underprepared for the students' arrival.

Some of the experiences of the professional nurses were reflected in the challenges and needs section of the study. In particular, situations where students posed questions in areas beyond the nurses' expertise revealed feelings of inadequacy and powerlessness. These experiences were further coupled with language barriers and lack of support from the university in fulfilling their mentoring responsibilities.

In conclusion, the nurses had mixed experiences of positive and negative encounters with the interprofessional mentoring of pharmacy students in PHC settings. The university and the clinical setting management will need to invest more resources and involve the nurses more in the planning and implementation of the clinical placement programme to enhance their experiences in interprofessional mentoring roles.

5.3.2 Conclusion on Objective 2

Objective 2 of this study was to explore and describe the challenges that professional nurses encounter in mentoring pharmacy students in PHC settings in the North West province. Theme 2 of the thematic analysis conducted on the interview data, presented in the empirical paper (Mmoloke et al., 2025b) reported in Chapter 4 of the dissertation, addresses the challenges faced by professional nurses mentoring pharmacy students, and comprises five subthemes: (i) heavy

workload, (ii) language barrier, (iii) patients' privacy concerns, (iv) lack of clarity on mentoring roles and university support, and (v) passive student engagement.

Pharmacy students added an extra burden to the already heavy workload of the professional nurses. In addition to managing long patient queues, administrative duties, and the supervision of nursing students, the nurses also had to support pharmacy students during clinical placement. Nurses were confronted with a diverse group of students, requiring someone to translate on some occasions, further increasing the time spent on teaching while simultaneously navigating routine service delivery.

Although student involvement is permitted in many clinical settings, patients were concerned about their privacy during procedures that exposed them in front of students in the consulting room and treatment stations, which added further challenges for the nurses. Additionally, the nurses had not received adequate orientation regarding their roles as mentors, leading to uncertainty about the validity of what they were doing as mentors.

To conclude, nurses encountered challenges in their day-to-day mentoring of pharmacy students in PHC settings that were largely manageable or preventable. Providing training and orientation of the nurses involved in mentoring, as well as co-planning and implementing the clinical placement programme with them, could address issues relating to role clarity, heavy workload and passive student engagement. Student placements could be scheduled during shifts with nurses who can communicate effectively with them, and at times when students from other professions are not present, to ease the workload. Patient education and obtaining consent before teaching sessions may alleviate privacy concerns, while proper student orientation and assessment could enhance their engagement and commitment to clinical practice.

5.3.3 Conclusion on Objective 3

The last objective of the study was to explore and describe the needs of professional nurses mentoring pharmacy students in primary healthcare settings in the North West province of South Africa. This was reported in theme 3, needs of professional nurses mentoring pharmacy students, in chapter 4. Theme 3 comprises four sub-themes: (i) need for adequate information, (ii) enough guidance and feedback, (iii) knowledge and skills needed, and (iv) deeper university involvement.

Professional nurses needed information to clear their uncertainties and expectations about their roles when mentoring pharmacy students. The university must provide guidance and feedback on what the professional nurses are doing to determine if it is effective or not. The professional nurses also require opportunities to enhance their knowledge and skills through targeted training, and the university should support them by providing recognition or certification to contribute to their professional development.

In conclusion, the professional nurses regarded interprofessional mentoring of pharmacy students as worthwhile, but needed effective communication and collaboration between the university and the facilities to meet their expectations and the students' objectives.

5.4 CONTRIBUTIONS OF THIS STUDY

The study findings offer a valuable contribution by bringing to light the experiences, challenges and needs of professional nurses for the university to consider to improve the mentoring of pharmacy students and enhance collaboration in PHC settings. To the researcher's knowledge, this is the first study to explore professional nurses' experiences, challenges and needs for interprofessional mentoring in South African PHC settings, adding to the body of knowledge. The publication of an empirical paper in an international open-access and Scopus-indexed journal and presenting at a national conference and the Dr Kenneth Kaunda research day, makes the findings available for the provincial, national and international academics and policy makers to use in guiding research and health professions education.

5.5 LIMITATIONS OF THE STUDY

The following limitations were identified:

The study was contextual, reflecting on the experiences of professional nurses working in PHC settings in the North West province, specifically in the Dr Kenneth Kaunda district. This geographical and institutional focus limits the scope and utility of the findings, as the healthcare infrastructure, staffing levels, and mentoring practices in this district may not be representative of other regions in South Africa. Consequently, the results may not be generalisable to settings with different resource constraints, institutional support, or cultural dynamics influencing interprofessional mentoring.

The study would have been more comprehensive if it had included the views, experiences, challenges and needs of pharmacy students themselves.

5.6 RECOMMENDATIONS

The following recommendations are made to improve interprofessional mentoring during clinical placement visits.

5.6.1 Recommendations for future research

More research should be conducted on the interprofessional mentoring of pharmacy students by professional nurses in various provinces and districts in South Africa to generate evidence for national policy reforms on interprofessional mentoring.

From the results of this study, it is evident that professional nurses working in PHC settings were uncertain about their roles during the clinical placement visit of pharmacy students. Therefore, there is also a need to conduct studies that could determine the experiences of pharmacy students.

The results of this study could assist the university in developing guidelines that enhance the successful implementation of interprofessional mentoring of pharmacy students.

The programme must be evaluated timeously and provide feedback through research and meetings for its success.

5.6.2 Recommendations for practice

During the interviews, professional nurses reported that staff shortages contributed significantly to their workload, which in turn affected their ability to effectively mentor pharmacy students. To enhance the quality of interprofessional mentoring in PHC settings, it is recommended that human resource planning take into account the dual clinical and educational roles of professional nurses. Increasing staffing levels where possible may help alleviate pressure and allow nurses the time and capacity to provide meaningful mentorship without compromising patient care.

5.6.3 Recommendations for education

Clinical placement is essential for pharmacy students to relate theory to practice, and to gain real-world experience and broaden their professional knowledge. It is recommended that professional nurses receive structured orientation and preparatory training before the arrival of pharmacy students. This preparation should include clear guidelines on mentoring roles, learning objectives, and practical tools or resources to support effective student engagement during the placement.

5.7 REFERENCES

- Bennett, M., & McGowan, B. (2014). Assessment matters—Mentors need support in their role. *British Journal of Nursing*, 23(9), 454–458.
<https://doi.org/10.12968/bjon.2014.23.9.454>
- Cavanaugh, K., Cline, D., Belfer, B., Chang, S., Thoman, E., Pickard, T., & Holladay, C. L. (2022). The positive impact of mentoring on burnout: Organizational research and best practices. *Journal of Interprofessional Education & Practice*, 28, 100521.
<https://doi.org/10.1016/j.xjep.2022.100521>
- Crocker, A., Brown, L., Little, A., & Crowley, E. (2016). Interprofessional Relationships for Work-Integrated Learning in Healthcare: Identifying Scope for Ongoing Professional Development. *Creative Education*, 07(12), 1729–1738.
<https://doi.org/10.4236/ce.2016.712176>
- Deutschlander, S., & Suter, E. (2011). *Interprofessional mentoring guide*. (No. November; pp. 1–26). Alberta Health Services.
<http://www.albertahealthservices.ca/careers/docs/WhereDoYouFit/wduf-stu-sp-ip-mentoring-guide.pdf>
- Fong, T. S., Hassan, Z., Kasa, M., Balang, R. V., & Abdullah, S. M. (2021). Exploring Mentoring Skills to Assist New Nurses: Mentors' and Mentees' Perspectives. *International Journal of Academic Research in Business and Social Sciences*, 11(14), Pages 124-141. <https://doi.org/10.6007/IJARBS/v11-i14/8534>
- Goodyear, C., & Goodyear, M. (2018). Supporting successful mentoring. *Nursing Management*, 49(4), 49–53. <https://doi.org/10.1097/01.NUMA.0000531173.00718.06>
- Grealish, L., & Smale, L. (2011). Theory before practice: Implicit assumptions about clinical nursing education in Australia as revealed through a shared critical reflection. *Contemporary Nurse*, 39(1), 51–64. <https://doi.org/10.5172/conu.2011.39.1.51>
- Hall, K., Musing, E., Miller, D. A., & Tisdale, J. E. (2012). Experiential Training for Pharmacy Students: Time for a New Approach. *The Canadian Journal of Hospital Pharmacy*, 65(4). <https://doi.org/10.4212/cjhp.v65i4.1159>
- Henry-Noel, N., Bishop, M., Gwede, C. K., Petkova, E., & Szumacher, E. (2019). Mentorship in Medicine and Other Health Professions. *Journal of Cancer Education*, 34(4), 629–637. <https://doi.org/10.1007/s13187-018-1360-6>
- Huerta, J. J., Figuracion, M. T., Vazquez-Cortes, A., Hanna, R. R., Hernandez, A. C., Benitez, S. B., Sipelii, M. N., Brooks, T. C., ZuZero, D. T., Iopu, F. M. R. V., Romero, C. R.,

- Chavez, A., Zell, A., Shugerman, S. R., Shannon, J. S., & Marriott, L. K. (2022). Interprofessional Near-Peer Mentoring Teams Enhance Cancer Research Training: Sustainable Approaches for Biomedical Workforce Development of Historically Underrepresented Students. *The Journal of STEM Outreach*, 5(2).
<https://doi.org/10.15695/jstem/v5i2.10>
- Khunou, S. H. (2019). Community Service Nurses' Experiences Regarding Mentoring in South Africa. *Africa Journal of Nursing and Midwifery*, 21(1). <https://doi.org/10.25159/2520-5293/4267>
- Khunou, S. H., & Matlhaba, K. L. (2023). Literature Review: The Support Needs of The Nurse Mentors in Their Mentoring Role. *Jurnal Ners Dan Kebidanan (Journal of Ners and Midwifery)*, 10(2), 288–301. <https://doi.org/10.26699/jnk.v10i2.ART.p288-301>
- Kramer, D. S., McCue, V. Y., Butler, E., Prentiss, A. S., Ojeda, M. M., Tugg, K. K., Fuentes, V., & Bonet, S. (2021). The Art of Nurse Mentoring: A Framework of Support. *Nursing & Health Sciences Research Journal*, 4(1), 16–25. <https://doi.org/10.55481/2578-3750.1097>
- Lait, J., Suter, E., Arthur, N., & Deutschlander, S. (2011). Interprofessional mentoring: Enhancing students' clinical learning. *Nurse Education in Practice*, 11(3), 211–215. <https://doi.org/10.1016/j.nepr.2010.10.005>
- McIntosh, A., Gidman, J., & Smith, D. (2014). Mentors' perceptions and experiences of supporting student nurses in practice. *International Journal of Nursing Practice*, 20(4), 360–365. <https://doi.org/10.1111/ijn.12163>
- Mmoloke, M., Vorster, M., & Christmals, C. D. (2025). Interprofessional Mentoring of Pharmacy Students in Primary Healthcare Settings in South Africa. *International Medical Education*, 4(4), 37. <https://doi.org/10.3390/ime4040037>
- Neshuku, H., & Amukugo, H. J. (2015). Experiences of registered and student nurses regarding the clinical supervision in medical and surgical wards: Develop an educational programme to support registered nurses. *International Journal of Medicine*, 3(2), 87. <https://doi.org/10.14419/ijm.v3i2.5136>
- Panzavecchia, L., & Pearce, R. (2014). Are preceptors adequately prepared for their role in supporting newly qualified staff? *Nurse Education Today*, 34(7), 1119–1124. <https://doi.org/10.1016/j.nedt.2014.03.001>
- Rakhudu, M. A., Davhana-Maselesele, M., & Useh, U. (2016). Concept analysis of collaboration in implementing problem-based learning in nursing education. *Curationis*, 39(1), 13 pages. <https://doi.org/10.4102/curationis.v39i1.1586>

- Towle, A., Brown, H., Hofley, C., Kerston, R. P., Lyons, H., & Walsh, C. (2014). The expert patient as teacher: An interprofessional Health Mentors programme. *The Clinical Teacher*, 11(4), 301–306. <https://doi.org/10.1111/tct.12222>
- Tuomikoski, A.-M., Ruotsalainen, H., Mikkonen, K., & Kääriäinen, M. (2020). Nurses' experiences of their competence at mentoring nursing students during clinical practice: A systematic review of qualitative studies. *Nurse Education Today*, 85, 104258. <https://doi.org/10.1016/j.nedt.2019.104258>
- Yamuragiye, A., Ndayisenga, J. P., Nkurunziza, A., Bazirete, O., & Uwimana, M. C. (2023). Benefits of a Mentorship Program on Interprofessional Collaboration in Obstetric and Neonatal Care in Rwanda: A Qualitative Descriptive Case Study. *Rwanda Journal of Medicine and Health Sciences*, 6(1), 71–83. <https://doi.org/10.4314/rjmhs.v6i1.9>
- Zwarenstein, M., Goldman, J., & Reeves, S. (2009). Interprofessional collaboration: Effects of practice-based interventions on professional practice and healthcare outcomes. In The Cochrane Collaboration (Ed.), *Cochrane Database of Systematic Reviews* (p. CD000072.pub2). John Wiley & Sons, Ltd. <https://doi.org/10.1002/14651858.CD000072.pub2>

ADDENDUM A: APPROVAL FOR SUBMISSION TO SCIENTIFIC COMMITTEE



Small group discussion and recommendation for submission to HPEd Scientific Committee

Dear HPEd Scientific committee member

We hereby provide confirmation of the small group discussion on the SoTL research project titled:

Study title: Interprofessional mentoring of pharmacy students in South African primary healthcare settings: Nurses' Experiences

We confirm that:

- the PI provided the proposal with all supporting documents to the small group members as part of the critical read process,
- sufficiently addressed the recommended/ requested changes in the proposal as well as in all the accompanying supporting documentation,
- provided a change log, indicating what changes have been made and where the changes were made (referring to documents and pages).

We are satisfied with the quality of the proposal and all supporting documentation and recommend the submission to HPEd Scientific Committee.

Members of small group

Small group member	Surname & Name	Signature of approval	Date of approval
Member 1	Mrs. Hanlie Steyn	H Steyn (cannot sign in Word for android)	27/06/2022
Member 2	Mr. David Salifu		26-06-2022
Member 3	Dr. Alhassan Sibdow Abukari		27/06/2022

ADDENDUM B: APPROVAL HEALTH PROFESSIONS EDUCATION SCIENTIFIC COMMITTEE



Recommendation of the HPEd Scientific Committee to the NWU-HREC

Scientific Committee	Name	Health Professions Education Scientific Committee	Discipline	Scholarship of Teaching and Learning in Health Sciences
	Research Entity	CHPE	Contact Person	Paula Jardim
	Faculty	Health Sciences	E-mail	Paula.jardim@nwu.ac.za
Title of the study:	Interprofessional mentoring of pharmacy students in South African primary healthcare settings: Nurses' Experiences			
Researchers involved in the study:	Dr. Christmal Christmals; Madile Mmoloke			
Executive summary of the research:	Work-based learning (WBL) is a critical component of the training of pharmacy students (South African Pharmacy Council (SAPC, 2017). Therefore, the need for pharmacy students to experience work-based learning during their training cannot be overemphasised. To ensure the success of WBL, pharmacy students need to be placed in different clinical settings and under the supervision of experienced pharmacists or other health professionals. According to the Good Pharmacy Education Standards (GPES) (SAPC 2018), a registered pharmacy student is supposed to work 400 hours, and the programme must be developed, facilitated, and supervised by a pharmacist or a delegated person. Pharmacy students at North-West University undergo 455 hours of work integrated learning, which is a little more than the 400 hours prescribed by the SAPC. The 455 hours are divided as follows: The first year, 40hours in retail pharmacies; second year: 60 hours in retail pharmacies; third year, 120 hours in public health sector pharmacies, including PHC clinics; and the fourth year, 235 hours in the community, private hospital, public hospitals pharmacies and symposium, and pharmacy industries. Students must register with the SAPC at the beginning of the second year of the BPharm programme (SAPC, 2018b). (SAPC, 2018a). The primary healthcare (PHC) setting is one of the accredited facilities for the training and placement of pharmacy students. According to Bobbin et al. (2020), the pharmacist's role in the PHC setting is to render pharmaceutical services and pharmaceutical care to patients and provide support to students and post-basic assistants. However, because of the shortage of pharmacists and post-basic pharmacist assistants in the PHC setting, it is impossible for registered pharmacy personnel to supervise and mentor BPharm students who must have the PHC setting experience as part of their WBL (Naudé, 2016).			

	The professional nurse then becomes the direct supervisor/mentor of the Bachelor of pharmacy students in the PHC settings in the North-West province, although the professional nurses are only trained and obliged to mentor and supervise nursing students in the health facilities (National Department of Health, 2020). The aim of this study is to describe the experiences, challenges, and needs of professional nurses mentoring pharmacy students in the primary health care settings in the North-West Province of South Africa by reaching these objectives: i. To explore and describe the experiences of professional nurses mentoring pharmacy students in primary health care settings in the North-West province of South Africa. ii. To explore and describe the challenges that professional nurses encounter in mentoring pharmacy students in the PHC settings in the North-West Province, iii. To explore and describe the needs of the professional nurses mentoring pharmacy students in the primary healthcare settings in the North-West province of South Africa The qualitative descriptive study uses semi-structured individual interviews in primary healthcare settings. The interview guide will be used for data collection.		
Potential risk level for human participants:	No risk	☐	Motivate: The study involves postgraduate students who are not considered as a vulnerable group of people in SoTL research but the procedures and processes involved in the research does not put them at critical risk therefore the decision.
	Minimal risk	☒	
	Medium risk	☐	
	High risk	☐	
Potential risk level for children and incapacitated adults:	No risk	☐	Motivate: Click here to enter text.
	No more than minimal risk of harm	☐	
	Greater than minimal risk with the prospect of direct benefit	☐	
	Greater than minimal risk with no direct benefit	☐	
Recommendation for the ethics committee	Expedited review	☐	Motivate: Click here to enter text.
	Full review	☒	
	Exempted from review	☐	
Any additional comments	Motivate: Click here to enter text.		
Committee members present during the review	Members present		
	Boitumelo Molato		
	Christiaan Bekker		
	Ingrid Opperman		
	James Asamani		
	Click here to enter name.		
	Click here to enter name.		

Date of review	2022/07/27
----------------	------------



Signature of Chairperson
(Acting)
Date: 2022/09/28



Signature of Research Director
Date: 2022/10/03

ADDENDUM C: SEMI-STRUCTURED INDIVIDUAL INTERVIEW GUIDE FOR PROFESSIONAL NURSES

Interprofessional mentoring of pharmacy students in South African primary healthcare setting: Nurses' Experiences

Length of interview: approximately 30-45 minutes

Primary goal: To allow you the freedom to express your views, feelings and experiences about the programme in your own terms

Instructions to the researcher

- Introduce yourself,
- Ensure the adherence to the COVID-19 safety protocol as stipulated by the government of South Africa and the World Health Organization
- Thank the participant for his/her willingness and donating their time to participate in the research,
- Assign a code to the participant.

Give a short overview of the study outlining:

- The aim and objectives of the study:
The purpose of this study is to describe the experiences, challenges, and needs of professional nurses mentoring pharmacy students at the primary health care settings in the North-West province of South Africa to provide empirical evidence for the planning and implementation of interprofessional mentoring programmes in the province.
To achieve the aim, the following objectives will be pursued:
 - i. To describe the experiences of professional nurses mentoring pharmacy students in primary health care settings in the North-West province of South Africa
 - ii. To describe the challenges the professional nurses, encounter during the training of pharmacy students
 - iii. To describe the needs of the professional nurses mentoring pharmacy students in the primary healthcare settings in the North-West province of South Africa.
- The participation is always voluntary, that participant may choose not to respond and could withdraw from the interview at any time without any consequences,
- Emphasise the importance of confidentiality,
- The need to audio-recorder for the interaction for the purpose of transcription. Participants are requested to verbally confirm consent for recordings.

- Also explain that all recordings will be transcribed verbatim by the researcher.
- To ensure anonymity, codes will be assigned to participants. Also, no identifiable information will be used in any part of the research report.
- Address any questions and/or uncertainties.
- Covid 19 protocol

Conducting the semi-structured individual interview:

- Please tell me about your daily activities as a professional nurse in primary health care setting.
- Please tell me the importance of student's clinical visit to primary health care settings.
- Please tell me how you assist students in having a purposeful and meaningful clinical learning experience.
- Could you share your experience as a professional nurse mentoring pharmacy students?
- Please tell me how you facilitate student learning at the PHC setting.
 - Probe student involvement
 - Teaching methods
 - Assessment methods
 - Any debriefing or clinical conference sessions
- What, in your opinion, are the challenges of interprofessional mentoring of pharmacy students?
 - To what extent did the interprofessional mentoring programme affect your day-to-day activities?
- Do you think you are well prepared for the interprofessional mentoring job?
 - What are your training needs for the interprofessional mentoring programme?
 - Please tell me about the support you receive from the University regarding your involvement in training the pharmacy students.
 - What about your competencies?
- **Concluding question:** Do you have anything you would like to share concerning interprofessional mentoring pharmacy students that we have not discussed or talked about?

ADDENDUM D: INFORMED CONSENT FOR PROFESSIONAL NURSES

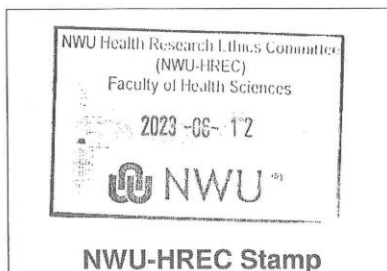


Private Bag X1290, Potchefstroom
South Africa 2520

Tel: +2718 299-1111/2222

Fax: +2718299-4910

Web: <http://www.nwu.ac.za>



INFORMED CONSENT DOCUMENTATION FOR PROFESSIONAL NURSES TO PARTICIPATE IN SEMI- STRUCTURED INTERVIEWS

TITLE OF THE RESEARCH STUDY: Interprofessional mentoring of pharmacy students in
South African primary healthcare settings: Nurses' Experiences

ETHICS REFERENCE NUMBERS: NWU-00187-22-A1

PRINCIPAL INVESTIGATOR: Christmal Christmals

POST GRADUATE STUDENT: Madile Joconita Mmoloke

ADDRESS: CHPE: Faculty of Health Sciences

Building G23; Room 105

North-West University

Potchefstroom 2520

CONTACT NUMBER: 018 299 2692

You are being invited to take part in a **research study** that forms part of Master study. Please take some time to read the information presented here, which will explain the details of this study. Please ask the researcher or person explaining the research to you any questions about any part of this study that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you might be involved. Also, your participation is **entirely voluntary**, and you are free to say no to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part now.

This study has been approved by the NWU-Health Research Ethics Committee of the Faculty of Health Sciences of the North-West University (NWU-00187-22-A1) and will be conducted according to the ethical guidelines and principles of Ethics in Health Research: Principles, Processes and Structures (DoH, 2015) and other international ethical guidelines applicable to this study. It might be necessary for the research ethics committee members or other relevant people to inspect the research records.

What is this research study all about?

- The purpose of this study is to describe the experiences, challenges and needs of professional nurses mentoring pharmacy students at the primary healthcare settings in the North-West province of South Africa to provide empirical evidence for the planning and implementation of interprofessional mentoring programmes in the province.

Why have you been invited to participate?

- You have been invited to participate because you are a Professional nurse working in PHC.
- You have also complied with the following inclusion criteria: You have been mentoring the pharmacy students in PHC before.

What will be expected of you?

- You will be responsible to participate in individual interview and spending 30- 45minutes of your time with the researcher.
- You will be asked to share your experiences and challenges you encountered during interprofessional of mentoring the pharmacy students' clinical placement.

Will you gain anything from taking part in this research?

- The indirect benefits are that you contribute to the improvement of placements and patient care and recognition of support to be given for enhancement of practice in primary health care.

- The indirect benefit is that sharing your experiences will reflect on the impact of what and how mentoring affects your overall working career.
- There will be no direct benefit for participation in the study.

Are there risks involved in you taking part in this research and what will be done to prevent them?

- The research poses a minimal risk to the participants because they are only asked to share their experiences in clinical mentoring.
- During the interview, you will feel little discomfort to answer or comment on some of the questions when asked to comment the interprofessional mentoring of the pharmacy students' clinical placement. pharmacy students in primacy health care.
- Please note that no one will be held accountable you will be provided with the code no one's name will be mentioned, and all information will be confidential.
- The benefits outweigh the risks involved.

How will we protect your confidentiality and who will see your findings?

- Anonymity is rarely possible with face-to-face interviews because of the presence of the researcher, but nonetheless the researcher will do everything in her power to ensure confidentiality by processing data anonymously and confidentiality will be maintained. The participants will be protected with codes and the data transcription.
- The data will only be accessible to the researcher and transcriber, her supervisors, and the co-coder.
- The transcriber will have access to the digital recordings of the interviews and will sign a confidentiality agreement, and all copies of the recordings and transcriptions will be deleted from her computer after being sent to the researcher.

What will happen with the findings or samples?

- The data collected will only be used for this study and to develop an article for research publication.
- The audio recordings will be destroyed after transcription and data will be stored for five years in the office of the principal investigator in North-West University, and the researcher will submit the research report to the University's repository.

How will you know about the results of this research?

- The seminar will be held at the facilities.
- Policy briefs of a five-page summary of findings will be given with the link to the dissertation.

Will you be paid to take part in this study and are there any costs for you?

- No one will be paid to participate in the study. But refreshments will be served during the interview session.

Is there anything else that you should know or do?

- You can contact: Dr C. Christmals at 018 285 2117 or Christmal.Christmals@nwu.ac.za if you have any further queries or encounter any problems.
- You can contact the Health Research Ethics Committee at 018 299 4912 or Ms. Carolien van Zyl's email address: Carolien.VanZyl@nwu.ac.za if you have any concerns or complaints that have not been adequately addressed by the researcher.
- You will receive a copy of this information and consent form for your own records.

Declaration by participant

By signing below, I agree to take part in the research study titled: Interprofessional mentoring of pharmacy students in South African primary healthcare setting: Nurses' Experiences and I consent that the interview may be audio-recorded.

I declare that:

- I have read this information/it was explained to me by a trusted person in a language with which I am fluent and comfortable.
- The research was clearly explained to me.
- I have had a chance to ask questions to both the person getting the consent from me, as well as the researcher and all my questions have been answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be handled in a negative way if I do so.
- I may be asked to leave the study before it has finished, if the researcher feels it is in the best interest, or if I do not follow the study plan, as agreed to.

Signed at (*place*) on (*date*) 20....

.....

Signature of participant

.....

Signature of witness

Declaration by person obtaining consent

I (name) declare that:

- I clearly and in detail explained the information in this document to
.....
- I did/did not use an interpreter.
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above.
- I gave him/her time to discuss it with others if he/she wished to do so.

Signed at (place) on (date) 20....

.....

Signature of person obtaining consent

Declaration by researcher

I (name) declare that:

- I explained the information in this document to
- I did/did not use an interpreter.
- I encouraged him/her to ask questions and took adequate time to answer them or I was available should he/she want to ask any further questions.
- The informed consent was obtained by an independent person.
- I am satisfied that he/she adequately understands all aspects of the research, as described above.
- I am satisfied that he/she had time to discuss it with others if he/she wished to do so.

Signed at (place) on (date) 20....

.....

Signature of researcher

**ADDENDUM E: LETTER TO DEPARTMENT OF HEALTH NORTH WEST
PROVINCE**

**Interprofessional mentoring of pharmacy students in South African primary healthcare
setting: Nurses' Experiences**

Private Bag X 1290
Potchefstroom
South Africa, 2520
Tel: 018 299-2692/ 018 285-2117
Web: <http://www.nwu.ac.za>

Department of Health

North-West province

Dear Sir/Madam

APPLICATION FOR PERMISSION TO CONDUCT RESEARCH ON:

**Interprofessional mentoring of pharmacy students in South African primary healthcare
setting: Nurses' Experiences**

I am in the process of writing a dissertation to obtain the Master of Health Sciences in Health Professions Education in the Faculty of Health Sciences at the North-West University (Potchefstroom campus) (Student number 12892157) for the above-mentioned title of the study.

My study leader is:

Dr. C Christmals

Division: Centre of Health Professions Education Faculty of Health Sciences, North-West University, South Africa.

The purpose of this study is to describe the experiences, challenges, and needs of professional nurses mentoring pharmacy students at the primary health care settings in the North-West province of South Africa to provide empirical evidence for the planning and implementation of interprofessional mentoring programmes in the province.

To achieve the aim, the following objectives will be pursued:

- i. To describe the experiences of professional nurses mentoring pharmacy students in primary health care settings in the North-West province of South Africa

- ii. To describe the challenges the professional nurses, encounter during the training of pharmacy students
- iii. To describe the needs of the professional nurses mentoring pharmacy students in the primary healthcare settings in the North-West province of South Africa

My target population is the professional nurses working in the Primary Healthcare settings interprofessionally mentoring the pharmacy students during work-based learning clinical visits.

A literature review will be done. This literature review will ensure that the researcher will have the necessary knowledge to conduct the research in order to answer the research questions.

The semi-structured interviews will be conducted with the professional nurses working in the primary health care facilities and interprofessionally mentoring the pharmacy students during work-based learning clinical placement.

Yours faithfully

Mrs. MJ Mmoloke

Clinical Preceptor

Department of Clinical Pharmacy

School of Pharmacy

North-West University

ADDENDUM F: LETTER TO THE OPERATIONAL MANAGER

Private Bag X1290
Potchefstroom
South Africa
2520
Tel: 018 299-2692/ 018 285-2117
Web: <http://www.nwu.ac.za>

Dear Sir/ madam

APPLICATION FOR GOODWILL PERMISSION TO CONDUCT RESEARCH IN YOUR FACILITY ON:

Interprofessional mentoring of pharmacy students in South African primary healthcare setting: Nurses' Experiences

I am Madile Joconita Mmoloke, a student at the North-West University and writing a dissertation to obtain the Master of Health Sciences in Health Professions Education in the Faculty of Health Sciences at the University for the above-mentioned study.

I hereby request the permission to conduct the research in your facility. For data collection, I intend to have semi structured interviews with the professional nurses who mentored the pharmacy students during interprofessional mentoring of the pharmacy student's clinical placement.

The purpose of this study is to describe the experiences, challenges, and needs of professional nurses mentoring pharmacy students at the primary health care settings in the North-West province of South Africa to provide empirical evidence for the planning and implementation of interprofessional mentoring programmes in the province. In line with the purpose of the study, the researcher will conduct semi-structured interviews to describe the experiences of professional nurses mentoring pharmacy students in primary health care settings in the North-West province of South Africa.

The interviews will take up approximately 30-45 minutes and will take place at a time and place that is convenient to you. The refreshments will be served.

All information obtained during the interviews will be kept strictly confidential.

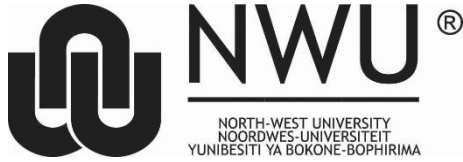
It would be greatly appreciated if the permission is granted in this regard.

Yours faithfully

Madile Joconita Mmoloke

Student

ADDENDUM G: INFORMATION LEAFLET FOR PROFESSIONAL NURSES



**Private Bag X1290, Potchefstroom
South Africa 2520**

Tel: +2718 299-1111/2222

Fax: +2718299-4910

Web: <http://www.nwu.ac.za>

INFORMATION LEAFLET FOR PROFESSIONAL NURSES

TITLE OF THE RESEARCH STUDY: Interprofessional mentoring of pharmacy students in South African primary healthcare settings: Nurses' Experiences

You are invited to participate in a research study that forms part of a Master's study. Please take some time to read the information presented here, which will explain the details of this study. Please ask the researcher or person clarifying the research to you any questions about any part of this study you do not fully understand. You must be fully satisfied that you clearly understand what this research is about and how you might be involved.

What is this research study all about?

The purpose of the study is to explore and describe the experiences, challenges, and needs of professional nurses mentoring pharmacy students in the primary healthcare settings in the North-West province of South Africa to provide empirical evidence for the planning and implementing interprofessional mentoring programmes in the province.

Why have you been invited to participate?

You have been invited to participate because you are a Professional nurse working in PHC.

You have also complied with the following inclusion criteria: You have been mentoring pharmacy students in PHC before.

What will be expected of you?

You will be responsible for participating in an individual interview and spending 30- 45 minutes with the researcher.

You will be asked to share your experiences and challenges during interprofessional mentoring the pharmacy students' clinical placement.

Anonymity and confidentiality will be maintained, you will be asked to state any information about yourself during the interview.

What are your rights?

Your participation is entirely voluntary, and you are free to say no to participating. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you agree to participate.

Source for more information

Supervisor: Prof C. Christmals

Tell: 018 285 2117 Email: Christmal.Christmals@nwu.ac.za

Researcher: Mrs. MJ Mmoloke

Tell: 018 299 2692 Email: madile.mmoloke@nwu.ac.za.

ADDENDUM H: CONFIDENTIALITY AGREEMENT

CONFIDENTIALITY UNDERTAKING

entered into between:

I, the undersigned

Prof / Dr / Mr / Ms _____

Identity Number: _____

Address: _____

hereby undertake in favour of the NORTH-WEST UNIVERSITY, a public higher education institution established in terms of the Higher Education Act No. 101 of 1997

Address: Office of the Institutional Registrar, Building C1, 53 Borchard Street,
Potchefstroom, 2520

(Hereinafter the “NWU”)

1. Interpretation and definitions

1.1. In this undertaking, unless inconsistent with, or otherwise indicated by the context:

1.1.1. “Confidential Information” shall include all information that is confidential in its nature or marked as confidential and shall include any existing and new information obtained by me after the Commencement Date, including but not be limited in its interpretation to, research data, information concerning research participants, all secret knowledge, technical information and specifications, manufacturing techniques, designs, diagrams, instruction manuals, blueprints, electronic artwork, samples, devices, demonstrations, formulae, know-how, intellectual property, information concerning materials, marketing and business information generally, financial information that may include remuneration detail, pay slips, information relating to human capital and employment contract, employment conditions, ledgers, income and expenditures and other materials of whatever description in which the NWU has an interest in being kept confidential; and

1.1.2. “Commencement Date” means the date of signature of this undertaking by myself.

1.1.3. The headings of clauses are intended for convenience only and shall not affect the interpretation of this undertaking.

2. Preamble

2.1. In performing certain duties requested by the NWU, I will have access to certain Confidential Information provided by the NWU in order to perform the said duties and I agree that it must be kept confidential.

2.2. The NWU has agreed to disclose certain of this Confidential Information and other information to me subject to me agreeing to the terms of confidentiality set out herein.

3. Title to the Confidential Information

I hereby acknowledge that all right, title and interest in and to the Confidential Information vests in the NWU and that I will have no claim of any nature in and to the Confidential Information.

4. Period of confidentiality

The provisions of this undertaking shall begin on the Commencement Date and remain in force indefinitely.

5. Non-disclosure and undertakings

I undertake:

5.1. to maintain the confidentiality of any Confidential Information to which I shall be allowed access by the NWU, whether before or after the Commencement Date of this undertaking. I will not divulge or permit to be divulged to any person any aspect of such Confidential Information otherwise than may be allowed in terms of this undertaking;

5.2. to take all such steps as may be necessary to prevent the Confidential Information falling into the hands of an unauthorised third party;

5.3. not to make use of any of the Confidential Information in the development, manufacture, marketing and/or sale of any goods;

5.4. not to use any research data for publication purposes;

5.5. not to use or disclose or attempt to use or disclose the Confidential Information for any purpose other than performing research purposes only and includes questionnaires, interviews with participants, data gathering, data analysis and personal information of participants/research subjects;

5.6. not to use or attempt to use the Confidential Information in any manner which will cause or be likely to cause injury or loss to a research participant or the NWU; and

5.7. that all documentation furnished to me by the NWU pursuant to this undertaking will remain the property of the NWU and upon the request of the NWU will be returned to the NWU. I shall not make copies of any such documentation without the prior written consent of the NWU.

6. Exception

The above undertakings by myself shall not apply to Confidential Information which I am compelled to disclose in terms of a court order.

7. Jurisdiction

This undertaking shall be governed by South African law be subject to the jurisdiction of South African courts in respect of any dispute flowing from this undertaking.

8. Whole agreement

8.1. This document constitutes the whole of this undertaking to the exclusion of all else.

8.2. No amendment, alteration, addition, variation or consensual cancellation of this undertaking will be valid unless in writing and signed by me and the NWU.

Dated at Potchefstroom this _____ 2023 _____

Witnesses:

1

2

(Signatures of witnesses)

(Signature)

ADDENDUM I: APPROVAL NWU HEALTH RESEARCH ETHICS COMMITTEE



Private Bag X1290, Potchefstroom
South Africa 2520

Tel: 086 016 9698

Web: <http://www.nwu.ac.za/>

North-West University Health Research Ethics
Committee (NWU-HREC)

Tel: 018 299-1206

Email: Ethics-HRECApply@nwu.ac.za (for human
studies)

12 June 2023

ETHICS APPROVAL LETTER OF STUDY

Based on approval by the North-West University Health Research Ethics Committee (NWU-HREC) on 12/06/2023, the NWU-HREC hereby approves your study as indicated below. This implies that the NWU-HREC grants its permission that, provided the general and specific conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title: Interprofessional mentoring of pharmacy students in South African primary healthcare settings: Nurses' Experiences

Principal Investigator/Study Supervisor/Researcher: Dr CD Christmals

Student: MJ Mmolohe - 12892157

Ethics number:

N	W	U	-	0	0	1	8	7	-	2	2	-	A	1
Institution				Study Number						Year			Status	

Status: S = Submission; R = Re-Submission; P = Provisional Authorisation;
A = Authorisation

Application Type: Single study

Commencement date: 12/06/2023

Expiry date: 30/06/2024

Risk:

Minimal

Approval of the study is provided for a year, after which continuation of the study is dependent on receipt and review of an annual monitoring report and the concomitant issuing of a letter of continuation. A monitoring report is due at the end of June annually until completion of the study.

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, the following general terms and conditions will apply:

- The principal investigator/study supervisor/researcher must report in the prescribed format to the NWU-HREC:
 - Annually on the monitoring of the study, whereby a letter of continuation will be provided annually, and upon completion of the study; and
 - without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study.
- The approval applies strictly to the proposal as stipulated in the application form. Should any amendments to the proposal be deemed necessary during the course of the study, the principal investigator/study supervisor/researcher must apply for approval of these amendments at the NWU-HREC, prior to implementation. Should there be any deviations from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited.
- Annually a number of studies may be randomly selected for active monitoring.
- The date of approval indicates the first date that the study may be started.
- In the interest of ethical responsibility, the NWU-HREC reserves the right to:
 - request access to any information or data at any time during the course or after completion of the study;

- to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process;
- withdraw or postpone approval if:
 - any unethical principles or practices of the study are revealed or suspected;
 - it becomes apparent that any relevant information was withheld from the NWU-HREC or that information has been false or misrepresented;
 - submission of the annual monitoring report, the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and/or
 - new institutional rules, national legislation or international conventions deem it necessary.
- NWU-HREC can be contacted for further information via Ethics-HRECApply@nwu.ac.za or 018 299 1206

Special in process conditions of the research for approval (if applicable):

- a. Please provide the NWU-HREC with copies of the goodwill permission letters from the managers of the primary health care facilities to be included in the study, granting access to the facilities.

As the study progresses the aforementioned conditions should be submitted to Ethics-HRECProcess@nwu.ac.za with a cover letter with a specific subject title indicating "Outstanding documents for approval: NWU-XXXXX-XX-XX." The letter should include the title of the approved study, the names of the researchers involved, that the documents are being submitted as part of the conditions of the approval set by the NWU-HREC, the nature of the document i.e. which condition is being fulfilled and any further explanation to clarify the submission.

The *e-mail*, to which you attach the documents that you send, should have a *specific subject line* indicating the nature of the submission e.g. "Outstanding documents for approval: NWU-XXXXX-XX-XX". The e-mail should indicate the nature of the document being sent. This submission will be handled via the expedited process.

The NWU-HREC would like to remain at your service and wishes you well with your study. Please do not hesitate to contact the NWU-HREC for any further enquiries or requests for assistance.

Yours sincerely,



Digitally signed by
Prof Petra Bester
Date: 2023.06.12
10:55:35 +02'00'

Chairperson NWU-HREC

Current details:(23239522) G:\My Drive\9. Research and Postgraduate Education\9.1.5.4 Templates\9.1.5.4.2_NWU-HREC_EAL.docm
20 August 2019
File Reference: 9.1.5.4.2

ADDENDUM J: APPROVAL NORTH WEST DEPARTMENT OF HEALTH



health

Department:
Health
North West Provincial Government
REPUBLIC OF SOUTH AFRICA



1st Floor, Health Office Park
Private Bag X 2068
MMABATHO
2735

RESEARCH, MONITORING & EVALUATION

Tel: +27 (18) 391 4501
Email: MbuleloT@nwpg.gov.za
www.nwhealth.gov.za

Name of Researcher: Dr. C.D. Christmals
North West University

Physical Address: _____
(Work/ Institution) _____

Subject: Research Approval Letter – Interprofessional mentoring of
pharmacy students in South African primary healthcare
settings: Nurses' Experiences.

HEAD OF DEPARTMENT

2023 -05- 3 1

NORTH WEST DEPARTMENT OF HEALTH
PRIVATE BAG X 2068, MMABATHO, 2735

This letter serves to inform the Researcher that permission to undertake the above mentioned study has been granted by the North West Department of Health. The Researcher must arrange in advance a courtesy meeting with the District Chief Director and the Chairperson of the District Health Research Committee (DHRC) (as per their details below), to introduce their research team/members on the proposed research to be undertaken. The researcher can thereafter proceed to the identified institution/s and/or facility and produce this letter to the Management as proof that the research was approved by the NWDoH.

This letter of permission should be signed and a copy returned to the department. By signing, the Researcher agrees, binds him/herself and undertakes to furnish the Department with an electronic copy of the final research report. Alternatively, the Researcher can also provide the Department with an electronic summary highlighting recommendations that will assist the Department in its planning to improve some of its services where possible. Through this, the Researcher will not only contribute to the academic body of knowledge but also contributes towards the bettering of health care services and thus the overall health of citizens in the North West Province.

Below are the contact details.



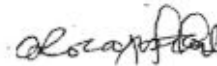
Office of the Chief Director: Dr Kenneth Kaunda District	Chairperson of the DHRC
Ms. Dineo Moromane	Dr. C. Cachet
Contact person: Mr. Calvin Mmisele	Contact person: Kutloano Mtimkulu
018 462 5744 CMmisele@nwpg.gov.za	018 294 9100 x9175/ 9170

Kindest regards,



Dr. FRM Reichel
Director: RM&E

Date: 31/5/2023



Researcher

Date: 12/06/2023

ADDENDUM K: APPROVAL DR KENNETH KAUNDA DISTRICT



health
Department
Health
North West Provincial Government
REPUBLIC OF SOUTH AFRICA



NDP
2030

4th Floor, West End Building
Private Bag A2
Klerksdorp
2570

Dr. Kenneth Kaunda District

Tel: +27 (18) 462 6744
Email: edmoromane@nwpg.gov.za
www.nwhealth.gov.za

To: Dr. C.D. Christmats
North West University

CC: Sub District Managers
Local Area Managers

From: Ms. M. Boikanyo
Acting Director: DHS
Dr. Kenneth Kaunda District

Date: 26 September 2023

Subject: Interprofessional Mentoring of Pharmacy Students in South African Primary Healthcare Setting: Nurses' Experiences

Dear Dr. Christmats,

This correspondence bears reference

Please note that as per the approval obtained from the Office of the Director: Policy, Planning, Research, Monitoring and Evaluation Directorate. Permission is hereby granted for you to access Health Facilities in Dr. Kenneth Kaunda District in conducting your research project.

It is expected of you to arrange in advance with the facility / operational managers and issue this letter together with approval from the Policy & Planning Directorate as proof of access the hospital to serve as your permission to conduct your research.

It is requested that provision of health care services should not be compromised and prior arrangements should be made in order to avoid compromising the provision of health care services by health care providers to the community

It is also requested that upon concluding your research project, a copy of your findings be availed to the District Management as well as the Provincial Office.

Sincerely,


Ms. M. Boikanyo
Acting Director: DHS
Dr. Kenneth Kaunda District

1

Let's Grow North West Together

ADDENDUM L: EVIDENCE OF ARTICLE PUBLISHED

DOI: <https://doi.org/10.3390/ime4040037>

**international
medical education**

[Submit to this Journal](#)
[Review for this Journal](#)
[Propose a Special Issue](#)

Article Menu
Academic Editors
 Douglas McHugh
 Anthony Payne
Recommended Articles
Related Info Link
More by Authors Links

Article Views 461

Table of Contents

- Abstract
- Introduction
- Materials and Methods
- Results
- Discussion
- Conclusions
- Policy Implications
- Author Contributions

Open Access **Article**
Interprofessional Mentoring of Pharmacy Students in Primary Healthcare Settings in South Africa
by Madile Mmoloke ¹, Martine Vorster ² and Christmal Dela Christmals ^{1,*}
¹ Centre for Health Professions Education, Faculty of Health Sciences, North-West University, Potchefstroom Campus, 11 Hoffman Street, Potchefstroom 2531, Northwest Province, South Africa
² Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, North-West University, 11 Hoffman Street, Potchefstroom 2531, Northwest Province, South Africa
* Author to whom correspondence should be addressed.
Int. Med. Educ. **2025**, *4*(4), 37; <https://doi.org/10.3390/ime4040037>
Submission received: 6 August 2025 / Revised: 16 September 2025 / Accepted: 19 September 2025 / Published: 24 September 2025
(This article belongs to the Special Issue Health Professions Education Advancements and Innovations—International Perspectives)
[Download](#) [Browse Figure](#) [Versions Notes](#)
Abstract
Professional nurses assume clinical mentoring roles for pharmacy students in Primary healthcare (PHC) settings in South Africa due to the chronic shortage of pharmacists in these settings. This study sought to describe the experiences, challenges and needs of professional nurses mentoring pharmacy students within the primary healthcare settings of South Africa. A descriptive qualitative study design was employed and 35 semi-structured, individual interviews in 18 primary healthcare settings were conducted. Data was analyzed using thematic content analysis. While some professional nurses are supportive of mentoring pharmacy students during healthcare delivery, others believe it increases workload and slows down healthcare delivery. The professional nurses enjoyed mentoring pharmacy students but indicated a lack of confidence due to non-preparation and not being involved during the planning or preparation for the pharmacy students' clinical placement visits. They needed short courses to train them to perform better in mentoring pharmacy students in PHC settings. To facilitate the successful implementation of interprofessional mentoring of pharmacy students, deeper collaboration between the university and the professional nurses in primary healthcare facilities is needed to improve interprofessional mentoring of students in primary healthcare settings. Universities must provide clear information, guidance, and feedback on students' clinical placements, while professional nurses require in-service training on interprofessional mentoring and recognition from universities for their educational contributions.
Keywords: professional nurse; pharmacy student; primary healthcare setting; work-based learning; inter-professional mentoring

ADDENDUM M: PROOF OF LANGUAGE EDITING

Re: language Editing-Dissertation



Martine Vorster

To: incaline@iafrica.com; [Christmal Christmals](#)

[If there are problems with how this message is displayed, click here to view it in a web browser.](#)

Start your reply all with:

[Wonderful, thank you!](#)

[Great, thanks for letting me know!](#)

[Sounds great, thank you!](#)

[Feedback](#)



Wed 26/11/2025 05:45

Thank you for the work on Madile's dissertation.

The suggestions were already addressed and we are now working on your comments.

We will look at the two pages and ask if we are unsure.

Regards

M

From: Catherine A. Bell <incaline@iafrica.com>

Sent: Tuesday, November 25, 2025 5:06:45 PM

To: 'Christmal Christmals' <Christmal.Christmals@nwu.ac.za>

Cc: Martine Vorster <Martine.Vorster@nwu.ac.za>

Subject: RE: language Editing-Dissertation

Hi Christmal

Further to our discussion, I will do additional edits to the document if it will help, but in case you have already worked on the document, you need to look at pages 47 and 53 regarding social distancing.

Kind regards

Catherine

From: Catherine A. Bell <incaline@iafrica.com>

Sent: 25 November 2025 10:40

To: 'Christmal Christmals' <Christmal.Christmals@nwu.ac.za>

Cc: 'Martine Vorster' <Martine.Vorster@nwu.ac.za>; 'Paula Jardim' <Paula.Jardim@nwu.ac.za>

Subject: RE: language Editing-Dissertation

Dear Christmal et al

.....

ADDENDUM N: PLAGIARISM CHECK – SUMMARY OF TURNITIN REPORT

Note: The 3% recorded from MDPI is from the students paper published as part of this research.



Page 1 of 80 - Cover Page

Submission ID trn:oid:::1:3431688375

ANNE-MARIE BEKKER

10864008:Final_Dissertation_Madile_02_12_2025_LangE_Zot...

MJ Mmoloke Protocol 1
763bdd9e-6766-4974-a042-300347813dcf
eFundi

Document Details

Submission ID
trn:oid:::1:3431688375

Submission Date
Dec 3, 2025, 7:11 AM GMT+2

Download Date
Dec 3, 2025, 11:59 AM GMT+2

File Name
ion_Madile_02_12_2025_LangE_Zotero_unlinked_Turnitin_MV_new.docx

File Size
803.4 KB

69 Pages

17,526 Words

105,691 Characters



Page 1 of 80 - Cover Page

Submission ID trn:oid:::1:3431688375

15% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Filtered from the Report

- Bibliography
- Quoted Text
- Small Matches (less than 8 words)
- Submitted works

Exclusions

- 45 Excluded Matches

Match Groups

- 191 Not Cited or Quoted** 12%
Matches with neither in-text citation nor quotation marks
- 52 Missing Quotations** 3%
Matches that are still very similar to source material
- 0 Missing Citation** 0%
Matches that have quotation marks, but no in-text citation
- 0 Cited and Quoted** 0%
Matches with in-text citation present, but no quotation marks

Top Sources

- 12% Internet sources
- 12% Publications
- 0% Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

No suspicious text manipulations found.

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

Match Groups

- 191 Not Cited or Quoted 12%**
Matches with neither in-text citation nor quotation marks
- 52 Missing Quotations 3%**
Matches that are still very similar to source material
- 0 Missing Citation 0%**
Matches that have quotation marks, but no in-text citation
- 0 Cited and Quoted 0%**
Matches with in-text citation present, but no quotation marks

Top Sources

- 12% Internet sources
- 12% Publications
- 0% Submitted works (Student Papers)

Top Sources

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1	Internet	www.mdpi.com	3%
2	Internet	www.ncbi.nlm.nih.gov	<1%
3	Internet	perpustakaan.poltekkes-malang.ac.id	<1%
4	Internet	pharmacyeducation.fip.org	<1%
5	Internet	repository.nwu.ac.za	<1%
6	Internet	scholar.ufs.ac.za	<1%
7	Internet	repository.up.ac.za	<1%
8	Publication	Mthombeni, Q. M.. "Experiences of Primary Health Care Nurses Regarding Worklo...	<1%
9	Internet	vital.seals.ac.za:8080	<1%
10	Internet	uir.unisa.ac.za	<1%

11	Internet	link.springer.com	<1%
12	Publication	Biggie Manatsa, Vincent Mabvurira. "Navigating systemic exclusion: Social worke...	<1%
13	Internet	5dok.net	<1%
14	Publication	Motlhale, Lydia Mamoditsana. "Strategies to Attain and Retain Community Servic...	<1%
15	Internet	dspace.nwu.ac.za	<1%
16	Publication	Anim-Boamah, Oboshie. "The Development of a Framework for Assessing Clinical...	<1%
17	Internet	ir.knust.edu.gh	<1%
18	Publication	Mavanyisi, Rynnet Doris. "The Effect of Quality Assurance Nurse Managers on the...	<1%
19	Internet	assets.researchsquare.com	<1%
20	Internet	docslib.org	<1%
21	Internet	www.paradigmpress.org	<1%
22	Internet	actionresearch.net	<1%
23	Internet	chem.mandela.ac.za	<1%
24	Publication	Costello, Ro. "Uses and Perceptions of E-mail for Course-Related Communication ...	<1%

25	Internet	bmcnurs.biomedcentral.com	<1%
26	Internet	libdspace.ufh.ac.za	<1%
27	Internet	www.frontiersin.org	<1%
28	Publication	Cathy C. Kline, Paula Riganti, Ashley Moller-Hansen, William Godolphin, Angela To...	<1%
29	Publication	Mbatha, Adelia Nomawethu. "Phenomenological Analysis of the Experiences of ...	<1%
30	Publication	Nesengani, Tintswalo Victoria. "Strategies for Professional Nurses to Facilitate Ca...	<1%
31	Internet	psychology.mandela.ac.za	<1%
32	Internet	www.longdom.org	<1%
33	Internet	ajod.org	<1%
34	Internet	www.otago.ac.nz	<1%
35	Internet	open.uct.ac.za	<1%
36	Publication	Makua, Memme Girly. "Induction and Professional Development Support of Newl...	<1%
37	Internet	hsag.co.za	<1%
38	Publication	Mabetshe, Lindokuhle. "Nurses' Attitudes Towards Family Presence During the M...	<1%

39	Publication	Matthew Kwaw Somiah, Clinton Ohis Aigbavboa, Wellington D. Thwala. "Developi...	<1%
40	Publication	Mthembu, Mpho Princess. "Challenges Experienced by Special Education and Lea...	<1%
41	Internet	ulspace.ul.ac.za	<1%
42	Publication	Kuang Teck Tay, Xiu Hui Tan, Lorraine Hui En Tan, Divya Vythilingam et al. "A syst...	<1%
43	Internet	repository.up.ac.za:8080	<1%
44	Internet	ul.netd.ac.za	<1%
45	Internet	wuir.washburn.edu	<1%
46	Publication	Matlala, Mosehle Salome. "Strategies to Improve Compliance to Post Exposure Pr...	<1%
47	Publication	Ndove, Danisa Pamela. "The Experience of Community Development Practitioner...	<1%
48	Internet	hdl.handle.net	<1%
49	Internet	theses.ncl.ac.uk	<1%
50	Publication	Mphothi, Lebogang Jacobeth. "Rendering Services Within the Employee Assistanc...	<1%
51	Internet	bmcpublichealth.biomedcentral.com	<1%
52	Internet	www.purdue.edu	<1%

53	Internet	csusm-dspace.calstate.edu	<1%
54	Internet	smartbalkansproject.org	<1%
55	Internet	digital.library.unt.edu	<1%
56	Internet	etd.cput.ac.za	<1%
57	Internet	mpira.ub.uni-muenchen.de	<1%
58	Internet	ntnuopen.ntnu.no	<1%
59	Internet	www.science.gov	<1%
60	Publication	Inge Petersen, Lara Fairall, Babalwa Zani, Arvin Bhana et al. "Effectiveness of a ta...	<1%
61	Publication	Oben, James Ako. "High School Learners' Perceptions of Accounting as a Career P...	<1%
62	Publication	Mokoena, Machidi Julia. "Perceptions of Professional Nurses on the Impact of Sho...	<1%
63	Internet	academic.oup.com	<1%
64	Internet	www.jisem-journal.com	<1%
65	Publication	Giovanna Artioli, Chiara Foà, Gisele Cristina Manfrini, Victoria Cervantes Camach...	<1%
66	Publication	Herculina Kruger, Cristian Ricci, Anita Pienaar, Makama Monyeki, Tertia Van Zyl, ...	<1%

67	Publication	Rossouw, Susanna Cornelia. "Refinement of the Competencies for a Programme i...	<1%
68	Internet	research.vu.nl	<1%
69	Internet	researchspace.ukzn.ac.za	<1%
70	Internet	ro.ecu.edu.au	<1%
71	Internet	vuir.vu.edu.au	<1%
72	Internet	www.oreilly.com	<1%
73	Publication	Awagah, Nicholas K.. "An Integrated Framework for Mentoring Artisans in the Gh...	<1%
74	Publication	Livhuwani Muthelo, Tshinanne Nemagumoni, Tebogo Maria Mothiba, Arthur Tha...	<1%
75	Publication	Mosime, Kwenaisile Maitshwarelo. "The Post-Event Function of World Cup Stadia...	<1%
76	Publication	Nottinson, Florencia Adai. "The Relevance of Students' Representative Councils to...	<1%
77	Publication	Phomane, Mafoko. "Perceptions of Nurses Working in Primary Health Care Facilit...	<1%
78	Publication	Pushan Kumar Dutta, Sonal Trivedi. "Rural Futures - Innovation, Resilience, and S...	<1%
79	Publication	Shunmugam, Vernon. "Best Practices for Assessing Parental Alienation: Perspecti...	<1%
80	Publication	Winsome St John, Helen Keleher. "Community Nursing Practice - Theory, Skills an...	<1%

81	Publication	Yaser Mohammed Al-Worafi. "Chapter 491-1 Pharmacy Education, Practice, and R...	<1%
82	Internet	journals.sagepub.com	<1%
83	Publication	le Roux, Estelle. "Guidelines for the Development of a Professional Nursing Identi...	<1%
84	Internet	spectrum.library.concordia.ca	<1%
85	Internet	wrap.warwick.ac.uk	<1%
86	Internet	www.nursinghero.com	<1%
87	Internet	www.treasury.nwpg.gov.za	<1%
88	Publication	Abrahams, Andrea. "Exploring the Factors Affecting the Early Identification of De...	<1%
89	Publication	Alan Gillies. "Healthcare Management - Global Perspectives", Routledge, 2024	<1%
90	Publication	Buckson, Esther. "The Views of Professional Nurses on Attracting and Retaining N...	<1%
91	Publication	Chikonzo, Agnes Chitsidzo. "The Roles of Social Media in Disseminating HIV/AIDS ...	<1%
92	Publication	Kholofelo Matlhaba. "Factors Impacting on Clinical Competence of Nursing Stude...	<1%
93	Publication	Locke, Gabriella E.. "Technology and Pleasure: A Qualitative Study on Using Mobil...	<1%
94	Publication	Luhanga-Nyirenda, Florence. "Perceptions on the Common Roles of Qualified Nur...	<1%

95	Publication	Mamabolo, Maisaka Dora. "Realising the Value and Benefits of it Projects.", Unive...	<1%
96	Publication	Mmatsatsi, Kekae Sannah. "Primary Health Care Students' Experiences of Vocatio...	<1%
97	Publication	Molele, Mahlodi Annah. "Nurses Perceptions of the Factors Contributing to the Sp...	<1%
98	Publication	Motloutsi, Aniekie Mohlabine. "Stakeholder-Inclusivity of African Traditional Heal...	<1%
99	Publication	Nzeleni, Lineo Primrose. "Provision of Guidance and Counselling Services in the S...	<1%
100	Publication	Paul Euripides Demetriou. "Mentoring New Teachers in Post-Compulsory Educati...	<1%
101	Publication	Yorke, Lynette Claire. "Promotion of Inclusion by the Educational Psychologist Th...	<1%
102	Internet	bmchealthservres.biomedcentral.com	<1%
103	Internet	bmw.ctcp.pt	<1%
104	Internet	eprints.lincoln.ac.uk	<1%
105	Internet	health-sciences.nwu.ac.za	<1%
106	Internet	ir.unisa.ac.za	<1%
107	Internet	mail.globalacademicstar.com	<1%
108	Internet	qspace.library.queensu.ca	<1%

ADDENDUM O: CODE OF ACADEMIC CONDUCT



Code of Academic Conduct for Students in the Faculty of Health Sciences

(Draft 1, 2018.09.07)

As a student of the North-West University, I subscribe to the strategy statement approved by Council on 15 November 2015 that the university is transformed and positioned as a unitary institution of superior academic excellence, with a commitment to social justice.

I therefore commit myself, in all my academic endeavours:

- To uphold the set of values of the university as this is embedded in the constitutional values of human dignity, equality and freedom:
 - Academic integrity.
 - Ethics in all endeavours.
 - Academic freedom and freedom of scientific research.
 - Responsibility, accountability, fairness and transparency.
 - Embracing diversity.
- To subscribe to the stated student-value proposition that pursues the following:
 - the quality of the core academic project,
 - equity of access and success,
 - sense of belonging,
 - an empowering and supportive learning experience in an aligned programme offering that is locally and regionally relevant, and internationally competitive,
 - seamless teaching and learning experience,
 - functional multilingualism that promotes access, academic performance, student growth and employability,
 - a diverse and integrated student life,
 - employability of graduates who are known to be responsive and caring citizens and knowledgeable to be leaders in our developing country and our continent.
- To demonstrate utmost integrity in my academic work and to maintain high standards of academic honesty in accordance with the NWU Policy on Academic Integrity.
- To refrain from any acts of academic misconduct, such as (but not limited to the following):
 - Any acts of plagiarism e.g. cutting and pasting sections of text without proper referencing or citing sources not used.
 - Any acts of fabrication or falsification related to academic work.
 - Copying from someone else's work
 - Hiring a person to write my assignment.
 - Submitting an assignment that had already been assessed.
 - Dishonest conduct in a formative or summative assessment session.
 - Assisting fellow-students in assessments.
 - Sitting on someone else's behalf in the examination etc.
- To submit to the disciplinary rules of the NWU in instances of alleged transgression of the NWU Policy on Academic Integrity.

SIGNED on this day 28.06.2022

at the Potchefstroom

Campus of the NWU.

Student name and surname Madile Joconita Mmoloke

Student number 12892157

Student signature

Madile J
Mmoloke

Digitally signed by
Madile J Mmoloke
Date: 2022.06.28
10:02:43 +02'00'

ADDENDUM P: DECLARATION OF AI USE

<<AI use in research Declaration Form.docx>>



Artificial Intelligence (AI) in Academic Research Declaration Form

Section A: Researcher Information

Full name:	Madile Joconita Mmoloke
Student/Staff Number:	12892157
Faculty and School:	Health Sciences School of Pharmacy
Research Unit:	Centre for Health Professions Education
Name of Supervisor(s):	Christmal Christmals; Martine Vorster
Research title:	Interprofessional mentoring of pharmacy students in South African primary healthcare settings: Nurses' Experiences

Section B: AI Use Disclosure

1. Was AI used in any part of this research paper?

- Yes (If you selected "Yes", complete Section C onwards and the signature section)
- No (If you selected "No", please proceed to the signature section.)

Section C: Details of AI Use

Please complete Section C on the next page by completing the table.

Section D: Declaration

I confirm that:

- I have read the best practice guidelines on best practices for ethical AI use in academic research and also the NWU protocols on responsible AI use.
- All AI contributions have been declared, acknowledged and properly referenced where applicable.
- No confidential, personal, or unpublished data was uploaded into AI systems.
- All AI outputs were checked and verified against credible scholarly sources.
- The final academic reasoning, analysis, and conclusions are my own, not solely generated by AI.

A rectangular box containing a handwritten signature in black ink, which appears to read 'M. Mmoloke'.

Signature of researcher:

Date: 03/12/2025

Signature of research supervisor/promoter:

Date:

Section C: Continued

Tool Used (e.g., ChatGPT)	Purpose of Use (e.g., grammar correction, reference formatting, idea generation)	How Information Was Verified	Section of Research Where Used (e.g., proposal, data analysis, final report, etc.)
Writefull	Grammar correction	Assist with paraphrasing	Final document