The knowledge, attitudes, and practices of nurse educators regarding evidence-based practice at nursing education institutions in Lesotho

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Thesis presented in partial fulfilment of the requirements for the degree of Master of Nursing Science in the Faculty of Medicine and Health Sciences

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April 2022

DECLARATION

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ABSTRACT

Background

To keep up to date with the ever-changing health science information, it has become a curricular and professional requirement for nurse educators to implement evidence-based teaching practice. Responsibilities of nurse educators have expanded beyond ensuring that students acquire clinical skills and theoretical knowledge to also prepare them to develop a spirit of inquiry and the ability to find evidence to support critical reasoning and thinking in their practice. Nursing education is thus an opportune moment to teach evidence-based practice (EBP) to educate future nurses to graduate with knowledge regarding EBP, foster attitudes about EBP, and the ability to use EBP in their nursing practice. Without EBP, nurses graduate with obsolete information from their training, and they acquire unfavourable attitudes about research and EBP as a result.

Methods

The study used an explorative, descriptive, and quantitative research methodology to explore and describe the knowledge, attitudes, and practices of nurse educators at Lesotho nursing institutions regarding EBP in line with i-PARiHS framework. Data was collected from 57 nurse educators through online surveys in 2021. The response rate was 81%. Descriptive and inferential statistics was used in this study and analysed using the STATA statistical software, version 17. Reliability of the data collection instrument was ensured by utilising validated EBP instruments. Internal reliability was confirmed for each of the data collection tool subscales. Reliability was also confirmed by conducting a pilot study. Ethical principles were maintained throughout the study.

Results

This study successfully answered the research question since the knowledge, attitudes, and practices of nurse educators regarding EBP at nursing education institutions in Lesotho were explored and described. This study found that a substantial number of nurse educators at Lesotho nursing education institutions have never been trained in EBP. They therefore do not construct focused clinical questions and do not access electronic databases to find the necessary evidence. However, on average, there is good knowledge, attitudes, and practices regarding EBP.

Conclusion

This study found that, on average, there is good knowledge, attitudes, and practices regarding EBP. Most nurse educators search electronic databases for empirical evidence, but they get

a plethora of irrelevant results because they do not know how to create clinical questions using search strategies to yield focused results. As a result, finding the best evidence to answer the question takes more time. Although most respondents consult experts for EBP guidance, a considerable number do not, implying that they use their traditional knowledge to inform their teaching practice, which could lead to ineffective and unsafe outcomes.

Recommendations

Preceptorship programmes for both students and nurses on the clinical platform should be designed to promote and teach them about the EBP process and its applicability to clinical practice. However, because hospitals and practicing professional nurses may be reluctant to change and hesitant to implement such a programme, nursing institutions can bear the responsibility of ensuring that trainees obtain clinical preceptorship based on EBP. Second, nurse educators should be taught the EBP process on a regular basis to ensure that they can implement EBP. Finally, the EBP process should be included into all nursing programmes for students to graduate with knowledge, positive attitudes, and the ability to apply effective evidence-based clinical practice.

Key words

Evidence-based practice, nurse educator, knowledge, attitudes, and practices

OPSOMMING

Agtergrond

Om op datum te bly met voortdurende veranderinge in gesondheidswetenskappe kennis, is dit 'n kurrikulêre en professionele vereiste dat verpleegkunde-opvoedkundiges bewysgebaseerde onderrigpraktyke implementeer. Verpleegkunde-opvoedkundiges se verantwoordelikhede het uitgebrei en sluit meer in as om net te verseker dat studente kliniese vaardighede en teoretiese kennis verwerf. Hulle moet ook studente voorberei om geesdrif vir navorsing te ontwikkel en die vermoë te hê om bewyse te vind wat kritiese redenasie en kennis in praktyk ondersteun. Verpleegkunde-opvoedkunde is dus 'n geleë oomblik om bewysgebaseerde praktyk (BGP) aan toekomstige verpleegsters te onderrig. Die onderrig van BGP sal toekomstige verpleegsters oplei sodat hulle gradueer met BGP-kennis, positiewe gesindhede teenoor BGP kweek, en toerus met die vermoë om BGP in hul daaglikse praktyk te gebruik. Sonder BGP sal verpleegsters gradueer met verouderde kennis en beleide. Gevolglik sal hulle ook ongunstige gesindhede teenoor navorsing en BGP hê.

Metode

Hierdie studie het ondersoekende, beskrywende en kwantitatiewe navorsingsmetodologieë gebruik om verpleegkunde-opvoedkundiges in Lesotho se verpleegkunde-instellings se kennis, gesindhede en praktyke rondom BGP, in lyn met die i-PARiHS-raamwerk, te verken en te beskryf. Data vanaf 57 verpleegkunde-opvoedkundiges is in 2021 ingesamel via aanlyn opmetings. Die responskoers was 81%. Beskrywende en afleibare statistieke is in hierdie studie gebruik. STATA statistiese sagteware, weergawe 17, is gebruik om die statistieke te analiseer. Die betroubaarheid van die data-insameling is verseker deur geldige BGP-instrumentasie te gebruik. Interne betroubaarheid is vir elke data-insameling instrument subskaal bevestig. Betroubaarheid is ook deur die uitvoering van 'n lootstudie bevestig. Etiese standaarde is deurgaans die studie gehandhaaf.

Resultate

Hierdie navorsing het die navorsingsvrae suksesvol beantwoord. Verpleegkunde-opvoedkundiges van Lesotho se verpleegkunde-opvoedkundige instellings se kennis, gesindhede en praktyke rondom BGP is verken en beskryf. Die studie het bevind dat 'n aansienlike getal verpleegkunde-opvoedkundiges van Lesotho se verpleegkunde-opvoedkundige instellings, nog nooit in BGP opgelei is nie. Gevolglik is hulle nie daartoe in staat om gefokusde kliniese vrae saam te stel om die nodige bewyse te verkry nie en hulle gebruik nie die elektroniese databasisse nie. Nietemin is daar in die algemeen goeie kennis, gesindhede en praktyke rakende BGP.

Slotsom

Hierdie studie bevind dat daar in die algemeen goeie kennis, gesindhede en praktyke rondom BGP bestaan. Meeste van die verpleegkunde-opvoedkundiges deursoek elektroniese databasisse vir empiriese bewyse, maar hulle kry ’n oormaat van ontoepaslike resultate omdat hulle nie weet hoe om kliniese vrae te skep om ’n meer doeltreffende soekstrategie te ontwikkel sodat hulle meer gefokusde resultate kan kry nie. As gevolg neem dit langer om die beste bewysgebaseerde antwoorde te kry. Alhoewel die meeste studiedeelnemers kenners vir BGP-leiding raadpleeg, is daar steeds ’n beduidende getal verpleegkunde-opvoedkundiges wat die nie doen nie. Dit impliseer dat hulle op tradisionele kennis staat maak in hul onderrigpraktyk. Dit kan tot oneffektiewe en onveilige uitkomste.

Aanbevelings

Meestersklasprogramme vir beide studente en verpleegsters moet op die kliniese platform ontwerp word om BGP-prosesse en die aanwendbaarheid daarvan in die kliniese praktyk aan te moedig en te onderrig. Tweedens moet verpleegkunde-opvoedkundiges opgelei word om BGP-prosesse op ’n gereelde basis te gebruik om te verseker dat hulle BGP kan implementeer. Laastens moet die BGP-prosesse by al die verpleegkunde-programme ingesluit word sodat studente gradueer met kennis, positiewe gesindhede en die vermoë om effektiewe bewysgebaseerde kliniese praktyke toe te pas.

Sleutelwoorde

Bewysgebaseerde praktyk, verpleegkunde-opvoedkundige, kennis, gesindhede en praktyke

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to:

- My supervisors, Prof. P.J. Jordan, and Dr C.J. Iwu-Jaja; my biostatistician, Dr M. Dzikiti and language editor, Ms S. Delport for their unwavering support in the development of this thesis.
- Stellenbosch University Postgraduate Scholarship Bursary for funding my second year of study and conduction of the thesis.
- Maluti Adventist College, SCOTT College of Nursing, Roma College of Nursing, Paray School of Nursing, and the National Health Training College for allowing this study to be conducted through their renowned nurse educators. A special thanks to Maluti Adventist College for my employment as well as for the time and resources provided for this research.
- Finally, I wish to express thanks to my family for their unwavering support, especially my daughter Nozipho Naleli Dube.

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ABBREVIATIONS

CBC	Competency-based curriculum
CHAL NTI	Christian Health Association of Lesotho Nurses Training Institution
CHE	Council on Higher Education
CI	Confidence Interval
COQ	Competency Questionnaire
CPG	Clinical Practice Guidelines
EBP	Evidence-based practice
EBTP	Evidence-based teaching practice
HREC	Health Research Ethics Committee
IQR	Interquartile range
JBI	Joanna Briggs Institute
LNC	Lesotho Nursing Council
NEPI	Nurse Education Partnership Initiative
NICE	National Institute for Health and Care Excellence
i-PARiHS	Integrated Promoting Action on Research Implementation Services
RCN	Royal College of Nursing
REDCap	Research Electronic Data Capture
RNAO	Registered Nurses Association of Ontario
SANC	South African Nursing Council
SD	Standard Deviation
SI	Successful implementation
SU	Stellenbosch University

CHAPTER ONE
OVERVIEW OF THE STUDY

1.1 Introduction

This chapter provides an overview and introduction to the study. The background, operational definitions, rationale of the study, problem statement, research question, study aim, objectives and conceptual framework used in this study are described. The research methodology is introduced, and the ethical principles are comprehensively described. The chapter then ends by outlining the thesis chapters.

1.2 Background

Nursing is both an art and a science with a constantly evolving scientific research knowledge and practice base, thus requiring nurses to use evidence-based practice (EBP) in guiding their decision making in patient care delivery, learning, teaching and research (Al-Yateem *et al.*, 2019:217; Hadgu *et al.*, 2015:73; Wonder & Spurlock, 2020:77). EBP is accepted as the gold standard for providing effective and compassionate healthcare to patients by both the healthcare community and regulatory bodies (Stichler *et al*., 2011:93). For example, EBP is one of the pre-registration criteria for nurses in the United Kingdom (Heaslip & Serrant, 2019:32). Nursing Education Training Standards in South Africa require nursing institutions to enable the acquisition of evidence-based competencies in order to develop nurses who appreciate research and use evidence in their practice (South African Nursing Council, 2020:34). Similarly, the Lesotho Nursing Council (LNC) Standards for Nursing and Midwifery Education (Lesotho Nursing Council, 2013:4) highlight that nursing education should prepare future nurses to undertake research investigations, resulting in research evidence and, as a result, EBP implementation.

EBP is a contextual decision-making approach used by healthcare professionals to provide services to their patients (Slocum *et al.*, 2014:41). It is characterized as the combination of high-quality published scientific findings, healthcare practitioners' clinical knowledge, and patients' and their significant others' perspectives and values (Akobeng, 2005; Melnyk *et al.*, 2014:5; Orta *et al.*, 2016:410). Orta *et al.* (2016:410) add that the EBP process uses available resources to structure systematic interventions, which are referred to as best practice. Asking a clinical question, looking for the best evidence, objectively appraising the evidence, discussing the sufficiency of the evidence for implementation, and assessing the outcome of evidence are the five sequential steps of the EBP process (Fineout-Overholt *et al.*, 2005:338).

According to Winters and Echeverri (2012:49), EBP demands nurses to quickly access and appraise evidence before incorporating it into their clinical practice. Since different research designs have different strengths, healthcare practitioners must access the most applicable evidence from electronic databases by asking answerable questions and appraising the evidence using the Johns Hopkins Nursing Evidence-Based Practice Guide (Dearholt & Dang, 2012; Leonardo, 2018:np). EBP is fundamentally guided by asking questions that can be answered to help locate relevant empirical evidence (Kloda, 2020:75). Nurses should, therefore, be encouraged and fostered to have a spirit of critical inquiry and analytical curiosity about practice since EBP questions concentrate on realistic real-world problems and issues that arise in practice (Winters & Echeverri, 2012:50).

Porta and Last (2018:np) define knowledge, attitudes, and practices as attributes that are assessed to obtain baseline information in a programme. Ritchie *et al.* (2019:153) state that knowledge, attitudes, and practices are behaviour-change attributes that chronologically inform each other in the attainment of EBP in academic healthcare professions. Firstly, knowledge, attitudes, and practices are intentionally studied in that order because health professional education programmes recruit academically high-performing students and assess their theoretical knowledge. Furthermore, when it comes to applying knowledge in practical environments, the social-cognitive approach to clinical practice asserts that attitudes are just as essential as knowledge. Finally, students may learn to objectively evaluate research data, but if they do not value evidence used in practice, they are unlikely to continue this EBP activity after graduation. D'Souza *et al.* (2015:52) add that nurses must acquire EBP knowledge and have a positive attitude to allow them to effectively incorporate it in practice.

An opportune moment to introduce EBP to healthcare professionals is during their training as students at colleges and universities (Mclnerney & Suleman, 2010:91). Nursing students who do not have EBP knowledge when they graduate will base their practice on information received from colleagues and outdated policies, and consequently develop negative views about research and EBP (Abdulwadud *et al.*, 2017:347; Melnyk *et al.*, 2012:6; Ramsay *et al.*, 2020:415). Similarly, nurse educators who lack the ability to search for evidence turn to human and written resources rather than electronic databases for knowledge (Farokhzadian *et al.*, 2015:574). Melnyk *et al.* (2012:411) state that nursing students develop negative attitudes toward EBP because they are not trained to translate research into their practice or to base their clinical decisions on the best available evidence. Instead, they are taught the rigorous process of research instead of how to use research to support an evidence-based patient care. Fineout-Overholt *et al.* (2005:335) emphasise the need for universities, nursing

leadership, and policymakers to ensure that nursing students and nurses have EBP knowledge and abilities.

The primary purpose of nursing education institutions is to provide nursing students with the skills necessary to provide evidence-based care; this can only be accomplished by nurse educators who are knowledgeable in EBP (Orta *et al.*, 2016:409). Teaching EBP is a key ability in nursing education, according to Kim *et al.* (2019:2). As a result, nurse educators must be knowledgeable about EBP as a concept (Orta *et al.*, 2016:409) and know how to apply and teach student nurses who are, in turn, expected to implement and base their clinical decision-making on the best available evidence. Despite the fact that numerous studies show that student nurses graduate as professional nurses with a good attitude toward EBP, constraints such as excessive workloads and limited staffing have hampered EBP implementation (Hadgu *et al.*, 2015:80).

Research knowledge is also reported to be aligned with research utilisation, since EBP is based on the transformation of knowledge to inform clinical practice (Hines *et al.*, 2017:257). Successful EBP implementation largely relies on health professionals with EBP knowledge and positive attitudes to advocate practices based on the best available evidence. Thus, nurses can translate actual patient situations into focused clinical issues that can be addressed scientifically (D'Souza *et al.*, 2015:52; Oh & Yang, 2019:46). Ruzafa-Martinez *et al.* (2013:1) and Oh and Yang (2019:45) propose that nursing curricula should encourage the acquisition and development of EBP knowledge in future nurses in order to improve their critical thinking and decision-making abilities. Nurse educators, on the other hand, have shown that the lack of EBP knowledge has been linked to their reluctance to use it in practice (Hadgu *et al.*, 2015:80; Mclnerney & Suleman, 2010:94).

Since nurse educators cannot teach about EBP when they do not know it, Melnyk *et al.* (2012:415) and Orta *et al.* (2016:417) opine that verifying their EBP knowledge will ensure that they will teach students to independently make EBP-informed clinical decisions and solutions. Mclnerney and Suleman (2010:91) concur that if nurses are not introduced to EBP during their undergraduate studies, they will not implement it in practice and instead rely only on own experiences and opinions of their peers. Booth *et al.* (2016:55) identified a gap in nursing education. Although nursing education includes both pedagogical and clinical EBP, the pedagogical EBP is not well-established and specified, as evidenced by the slow adoption of EBP by nurse educators.

Mclnerney and Suleman (2010:94) conducted a study investigating the extent of EBP use by academic healthcare practitioners when teaching at a South African institution. The response rate of this study was low and, according to the findings, this was anticipated because most educators lacked interest in EBP as a subject and was unfamiliar with it. Furthermore, the study reported that while academics have positive attitudes toward EBP, they lack EBP knowledge, which is one of the major barriers to educators using EBP in their teaching. Lack of EBP knowledge, according to Hadgu *et al.* (2015:79), is significantly associated with lack of EBP implementation. Mclnerney and Suleman (2010:94) also suggest that there is a favourable link between the level of education and EBP implementation of health professional educators. The authors go on to say that age has an impact on research utilisation to inform evidence-based decisions since they found that younger health professional educators are more adept at using literature search techniques than older ones.

Several authors agree that EBP should be part of the nursing curriculum (Abdulwadud *et al.*, 2017:347; Al-Yateem *et al.*, 2019:217; Kim *et al.*, 2019:2; Labrague *et al.*, 2019:242; Oh & Yang, 2019:45). Further, it is suggested that the EBP process should be introduced early in the training of nursing students for them to graduate as nurses who will independently engage with EBP in their practice (Finotto *et al.*, 2013:459; Wonder & Spurlock, 2020:80). Abdulwadud *et al.* (2017:347) also emphasize the need of nursing educators having EBP knowledge, attitudes, and skills so that their instruction may be based on the best available research. Nurse educators incorporate EBP by merely teaching about research and EBP principles rather than how research findings are used to guide EBP, according to a study done in the United States of America (Smith & Kennedy, 2020:56). For this reason, nurse graduates do not implement EBP in practice but rather base their practice on outdated theoretical content that they learnt when studying as well as outdated policies and procedures they find in the clinical area (Melnyk *et al.*, 2012:411).

Although nurses recognise the value of EBP in nursing practice, they face barriers that prevent them from implementing it (Hadgu *et al.*, 2015:75). Nurses do not use research evidence to guide their clinical decision-making because they are unaware of it, according to Hagan and Walden (2017:168). Similarly, nurse educators in the United States are unclear of how to utilize research to guide their teaching and academic responsibilities, according to Kalb *et al.* (2015:218). A study conducted in Saskatoon reported that students who were taught EBP in different academic settings suggested that EBP in clinical settings was not implemented as they were taught (Wakibi, 2019:21). Only one research, a cross-sectional survey, was undertaken in Lesotho as one of the four countries to assess academic healthcare practitioners' awareness, attitudes, and knowledge of EBP (Abdulwadud *et al.*, 2017:347).

Murarane za *et al.* (2016:5) highlight that to develop professionals that will satisfy the demands of their healthcare systems, nursing and midwifery education has undergone a paradigm change from content-driven to competency-based curriculum (CBC) in Africa. Similarly, Lesotho has embraced the CBC to teach nurses to address the country's healthcare demands. (Botma, 2016:1876). Botma (2016:1880) adds that EBP is one of the core competencies in CBC because one of the main qualities that student nurses should learn, according to the CBC, is the conduct of research and its usage to inform EBP. The CBC implementation in nursing and midwifery education in Lesotho was also informed by the National Nursing and Midwifery Strategic Plan of 2010 with the aim of improving quality of care to meet the community-based healthcare demands of Basotho (Ministry of Health, 2010:np). The need for CBC, and consequently the use of EBP in the nursing teaching and learning practice in Lesotho, was further strengthened by the Nurse Education Partnership Initiative's (NEPI) needs assessment findings for Nursing and Midwifery in Lesotho (Lesotho Ministry of Health and Social Welfare, 2011:np). There is, however, no literature on the knowledge, attitudes, and practices of nurse educators in Lesotho nursing institution regarding EBP as the core competency of the CBC being implemented.

This research study is important because, to teach EBP, nurse educators need to have knowledge on the process of accessing evidence and have a positive attitude towards EBP, which will help them to practice EBP. For these reasons, this study will describe the knowledge, attitudes, and practice of the Lesotho nurse educators.

1.3 Operational definitions

Operational definitions describe the researcher's viewpoint on a topic (Brink et al., 2018:77). The following are operational definitions of commonly used concepts in this study:

Evidence-Based Practice (EBP)

The incorporation of quality published research evidence with healthcare providers' clinical expertise and the opinions and values of patients and their significant others (Orta *et al.*, 2016:837). In this study, EBP refers to the knowledge, attitudes, and practice of nurse educators regarding the incorporation of best available research evidence that is relevant to teaching and learning in nursing education programmes.

Nurse educator

A nurse with an education qualification who has knowledge and proficiency in the nursing curriculum and academic management (South African Nursing Council, 2020:77). In this

study, a nurse educator is a qualified, registered, and licenced nurse employed by and teaching at a nursing institution in Lesotho, who either has an additional qualification in nursing education or not. Qualified nurse educators in Lesotho are either employed as classroom teaching nurse educators or clinical instructors who teach the clinical component of nursing.

Nursing institutions

A nursing institution is defined in this study as an educational nursing institution of learning that provides education and training for student nurses as defined by the Nurses and Midwives Act No. 12 of 1998 (Lesotho, 1998:np). Nursing institutions in this study pertain to Lesotho's nurse training institutions, which are either colleges or institutes.

Nursing students

A nursing student is defined as a learner at a nursing institution who is pursuing professional nurse training as defined by the Nurses and Midwives Act No. 12 of 1998 (Lesotho, 1998:np). A nursing student in this study therefor refers to a learner undergoing training to become a professional nurse from one of the five nursing institutions used in this study. As a result, in this study, a nursing student refers to a learner pursuing professional nurse training at one of the five nursing institutions identified as study settings for this study.

1.4 Rationale for the study

Nursing is a significant healthcare profession in Lesotho, with nursing institutions training and producing the highest number of health professionals of all healthcare professions (Nyoni & Barnard, 2016:166). Nurses who are trained with a diverse educational background are expected to deliver EBP in their care of patients (Wonder & Spurlock, 2020:77). The undergraduate nursing curriculum of the four Christian Health Association of Lesotho Nurses Training Institutions (CHAL NTI) and the National Health Training College have shifted from content-driven to a competency-based curriculum (CBC) in 2014 to produce nurses who will meet the primary healthcare needs of the country (Botma, 2016:1877). According to the CBC, one of the major competencies that student nurses should acquire during their training is to conduct research studies to inform scientific literature, followed by the review, retrieval, and utilisation of produced literature to inform EBP in practice (Botma, 2016:1880). Research studies have reported that South African and Lesotho academic healthcare professionals lack adequate EBP knowledge and practice (Abdulwadud *et al.*, 2017:347; Mclnerney & Suleman, 2010:94).

According to anecdotal evidence from Lesotho nursing education institutions, some nurse educators lack knowledge of research methods and so do not conduct research, teach, or

supervise a research study. Nurse educators who do not participate in research project design, teaching or supervision may lack EBP knowledge, have unfavourable attitudes about EBP implementation, and engage in poor EBP practices. Research programmes produce empirical evidence for EBP. Furthermore, just a few nurse educators use the free Hinari and EBSCOhost electronic databases and clinical practice guidelines to access empirical information on which to base their clinical decisions when teaching in Lesotho nursing institutions.

A critical place to begin correcting this situation in nurse educators will, however, demand that nurses recognise that they cannot teach what they themselves do not know since knowledge is associated with EBP implementation (Hadgu *et al.*, 2015:80). It is, therefore, envisaged that the findings of the study will provide data of the EBP knowledge, attitudes, and practices of nurse educators who teach at the nursing education institutions in Lesotho. This is a crucial issue to explore because it will determine if Lesotho nurse educators have the necessary knowledge, attitudes, and practices when teaching EBP through the CBC. As a result, it is envisaged that the CBC will be in compliance with the LNC Standards for Nursing and Midwifery Education, which mandate EBP generation and implementation in nursing curricula (Lesotho Nursing Council, 2013:4).

1.5 Problem statement

The latest LNC Standards for Nursing and Midwifery Education prescribe the incorporation of EBP in the nursing curricula (Lesotho Nursing Council, 2013:4). The CHAL NTIs and National Health Training College have, therefore, shifted from the hospital-based content-driven curriculum to the CBC, which is based on equipping nurses to answer to Lesotho's primary healthcare needs (Botma, 2016:1867). The content-driven curriculum first phased out from the one-year midwifery programme in 2014 and is now phasing out from the three-year nursing programme. Therefore, only the midwifery programme is fully implementing the CBC, while the nursing programme is implementing both curricula until the content-driven curriculum is phased out.

Outdated textbooks and traditional teaching and learning practices, which might not be based on the latest evidence, mostly informed the content-driven curriculum. Anecdotal evidence indicates that only a few nurse educators access evidence to inform their nursing education. There is also no evidence that Lesotho nurse educators access free electronic databases subscribed for by the Lesotho nursing institution stakeholders nor clinical practice guidelines to inform their nursing education instruction. Although nurse educators who implement the CBC must incorporate scientific findings, best practice recommendations, and the most

current evidence into their teaching and evaluations (Botma, 2016:1880), there is no evidence, however, that they do.

Because EBP is a unique approach to nursing problems based on the best available evidence (Stannard, 2019:1080), nurse educators must be involved in the development and use of the best available research findings in their teaching. My experience as a nurse educator at one of the CHAL NTIs has, however, proved otherwise. The researcher has observed that most nurse educators have limited knowledge and a negative attitude towards EBP and do not teach EBP to the nursing students. They hesitate to participate in research activities such as the students' supervision for their research studies and being members of the research committee. Although nurse educators are in a unique position to serve as role models for EBP implementation in clinical practice for students (Winters & Echeverri, 2012:53), there is no visible evidence that nurse educators at Lesotho nursing institutions role model the use of EBP to make informed clinical decisions during student accompaniment at clinical placement areas.

The only comparable research conducted in Lesotho, where Lesotho was one of four African countries participating, was a cross-sectional survey exploring academic healthcare practitioners' awareness, attitudes, and knowledge of EBP (Abdulwadud *et al.*, 2017:347). Although academics have free access to the Cochrane Library database, the survey found that they have gaps in their EBP knowledge, training, awareness, and use of the resources. The survey's findings cannot be generalised because Lesotho's participation was only 5% and the entire study sample was small, justifying the need for this investigation. The study also addressed medical university educators and not necessarily nurse educators at Lesotho nursing education institutions. As a result, the study did not focus on the issue of access and use of nursing electronic databases and guidelines such as the Registered Nurses Association of Ontario (RNAO), Joanna Briggs Institute (JBI), and the National Institute for Health and Care Excellence (NICE) by nurses because it was focused on healthcare practitioners from various disciplines at the university. Lesotho nursing education institutions have access to electronic databases; however, anecdotal information suggests that access to such databases is limited, implying that nurse educators do not base their instruction on current scientific evidence.

The researcher anticipates that students will graduate from Lesotho nursing education institutions to populate the nursing workforce with limited or no knowledge of EBP. Therefore, they are unlikely to critically appraise literature or apply the best evidence to solve the clinical problems they face and they would not make informed decisions based on their patient's

values and clinical expertise. Furthermore, because this study focuses on nurse educators in Lesotho who are also introducing a new curriculum, CBC, no previous research has been done in this area. This study will, therefore, explore and describe the knowledge, attitudes, and practices of nurse educators in Lesotho nursing education institutions regarding EBP. Although the outcomes cannot be guaranteed to improve EBP knowledge amongst nurse educators in Lesotho, it is envisaged that the study findings will increase awareness and make recommendations to promote EBP amongst the nurse educators.

1.6 Research question

What is the knowledge, attitudes, and practices of nurse educators regarding EBP at nursing education institutions in Lesotho?

1.7 Research aim

The aim of this study is to explore and describe the knowledge, attitudes, and practices of nurse educators regarding EBP at nursing education institutions in Lesotho.

1.8 Research objectives

The objectives of the study are as follows:

- Explore and describe the knowledge of nurse educators regarding EBP at nursing education institutions in Lesotho.
- Explore and describe the attitudes of nurse educators regarding EBP at nursing education institutions in Lesotho.
- Explore and describe the practices of nurse educators regarding EBP at nursing education institutions in Lesotho.
- Explore and describe the relationship between the knowledge, attitudes, and practices of nurse educators at nursing education institutions regarding EBP.

1.9 Conceptual framework

Grove and Gray (2019:573) define a research framework as an abstract, logical structure of meaning that guides the development of the study and enables the researcher to link the findings to nursing's body of knowledge. They also add that a research framework guides how a research study will unfold by addressing the concepts used and how they relate to each other. On the other hand, a conceptual map is defined as the symbolic representation of a phenomenon under study that serves as a foundation for the study and guide for the study design (LoBiondo-Wood & Haber, 2019:86).

1.9.1 The integrated Promoting Action on Research Implementation in Health Services Framework

The Promoting Action on Research Implementation in Health Services (PARiHS) framework was developed by a research and development team at the Royal College of Nursing (RCN) Institute. It elaborates on the interdependent relationship between factors that influence the effective use of research evidence in clinical practice (Kitson *et al.*, 1998:149). The PARiHS framework postulates that successful implementation (SI) of research in evidence-based practice (EBP) is a function (f) of the nature and type of evidence (E), the qualities of the context (C) of implementation, and the way the implementation process is facilitated (F); therefore, SI = f (E, C, F) (Kitson *et al.*, 2008:2). The PARiHS framework was reviewed to be an integrated Promoting Action on Research Implementation in Health Services (i-PARiHS) framework. The i-PARiHS framework postulates that successful EBP implementation is a result of facilitating innovation for the intended recipients in their contextual setting (Kitson *et al.*, 2008:5) and will be used to guide this study. Four constructs of – facilitation, innovation, recipients, and context – are highlighted as indicated in Figure 1 below and their relation to the study variables is explained later.

SI = Facn (I + R + C)

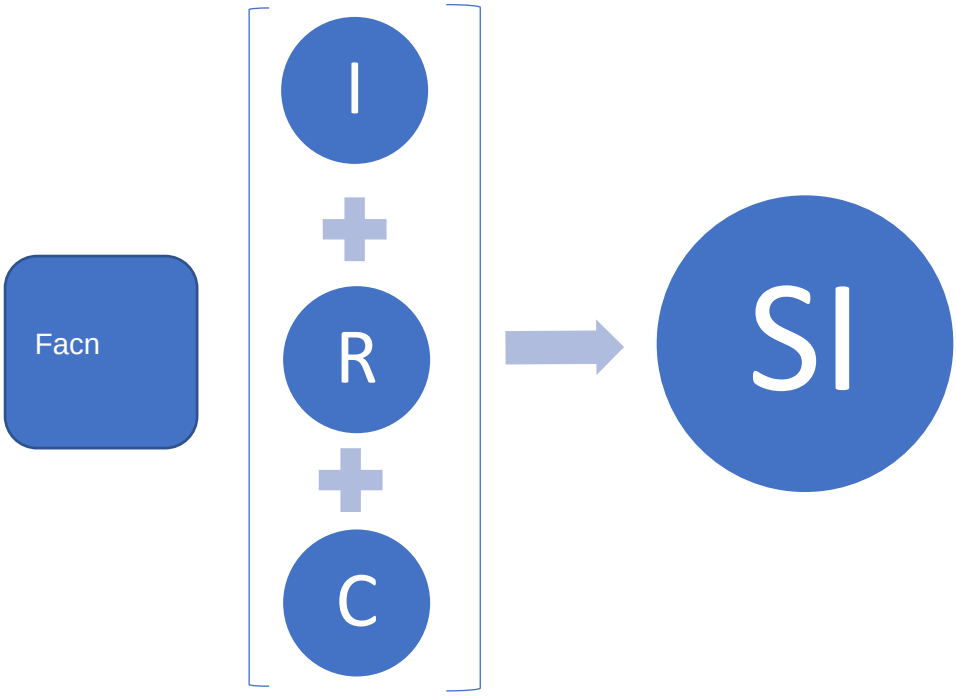

Figure 1: Conceptual framework of the study

Key:

SI = successful implementation

Facn = facilitation

I = innovation

R = recipients (individual and collective)
C = context (inner and outer)

1.9.2 Application of i-PARiHS framework into the study

While the i-PARiHS framework is primarily used in healthcare settings to ensure uptake of newly introduced healthcare programmes, it is also widely used in African countries, as evidenced by a systematic literature review conducted by Leonard, de Kock, and Bam (2020:np) to identify, assess, and synthesize the facilitators and barriers to sustaining implementing evidence-based health innovations in a low and middle-income country (LMIC) context. The bulk of the studies analysed in this study were conducted in Africa. As a result, the application of i-PARiHS framework in an African context, such as Lesotho, is justified.
The five constructs of i-PARiHS framework, namely, successful implementation, innovation, recipients, context, and facilitation, are defined and their application to this study is described.

1.9.2.1 Successful implementation

Successful implementation (SI) is described in terms of implementation progress, which stems from facilitating innovation with recipients in their local, organisational, and healthcare system contexts (Harvey & Kitson, 2016:2). As a result of this study, it is envisaged that Lesotho nurse educators will have an increased awareness of their EBP knowledge, attitudes, and practices, which will inspire them to successfully implement EBP at nursing education institutions in Lesotho. Nurse educators will, therefore, facilitate EBP innovation with nursing students who are recipients of the innovations in the context of their specific nursing education institutions.

1.9.2.2 Innovation construct

The innovation construct (I) is derived from Rogers' Diffusion of Innovations Theory that defines innovation as knowledge that is perceived as new (Harvey & Kitson, 2016:4; Rogers, 1995:11). Nursing innovation is described as the process through which nurses develop, implement, evaluate, and acknowledge creative new methods, procedures or initiatives, which they then convert into unique items or services (Weng *et al.*, 2016:1951).

Evidence is described as information and expertise derived from three evidence strands: research, clinical experience, and patient preferences on which clinical decisions are made (Squires *et al.*, 2012:294). While all three evidence strands are suitable for nurses to use in their practice, there are situations where clinical judgements and decisions are made solely on research and are not in line with nurses' clinical experience nor patient preferences. Harvey

and Kitson (2016:4) add that new knowledge is sought from research evidence to promote change and improvements in practice.

In this study, EBP is deemed new knowledge because it is not part of the content-driven curriculum that is being phased out, but it is a core competency for the new curriculum, CBC. It is, therefore, an innovation that will be described in terms of the knowledge, attitudes, and practices of nurse educators regarding EBP at nursing institutions in Lesotho. EBP knowledge and attitudes of nurse educators will mainly refer to their search for, critical appraisal, and utilisation of evidence to inform their teaching practice.

1.9.2.3 Recipient construct

The recipient construct (R) assesses the impact of people who are affected by and have influence over the implementation of an invention, such as whether they support or ignore it (Harvey & Kitson, 2016:4). In this study, recipients are students in the nursing programmes to whom the nurse educators provide teaching and learning based on EBP. This study will, therefore, describe the knowledge, attitudes, and practices of nurse educators regarding EBP at nursing education institutions in Lesotho. As a result of this study, it might be possible to determine whether nurse educators have the appropriate EBP knowledge, attitudes, and practices in order to teach students as the recipients of EBP.

1.9.2.4 The contextual construct

The contextual construct (C) takes into account the culture, resources, and learning environment that will be used to implement an innovation (Harvey & Kitson, 2016:5). The environment or setting of nurse educators who participated in this study, and from where data was collected, is the four CHAL NTI nursing education institutions. Because each institution has its unique religion and practice culture, even though their academic goals and curricula are uniform, the data were gathered from nurse educators who use similar teaching methods. This study did not explore and describe the availability of EBP implementation resources; rather, it explored and described how they could be accessed and used to inform evidence-based teaching practices (EBTP). Electronic databases, administrators, mentors, and co-workers are examples of such resources.

1.9.2.5 Facilitation construct

Facilitation (Facn) is a key construct that activates EBP implementation by evaluating and reacting to the characteristics of EBP and the recipients in their context (Harvey & Kitson, 2016:6). In relation to other i-PARiHS constructs, facilitation is described as both a specific

function of a facilitator and a collection of facilitation acts (Hunter *et al.*, 2020:2). An effective facilitator must have certain facilitation qualities, knowledge, and skills (Squires *et al.*, 2012:296). Facilitators, in this study, refer to nurse educators at Lesotho nursing education institutions who carry out facilitative acts of integrating EBP to teach student nurses. Their knowledge, attitudes, and practice regarding EBP when teaching were explored and described through self-reported online questionnaires. However, in order to align with the objectives of this study, the facilitators will not assess whether nursing students have learnt about EBP and if they will implement it in practice.

1.10 Research methodology

The research study followed a quantitative study design. A comprehensive discussion of the research methods and design follows in chapter 3.

1.11 Ethical considerations

This study was conducted according to the three basic human research principles, namely, respect for persons, beneficence, and justice as informed by the Belmont Report of 1979. Brink, van der Walt, and van Rensburg (2018:28) highlight that these principles guide the research process by protecting the human rights of the respondents and that seeking consent is a principle that indicates respect for autonomy. The Participant Information Leaflet and Consent Form for Online Survey (Appendix 1) was therefore sent to respondents to address these principles. There was only an English version on the online survey since English is the medium of instruction at all nursing institutions in Lesotho.

1.11.1 Consent and informed consent

Before commencing the study, the researcher obtained approval from Stellenbosch University's (SU) Health Research Ethics Committee (HREC) (Ethics Reference No: S21/01/010) and the Lesotho Ministry of Health Research Ethics Committee (REF: ID 25-2021). The researcher then sought approval from the identified nursing institutions, where the pilot and main studies were conducted. After approval was obtained, contact numbers and email addresses of all eligible and interested respondents were sought and received via email and stored in a password protected file. Potential respondents were then sent customised Research Electronic Data Capture (REDCap) generated email invitations with research details, in the Participant Information Leaflet and Consent Form for Online Survey (Appendix 1). The emails provided a link to a consent form with options to participate or not to participate. Only those who agreed to take part in the survey were redirected to the online survey.

1.11.2 Respect for persons

Respect for persons is defined as an ethical principle that ensures that research participants have autonomy by allowing them to choose whether or not to participate in a study and to withdraw from a study at any time (Brink *et al*., 2018:29). Respondents' autonomy was protected by obtaining their informed agreement to engage in the study at their own volition and notifying them of their right to stay or withdraw from the study at any moment without fear of being treated unfairly. No harm to respondents was anticipated due to the nature of the study; however, respondents were informed that if they felt uncomfortable or experienced any emotional harm while taking the online survey, they were guided on how to contact the researcher for debriefing and possible referral to a counsellor or psychologist. Respondents were also treated with respect by ensuring that their responses were kept anonymous. This was accomplished by using online surveys created by REDCap, housed by SU. Only the researcher and supervisors have access to the REDCap account used, which is a password-protected data management system that also requires Google authentication. For all responses, the system created identifiers that could not be traced back to the respondents' names or email addresses.

1.11.3 Beneficence

The principle of beneficence addresses the role of researchers in protecting respondents from any harm or discomfort (Brink *et al*, 2018:29). As a result, the researcher followed the golden rule by sending out anonymously completed electronic surveys. REDCap protects the privacy of respondents by sending out blind copy email invitations, which prevented respondents from seeing each other's email addresses. For identification, the surveys produced unique identifiers for each respondent. Because there was little risk in participating in this study, respondents were informed that they would benefit indirectly rather than directly from the study report on knowledge, attitudes, and practices of nurse educators in relation to EBP at nursing institutions.

1.11.4 Justice

The principle of justice refers to the equitable distribution of the selection of research respondents, remuneration, and protection from harm (Grove & Gray, 2019:584). Only respondents who were closely related to the research problem were chosen for this study, ensuring that justice was followed. The researcher also gave the respondents her contact information in case they had any questions. The respondents' right to privacy was protected by not disclosing their personal information without their permission. Their right to fairness was protected by treating them equally and without discrimination based on their age, social status

or gender. The researcher further ensured fairness by compensating respondents for their time, any inconveniences caused, and expenses incurred during the survey by providing each potential respondent with a 50 ZAR (R50.00) airtime voucher for data prior to participating. This also served as a form of motivation to partake in the online survey. Contact details of all respondents for sending the airtime were sought from their institutions, directly after approval to conduct the study was granted.

1.12 Chapter outline

Table *1* indicates the chapter outline to be followed in this thesis.

Table 1: Chapter outline

Chapters	**Description**
Chapter one: Overview of the study	In this chapter, the researcher gives an introduction and study overview.
Chapter two: Literature review	The chapter explains the purpose of the literature review, how it was conducted, and a narrative review of the literature is outlined.
Chapter three: Research methodology	The researcher comprehensively discusses the research methods and design of the study.
Chapter four: Empirical results	The chapter analyses and presents the empirical results of the data elicited from the data collection phase.
Chapter five: Discussion, conclusions, limitations, and recommendations, application of framework, dissemination of findings and summary	After data analysis, the researcher provides a discussion of study results and make conclusions in relation to the literature review. Recommendations are also be made and limitations of the study are highlighted. The researcher also outlines the application of the conceptual framework used in this study and give a study summary

1.13 Summary

In this chapter, the reader was introduced to the study concepts, a brief overview of the problem, objectives, the conceptual framework, ethical considerations and chapter outline for this study. In the next chapter, a narrative literature review outline will follow.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter is a continuation from the preceding chapter that gave an overview of the study. This chapter provides a comprehensive review of the literature on nurse educators' evidence-based practice (EBP) knowledge, attitudes, and practices. It starts with an overview of the literature search process, then describes EBP knowledge, attitudes, and practices, as well as EBP's application in nursing and other disciplines. The focus of this chapter then shifts to address EBP in nursing education. Since there is a paucity of studies conducted in Lesotho, the researcher broadened the literature review to include research from other developing and developed countries. The purpose of the literature review is to describe what is known and not known about the knowledge, attitudes, and practices of nurse educators in teaching EBP.

2.2 Literature searching process

Literature was selected from five electronic databases (CINAHL, MEDLINE, Google Scholar, PubMed and Hinari). The grey literature included published theses, the Lesotho Nursing Council (LNC) Standards for Nursing and Midwifery Education, the Lesotho and Midwifery Strategic Plan of 2011 to 2015, and the 2011 Nurse Education Partnership Initiative (NEPI) needs assessment report for Nursing and Midwifery in Lesotho.

The following Boolean keywords were used to search for literature: "knowledge" AND "attitudes" AND "practices" AND "nurses" or "student nurses" or "nurse educators" or "academic faculty" or "healthcare professionals" AND "evidence-based practice". Evidence accessed and reviewed were less than 10 years old except for seminal studies on EBP. Due to translation cost, only articles published in English were accessed and used. There was, however, a paucity literature related to the topic in Lesotho.

2.3 Evidence-based practice

EBP is a context-based decision-making methodology that health professionals employ to offer quality and safe patient care (Slocum *et al.*, 2014:41). EBP was originally known as evidence-based medicine when only doctors were involved, but it has subsequently been adopted by other professions such as nursing (Brink *et al*., 2018:11). It is characterised as combining high-quality published scientific findings with the clinical competence of healthcare providers, as well as the perspectives and values of patients and their families (Melnyk *et al.*,

2014:5; Orta *et al.*, 2016:410). Orta *et al.* (2016:410) add that the EBP process is based on available resources to structure comprehensive interventions, referred to as best practice.

Many countries of the world regard EBP as one of the key competencies in quality assurance (D'Souza *et al.*, 2015:53). The ultimate benefits of EBP have been reported as: providing patient-centred quality care; improving healthcare quality, costs, and patient outcomes; increasing patient safety; and influencing the development and review of policies and clinical guidelines (Al-Yateem *et al.*, 2019:217; Hadgu *et al.*, 2015:73; LoBiondo-Wood & Haber, 2019:37; Melnyk *et al.*, 2012:416; Oh & Yang, 2019:45). According to LoBiondo-Wood and Haber (2019:37), EBP is informed by scientific research findings. Scientific studies provide information that nurses can utilise to guide their actions and decisions in order to guarantee that nursing practice is clinically acceptable, cost-effective, and results in positive patient outcomes (Polit & Beck, 2012:3).

2.3.1 Evidence-based practice steps

EBP is a complex process that comprises several basic steps (Salbach & Jaglal, 2011:794). Melnyk *et al.* (2014:6) outline seven EBP steps: cultivating a spirit of inquiry, asking focused questions, finding evidence, making critical appraisals, making decisions, performing evaluations, and disseminating outcomes. The teaching of EBP is based on the basic EBP steps that serve as a framework for developing EBP curricula (Zeleníková *et al.*, 2014:np). It was discovered that a lack of knowledge about EBP steps and concepts, which is often linked to a lack of research and EBP training, can lead to negative attitudes against EBP, resulting in limited or no use of EBP (Melnyk *et al.*, 2012:411; Saunders & Vehviläinen-Julkunen, 2015:np; Sim *et al.*, 2016:np).

2.3.1.1 Cultivating a spirit of inquiry along with an EBP culture and environment

According to Melnyk *et al.* (2014:6), the EBP process begins with establishing a spirit of inquiry, as well as an EBP culture and environment, because healthcare professionals will not frequently raise clinical questions about their practices if these factors are not there. Because the next steps in the EBP process are unlikely to occur without the spirit of inquiry, this step is critical (Melnyk *et al.*, 2010:52).

A survey conducted by Huang *et al.* (2017:296) among Chinese nurses suggests that in order to promote nurses' engagement with literature and foster a culture of academic inquiry, they need be given protected time, critical thinking training, and reward mechanisms. It is,

therefore, recommended that nurse educators should no longer primarily focus on clinical skill mastery and theoretical knowledge; they must also teach nurses how to cultivate a spirit of inquiry and equip them with the ability to find evidence to support critical reasoning and thinking in their practice (Stichler *et al.*, 2011:93). According to Malik *et al.* (2015:51), senior nurses have a duty to find the best evidence to support their teaching and practice, as well as to encourage a spirit of inquiry, critical thinking, and a life-long learning attitude among nurses.

2.3.1.2 Asking focused clinical questions

The second step in the EBP process is the formulation of a clinical question of interest. The purpose of asking a focused clinical question is to reduce the chances of systematic errors that might occur. The objective of the clinical question determines how to formulate a good clinical inquiry. Background questions are obtained through a broad or open-ended search, whereas foreground questions are asked using the PICO mnemonic, which allows for more focused and clinically relevant questions (Lin *et al.*, 2010:165). Asking focused clinical questions is organised by means of using a search strategy. A search strategy is defined as an unbiased, effective search for focused relevant studies to the clinical question that will serve as the foundation for any evidence-based recommendations, decisions or practices (Gallagher Ford & Melnyk, 2019:np).

PICO is a search strategy mnemonic that consists of P for patient or population, I for intervention, C for control, and O for outcome. It is used to successfully retrieve empirical evidence from different electronic sources to answer clinical questions. The PICO mnemonic was developed by Richardson *et al.* (1995:np) in 1995 and has evolved into different variations. Variations such as PICOT, PICOTT, PICOC, PIPOS, PIPOH, PECODR, PESICO, ECLIPSE and SPICE were developed in the attempt to break down clinical questions into searchable keywords and focus the search strategy, while not excluding potentially useful and relevant information (Kloda, 2020:76). The variations of the mnemonic are described in Table 2.

Table 2: PICO variations

PICO variation	Mnemonic descriptions*
PICOT	P – Population, I – Intervention, C – Comparison, O – Outcome, and T – Timeframe
PICOTT	P – Population, I – Intervention, C – Comparison, O – Outcome, T – Type of question, and T – Type of study design

PICOC	P – Population, I – Intervention, C – Comparison, O – Outcome, and C – Context
PIPOS	P – Population, I – Intervention, P – Professionals, O – Outcome, and S – Setting
PIPOH	P – Population, I – Intervention, P – Professionals, O – Outcome, and H – Healthcare setting
PECODR	P – Population, E – Exposure, C – Comparison, O – Outcome, D – Duration, and R – Results
PESICO	P – Population, E – Environment, S – Stakeholders, I – Intervention, C – Comparison, and O – Outcome
ECLIPSE	E – Expectation, C – Client Group, L – Location, I – Impact, P – Professionals, and SE – Service
SPICE	S – Setting, P – Perspective, I – Intervention, C – Comparison, and E – Evaluation

*Adopted from Kloda (2020:76)

After the key terms have been recognised for asking focused clinical questions, an advanced search is carried out successfully using the Boolean operators “and” and “or” (Akobeng, 2005:839). Including the word "and" between two key terms, implies that each search result must include both search keywords, while including the word "or" between two key terms, implies that each search result might comprise both keywords (Woods, 2013:5). Well-formulated clinical questions using search strategies, therefore, create focused and timely literature searches that yield relevant evidence to answer questions (Stucky *et al.*, 2020:508).

2.3.1.3 Finding evidence

Finding evidence is the third step of the EBP process. Shamsaee *et al.* (2021:2) highlight that the evidence integrated in EBP is based on the most recent and valid research findings. Various electronic databases and journals are available to promote EBP among healthcare professionals (Shayan *et al.*, 2019:12). EBP requires healthcare professionals to be able to search, locate, and retrieve the best available evidence quickly and easily using electronic bibliographic databases (Michaleff *et al.*, 2011:191). Searching electronic databases for the best evidence without these skills frequently leads to a lack of information or a large amount of information that is irrelevant to the searched topic (Leonardo, 2018:1). With the knowledge of accessing empirical evidence, nurse educators will then be able to teach students to construct clinical questions using PICOT or variations of the format in practice.

However, in the effort to keep up to date with the high amount of healthcare information produced daily, nurses struggle to search, retrieve, and use existing evidence to support their clinical judgement and decision-making processes (Farokhzadian *et al.*, 2015:572). Furthermore, due to limited access to electronic databases as a result of high subscription costs, as well as limited searching skills and time constraints, nurses prefer to obtain articles that are readily available over performing thorough and unbiased searches to find all relevant research on a certain topic (Michaleff *et al.*, 2011:191).

While most people use Google to search for evidence, it generally only yields abstracts, whereas other electronic databases yield full texts of the information requested (Woods, 2013:5). Electronic databases provide scientific evidence that differ according to the primary professional target audience, journals indexed, and types of articles indexed. Examples of such electronic databases are the Medical Literature Analysis and Retrieval System Online (MEDLINE); Excerpta Medica Database (EMBASE); Cochrane Library (including Cochrane Review Group Registers and Cochrane Central Register of Controlled Trial [CENTRAL]); Clinical Index of Nursing and Allied Health Literature (CINAHL); PsycINFO; Allied and Complementary Medicine Database (AMED); Ovid; and Physiotherapy Evidence Database (PEDro) (Michaleff *et al.*, 2011:191; Woods, 2013:5).

Nurses and other health professionals can also access the best evidence in published guidelines, which have previously researched and appraised the literature, as well as created, assessed, and published practice recommendations by subject matter experts (Stucky *et al.*, 2020:508). The Joanna Briggs Institute (JBI) is an international research organisation based at the Faculty of Health and Medical Sciences at the University of Adelaide that develops and delivers unique evidence-based information, software, education, and training based on the needs of health professionals to improve healthcare practice and outcomes (JBI, 2021:np). The National Institute of Health and Care Excellence (NICE) guidelines are evidence-based recommendations developed by independent committees comprising specialists and lay people, as well as stakeholders (NICE, 2021:np). The Registered Nurses Association of Ontario (RNAO) has developed a multi-year initiative to assist Ontario nurses with the implementation of published nursing best practice guidelines for client care, as well as a toolkit and educator's resource (RNAO, 2021:np). Nurses, on the other hand, have been reported not to use evidence-based clinical practice guidelines (CPG), which could be related to their information seeking behaviour in which they seek knowledge from their peers due to factors such as accessibility, effectiveness, and information quality variations (Lin *et al.*, 2019:1643; Marshall *et al.*, 2013:3).

2.3.1.4 Critical appraisal

After the evidence has been collected, it must be appraised for its validity, reliability, applicability to a wider audience, strength, and quality (Spruce *et al.*, 2014:248; Woods, 2013:6). Critically appraising evidence from literature is the fourth step of the EBP process (Stucky *et al.*, 2020:509). Critical appraisal is used to determine the value of research to practice by determining the validity of the results, which should be as close to the truth as possible. Also important is the reliability of the research in reproducing the same results if the study is repeated and whether the research is clinically relevant to the patients involved (Fineout-Overholt *et al.*, 2005:339).

Study designs and evidence have distinct strengths, thus require healthcare professionals to identify the best and most relevant evidence from electronic databases (Dearholt & Dang, 2012:np; Leonardo, 2018:1). The appraisal of the strength of evidence found is done using the hierarchy of evidence as outlined by Leonardo (2018:2) in Figure 2. The quality of evidence is graded as high, good, or low with high quality evidence being well-defined research with reproducible findings and consistent outcomes involving a sufficient number of respondents. Low quality evidence is the polar opposite (Dearholt & Dang, 2012:np). Figure 2 outlines the hierarchy of evidence, indicating that evidence from research designs at the top of the pyramid has the strongest methodology, is less biased, and has controls for comparison.

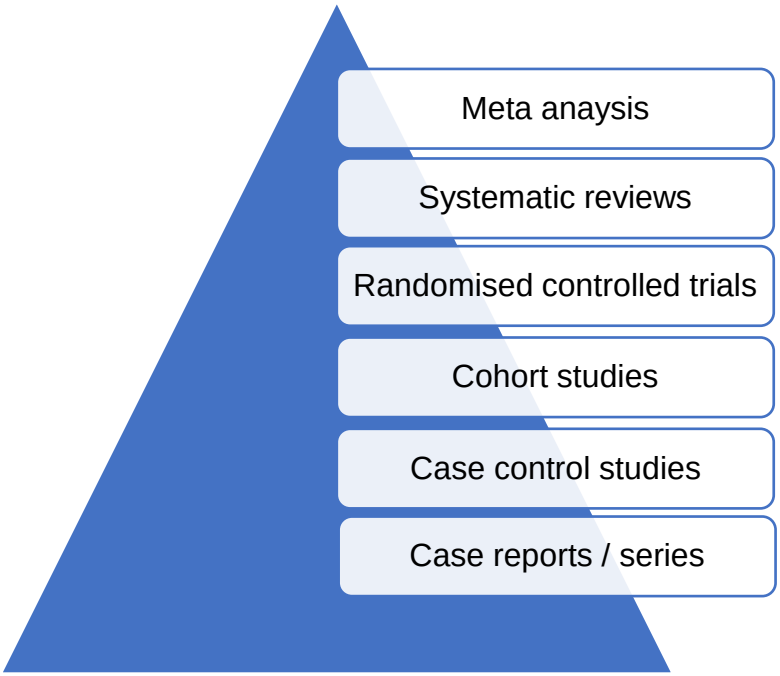

Figure 2: Study design and evidence hierarchy (Leonardo, 2018:2)

Health practitioners must be able to seek, identify, and retrieve the best available evidence to incorporate into their practice using electronic databases as part of EBP, rapidly and efficiently

(Michaleff *et al.*, 2011:191; Winters & Echeverri, 2012:49). As a result, Melnyk *et al.* (2014:5) considers critically appraising both primary and synthesised data to be a critical competency for nurses to identify the best evidence. However, findings from a study conducted by Malik *et al.* (2015:50) that aimed to explore knowledge, skills and attitudes of nurse educators, clinical coaches and nurse specialists associated with EBP revealed that a lack of critical evaluation skills and a lack of time as barriers to the appraisal of evidence.

2.3.1.5 Decision-making

Clinical decision-making is the fifth step of the EBP process. Clinical decision-making is informed by clear and explicit understanding of the strength of evidence supporting intervention options and important contextual factors, including patient values (Slocum *et al.*, 2014:1). In this step, nurses integrate scientific evidence with their expert clinical judgement while incorporating patients' beliefs, preferences, and values to apply evidence to their unique care settings and particular patients (Stucky *et al.*, 2020:511). There is, however, no magical solution to weigh each of the aspects integrated with EBP implementation since it is highly influenced by institutional and clinical variables as indicated in the contextual construct of the i-PARiHS framework utilised in this study (Melnyk *et al.*, 2010:53).

While the term "evidence-based practice" is still widely used, the term "evidence-informed decision making" has become more popular in recent years to emphasise that research-based evidence "informs" decision-making alongside clinical expertise, available resources, and patient values, rather than being the sole basis for practice as the term "evidence-based practice" implies (Morris, 2016:np; Nevo & Slonim-Nevo, 2011:23). Nurse educators can make informed decisions about the education of student nurses based on current and best evidence in an evidence-based teaching approach that is conscientious, explicit, and judicious (Kalb *et al.*, 2015:213). Because nurse educators cannot teach what they do not know, it is thus vital to confirm their EBP knowledge, attitudes, and practices to ensure that they can teach student nurses to use EBP in their practice (Orta *et al.*, 2016:417).

Winters and Echeverri (2012:49) emphasise that training student nurses on how to apply EBP in their decision-making is the most important and first step in motivating nurses to use and build favourable attitudes toward EBP to guide their practice decisions. Nurse educators, on the other hand, cannot teach EBP if they do not know it; they must be equipped with the necessary EBP knowledge and skills in order to teach it to their students and integrate EBP into entire academic programmes in order to produce graduates who are competent in evidence-based care (Melnyk *et al.*, 2012:416). Melnyk *et al.* (2012:410), therefore, state that nurse educators and leaders can make informed and evidence-based clinical decisions,

resulting in the best possible patient outcomes only by accelerating and investing in EBP process and promoting the EBP approach.

2.3.1.6 Evaluating performance

Evaluating performance or action outcomes is one of the final steps in the EBP process. Evaluation is essential for determining the effectiveness of a change in practice and assisting nurses in determining if evidence was successfully translated into practice. Furthermore evaluation is essential for monitoring and evaluating any changes in outcomes so that positive effects can be supported and negative effects can be addressed (Melnyk *et al.*, 2010:53; Stucky *et al.*, 2020:512). Nurses can assess their performance and action outcomes based on how well they followed the first four steps of the EBP process, the intervention's outcome, and how the outcomes compared to those identified in the literature (Lin *et al.*, 2010:167). Several tools – such as the National Database of Nursing Quality Indicators, the American Nurses Association and Practical Application of Clinical Evidence System, and the JBI – can help nurses gather survey information for evaluation (Woods, 2013:6).

2.3.1.7 Disseminating outcomes

Disseminating of outcomes is the seventh and final step in the EBP process. This phase is critical because, while EBP can provide wonderful results, failing to disseminate those results with colleagues and other healthcare organisations consumes time and resources and perpetuates therapeutic methods that are not evidence-based (Melnyk *et al.*, 2010:53).

Strategies to disseminate successful EBP initiatives are hosting institutional EBP rounds; presenting results at local, regional, and national conferences; and publishing reports in peer-reviewed journals, professional newsletters, and publications for general audiences (Melnyk *et al.*, 2010:53). Publishing the findings in peer-reviewed, indexed journals may be extremely advantageous since it assures that the information is easily accessed, quoted, and utilised to enhance practice around the globe (Woods, 2013:6). Because students may focus on their personal thinking and change but fail to take the next step of disseminating that thinking to others, educators must incorporate individual and organisational change in their curricula for all levels of students (Fineout-Overholt *et al.*, 2010:51).

2.3.2 Integration of evidence-based practices steps in the nursing curriculum

To meet the minimal requirements of teaching and conducting EBP and to inspire EBP implementation in practice, healthcare graduates should be trained in the required abilities to promote life-long learning through the five steps of EBP (Larsen *et al.*, 2019:2). However, the

first three steps of asking focused questions, discovering evidence, and critically evaluating evidence are mostly taught to healthcare students. The next two steps are rarely taught and, as a result, students and graduates are unable to apply their EBP knowledge in a clinical context during or after graduation (Daly & DeAngelis, 2017:np; Greenhalgh *et al.*, 2014:6). Melnyk *et al.* (2014:12) claim that nurses who have been trained in the basic EBP steps have better attitudes, knowledge, and EBP abilities.

Iradukunda and Mayers (2020:2) add that the integration of EBP into most nursing curricula is based on the five steps of EBP utilising a scaffolded approach by teaching EBP in various years of training. This strategy has been proven to be successful. Students are taught online navigation, the construction of learning questions, and how to reference in the first year of study. Then students are taught formulating PICO format questions, finding evidence by utilising appropriate databases, and critically appraising the evidence in the second year. Students learn how to search for and use evidence-based CPGs and to critically appraise evidence at a senior level (Finotto *et al.*, 2013:461; Spek *et al.*, 2012:np). Melnyk *et al.* (2012:415) highlight that, in master's degree programmes, teaching rigorous research methodology rather than how to use research to promote an evidence-based approach to care is also common, thus leading to negative attitudes towards research among graduate students. The same authors, however, mention that acknowledging that nursing professors cannot teach what they do not know is a key first step in addressing this predicament in academia; hence the need to investigate the knowledge, attitudes, and practices of nurse educators.

2.4 Studies addressing evidence-based practice knowledge, attitudes, and practices of nurses

An experimental study was conducted with senior nursing undergraduate students from a university in Seoul, Korea on the benefits of an EBP education programme through blended learning (Oh & Yang, 2019:4). The study concluded that an intensive 30-hour EBP education programme was successful since the intervention group exhibited significant increases in EBP knowledge, self-efficacy and practice through resource use and electronic resource consumption when compared to the control group. Similarly, a cross-sectional study conducted by Hines *et al.* (2017:261) to assess the EBP knowledge, attitudes, and practices of nurses and midwives reported that nurses who participated in a single day of EBP education covering the basic steps of EBP had more positive attitudes, knowledge, and practices in EBP than those who did not. Hines *et al.* (2017:161), however, state that while it appears that nurses who have been educated or trained in EBP will have better EBP knowledge, a

commensurate increase in positive attitudes and, more significantly, practice is less certain. Although healthcare professionals generally have positive attitudes towards EBP, Shayan *et al.* (2019:13) highlight that they are said to have inadequate information finding and retrieval abilities, as well as shortcomings in the use of updated resources.

According to a cross-sectional study conducted by Dalheim *et al.* (2012:1) on factors influencing the implementation of EBP among nurses in a large Norwegian university hospital, most nurses used experience-based knowledge rather than evidence-based knowledge to inform their practice, which might be due to a lack of time and skills to search and manage research evidence. The nurses' age, their number of years of nursing work, and the number of years since their previous health professional degree are regarded as factors influencing their search for and use of scientific data to inform their expertise, according to the study. The study reported that EBP implementation increased with the age of nurses, with number of years of nursing practice and administrative and collegial support received. Malik *et al.* (2015:51) agree that one of the primary issues contributing to poor EBP implementation is a lack of administrative support from both colleagues and administrators.

Similar findings are reported by Hines *et al.* (2017:261), stating that older and more senior nurses were more likely to engage in EBP than their younger and junior counterparts. According to a quantitative pilot study conducted by McInerney and Suleman (2010:94) in South Africa, contrary findings were reported. According to the researchers, younger health professional educators are better at using literature search strategies, which is part of the EBP implementation process, than the older ones.

2.5 Evidence-based practice as a requirement for healthcare professionals

As a result of technological advances that have facilitated the rapid dissemination of best practices, EBP is increasingly becoming the standard for successful clinical practice globally (D'Souza *et al.*, 2015:51). Healthcare professionals are thus expected to utilise EBP to enhance patient health outcomes (Connolly *et al.*, 2020:153). This has led to nursing professionals adopting EBP on which to base their practice since the time of Florence Nightingale in the 1800s as a way for the nursing discipline to minimise the gap between theory to practice gap (Hagan & Walden, 2017:158; Heaslip & Serrant, 2019:32; Mackey & Bassendowski, 2017:np). According to Al-Yateem *et al.* (2019:217), the modern healthcare system is faced with ever-changing advances in science and technology. A systematic search for evidence has, therefore, become the epicentre of modern nursing practice (Heaslip & Serrant, 2019:32). D'Souza *et al.* (2015:51) add that the integration of EBP in nursing practice

and education is a critical topic that has progressed significantly over the past two decades and is now recognised as critical by all healthcare practitioners.

Nurses are expected to use the constantly evolving amounts of healthcare data provided as empirical evidence for clinical decisions and judgements by their profession and policymakers (Farokhzadian *et al.*, 2015:571). Even though healthcare practitioners have accepted EBP, studies have revealed several obstacles to its implementation, as well as the limited degree to which evidence-based knowledge is sought and utilised in the healthcare system of low- and middle-income countries (Hadgu *et al.*, 2015:75; Shayan *et al.*, 2019:13; Stevens, 2013:np). Consequently, patients may suffer undue pain or other health-related inconveniences (Breimaier *et al.*, 2011:1745). However, for nurses to keep abreast of the high amount of evidence produced daily, there is still a need to constantly seek for, retrieve, and ultimately implement evidence-based patient care (Farokhzadian *et al.*, 2015:571), regardless of the obstacles faced.

The initial and essential step to motivate nurses to use and develop positive attitudes towards EBP to guide their practice decisions is to train them as student nurses about what EBP entails, how to find evidence, and how to apply EBP in their decision-making (Winters & Echeverri, 2012:49). Their education and training would thus need to change to an evidence-based curriculum to equip them to provide the safest and highest quality of service (Stevens, 2013:np). The EBP knowledge of Jordanian nursing students was assessed in an online cross-sectional survey conducted in Jordan, an Arab country in Southwest Asia (Al Qadire, 2019:3). Students in this study had a low mean total knowledge score because they did not comprehend critical appraisal principles. Nurse educators are thus critical in promoting and supporting evidence-based nursing care in student nurses because they play a vital role in building an EBP culture through a range of activities and programmes (Malik *et al.*, 2015:47). However, a study conducted in Australia found that nurse educators lacked sufficient knowledge and abilities in research methodologies. They also lacked the ability to locate and appraise evidence from literature to inform their education practices and decision-making (Malik *et al.*, 2015:51).

An increasing number of nursing professional regulatory bodies agree that the use of evidence to inform healthcare practice is a prerequisite for registration after graduating from nursing schools (Heaslip & Serrant, 2019:32). The LNC, as a professional regulatory body of Lesotho, supports the later statement by ensuring that the training of nurses is based on a curriculum that promotes EBP knowledge, generation and implementation (Lesotho Nursing Council, 2013:4).

2.6 Evidence-based practice in nursing education institutions

EBP has been reported to have an inter-professional impact in healthcare. In the field of clinical psychology, it is reported to influence economic policies and practice (Drisko & Grady, 2019:23). It is also receiving rising attention in occupational therapy practice (Glover & Mitchell, 2013:60). In addition to the impact of EBP in inter-professions clinical practice, including nursing, EBP is also a requirement in nursing education. Oh and Yang (2019:45) indicate that nursing educational programmes should be well-designed to incorporate EBP and assist nursing undergraduates and nurse educators with improving their critical thinking and decision-making abilities.

Theoretical input, the development of associated abilities, practical application, and successful role models are all required for effective evidence-based teaching practice (EBTP) (Farokhzadian *et al.*, 2015:6). According to Abdulwadud *et al.* (2017:347), it is vital for academic health professionals to be taught in EBP in order to improve their practice. As a result, nurse educators will be effective role models and mentors in the formation of student attitudes and behaviour in the classroom. Mentors help with the successful implementation of EBP in a healthcare system by teaching EBP principles and coaching quality improvement projects through evidence-based teaching and evaluation strategies (Oh & Yang, 2019:46; Ramsay *et al.*, 2020:6; Woods, 2013:5). Nurse educators will thus be ideal role models and mentors who are crucial in the formation of student attitudes and behaviour in practice, hence moulding nursing practice in the future (Stichler *et al.*, 2011:93). Nurse educators thus serve as EBP role models for student nurses, collaborating with other stakeholders in clinical practice to ensure that EBP is implemented (Labrague *et al.*, 2019:242; Lam & Schubert, 2019:167). Furthermore, research suggests that academic health professionals should model the use of EBP in practice while teaching, as this is an ideal time for students to develop a culture of using evidence to inform clinical practice (Abdulwadud *et al.*, 2017:410; Kalb *et al.*, 2015:218; Labrague *et al.*, 2019:243).

Nursing students, according to Mclnerney and Suleman (2010:91), may never contemplate applying best evidence in practice unless they have mastered EBP throughout their undergraduate years. Thus, institutions of higher learning have been identified as the opportune context for students to learn about EBP (Abdulwadud *et al.*, 2017:410). The primary purpose of nursing education is to provide student nurses with the knowledge and skills necessary to provide evidence-based nursing care, which can only be accomplished by nurse educators who are experts in EBP (Orta *et al.*, 2016:409). Kim *et al.* (2019:2) emphasise that EBP is a core competency in nursing education. As a result, nurse educators must be

knowledgeable with EBP to teach student nurses, who will be required to put it into practice (Orta *et al.*, 2016:409). However, nurses do not use EBP for a variety of reasons, including a lack of knowledge, negative attitudes, and barriers they face (Hadgu *et al.*, 2015:75).

According to a quantitative pilot study conducted by McInerney and Suleman (2010:94) at a South African university, there is a positive association between educational level and research evidence use by health professional educators. Additionally, nurse educators are expected to have EBP knowledge, attitudes, and skills so that their teaching practice can be based on the most up-to-date information. EBP should, therefore, be taught in nursing schools (Abdulwadud *et al.*, 2017:347; Al-Yateem *et al.*, 2019:217; Kim *et al.*, 2019:2; Labrague *et al.*, 2019:242; Oh & Yang, 2019:45). Furthermore, it is proposed that the EBP process be introduced early in the education of nursing students in order for them to graduate as nurses who will engage in EBP in their practice autonomously (Finotto *et al.*, 2013:459; Wonder & Spurlock, 2020:80).

Nurse educators are also expected to have EBP knowledge, attitudes, and abilities, according to Abdulwadud *et al.* (2017:347) for their teaching practice to be based on the best available evidence. According to a study done in the United States, nurse educators teach about research and EBP ideas but not how research findings are used to inform EBP (Smith & Kennedy, 2020:56). As a result, nursing graduates do not use EBP in their practice, instead relying on out-of-date theoretical knowledge learned during their studies, as well as out-of-date policies and procedures found in the clinical setting (Melnyk *et al.*, 2012:411).

While nurses acknowledge the importance of EBP in nursing practice, they are faced with barriers that hinder them from implementing EBP (Hadgu *et al.*, 2015:75). Hagan and Walden (2017:168) stated that nurses do not utilise EBP due to inadequate knowledge of research and research methods. A study conducted in the United States reported that nurse educators are not aware of the utilisation of evidence to inform their teaching and academic responsibilities (Kalb *et al.*, 2015:218). On the other hand, a study conducted in Saskatoon reported that while students were taught about EBP and motivated to implement it in practice, it is not implemented in clinical practice (Wakibi, 2019:21). As a result, in order for students to become future evidence-based healthcare professionals, their education must be evidence-based and linked with EBP core principles (Gallagher Ford & Melnyk, 2019:np; Spek *et al.*, 2012:np).

It is a mandatory for nurse educators and other healthcare professionals to be trained for effective implementation of EBP in their practice (D'Souza *et al.*, 2015:52). While most

educators support teaching EBP, Stichler *et al.* (2011:94) state that owing to challenges such as high job demands, lack of skills, lack of knowledge or time management, they may not be implementing it into their teaching. Because nurse educators cannot teach what they do not know, Melnyk *et al.* (2012:415) and Orta *et al.* (2016:417) assert that validating their EBP knowledge would ensure that students who graduate will be able to base their practice on evidence independently. Mclnerney and Suleman (2010:91) concur that if nurses are not exposed to EBP during their undergraduate studies, they may never implement EBP. Instead, they may base their practice on their own experiences as well as the opinions of their peers. Booth *et al.* (2016:55) suggest that nurse educators are reluctant to adopt EBP because nursing education comprises both pedagogical and clinical EBP, and the pedagogical EBP is not well-established and defined. According to Stichler *et al.* (2011:94), although most nurse educators favour teaching EBP, they are unaware of the distinctions between traditional research and an EBP technique, hence continue to focus on teaching research methodology without ensuring that students also learn to apply what they have learned in their nursing practice.

2.6.1 Integration of evidence-based practice into the nursing curriculum

Stevens (2013:np) state that to implement EBP, nursing curricula must be revised to help equip future healthcare professionals who will then implement EBP in their practice. However, a report on the incorporation of EBP in nursing education conducted in India found that some EBP elements in India's undergraduate and postgraduate nursing curricula are insufficient in order to adequately train future nurse practitioners to incorporate EBP in their areas of practice (D'Souza *et al.*, 2015:52). The importance of nursing educators designing education programmes that target evidence-based clinical practice was thus highlighted to effect improvements in the incorporation of EBP in patient care.

EBP training at nursing institutions should be an important component of the nursing curriculum to promote the development of competent nurses who utilise evidence to monitor and improve patient care (Melnyk *et al.*, 2010:53). Melnyk *et al.* (2014:12), therefore, suggests that EBP be integrated into academic curricula and the clinical training of nurses. A study conducted in Rwanda adds that this type of integration in the early phases of nurse education aids the formation of nursing graduates with positive attitudes toward research and EBP, which leads to more rigorous implementation of EBP processes and practices (Iradukunda & Mayers, 2020:2). As a result, it is the major responsibility of nursing institutions, nursing administration, and policymakers to guarantee that nurses are effectively trained in EBP knowledge and practices (Mclnerney & Suleman, 2010; Melnyk *et al.*, 2012). Nursing students who participated in a survey that sought to determine the knowledge, attitudes and application of

EBP by nursing students at a school of nursing in Rwanda agreed that EBP should be an integral part of their nursing education (Iradukunda & Mayers, 2020:5).

According to Iradukunda and Mayers (2020:2), effective EBP integration in nursing education must contain both theoretical and practical components. Theoretical EBP instruction prepares students to seek for and evaluate literature, whereas clinical EBP instruction allows them to put theory into practice (Balakas & Sparks, 2010:np; Finotto *et al.*, 2013:460). While having a theoretical knowledge of the EBP process is the first step in developing positive attitudes and using EBP in clinical practice, Farokhzadian *et al.* (2015:4) cautions that theoretical knowledge alone may not be sufficient to change attitudes or promote EBP use in practice. In addition, according to Hung *et al.* (2015:np), who evaluated the condition of EBP teaching for undergraduate nursing students in Taiwan across 21 nursing schools, it was discovered that the majority of institutions (n = 18; 85.7%) focused on EBP knowledge in theory but paid less attention to its clinical application.

Nurse educators are experimenting with various teaching and curricular approaches to address the uptake of EBP in practice, as EBP is an important aspect of nursing education and a clinical practice requirement (Lam & Schubert, 2019:161). As a result of this effort, the necessity for competency-based education as a new approach to rethinking nursing and healthcare curricula has become critical. Murararaneza *et al.* (2016:5) highlight that in Africa, nursing and midwifery education has experienced a paradigm shift from content-driven to competency-based curriculum (CBC) to train professionals who will meet the needs of their healthcare system. Likewise, Lesotho has also adopted a CBC to train nurses who will meet its healthcare needs (Botma, 2016:1876). CBC in Lesotho was informed by the National Nursing and Midwifery Strategic Plan of 2010, which attempts to improve the quality of care by incorporating CBC into nursing and midwifery education (Ministry of Health, 2010:np). One of the seven core competencies for the CBC in Lesotho is that students should be able to apply EBP through the conduct of research studies to develop scientific evidence and to use that scientific data to inform their practice (Botma, 2016:1880).

The CBC has been implemented by the undergraduate Christian Health Association of Lesotho Nurses Training Institutions (CHAL NTI) from 2014 (Botma, 2016:1877). It was first piloted by the midwifery programme and is now implemented in advancing levels of the nursing programme. Although the content-based curriculum comprised an introduction to research, a research proposal, and real research study execution, it was mostly based on outmoded textbooks and clinical practices. According to Farokhzadian *et al.* (2015:5), research courses may not be sufficient to provide students the grounding they need to acquire EBP skills.

Anecdotal evidence from Lesotho nursing education institutions indicates that some nurse educators do not know about the use of EBP to inform their teaching practices. Since CBC requires that nursing education institutions and nurse educators go beyond only conducting research studies, research evidence should be translated into practice by means of the EBP process. This study will thus explore and describe the knowledge, attitudes, and practices of nurse educators at the CHAL NTIs as they teach EBP in the CBC curriculum.

2.6.2 Evidence-based practice teaching strategies

Ruzafa-Martinez *et al.* (2013:1) suggest that nursing curricula should promote the acquisition and development of EBP. New educational trends such as community-based education, problem-based learning, student-centred education, project-based learning, competency-based curriculum and team integration are therefore used to apply EBP teaching strategies in nursing curricula (Hosny & Ghaly, 2014:S63; Ruzafa-Martinez *et al.*, 2013:1).

Oh and Yang (2019:45) state that the growing demand for EBP necessitates well-designed EBP education programmes to help nursing undergraduates and nurse educators improve their critical thinking and decision-making skills. The same authors opine that nurse educators ought to use teaching strategies that are appropriate for EBP content to help nursing students understand how to generate and utilise scientific evidence in clinical practice. This is accomplished by employing innovative rather than traditional teaching and learning methods (Hosny & Ghaly, 2014:S63). Nurse educators, on the other hand, have a difficult time coming up with innovative strategies to engage students in a way that promotes their development of positive attitudes, knowledge, and practice in the area of EBP (Kyriakoulis *et al.*, 2016:8).

A variety of approaches to EBP integration into the nursing curriculum have been reported. The first approach is that a separate EBP course be incorporated into the nursing curriculum focused on the fundamentals of EBP. However, this has been criticised for only improving the informational aspect of EBP, not the practice (D'Souza *et al.*, 2015:52). Another way to incorporate EBP into the curriculum, according to the same source, is through a clinically integrated course. Kim *et al.* (2019:8) studied and suggested a multimodal EBP education programme for undergraduate nursing students as an effective way to improve EBP knowledge, skills, attitudes, competences, future EBP usage, and critical thinking.

Multifaceted teaching strategies used to effectively teach EBP and promote the attainment of EBP knowledge, attitudes, and practice at nursing institutions include establishing an institutional EBP committee, EBP courses, conferences, workshops, journal clubs, educational seminars, didactic lectures, computer sessions, group discussions, computer

laboratory sessions, portfolios, assignments, and the use of real clinical scenarios (Abdulwadud *et al.*, 2017:352; Hosny & Ghaly, 2014:S63; Kim *et al.*, 2019:2; Kyriakoulis *et al.*, 2016:8).

Nurses improved their critical appraisal of research, searching skills, and ability to use and discuss research findings, according to a quasi-experimental study conducted in Korea to evaluate the effect of education programmes on EBP implementation (Sim *et al.*, 2016). As a result, an EBP programme was incorporated into their training. Postgraduate masters and doctoral programmes have also been designed for nurses to contribute to the scientific body of nursing knowledge (Al-Yateem, 2019:217). However, Heaslip and Serrant (2019:33) have observed that the USA and the rest of the world have small numbers of nurses with doctorates. The authors further observed that nurses with a Doctorate qualification and who engage in nursing research, work as nurse educators and have limited time for clinical practice, while those in clinical practice are overwhelmed by the clinical workload and cannot engage in nursing research.

2.7 Summary

EBP as a global requirement for all nurses has been supported by nursing regulatory bodies. As a result, nurse educators must have the required knowledge, attitudes, and teaching practices to model for nursing students, who will then implement it into their nursing practice. While nurse educators and other healthcare professionals' support EBP, the literature shows that nurse educators lack the EBP knowledge, attitudes, and practices needed to teach nursing students. There is a paucity of literature or studies conducted in Lesotho regarding the knowledge, attitudes and practices of nurse educators teaching at nursing education institutions to ensure that EBP as a core competency of the CBC is indeed integrated.

This chapter gave the reader an overview of the literature that can act as literature control support for my data collection instrument. The next chapter will comprehensively discuss the research design and methods.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter builds on the previous one, which provided a thorough examination of the literature on nurse educators' knowledge, attitudes, and practices regarding evidence-based practice (EBP). To fulfil the study's goal and objectives, an in-depth discussion of the research design methods will be presented in this chapter. The study setting, population, and sample size are described. The development and contextualisation of the data collection instrument, as well as the data collection process followed, are clearly detailed so that the methodology can be replicated. The reliability and validity of the data collection instrument, as well as data collection for the pilot study and main study are all part of the described process. The chapter concludes with a discussion of the data analysis process used in this study and a summary of the chapter.

3.2 Aim and objectives

The aim of this study was to explore and describe the knowledge, attitudes, and practices of nurse educators regarding EBP at nursing education institutions in Lesotho.

The objectives of the study were as follows:

- Explore and describe the knowledge of nurse educators regarding EBP at nursing education institutions in Lesotho.
- Explore and describe the attitudes of nurse educators regarding EBP at nursing education institutions in Lesotho.
- Explore and describe the practices of nurse educators regarding EBP at nursing education institutions in Lesotho.
- Explore and describe the relationship between the knowledge, attitudes, and practices of nurse educators at nursing education institutions regarding EBP.

3.3 Study setting

The study setting is defined as the location where the study is conducted (Grove & Gray, 2019:59), and a natural setting was used in this study. The study was conducted at five nursing institutions, the National Health Training College and all four Christian Health Association of Lesotho Nurses Training Institutions (CHAL NTI). Of the 10 districts in Lesotho indicated in Figure 3 below, the institutions are in three districts, namely, Maseru, Berea and Thaba-Tseka. The National Health Training College is a government-owned health institution located in

Maseru, the capital city of Lesotho (Council on Higher Education, 2016:np). It offers undergraduate nursing and midwifery courses and other post-basic health science programmes. The CHAL NTI is a Faculty of the Christian Health Association of Lesotho that is established to monitor curricula implementation and the adherence of nursing institutions to the regulatory body standards (CHAL, 2021:np). There are four nurses' training institutions under the CHAL NTI, namely, Maluti Adventist College, SCOTT College of Nursing, Roma College of Nursing, and Paray School of Nursing. The Maluti Adventist College is in the eastern rural Berea area, while the Paray School of Nursing is in the Thaba-Tseka district, which is in Lesotho's rural east. SCOTT College of Nursing and Roma College of Nursing are in Maseru, Lesotho's capital city. The institutions offer the Diploma in General Nursing, the Diploma in Midwifery, and the Nursing Assistant Certificate as undergraduate programmes (CHAL, 2021:np).

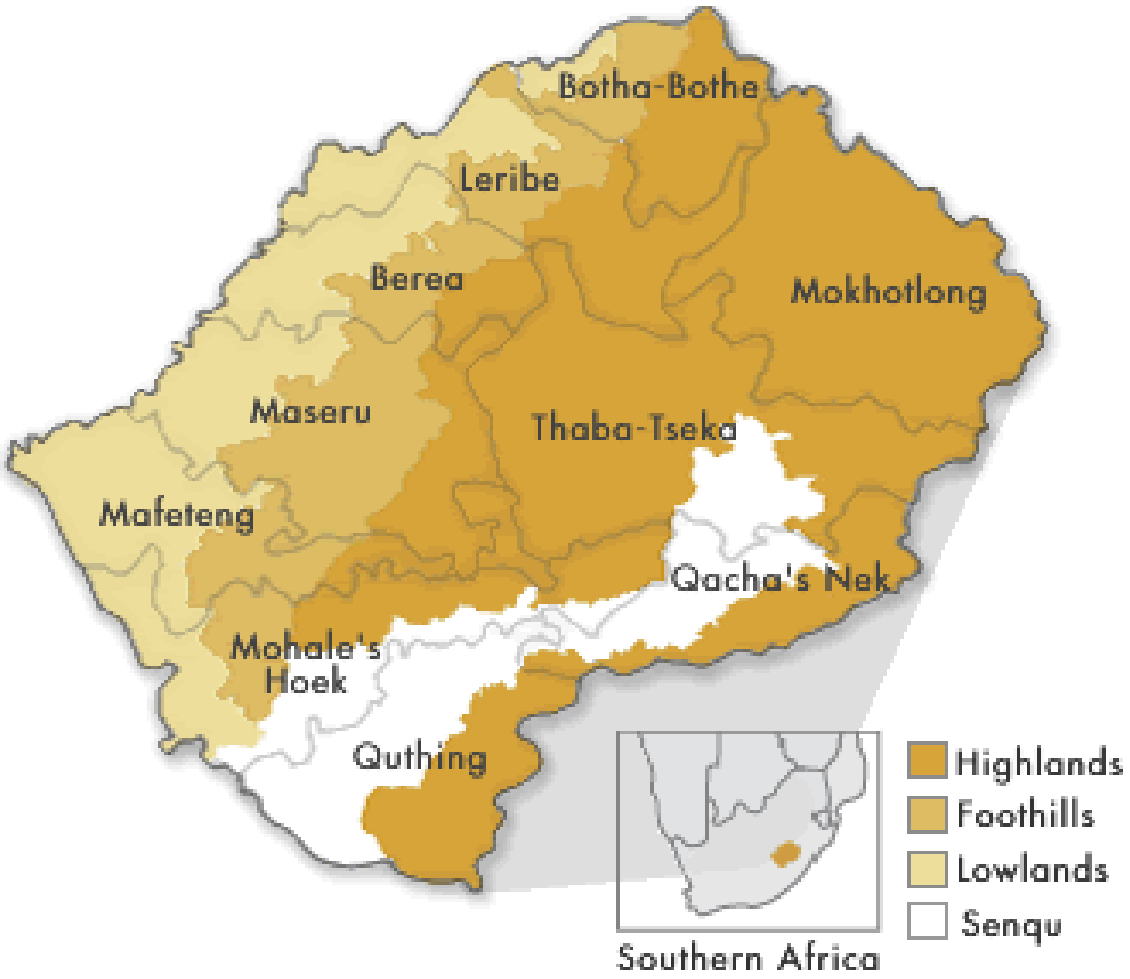

Figure 3: Map of Lesotho (Rocchi & Sette, 2016:7)

3.4 Research design

An explorative, descriptive quantitative research design is chosen for this study. A well-developed body of evidence and procedures, precise data collection instruments, and a representative sample are all features of a meticulous quantitative study (Almeida *et al.*, 2017:370; Grove & Gray, 2019:58; Polit & Beck, 2018:45). According to Siedlecki (2020:8), identification, description, investigation, explanation, and prediction or control are among the specific aims of descriptive studies in nursing research. Grove and Gray (2019:258) and Polit and Beck (2018:222) add that a descriptive study design helps to identify, observe, and describe practice problems and to justify practice by collecting data on characteristics of that field of study as they naturally happen. Grove and Gray (2019:35) also state that descriptive research entails exploring new areas of research and describing situations as they exist in the real world, which is appropriate given that this study will delve into a previously unexplored area of EBP knowledge, attitudes, and practices among nurse educators in Lesotho nursing education institutions.

Grove and Gray (2019:356) mention that questionnaires, also known as surveys, are used in descriptive research to obtain data from a sample of respondents, who in this study are nurse educators in Lesotho nursing institutions. Data for this study was collected through online surveys that were sent to nurse educators. The data collection method resulted in a numerical analysis that was utilised to inform the findings, discussion, and recommendations of the study. This is typical in quantitative studies, as each study variable is identified via the collection and analysis of numerical data (Grove & Gray, 2019:93).

3.5 Target population

Grove and Gray (2019:69) define a population as all individuals who qualify for the study's inclusion criteria. For this study, the target population is all National Health Training College and CHAL NTI nurse educators who teach in the undergraduate nursing, midwifery, and nursing assistant programmes. Nurse educators are regulated by the Standards for Nursing and Midwifery Education (2012: 6) when teaching nursing students, which demands them to keep updated with information and participate in research in order to retain clinical and educator competence. Nurse educators in Lesotho are either academically qualified nurse educators or registered nurses and midwives engaged by institutions to teach the theory and practical aspects of nursing to student nurses in selected programmes. The nursing education institutions offer nursing, nursing assistant and midwifery programmes with some nurse educators teaching in either some of or all the programmes. This study therefore included nurse educators from all three programmes. According to anecdotal evidence, all nurse

educators in this study received EBP training, either through workshops or informal training programs; however, they all received formal education to become qualified nurses, with some specializing in nursing education; thus, their formal education can be considered relevant to their EBP knowledge, attitudes, or practices.

The target population was determined informally, prior to official data collection taking place. The National Health Training College had 12 nurse educators, Maluti Adventist College had 15 nurse educators, SCOTT College of Nursing had 16 nurse educators, Roma College of Nursing had 15 nurse educators, and Paray School of Nursing had 24 nurse educators in total. The target population was therefore 82 nurse educators (Table 3).

Table 3: Target population

Nursing education institution	**Number of nurse educators**
National Health Training College	12 (pilot)
Maluti Adventist College	15
SCOTT College of Nursing	16
Roma College of Nursing	15
Paray School of Nursing	24
Target population	**82**

3.6 Sample size

Grove and Gray (2019:69) define a sample as a selected part of the target population who partake in the study to represent the whole population. To calculate an estimated sample size for this study, a biostatistician from Stellenbosch University (SU) was consulted as a requirement by the SU Health Research Ethics Committee (HREC). The sample size was calculated using mean knowledge, attitudes and skills scores from Nigeria, an African country like Lesotho, in a study conducted by Labrague *et al.* (2019:241) between Oman, India, Saudi, and Nigeria utilising the same validated Evidence-based Practice Competency Questionnaire (EBP-COQ) tool used in this study. Different precision scores were assumed using the mean knowledge, attitudes and practice outcome scores and standard deviations (SD) reported in the study. To achieve a precision of +/- 0.3 scores of the knowledge score outcome, that had a mean knowledge score of 2.25 and an SD of 1, a sample size of 46 would be required. To achieve a precision of +/- 0.2 scores of the attitude score outcome, that had a mean attitude score of 2.92 and an SD of 0.82, a sample size of 67 would be required. Lastly, to achieve a precision of +/- 0.3 scores of the practice score outcome, that had a mean practice score of 2.34 and a SD of 1, a sample size of 46 would be required. It was, therefore, concluded this

study would use the mean attitude score sample size of 67 since it is the largest number that can be achieved from the three knowledge, attitudes, and practice score outcomes.

3.7 Sampling technique

According to Grove and Gray (2019:314), descriptive quantitative research utilizing survey questionnaires require large samples to account for the possibility of extraneous factors influencing respondent replies. Since National Health Training College was used for the pilot study, the researcher opted for an all-inclusive sampling technique by engaging all nurse educators (N = 70) from the remaining four CHAL NTIs in the main study.

3.8 Data collection instrument

An electronic questionnaire was generated using the Research Electronic Data Capture (REDCap) tool hosted at SU. REDCap is a "secure, web-based application designed to support data capture for research studies" (Harris *et al.*, 2009:377; MacHowska *et al.*, 2020:7).

The self-reported survey comprised 32 items that were completed by study respondents online within an estimated time of 15 minutes (Appendix 5). There was only an English version since English is the medium of instruction in Lesotho and all nurse educators at the Lesotho nursing institutions are English literate. Eighteen items were sourced and contextualised from the EBP-COQ. The EBP-COQ was developed and validated by Ruzafa-Martinez *et al.* (2013:7), with a Cronbach's alpha of 0.888, then utilised by Labrague *et al*. (2019:238). Nine items were sourced from the EBTP data collection tool developed by Kalb *et al.* (2015:217), with a reported interrater reliability of 0.861 and modified to the context of this study by the researcher. Items addressing skills in EBP were developed and added to the existing questionnaire by the researcher, item by item, to address EBP knowledge, attitudes, and practices of nurse educators. Six additional items from the literature review and i-PARiHs conceptual framework were devised by the researcher.

The questionnaire was sub-divided into four sections as follows:

Section A: Demographic data items – comprising three items that included age, programme, and years of teaching. This information was obtained to describe the nature of study respondents.

Section B: Knowledge of nurse educators regarding EBP – comprising 9 items using a binary yes or no scale, 6 of which were sourced and contextualised from the EBP-COQ scale (Ruzafa-Martinez *et al.*, 2013:7).

Section C: Attitudes of nurse educators regarding EBP – comprising 11 items, using a 5-point Likert scale. Six items were sourced and contextualised from the Ruzafa-Martinez *et al.* (2013:7) EBP-COQ scale and 4 from the evidence-based teaching practice (EBTP) data collection tool developed by Kalb *et al.* (2015:217).

Section D: Practices of nurse educators regarding EBP – comprising 9 items, using a 5-point Likert scale of which 6 were sourced and contextualised from the EBP-COQ scale (Ruzafa-Martinez *et al.,* 2013:7) and 5 from Kalb *et al.* (2015:217) data collection tool.

3.9 Reliability and validity

Researchers collect data utilising instruments that accurately and consistently reflect the behaviour of their respondents; yet, errors are unavoidable and observed scores will only reflect true scores to a degree (LoBiondo-Wood & Haber, 2019:278). Researchers should establish the reliability and validity of such scales, according to Bajpai and Bajpai (2014:112), in order to increase the accuracy of results and, as a result, the scientific quality of studies.

3.9.1 Reliability

The capacity of a data gathering instrument to measure variable properties consistently is characterized as reliability (LoBiondo-Wood & Haber, 2019:278). A Cronbach alpha coefficient is a measure of internal reliability of multiple-item scales, according to Grove and Gray (2019:341). The data collection instrument for this study was developed by contextualising items from the EBP-COQ tool that had a Cronbach's alpha of 0.888 and the EBTP tool that had an interrater reliability of 0.861 (Kalb *et al.*, 2015:217; Labrague *et al.*, 2019:238). A pilot study was conducted at the National Health Training College to determine the reliability of the data collection instrument, and comments from the pilot study were integrated into the evaluation and finalisation of the data collecting instrument. Internal reliability was also established for each of the subscales, with Cronbach's alpha coefficients of 0.577 for EBP knowledge, 0.899 for EBP attitudes, and 0.677 for EBP skills.

3.9.2 Validity

Validity is defined as the degree to which a data collection instrument accurately assesses the attributes of a concept (LoBiondo-Wood & Haber, 2019:278). The reasonable measure that the instrument indeed measures the concept it has set out to measure, is determined by validity tests (Bajpai & Bajpai, 2014:113). Content validity determines the extent to which the instrument measures all significant items relevant to the assessed concept (Grove & Gray, 2019:341). Commonly used validity tests in nursing research are content validity, criterion-related validity, and construct validity. Because this study makes use of a validated data

collection instrument, the researcher only determined the content and face validity to see if the EBP concept, as articulated in the literature, is consistent with the study's aim after being contextualised. For a test to have content validity, face validity is assumed to be present as a basic and minimum index (Mohajan, 2017:16). Content and face validity were determined by enlisting the help of an SU biostatistician, conducting a pilot study of the data collection instrument, and reviewing the content of the questionnaire by a Lesotho nurse academic with knowledge and experience of EBP.

3.10 Pilot study

Pilot studies are preliminary investigations that provide specific information that will be used to plan larger-scale studies in the future (Moore *et al.*, 2011:336). As a result, a pilot study was done to gather information on the clarity of all data collection instrument items as well as the utilisation of REDCap online surveys. The National Health Training College was used as the pilot study setting with a target population of 12 nurse educators. The institution was selected because it has the lowest number of nurse educators compared to the other four nursing institutions and, since this is an all-inclusive study, all 12 nurse educators were targeted for the pilot study. A request letter with the study information (Appendix 3), and the SU HREC (Appendix 1) and the Lesotho Ministry of Health Research Ethics Committee approval letters (Appendix 2) were emailed to the institution, and upon approval, a contact personnel was assigned to the researcher.

All potential participants, who are all nurse educators at their respective institutions, received study information via the study's contact persons. Potential participants were requested to voluntarily provide their contact information so that the researcher may contact them with more information about the study and an official invitation to participate. Within a week of engaging with each of the four contact persons from the four nursing institutions, the researcher received email addresses and cell phone numbers from all potential respondents. The phone numbers were utilized to send each potential respondent airtime for their time and data reimbursement, while the email addresses were used to produce anonymous and email-specific online survey invitations using REDCap. The online survey invitations provided potential participants with information about the study in Appendix 4 and then asked for their voluntary involvement by selecting either yes or no and then proceeding to the attached survey link if yes was selected.

Of the targeted 12, only 10 nurse educators participated and provided feedback on the online survey itself and the clarity of the survey questions. This thus led to the pilot study response rate of 83%. The following changes were affected as guided by the pilot study respondents. Firstly, the online survey was set through REDCap to auto save answers and allow

respondents to return and complete the survey later. Secondly, item ten of Section C of the data collection was made more specific by changing “supportive academic administrators, peers, and mentors would motivate to teach evidence-based practice to students” to “receiving support from academic administrators, peers, and mentors motivates me to implement evidence-based teaching practice”.

Because all 12 nurse educators at the pilot study setting were engaged to pilot this study, and because this is an all-inclusive study with a sufficient predetermined target population from all four nursing institutions, the results of the pilot study were not included in the main study.

3.11 Data collection

Data collection is described as a set of techniques for gathering information for a study utilizing an instrument that was developed and tested in a pilot study (Brink *et al*., 2018:46). Data for this study was collected through online surveys that were sent to nurse educators. Online surveys, according to Saleh and Bista (2017:64), have become a prominent form of data gathering in educational research, allowing educators and students to participate and provide high response rates. However, because online surveys have been found to have a poor response rate, numerous approaches have been explored to improve the response rate to online medical surveys, including questionnaire abbreviations, prepaid or promised incentives, and tailored mail or postal reminders (McPeake *et al.*, 2014:25; Saleh & Bista, 2017:67).

The researcher firstly sought ethical clearance from the SU HREC (Reference number: S21/01/010) (Appendix 1) and the Lesotho Ministry of Health Research Ethics Committee (Reference number: ID 25-2021) (Appendix 2). Letters were then written to the CHAL NTIs through either their principal nurse educators or research committee after receiving ethics approval and sent by email to request permission to conduct the study (Appendix 4). The following, namely, the SU HREC approval letter and the Lesotho Ministry of Health Research Ethics Committee clearance letter, were included in the email request. The researcher contacted all nursing institutions that did not yet consent to the request to conduct the study a week later by email and phone calls.

Upon permission to conduct the study, the institutions were invited to forward email addresses and phone numbers of nurse educators who were interested in being invited to participate in the study. Each institution was then assigned a contact person who shared the study's information with all potential participants and asked them to share their contact information voluntarily for the researcher to contact them for further information on the study and to

officially invite them to participate. Since potential participants are all nurse educators from all four nursing institutions, the contact persons contacted all nurse educators and only received contact details of those who volunteered to be contact by the researcher. The email addresses were uploaded onto REDCap to generate anonymous and email-specific online survey invitations, while the phone numbers were used to send each potential respondent airtime for their time and data reimbursement.

The online survey invitations provided potential participants with information about the study in Appendix 4 and then asked for their voluntary involvement by selecting yes or no and then proceeding to the attached survey link if yes was selected. Those who refused to participate were redirected to a page that acknowledged their decision but encouraged them to revisit their decision if need be. The online questionnaires created by REDCap were distributed to a total of 57 potential respondents from all nursing institutions who had voluntarily provided their contact information to be contacted by the researcher. As a result, instead of the estimated 67, the actual sample size was 57, as shown in Table 4 below.

Table 4: Potential study respondents

Nursing institution	**Population**	**Sample**
Maluti Adventist College	15	15
SCOTT College of Nursing	16	16
Paray School of Nursing	24	15
Roma College of Nursing	15	11
Total	**70**	**57**

Some nursing institutions generate email addresses for the nurse educators while other nurse educators utilise their personal email addresses. Because there is now no law in Lesotho that establishes basic standards for the transfer of personal information, the email addresses and contact details of potential respondents were protected by storing the information in a password-protected folder that was destroyed after use. The institutions also have internet access (Wi-Fi), which is subsidized by the Lesotho government, and some generate email addresses for all nurse educators. As a result, every respondent either had a personal or institutional email address and access to the internet, all of which are required to participate in this study. However, due to challenges of slow and unreliable connectivity, each respondent was sent 50 ZAR (R50.00) airtime for data and time reimbursement. REDCap-generated email-specific online survey participation requests were sent to potential respondents, which included information about the study, an option to consent or not consent to participate

(Appendix 1), and a survey link that directed them to an option to either consent or not consent to participate. For those who consented to participate, the link directed them to the survey while those who did not consent were thanked. The data collection period was three weeks, from the 5th to the 23rd of July 2021.

The researcher opted for online surveys since the response rate for online surveys are reported to be higher than emailed surveys (Grove & Gray, 2019:356) and it also assisted with the adherence to COVID-19 preventive measures. Because the data was obtained electronically and there was no physical contact with the study respondents, maximum protection against the COVID-19 infection was maintained in this study. All responses were recorded into the REDCap database that was password-protected and could only be accessed by the researcher and supervisors. Since electronic survey response rates are generally lower than other forms of self-report (Grove & Gray, 2019:356), the researcher set-up automated REDCap-generated email reminders to study respondents for the duration of the data collection period. After the initial email request to participate, reminders were sent out every Wednesday of the three data collection weeks. During the final week of data collection, the researcher called study respondents who had either not completed or not yet conducted the survey to check on their progress.

3.12 Data analysis

In quantitative research, data analysis is described as the management of numerical data, as well as its inspection and reduction to provide relevant study results (Grove & Gray, 2019:378). Because data from online surveys were automatically coded and recorded by REDCap, after completion of the data collection period, the researcher downloaded the data and emailed it to the SU biostatistician for analysis using STATA statistical software, version 17.

Continuous variables, such as age, were summarised using means and SD or medians and interquartile ranges, depending on whether their distribution was normal or skewed. Categorical variables, such as the programme in which the nurse educators teach, were summarised using frequencies and percentages.

Mean knowledge scores, mean attitude scores, and mean practice scores were then reported with their corresponding 95% confidence interval (CI). Each EBP knowledge question ranged from 0 to 1 (a binary scale where 0 meant a wrong answer and 1 a correct answer). From a total of 9 knowledge items, the maximum knowledge score was obtained by adding all the nine questions on EBP knowledge, which gave a total knowledge score for individuals that

ranged from 0 to 9. The lower scores indicate lower knowledge levels while higher scores indicate high knowledge levels.

Of the 11 questions in the EBP attitudes section of the data collection instrument, two reverse order questions – “I do not like reading scientific articles” and “it pleases me that EBP is only a theoretical concept, and it is not translated in practice” – were excluded to calculate the mean attitude score since they were scored differently. As a result, the maximum attitude score was 45, which was calculated by multiplying 9 EBP attitude items by 5, the highest Likert scale level, which indicated the most positive attitude toward EBP for each item. The minimum attitude score was 9. The maximum attitude score of 45 was obtained by multiplying the number of questions on EPB knowledge (9) by the highest Likert scale level (5). The same method was used to obtain the maximum practice score, which was a product of 9 EPB practice questions and 5, the highest Likert scale level (5). The lower scores indicate lower attitude and practice levels while higher scores indicate high attitude and practice levels.

Inferential analyses were conducted for associated questions from the three sections of the data collection instrument: knowledge, attitudes, and practices. The significance of a relationship between two variables was determined by performing both a Pearson Chi-squared test and a Fisher's exact test. The corresponding p-value was then reported from either the Chi-squared test, if the corresponding expected frequencies (E) from any one cell were greater than 5, or the Fisher's exact test, if any E was less than 5 (Petrie & Sabin, 2020:67). A lower p-value (usually ≤ 0.05) suggests a significant relationship between variables, whereas p-values above 0.05 indicate a non-significant association between variables.

3.13 Summary

In this chapter, a comprehensive discussion was provided on the research design and methods used in the study. The next chapter will discuss the empirical results of the data elicited from the data collection phase.

CHAPTER FOUR
EMPIRICAL RESULTS

4.1 Introduction

In the previous chapter, an in-depth discussion of the research methodology used for this study was provided. In this chapter, the results of the study that aimed to describe the knowledge, attitudes, and practices of nurse educators regarding evidence-based practice (EBP) at nursing education institutions in Lesotho are presented. The results are presented according to the research objectives. Data collected and analysed, as per the four sections of the data collection instrument, is presented in this chapter.

Data was collected using online surveys whereby survey links were sent out to nurse educators through their email addresses and responses were automatically coded and recorded by Research Electronic Data Capture (REDCap). Descriptive and inferential statistics were used in this study and analysed using STATA statistical software, version 17. Percentages and frequencies in the knowledge, attitudes and practices section tables are rounded off to nearest whole numbers while those representing inferential statistics are rounded off to the nearest second decimal place for accuracy of reporting.

4.2 Study response rates

The target population for the study was 82 respondents, of which 12 was included in the pilot study. Thus, a remainder of 70 respondents were available for the main study since the pilot study results were not included in the main study. The calculated sample size was 67 respondents, of which only 57 respondents provided their email addresses and contact information to be contacted by the researcher. The actual sample size was therefore 57 instead of the estimated 67. Due to missing data from any of the three data collection instrument sections, data for Section A was reported for 54 respondents, data for Section B was reported for 53 respondents, data for Section C was reported for 52 respondents, and data for section D was reported for 52 respondents. Since only 54 respondents (from the target population of 82 and calculated sample size of 67 respondents) completed the survey, the response rate of this study was 81%. The response rate was therefore an adequate sample that is representative of the target population, as highlighted by Grove and Gray (2019:356) regarding response rates greater than 50%. The refusal rate of this study was calculated as 5% since three respondents of the 57 (actual sample size) did not respond to any of the data collection instrument sections.

4.3 Section A: Demographic data

This section comprised three items that included age, programme in which each nurse educator teaches, and years of teaching at nursing institutions in Lesotho.

Table 5 indicates the demographic data of this study's respondents. Data for age and years of teaching were collected as discrete variables, hence their frequencies and corresponding percentages are not reported. The average age of nurse educators in this study was 40 years, with a standard deviation (SD) of 8. The median years of teaching was 6 years (IQR:3-10). The SD and interquartile range (IQR) are both wide, showing that the age and years of teaching experience of the research respondents were heterogeneous. Most nurse educators (n = 30; 56%) who participated in this study teach in the nursing programme, while 19% (n = 10) are in the midwifery programme, 2% (n = 1) in the nursing assistant programme, and 24% (n = 13) teach in more than one of the nursing programmes.

Table 5: Demographic data of nurse educators who participated in the study

Age of respondents	Mean	Standard deviation (SD)
Age (years)	40	8
Years of teaching	Median	Interquartile range (IQR)
Years	6	3 – 10
Programmes in which participating nurse educators taught		
Programme	Frequency (n)	Percentage (%)
Nursing	30	56
Midwifery	10	19
Nursing assistant	1	2
In more than one programme*	13	24
Total (N)	54	100

*Lesotho nursing institutions provide up to three programmes: nursing, midwifery, or nursing assistant programmes. Some nurse educators either teach in all three or any two programmes.

4.4 Section B: Knowledge of nurse educators regarding EBP

This section of the data collection instrument describes the knowledge of nurse educators regarding EBP. It comprises 9 items using a binary yes or no scale. Table 6 indicates the knowledge scores of nurse educators regarding EBP.

According to Table 6, all the respondents (n = 53; 100%) agreed that evidence-based teaching practice (EBTP) is defined as the use of the best available research results to inform teaching and learning. All the respondents (n = 53; 100%) also agreed that students who look up to their nurse educators as role models learn how to combine the best available evidence, clinical expertise, and patient values to improve patient outcomes. Most of the respondents (n = 33; 62%) have been trained in EBP and its application in nursing education, while 20 (38%) received no training in EBP.

Although the data findings revealed that the respondents received training in EBP, it is evident that only half of the respondents (n = 26; 49%) know how to formulate clinical questions using the PICO format and searching strategies to find the best empirical evidence. Half of the respondents (n = 27; 51%) did not know how to formulate such clinical questions. Furthermore, it was found that the majority of the respondents (n = 48; 91%) know how to access electronic databases that provide scientific health sciences information to guide their teaching, while only 5 respondents (9%) did not have the knowledge to access electronic databases.

Of the 53 respondents only 36 (68%) indicated that they know how to critically appraise different study designs, while 17 (32%) do not know about the critical appraisal process. Furthermore, only 30 (57%) respondents know that the levels of evidence must be considered in searching for different studies, while 23 (43%) do not know, and only 35 (66%) respondents know how to interpret results from different study designs while 18 (34%) do not know. This study also found that the majority of the respondents (n = 48; 91%) know how to use evidence to inform innovative teaching methods in nursing education.

Table 6: Knowledge of nurse educators regarding EBP (n = 53)

Knowledge of nurse educators regarding EBP	Yes	No
	Frequency (%)	Frequency (%)
Evidence-based teaching practice is the utilisation of best available research results to inform teaching and learning activities.	53 (100)	0 (0)
Role modelling evidence-based practice to students means teaching them to integrate the best available evidence, clinical expertise, and patient values to maximise patient outcomes.	53 (100)	0 (0)

I have been trained in evidence-based practice and the application thereof in nursing education.	33 (62)	20 (38)
I know how to formulate clinical questions using the PICO or other search strategies to find the best evidence.	26 (49)	27 (51)
I know how to access electronic databases that offer scientific health sciences information to guide my teaching.	48 (91)	5 (9)
I know how to critically appraise different study designs that can be used to inform teaching and learning in nursing education.	36 (68)	17 (32)
I know the levels of evidence that need to be considered in searching for different studies.	30 (57)	23 (43)
I know how to interpret results from different study designs in order to assist me with incorporating the best evidence into teaching and learning practices in nursing education.	35 (66)	18 (34)
I know how to use evidence to inform innovative teaching methods in nursing education.	48 (91)	5 (9)

4.5 Section C: Attitudes of nurse educators regarding EBP

This section of the data collection instrument comprised 11 items that sought to describe the attitudes of nurse educators regarding EBP using a 5-point Likert scale. The results are illustrated in Table 7. The scores ranged from 1 to 5, with 1 being selected by those who strongly disagree and 5 by those who strongly agree with the statements. A total of 52 respondents completed the section of the data collection instrument.

Of all 52 respondents, the majority either agreed or strongly agreed that teaching EBP to nursing students helps them to implement it in practice. Fifty (96%) respondents strongly agreed, and 2 (4%) respondents agreed that it is important to teach nursing students to base their clinical practice on EBP. Forty (77%) nurse educators strongly agreed and 10 (19%) agreed that teaching using EBP are role models for nursing students to learn to also use EBP in nursing practice. Only 2 (4%) respondents gave a neutral response.

Thirty-nine (75%) respondents strongly agreed while 11 (21%) agreed and only 2 were neutral on the statement that application of EBP when teaching contributes to students achieving learning outcomes. Thirty-six (71%) respondents strongly agreed, 13 (25%) agreed and only 2 (4%) were neutral, indicating that teaching EBP to nursing students will help them to apply it in clinical practice to enhance patient outcomes. Forty-four (85%) respondents strongly

agreed and 8 (15%) agreed that research evidence generates new knowledge and best practices that promote change and improves nursing practice that is taught to students.

On the first reverse order question in this section of the data collection instrument, the majority of the respondents (n = 44; 86%) strongly disagreed and disagreed that they do not like reading scientific articles, 2 (4%) gave a neutral response, and 5 (10%) agreed. On the second reverse order question, 35 (67%) respondents strongly disagreed and disagreed that it pleases them that EBP is only a theoretical concept and that it is not translated into practice. Nine (17%) respondents were neutral, while 8 (16%) strongly agreed and agreed with the question.

All 52 respondents (100%) strongly agreed and agreed that it is important to critically evaluate the quality of a scientific article before using it for nursing education evidence and that nurse educators should be granted time and access to other resources in their teaching environment to participate in EBP. However, while the majority of respondents (n = 42; 82%) strongly agreed and agreed that they would facilitate an EBP course, 6 (12%) gave a neutral response while 3 (6%) strongly disagreed and disagreed. Additionally, while the majority of respondents (n = 55, 92%) strongly agreed and agreed that supportive academic administrators, peers, and mentors would motivate them to teach EBP to students, 3 (6%) were neutral about the question and 1 (2%) strongly disagreed.

Table 7: Attitudes of nurse educators regarding EBP (n = 52)

Attitudes of nurse educators regarding EBP	Frequency (%)				
	1 (Strongly disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly agree)
It is important to teach nursing students to base their clinical practice on EBP.	0	0	0	2 (4)	50 (96)
It is important to critically evaluate the quality of a scientific article before using it for nursing education evidence.	0	0	0	9 (17)	43 (83)
Nurse educators who teach using EBP are role models	0	0	2 (4)	10 (19)	40 (77)

for nursing students to learn to also use EBP in nursing practice.					
Nurse educators should be granted time and access to other resources in their teaching environment to participate in EBP.	0	0	0	6 (12)	46 (88)
Application of EBP when teaching, contributes to students achieving learning outcomes.	0	0	2 (4)	11 (21)	39 (75)
I do not like reading scientific articles. *	29 (57)	15 (29)	2 (4)	5 (10)	0
Teaching EBP to nursing students will, in turn, help students to implement EBP in clinical practice to improve patient outcomes.	0	0	2 (4)	13 (25)	36 (71)
It pleases me that EBP is only a theoretical concept and that it is not translated into practice. *	20 (38)	15 (29)	9 (17)	4 (8)	4 (8)
I would facilitate an EBP course if I had a chance.	1 (2)	2 (4)	6 (12)	18 (35)	24 (47)
Supportive academic administrators, peers, and mentors would motivate me to teach evidence-based practice to students.	1 (2)	0	3 (6)	12 (24)	43 (68)

Research evidence generates new knowledge and best practices that promote change and improve nursing practice that is taught to students.	0	0	0	8 (15)	44 (85)

*Reverse order questions

4.6 Section D: Practices of nurse educators regarding EBP

This section comprises 9 questions that addressed the self-reported practices of nurse educators regarding EBP. The questions were rated using a 5-point Likert scale that ranged from strongly disagree to strongly agree. The scores ranged from 1 to 5, with 1 being a selection for those who strongly disagree and 5 for those who strongly agree with the statements. Table 8 indicates practice scores regarding EBP of 52 nurse educators who participated in this study.

The majority of the respondents (n = 44; 85%) strongly agreed and agreed that they use EBP in their teaching and learning to help nursing students to make informed clinical judgements and decisions while 7 (13%) were neutral and 1 (2%) disagreed with the question. Most of the respondents (n = 37; 72%) strongly agreed and agreed that they formulate clinical questions to search for the best scientific evidence that will inform their teaching, while 10 (20%) were neutral and 4 (8%) disagreed with the statement. The majority of respondents (n = 27; 52%) in this study strongly agreed that they formulate clinical questions using the PICO or other search strategies to find the best evidence to guide their teaching. Sixteen respondents (31%) gave a neutral response while 9 (17%) strongly disagreed and disagreed with the statement.

Forty-three respondents (84%) used the best available evidence to select innovative teaching methods and 5 (10%) were neutral about the statement, while 3 (6%) did not. Additionally, most respondents (n = 44; 85%) searched for scientific evidence from health science databases to develop course content while 5 (10%) gave a neutral response and 3 (5%) disagreed with the statement. The majority of respondents (n = 39; 74%) also reported that they critically appraise the quality of scientific articles for best evidence to inform their teaching while 6 (12%) were neutral and 7 (14%) disagreed. Forty-three respondents (82%) strongly agreed and agreed that they do analyse the validity of scientific study results before adopting them in their teaching, while 5 (10%) gave a neutral response and 4 (8%) disagreed.

Most respondents (n = 30; 60%) consulted their administrators, colleagues and/or mentors for EBP guidance when preparing teaching material, while 13 (26%) were neutral about the statements and 7 (14%) did not. The majority of respondents (n = 47; 90%) reported that they incorporated EBP recommendations and clinical practice guidelines into their teaching practices, only 2 (4%) were neutral on the statement and 3 (6%) reported that they did not.

Table 8: Practices of nurse educators regarding EBP (n = 52)

Practices of nurse educators regarding EBP	Frequency (%)				
	1 (Strongly disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly agree)
I use EBP in teaching and learning in order to help nursing students to make informed clinical judgements and decisions.	0	1 (2)	7 (13)	18 (35)	26 (50)
I formulate clinical questions to search for the best scientific evidence that will inform my teaching.	0	4 (8)	10 (20)	20 (39)	17 (33)
I search for scientific evidence from health science databases to develop course content.	0	3 (5)	5 (10)	17 (33)	27 (52)
I formulate clinical questions using the PICO (Population/Patient Problem, Intervention, Comparison, Outcome, Time) or other search strategies to find the best evidence to guide my teaching.	3 (6)	6 (11)	16 (31)	13 (25)	14 (27)
I critically appraise the quality of scientific articles for best evidence to inform my teaching.	1 (2)	6 (12)	6 (12)	22 (42)	17 (32)

I analyse the validity of scientific study results before adopting them in my teaching.	0	4 (8)	5 (10)	24 (46)	19 (36)
I consult my administrators, colleagues and/or mentors for EBP guidance when preparing teaching material.	3 (6)	4 (8)	13 (26)	20 (40)	10 (20)
I use the best available evidence to select innovative teaching methods.	1 (2)	2 (4)	5 (10)	15 (29)	28 (55)
I incorporate evidence-based practice recommendations and clinical practice guidelines into teaching.	0	3 (6)	2 (4)	17 (32)	30 (58)

4.7 Mean knowledge, attitudes, and practice scores

The mean knowledge, attitude, and practice scores were calculated using data from sections B, C, and D of the data collecting instrument and are shown in Table 9.

The mean knowledge score was obtained by adding all the nine questions on EBP knowledge, which gave a total knowledge score for individuals that ranged from 0 to 9. As indicated in Table 9, the mean knowledge score on the knowledge of 53 nurse educators regarding EBP was 7 out of a maximum score of 9, with a 95% CI [6-7] and a standard error of 0.23. Since the mean knowledge score is high, above half of the maximum score, respondents were very knowledgeable about EBP.

The minimum attitude score was 9. The maximum attitude score of 45 was obtained by multiplying the number of questions on EPB knowledge (9) with the highest Likert scale level (5). Table 9 indicates the mean attitudes score was 42, with the 95% CI [41-43] and a standard error of 0.40. The mean attitude score was high since it was above half of the maximum attitude score, thus implying a positive attitude of respondents toward EBP. The CI was also narrow, indicating that responses were homogenous.

The minimum practice score was 9. The maximum practice score of 45 was obtained by multiplying the number of questions on EPB practice (9) with the highest Likert scale level (5). As indicated in Table 9, the mean practices score was 37, with the 95% CI [35-39] and a

standard error of 0.95. The mean practice score was high since it exceeded half of the maximum practice score. The CI was narrow, thus indicating that homogenous responses were given.

Table 9: Evidence-based practice knowledge, attitudes, and practice mean scores

EBP score	Frequency (n)	Maximum score	Mean	95% confidence interval	Standard error
Knowledge score	53	9	7	6-7	0.23
Attitudes score	52	55	42	41-43	0.40
Practices score	52	45	37	35-39	0.95

4.8 Relationship between the knowledge, attitudes, and practices of nurse educators at nursing education institutions regarding EBP

In this section, correlation statistics are presented regarding the following variables from the knowledge, attitudes, and practices sections of the data collection instrument:

- Relationship between the knowledge of formulating clinical questions and the teaching practice of formulating clinical questions
- Relationship between the knowledge of formulating clinical questions and the teaching practice of formulating clinical questions using PICO and other search strategies
- Relationship between knowledge and practice of accessing electronic databases
- Relationship between the knowledge of and attitudes towards critically appraising evidence
- Relationship between the knowledge and teaching practice of critically appraising evidence
- Relationship between knowledge and practices regarding the interpretation of results
- Relationship between attitudes and practices regarding support from and consultation with experts
- Relationship between the attitudes and teaching practice of EBP implementation
- Relationship between the knowledge of and attitudes towards role modelling EBP

For accuracy of reporting associations in this section, percentages and frequencies in this section are rounded off to the nearest second decimal place.

4.8.1 Relationship between the knowledge of formulating clinical questions and the teaching practice of formulating clinical questions

As indicated in Table 10, the Fisher's exact was used to examine the relationship between training in EBP and formulating clinical questions to search for the best scientific evidence that will inform teaching since some expected frequency values were below 5. The probability value (p = 0.152) was more than 0.05. Therefore, this study did not find a significant relationship between the knowledge of formulating clinical questions and the teaching practice of formulating clinical questions to search for evidence. Respondents (n = 25; 49.02%) who knew how to formulate clinical questions using PICO and other search strategies to find best evidence to use in their teaching were more likely to select neutral (n = 7; 28.00%), agree (n = 10; 40.00%) or strongly agree (n = 5; 20.00%) on the actual practice of formulating such questions. Similarly, respondents (n = 26, 50.98%) who did not know how to formulate clinical questions using PICO and other search strategies to find the best evidence were also more likely to select neutral (n = 3; 11.54%), strongly agree (n = 10; 38.46%) or agree (n = 12; 46.15%) on the actual practice of formulating such questions.

Table 10: Correlational statistics

I know how to formulate clinical questions using the PICO or other search strategies to find the best evidence	I formulate clinical questions to search for the best scientific evidence that will inform my teaching					Total	Probability values
	1 (Strongly disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly agree)		
Yes	0.00	3.00	7.00	10.00	5.00	25.00	Pearson Chi-square = 0.141
	0.00	2.00	4.90	9.80	8.30	25.00	
	0.00	12.00	28.00	40.00	20.00	100.00	
No	0.00	1.00	3.00	10.00	12.00	26.00	
	0.00	2.00	5.10	10.20	8.70	26.00	Fisher's exact = 0.152
	0.00	3.85	11.54	38.46	46.15	100.00	

I know how to formulate clinical questions using the PICO or other search strategies to find the best evidence	I formulate clinical questions using the PICO (Population/Patient Problem, Intervention, Comparison, Outcome, Time) or other search strategies to find the best evidence to guide my teaching					Total	Probability values
	1 (Strongly disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly agree)		
Yes	3.00 1.50 11.54	5.00. 3.00 19.23	11.00 8.00 42.31	4.00. 6.50 15.38	300 7.00 11.54	26.00 26.00 100.00	Pearson Chi-square = 0.006
No	0.00 1.50 0.00	1.00 3.00 3.85	5.00 8.00 19.23	9.00 6.53 34.62	11.00 7.00 42.31	26.00 26.00 100.00	Fisher's exact = 0.005
I know how to access electronic databases that offer scientific health sciences information to guide my teaching	I search for scientific evidence from health science databases to develop course content					Total	Probability values
	1 (Strongly disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly agree)		
Yes	0.00 0.00 0.00	2.00. 0.30 40.00	100 0.50 20.00	2.00 1.60 40.00	0.00 2.60 0.00	5.00 5.00 100.00	Pearson Chi-square = 0.002
No	0.00 0.00	1.00 2.70	4.00 4.50	15.00. 15.40	27.00 24.40	47.00 47.00	

	0.00	2.13	8.51	31.91	57.45	100.00	Fisher's exact = 0.004
I know how to critically appraise different study designs that can be used to inform teaching and learning in nursing education	It is important to critically evaluate the quality of a scientific article before using it for nursing education evidence					Total	Probability values
	1 (Strongly disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly agree)		
Yes	0.00	0.00	0.00	1.00	16.00	17.00	Pearson Chi-square = 0.129
	0.00	0.00	0.00	2.90	14.10	17.00	
	0.00	0.00	0.00	5.88	94.12	100.00	
No	0.00	0.00	0.00	8.00	27.00	35.00	
	0.00	0.00	0.00	6.10	28.90	35.00	Fisher's exact = 0.241
	0.00	0.00	0.00	22.86	77.14	100.00	
I know how to critically appraise different study designs that can be used to inform teaching and learning in nursing education	I critically appraise the quality of scientific articles for best evidence to inform my teaching					Total	Probability values
	1 (Strongly disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly agree)		
Yes	1.00	4.00.	4.00.	5.00	3.00	17.00	Pearson Chi-
	0.30	2.00	2.00	7.20	5.60	17.00	

	5.88	23.53	23.53	29.41	17.65	100.00	square = 0.026
No	0.00	2.00	2.00	17.00	14.00	35.00	
	0.70	4.00	4.00	14.80	11.40	35.00	Fisher's exact = 0.018
	0.00	5.71	5.71	48.57	40.00	100.00	
I know how to interpret results from different study designs in order to assist me incorporate the best evidence into teaching and learning practices in nursing education	I analyse the validity of scientific study results before adopting them in my teaching					Total	Probability values
	1 (Strongly disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly agree)		
Yes	0.00	2.00	1.00	11.00	4.00	18.00	Pearson Chi-square = 0.288
	0.00	1.40	1.70	8.30	6.60	18.00	
	0.00	11.11	5.60	61.11	22.22	100.00	
No	0.00	2.00	4.00	13.00	15.00	34.00	
	0.00	2.60	3.30	15.70	12.40	34.00	Fisher's exact = 0.265
	0.00	5.88	11.76	38.24	44.12	100.00	
Supportive academic administrators, peers, and mentors would motivate to	I consult my administrators, colleagues and/or mentors for EBP guidance when preparing teaching material					Total	Probability values
	1 (Strongly disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly agree)		

teach evidence-based practice to students							
1 (Strongly disagree)	1.00 0.10 100.00	0.00 0.10 0.00	0.00 0.30 0.00	0.00 0.40 0.00	0.00 0.20 0.00	1.00 1.00 100.00	Pearson Chi-square = 0.000
2 (Disagree)	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	Fisher's exact = 0.005
3 (Neutral)	0.00 0.20 0.00	2.00 0.20 66.67	0.00 0.80 0.00	0.00 1.20 0.00	1.00 0.60 33.33	3.00 3.00 100.00	
4 (Agree)	1.00 0.70 9.09	0.00 0.70 0.00	4.00 3.00 36.36	6.00 4.40 54.55	0.00 2.30 0.00	11.00 11.00 100.00	
5 (Strongly agree)	1.00 2.10 3.03	1.00 2.10 3.03	9.00 8.90 27.27	13.00 13.10 39.39	9.00 6.90 27.27	33.00 33.00 100.00	
It pleases me that EBP is only a theoretical concept and it is not translated into practice	I incorporate evidence-based practice recommendations and clinical practice guidelines into teaching					Total	Probability values
	1 (Strongly disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly agree)		
1 (Strongly disagree)	0.00 0.00 0.00	0.00 1.20 0.00	0.00 0.80 0.00	4.00 6.50 20.00	16.00 11.50 80.00	20.00 2.00 100.00	Pearson Chi-square = 0.036

2 (Disagree)	0.00 0.00 0.00	1.00 0.90 6.67	1.00 0.60 6.67	8.00 4.90 53,33	5.00 8.70 33.33	15.00 15.00 100.00	Fisher's exact = 0.013
3 (Neutral)	0.00 0.00 0.00	0.00 0.50 0.00	0.00 0.30 0.00	2.00 2.90 22.22	7.00 5.20 77.78	9.00 9.00 100.00	
4 (Agree)	0.00 0.00 0.00	1.00 0.20 25.00	0.00 0.20 0.00	2.00 1.30 50.00	1.00 2.30 25.00	4.00 4.00 100.00	
5 (Strongly agree)	0.00 0.00 0.00	1.00 0.20 25.00	1.00 0.20 25.00	1.00 1.30 25.00	1.00 2.30 25.00	4.00 4.00 100.00	
Role modelling evidence-based practice to students means teaching them to integrate the best available evidence, clinical expertise, and patient values to maximise patient outcomes	It pleases me that EBP is only a theoretical concept and it is not translated into practice					Total	Probability values
	1 (Strongly disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly agree)		
Yes	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	Not applicable

	0.00	0.00	0.00	0.00	0.00	0.00
No	20.00	15.00	9.00	4.00	4.00	52.00
	20.00	15.00	9.00	4.00	4.00	52.00
	100z.00	100.00	100.00	100.00	100.00	100.0 0

4.8.2 Relationship between the knowledge of formulating clinical questions and the teaching practice of formulating clinical questions using PICO and other search strategies

Fisher's exact was used to examine the relationship between training in EBP and formulating clinical questions using the PICO or other search strategies to find the best evidence to guide teaching. The probability value (p = 0.005) was less than 0.05, thus indicating a significant relationship between training in EBP and formulating clinical questions. Respondents (n = 26; 50.00%) who had been trained in EBP were more likely to select disagree (n = 5; 19.23%), neutral (n = 11; 42.31%) or agree (n = 4; 15.38%) on formulating clinical questions using PICO and other search strategies to find the best available evidence to use in their teaching. On the other hand, respondents (n = 26; 50.00%) who had not been trained in EBP were more likely to select neutral (n = 5; 19.23%), agree (n = 9; 34.62%) or strongly agree (n = 11; 42.31%).

4.8.3 Relationship between knowledge and practice of accessing electronic databases

The Fisher's exact test was used to investigate the relationship between knowledge and the practice of accessing electronic databases to find evidence to utilise in developing course material, as indicated in Table 10. The probability value (p = 0.004) was less than 0.05, demonstrating a strong association between knowing how to access electronic databases and practice. Respondents (n = 5; 9.62%) who knew how to access electronic databases that offer scientific health sciences information to guide their teaching were more likely to select disagree (n = 2; 40.00%), neutral (n = 1; 20.00%) or agree (n = 2; 40.00%). Conversely, respondents (n = 47; 90.38%) who did not know how to access electronic databases reported that they search for scientific evidence from health science databases to develop course content by selecting agree (n = 15; 31.91%) and strongly agree (n = 27; 57.45%).

4.8.4 Relationship between the knowledge of and attitudes towards critically appraising evidence

The Fisher's exact test was used to investigate the relationship between the knowledge and attitudes of nurse educators at Lesotho nursing institutions regarding critically appraising

evidence to guide their teaching, since some expected frequency values were below 5. The probability value (p = 0.241) was more than 0.05, thus indicating that there was no association between knowledge and attitudes of nurse educators regarding critically appraising evidence. Sixteen respondents (94.12%) strongly agreed that they knew how to critically appraise diverse research designs and 27 (77.14%) strongly agreed that they knew how to critically evaluate the quality of scientific evidence before adopting it as nursing education evidence.

4.8.5 Relationship between the knowledge and teaching practice of critically appraising evidence

Because some expected frequency values were below 5, the Fisher's exact test was employed to assess the relationship between the knowledge and teaching practice of critically appraising evidence, as shown in Table 10. The probability value of the relationship between the knowledge and practice of nurse educators regarding critically appraising evidence was 0.018, thus indicating a significant relationship. Respondents (n = 17; 32.69%) who knew how to critically appraise evidence were more likely to select disagree (n = 4; 23.53%), neutral (n = 4; 23.53%) or agree (n = 5; 29.41%) while those who did not know were more likely to select agree (n = 17; 67.31%) and strongly agree (n = 14; 40.00%) that they critically appraise evidence before incorporating it into their teaching.

4.8.6 Relationship between knowledge and practices regarding interpretation of results

Fisher’s exact was used to examine the relationship between knowledge and practices of nurse educators regarding the interpretation of study results before incorporating it into their teaching practices, since some expected frequency values were below 5. Regarding the interpretation of data, the probability value (p = 0.265) was more than 0.05, indicating that there was no association between knowledge and practice of nurse educators. Respondents (n = 18; 34.62%) who knew how to interpret study results were more likely to select agree (n = 11; 61.11%) and strongly agree (n = 4; 22.22%). Similarly, those (n = 34, 65.38%) who did not know how to interpret study results were more likely to select agree (n = 13; 38.24%) and strongly agree (n = 15; 44.12%) that they interpret results before incorporating it into their teaching.

4.8.7 Relationship between attitudes and practices regarding support from and consultation with experts

Since most expected frequency values were below 5, Fisher's exact was used to investigate the association between attitudes and practices regarding assistance and guidance from

administrators, peers, and mentors. The probability value (p = 0.005) was less than 0.05, demonstrating a significant association between the attitudes and practices of nurse educators regarding the need for administrative, peer, and mentor assistance and consultation. Respondents, who were motivated by supportive academic administrators, peers, and mentors to implement EBP in their teaching, were more likely to select neutral (n = 9; 27.27%), agree (n = 13; 39.39%) or strongly agree (n = 9; 27.27%) while respondents who were not motivated by such support were likely to either strongly disagree (n = 2; 100%) or disagree (n = 2; 66.67%) that they seek such support in practice.

4.8.8 Relationship between the attitudes towards and teaching practice of evidence-based practice implementation

Fisher's exact was used to examine the relationship between the knowledge, attitudes, and practices of nurse educators regarding EBP implementation in clinical practice, since most expected frequency values were below 5. The probability value was less than 0.05, thus indicating a significant relationship between the attitudes and practices of nurse educators regarding EBP implementation. The majority of respondents (n = 35; 67.31%) who reported a positive attitude towards EBP implementation were more likely to agree or strongly agree that they incorporate EBP recommendations and clinical practice guidelines (CPG) into their teaching. Respondents who strongly disagreed that it pleases them that EBP is only a theoretical concept that is not translated into practice were more likely to agree (n = 4; 20.00%) and strongly agree (n = 16; 80.00%) that they incorporate EBP recommendations and CPGs into their teaching, while those who strongly disagreed with the statement were more likely to agree (n = 8; 23.33%) and strongly agree (n = 5; 33.33%) that they incorporate EBP recommendations and CPGs into their teaching.

4.8.9 Relationship between the knowledge of and attitudes towards role modelling evidence-based practice

Two variable categories are "role modelling evidence-based practice to students means teaching them to integrate the best available evidence, clinical expertise, and patient values to maximise patient outcomes" and "it pleases me that EBP is only a theoretical concept and it is not translated into practice". Irrespective of these two variable categories, there was no variation found since all respondents responded similarly as either yes or no for each EBP attitude question on the Likert scale.

4.9 Summary

This study successfully answered the research question since the knowledge, attitudes, and practices of nurse educators regarding EBP at nursing education institutions in Lesotho were explored and described. This study found that while most nurse educators at Lesotho nursing education institutions have been trained on EBP, a substantial number have not been trained in EBP, cannot construct focused clinical questions to find necessary evidence, and do not access electronic databases. However, on average, there is good EBP knowledge, attitudes, and practices regarding EBP. This is indicated by the mean knowledge score on knowledge being 7 out of a maximum score of 9; the mean attitudes score was 42 out of a maximum score of 55; and the mean practices score out of a maximum score of 45 was 37.

The study also discovered that most nurse educators (n = 44; 85%) search electronic databases for empirical evidence. Yet, they get a plethora of irrelevant results since they do not know how to create clinical questions using search strategies such as PICO to yield targeted results. Another intriguing finding was that, despite the majority of respondents (n = 30; 60%) consulting experts for EBP guidance, a small but considerable number of respondents (n = 20; 40%) do not.

Significant relationships were found between training in EBP and formulating clinical questions ($p = 0.005$); knowledge and practice of accessing electronic databases ($p = 004$); knowledge and practices regarding critically appraising evidence ($p = 0.018$); attitudes and practices regarding support from and consultation with experts ($p = 0.005$); and attitudes and practices regarding EBP implementation ($p = 0.013$). A discussion of the findings, conclusions, recommendations, and limitations of the study are in chapter 5.

CHAPTER FIVE
DISCUSSION, CONCLUSIONS, LIMITATIONS, RECOMMENDATIONS, APPLICATION OF FRAMEWORK, DISSEMINATION OF FINDINGS AND SUMMARY

5.1 Introduction

Following the explanation of study findings in the preceding chapter, this chapter will provide an in-depth discussion by connecting the findings with past research and the study's conceptual framework. Second, a conclusion will be reached regarding the major study findings as well as whether the research questions were addressed. Third, the limitations of the study will be highlighted. Fourth, based on the outcomes of the study, recommendations for nursing practice, education, and further research will be provided. Finally, the chapter will discuss how the findings of the study will be disseminated.

5.2 Discussion

The aim of this study was to explore and describe the knowledge, attitudes, and practices of nurse educators regarding evidence-based practice (EBP) at nursing education institutions in Lesotho. In this chapter, the demographic data will be described, and an in-depth discussion is provided using each individual objective and integrating the study findings reported in chapter 4.

The discussion is based on the following study objectives:

- Explore and describe the knowledge of nurse educators regarding EBP at nursing education institutions in Lesotho.
- Explore and describe the attitudes of nurse educators regarding EBP at nursing education institutions in Lesotho.
- Explore and describe the practices of nurse educators regarding EBP at nursing education institutions in Lesotho.
- Explore and describe the relationship between the knowledge, attitudes, and practices of nurse educators at nursing education institutions regarding EBP.

5.2.1 Demographic data

While the rising popularity of the internet has prompted more researchers to employ online surveys in their research, online surveys have a lower response rate (Cunningham, Quan, Hemmelgarn, *et al.*, 2015:1). Many approaches, such as questionnaire abbreviations, prepaid or promised incentives, and personalised mail or postal reminders have been used to increase the response rate to online medical surveys (McPeake *et al.*, 2014:25; Saleh & Bista,

2017:67). Respondents were rewarded with data in order to enhance response rates, and three email reminders were sent out weekly to guarantee that potential respondents were free of compulsion and undue influence. In addition, respondents received weekly email and personal reminders via contact persons at various institutions.

The average age of nurse educators who participated in this study was 40 years, with a standard deviation (SD) of 8. The median years of teaching was 6 years (IQR:3-10). This indicated that the majority of study respondents were middle-aged with sufficient years of teaching experience. This corresponds with Dalheim *et al.* (2012:1), who highlighted that the utilisation of research-based evidence to inform practice increases with the age of the nurse and with the number of years of nursing practice. This implies that, while the respondents in this study varied in age and years of teaching experience, the majority are middle-aged and have experience in teaching nursing students and are thus qualified to provide information on EBP knowledge, attitudes, and teaching practices for this study.

As derived from the data in Table 5, most respondents were from nursing and midwifery programmes that currently implement a competency-based curriculum (CBC) and were thus eligible to participate in this study since both programmes have begun to implement CBC.

5.2.2 Objective 1: Explore and describe the knowledge of nurse educators regarding EBP at nursing education institutions in Lesotho

The first objective of this study was to explore and describe nurse educators' knowledge regarding EBP at Lesotho's nursing education institutions.

All respondents (n = 53) agreed that evidence-based teaching practice (EBTP) is defined as the use of the best available research results to inform teaching and learning. This finding is aligned with the definition of EBTP by Kalb *et al.* (2015:212), which states that it is the use of evidence by nursing educators to inform what to teach and how to facilitate and evaluate learning. All respondents (n = 53) also agreed that students who look up to their nurse educators as role models learn how to combine the best available evidence, clinical expertise, and patient values to improve patient outcomes. Because learning is experienced through observable behaviour, experiences, and the norms of the learning environment, Winters and Echeverri (2012:53) are in agreement that nurse educators should motivate students by role modelling EBP in order for them to put it into practice.

The majority of respondents (n = 33; 62%) have been trained in EBP and its application in nursing education. While Melnyk *et al.* (2012:415) and Orta *et al.* (2016:417) agree that nurse educators can only use EBTP if they know it, this finding contradicts Abdulwadud *et al.* (2017:347) who suggest that healthcare academics lack enough training and knowledge of EBTP. A substantial number of respondents (n = 20; 38%) had not been trained in EBTP, which might indicate that they lack knowledge of EBP in nursing education. This might be due to the low internal reliability of the data collecting instrument section on knowledge of nurse educators regarding EBP, which had a Cronbach alpha coefficient of 0.577, which was lower than the suggested value of 0.800 to 0.900 for validated instruments like the one used in this study (Grove & Gray, 2019:379).

EBP requires healthcare practitioners to be able to search, identify, and retrieve the best available evidence quickly and efficiently using electronic technology such as electronic bibliographic databases (Michaleff *et al.*, 2011:191). Lin *et al.* (2010:165) add that the PICO mnemonic and its variations are used to search for focused and clinically relevant questions. This study thus found that while fewer respondents (n = 26; 49%) know how to formulate clinical questions using PICO and its various search strategies to find the best empirical evidence, more respondents (n = 48; 91%) know how to access electronic databases that provide scientific health sciences information to guide their teaching. This means that most nurse educators search electronic databases for empirical evidence. Yet, they get a plethora of irrelevant results since they do not know how to construct focused clinical questions using search strategies such as PICO and its variations. Leonardo (2018:1) acknowledges that searching electronic databases for the best evidence without proper search strategy skills usually results in a lack of information or a huge volume of irrelevant evidence. This study confirms findings of Mohsen *et al.* (2016:np) who indicated that, while nurses could recognise clinical practice concerns, they could not translate them into well-constructed clinical questions.

Table 6 demonstrates that, on the surface, the majority of respondents reported that they can critically appraise empirical studies for their level of evidence and type of study design, and that they used the knowledge to incorporate it into their teaching. Thirty-six (68%) respondents reported that they know how to critically appraise different study designs, 30 (57%) respondents know the levels of evidence that need to be considered in searching for different studies, and 35 (66%) respondents know how to interpret results from different study designs. These findings corroborate assertions by Leonardo (2018:1) and Spruce *et al.* (2014:248) that, because research designs and evidence have different strengths, healthcare practitioners must be able to identify the best and most relevant evidence and then appraise its strength

and quality. This finding, however, contradicts prior studies that indicated that nurses lacked the confidence and skills to critically evaluate research and implement EBP (Melnyk *et al.*, 2012:414; Mohsen *et al.*, 2016:np). Furthermore, a sizable proportion of respondents do not know how to critically evaluate empirical research (n = 17; 23%) and do not know the levels of evidence (n = 23; 43%), which might mean that they are teaching nursing students based on data that has not been independently verified for strength and quality. This might be because the data collection instrument section on knowledge of nurse educators regarding EBP had a Cronbach alpha coefficient of 0.577, which is lower than the recommended range of 0.80 to 0.90 for validated instruments like the one employed in this study (Grove & Gray, 2019:379).

This study found that the majority of the respondents (n = 48; 91%) indicated that they know how to use evidence to inform innovative teaching methods in nursing education. This conclusion supports assertions that nurse educators should employ innovative teaching strategies tailored to EBP content to help nursing students comprehend how to create and digest scientific evidence in clinical practice (Hosny & Ghaly, 2014:S63; Oh & Yang, 2019:45). Nurse educators, on the other hand, have been found to have a hard time coming up with innovative teaching strategies to engage students in EBP in a way that fosters the development of positive knowledge, attitudes, and practice (Kyriakoulis *et al.*, 2016:8).

The mean knowledge score on the knowledge of nurse educators regarding EBP was 7, with a 95% CI [6-7] out of the highest knowledge score of 9. This indicates that, on average, respondents had good knowledge regarding EBP because the mean knowledge score is above half of the maximum knowledge score (9) for this study and responses were homogenous since the CI is narrow.

5.2.3 Objective 2: Explore and describe the attitudes of nurse educators regarding EBP at nursing education institutions in Lesotho

The second objective of this study was to explore and describe the attitudes of nurse educators regarding EBP at nursing education institutions in Lesotho. The next section highlights the item-by-item explanation of the data collecting questions used to describe this objective.

With highest scores ranging from 71 to 96%, respondents strongly agreed that role modelling EBP to student nurses is crucial. Ninety-six percent of respondents (n = 50) strongly believe that teaching nursing students to base their clinical practice on EBP is critical. Most

respondents (n = 40; 77%) strongly believe that nurse educators who teach using EBP are role models for nursing students who want to learn to utilise EBP in practice as well. The study also found that while 9 respondents (18%) were either unsure or disagreed that they would facilitate an EBP course if given the opportunity, the majority (n = 42; 82%) agreed that they would. Conclusions from other studies corroborate the findings of the research, which state that academic health professionals should model the use of EBP in practice while teaching, as this is an ideal time for students to develop a culture of using evidence to inform clinical practice (Abdulwadud *et al.*, 2017:410; Kalb *et al.*, 2015:218; Labrague *et al.*, 2019:243). The findings, however, contradict Hung *et al.* (2015:np) who evaluated the state of EBP education for undergraduate nursing students in Taiwan across 21 nursing schools. It was found that most institutions (n = 18; 85.7%) focused on EBP knowledge in theory but paid less attention to its clinical application.

Critically evaluating both primary and synthesised data, according to Melnyk *et al.* (2014:7), is a key competency for nurses. In this study, all respondents (n = 52; 100%) agreed that critically examining the quality of a scientific publication before utilising it as evidence for nursing education is essential. This finding can be compared to that of Malik *et al.* (2015:50), who investigated the knowledge, skills, and attitudes of nurse educators, clinical coaches, and nurse specialists regarding EBP. They discovered that a lack of critical evaluation skills and a lack of time prevented regular literature appraisal. This study finding can also be compared to that of a systematic review by El Abd (2017:np), which found that a lack of critical appraisal skills contributed to unfavourable attitudes toward EBP. The data of this study imply that all research participants had positive attitudes towards critical appraisal of literature, which may be attributed to their critical appraisal skills.

According to the majority of respondents (n = 55; 92%), support from academic administrators, peers, and mentors promotes the use of evidence-based teaching strategies. When provided time and access to needed materials in their teaching environment, all respondents (n = 52; 100%) were motivated to participate in EBTP. Dalheim *et al.* (2012:1) and Malik *et al.* (2015:51) concur that nurse educators who are provided the resources they need to implement EBP are more likely to do so fully. A survey conducted by Kalb *et al.* (2015:216) indicated that supportive nurse administrators (M = 3.65), the availability of resources (M = 3.65), an academic setting that recognises EBTP for promotion and tenure (M = 3.62), and support of the use of EBTP in nursing education (M = 3.61) positively influence EBTP.

The majority of respondents (n = 50; 96%) agreed that using evidence-based teaching techniques helps students accomplish learning outcomes. All respondents (n = 52; 100%)

stated that research evidence offers new information and best practices that encourage change and enhance nursing practice. The findings are in line with those of a study by Kalb *et al.* (2015:216), which found that the majority of respondents (M = 3.82) strongly agreed that it is critical for educators to employ EBTP in nursing education since it contributes to scientific advancement (M = 3.68). However, a contradicting finding of this study was that 35 respondents (67%) are dissatisfied that EBP is only a theoretical concept that has not been implemented into practice while a significant number (n = 17; 33%) agreed with the statement. This may be because this was asked as reverse order question.

The readability and comprehensibility of articles is one of the key problems in professional development for nurses in understanding and evaluating research articles for possible practical application (Weng *et al.*, 2016:301). Yet, the majority of respondents (n = 44; 86%) in this study prefer reading scientific papers to inform their teaching.

The mean attitude score of this study was 42, with a 95% CI [41-43], indicating that respondents had a generally favourable attitude toward EBP since it was above half of the maximum attitude score for this study. The CI was narrow, thus indicating that respondents reported homogenous attitudes towards EBP. Internal consistency was similarly good, with a Cronbach alpha coefficient of 0.899.

5.2.4 Objective 3: Explore and describe the practices of nurse educators regarding EBP at nursing education institutions in Lesotho

The third objective of this study was to explore and describe the practices of nurse educators regarding EBP at nursing education institutions in Lesotho.

The majority of respondents (n = 44; 85%) strongly agreed and agreed that they use EBP in teaching and learning to help nursing students to make informed clinical judgements and decisions. Most of the respondents (n = 43; 84%) reported that they use the best available evidence to select innovative teaching methods. These findings indicate good EBP practice. Clinical decision-making based on up-to-date empirical evidence is becoming an essential skill for nurses (Farokhzadian *et al.*, 2015:570). As a result, nursing students taught by nurse educators who implement EBTP will graduate having attained EBP as a nursing profession prerequisite. These findings corroborate Kalb *et al.'s* (2015:216) findings that the vast majority of respondents strongly agreed that it is important for educators to use EBTP in nursing education (M = 3.82). Similarly, nursing students who participated in a survey that sought to determine the knowledge, attitudes and application of EBP by nursing students at a school of

nursing in Rwanda, agreed that EBP should be an integral part of their nursing education (Iradukunda & Mayers, 2020:5).

EBP requires healthcare professionals to be able to use electronic technologies such as electronic bibliographic databases and the PICO search strategy to search, find, and obtain the best available evidence (Lin *et al.*, 2010:165; Michaleff *et al.*, 2011:191). According to this study, most respondents (n = 37; 72%) strongly agreed and agreed that they formulate clinical questions to search for the best scientific evidence that will inform their teaching practice, and that they formulate clinical questions using the PICO or other search strategies to find the best evidence to guide their teaching (n = 27; 52%). These findings contradict those of Farokhzadian *et al.* (2015:575), who reported that nurses have insufficient information literacy abilities to search for the best evidence from various databases, which is a prerequisite for information retrieval in order to execute EBP. However, while the majority of the respondents (n = 44; 85%) indicated that they search for scientific evidence from health science databases to develop course content, a substantial number of respondents (n = 25; 48%) do not formulate clinical questions before searching for best evidence. This implies that since large amounts of healthcare information are created daily, such searches may yield large volumes of results, resulting in a longer time to locate the best evidence to answers to the search (Leonardo, 2018:1). This finding, however, contradicts anecdotal evidence from the Lesotho nursing education institutions that only a few nurse educators access evidence to inform their teaching practice.

The majority of the respondents (n = 47; 90%) reported that they incorporate EBP recommendations and clinical practice guidelines (CPG) into teaching. Only 2 (4%) were neutral on the statement and 3 (6%) reported that they do not. This contradicts Lin *et al*. (2019:1643) and Marshall *et al*. (2013:3) who reported that nurses do not use CPGs, which could be related to their information seeking behaviour in which they seek knowledge from their peers due to factors such as accessibility, effectiveness, and information quality variations.

The majority of the respondents (n = 39; 74%) reported that, in practice, they critically appraise the quality of scientific articles for best evidence to inform their teaching and that they analyse the validity of scientific study results before adopting them in their teaching. This conclusion indicates good EBP practice, which contradicts prior research that reported that nurses lacked the confidence and abilities to appropriately evaluate research and apply EBP (Melnyk *et al.*, 2012:507; Stucky *et al.*, 2020:np). This implies that a minority, yet a substantial number, of nurse educators (n = 13; 26%) rely more on their implicit and traditional knowledge when

searching for and evaluating clinical recommendations. This is problematic because it could lead to teaching students using an EBP approach that might influence the quality of care delivery and decision-making (Ahmad *et al.*, 2018:270). Furthermore, according to a systematic review by Iradukunda and Mayers (2020:4), a lack of critical appraisal abilities contributed to negative attitudes regarding EBP.

According to this study, the majority of the respondents (n = 30; 60%) consult their administrators, colleagues and/or mentors for EBP guidance when preparing teaching material, which is evidence of practicing EBP. However, this study finding contradicts Ahmad *et al.* (2018:32) whereby nurses acknowledged that their usage of electronic information resources is hampered by a lack of proper technological infrastructure, as well as a lack of technical and nursing management support. There was, however, a substantial number of respondents (n = 20; 40%) who were either neutral or reported that they do not consult administrators, colleagues or mentors for EBP guidance. This could mean that the minority, yet a substantial number, of nurse educators use their implicit and traditional knowledge to guide EBTP, which is perilous because it could influence the quality and safe delivery of patient care (Ahmad *et al.*, 2018:270). A literature review conducted by Alving *et al.* (2018:4) adds that nurses still prefer to look for information on Google, as well as consulting and seeking for help from co-workers rather than exploring bibliographic databases.

Shamsaee *et al.* (2021:2) state that, since the growth of technology and the transition of the student population to the digital era, there has been a notable shift from traditional to creative teaching practices. This study findings revealed that the majority of the respondents (n = 43; 84%) use the best available evidence to select innovative teaching methods and 5 (10%) are neutral about the statement, while 3 (6%) do not.

Forty-seven respondents (90%) strongly agreed that they incorporate EBP recommendations and CPGs into teaching. This finding indicates good EBP practice that is commensurate with the finding from Kalb *et al*. (2015:216) whereby respondents reported using diverse sources of evidence in EBTP. The study by Kalb *et al.* (2015:216) reported that more than 80% of respondents (n = 514; 93%) agreed that their evidence-based teaching is informed by academics (n = 514; 93%), accreditation reports (n = 466; 84%), professional standards (n = 449; 81%), clinical expertise (n = 459; 83%), and student course assessments (n = 455; 82%).

This section had a relative reliability since it had a Cronbach alpha coefficient of 0.677. The mean practices score was 37, with a corresponding 95% CI [35-39]. This indicates that, on average, respondents had good self-reported EBP teaching practices since their mean

practice score was above half of the maximum practice score for this study. The CI was narrow, thus indicating that respondents reported homogenous responses.

5.2.5 Objective 4: Explore and describe the relationship between the knowledge, attitudes, and practices of nurse educators at nursing education institutions regarding evidence-based practice

Inferential statistics were used to compare two sets of questions from the knowledge, attitudes, and practices sections of the data collection instrument. This section discusses the findings.

According to D'Souza *et al.* (2015:52), while there is no gold standard on the content to be covered in an EBP programme for nurses and other healthcare professionals, they must be based on the five basic EBP steps. These steps include, but are not limited to, asking focused questions to enable nurse educators to use the identified evidence to make appropriate clinical decisions. However, this study discovered two opposing correlations between EBP training and the formulation of focused questions. There was no significant association between EBP training, and the formulation of clinical questions used to search for evidence. However, there was a link between EBP training, and the formulation of clinical questions used to search for evidence using the PICO and other search techniques. The data might suggest that, when searching for evidence using search techniques other than PICO and its variants, respondents do ask focused questions to search for evidence. This is further evidenced by the fact that both respondents who were trained or not trained in EBP were more likely to agree that they do formulate clinical questions to conduct focused literature searches.

The knowledge and practice of using electronic databases were shown to have a significant association with each in this study. While the majority of respondents were aware of electronic databases that provide evidence-based information relevant to policy and practice, such as the Cochrane South Africa, most did not recognise it as their Cochrane Reference Centre and did not contribute to it, according to Abdulwadud *et al.* (2017:350). Respondents (n = 5; 9.62%) who knew how to access electronic databases that give scientific health sciences information to aid their teaching were more likely to choose disagree (n = 2; 40.00%), neutral (n = 1; 20.00%) or agree (n = 2; 40.00%) in the study. Conversely, respondents (n = 47; 90.38%) who did not know how to access electronic databases reported that they search for scientific evidence from health science databases to develop course content by selecting agree (n = 15; 31.91%) and strongly agree (n = 27; 57.45%). This could indicate that those who are familiar with electronic databases prefer to seek professional assistance, whereas those who

do not know how to access electronic databases may have misinterpreted the question to mean that they search for evidence from a variety of sources.

There was a significant relationship between the knowledge and practice of nurse educators regarding critically appraising evidence to inform their teaching. This finding, however, contradicts prior studies that indicated that nurses lacked the confidence and skills to critically evaluate research and implement EBP (Melnyk *et al.*, 2012:414; Mohsen *et al.*, 2016:np). Respondents (n = 17; 32.69%) who knew how to critically appraise evidence were more likely to select disagree (n = 4; 23.53%), neutral (n = 4; 23.53%) or agree (n = 5; 29.41%). Those who did not know were more likely to agree (n = 17; 67.31%) and strongly agree (n = 14, 40.00%) that they conduct critical appraisal of evidence before incorporating it in their teaching practice. This discrepancy might occur because although both questions sought critical appraisal abilities, they were designed to address knowledge and practice, and respondents may have misconstrued them.

According to Leonardo (2018:1) and Spruce *et al.* (2014:248), because study designs and evidence have varying strengths, healthcare practitioners must be able to select the best and most relevant evidence and then assess its strength and quality. In this study, however, there was no association between nurse educators' knowledge and practice when it came to interpreting study outcomes. Both respondents who knew (n = 18; 34.62%) and did not know (n = 34; 65.38%) how to interpret study results were more likely to agree or strongly agree that they interpret study results before incorporating them in their teaching. The self-reported practice of interpreting study results by respondents who stated that they did not know how to evaluate research findings suggests a discrepancy, implying that they would prefer to accept the respective authors' interpretation of the data and discussion instead of creating their own confirmatory interpretation.

Nurse educators who are afforded the resources they need to fully implement EBP are more likely to do so, according to Dalheim *et al.* (2012:1) and Malik *et al.* (2015:51). As a result, this study discovered a link between nurse educators' views and actions about the necessity for administrative, peer, and mentor help and consultation when implementing EBP. A survey conducted by Kalb *et al.* (2015:216) also produced consistent results whereby supportive nurse administrators (M = 3.65), the availability of resources (M = 3.65), an academic setting that recognises EBTP for promotion and tenure (M = 3.62), and supports the use of EBTP in nursing education (M = 3.61) were all evaluated as positively influencing EBTP. Respondents who were motivated by supportive academic administrators, peers, and mentors to implement EBP in their teaching were more likely to select neutral (n = 9; 27.27%), agree (n = 13; 39.39%)

or strongly agree (n = 9; 27.27%). Respondents who were not motivated by such support were likely to either strongly disagree (n = 2, 100.00%) or disagree (n = 2; 66.67%) that they seek such support in practice. These findings complement findings by Hadgu *et al.* (2015:79) that supportive administrators are significantly related with EBP implementation, implying that most respondents have a good attitude toward EBP implementation assistance and seek it out in order to effectively adopt EBTP.

Nurses and other health professionals can find the best evidence in published CPGs (Stucky *et al.*, 2020:508). A significant relationship between the attitudes and practices of nurse educators of EBP implementation by incorporating CPGs in their teaching was thus discovered in this study. This finding is consistent with reports that nurses do not to use evidence-based CPGs, which could be related to their information seeking behaviour in which they seek knowledge from their peers due to factors such as accessibility, effectiveness, and information quality variations (Lin *et al.*, 2019:1643; Marshall *et al.*, 2013:3). Respondents (n = 35; 67.31%) who reported a positive attitude towards EBP implementation were more likely to agree or strongly agree that they incorporate EBP recommendations and CPGs into their teaching. On the other hand, 17 (32.69%) respondents reported a negative attitude towards EBP implementation although the majority of them were likely to agree and strongly agree that they incorporate EBP recommendations and CPGs. This could be because the question about nurse educators' attitudes toward EBP implementation was in reverse order, making it easy to misinterpret.

5.3 Application of the i-PARiHS framework

It is envisaged that nurse educators will be able to enhance their own practices regarding EBP in the nursing education institutions in terms of i-PARiHS framework constructs (Kitson *et al*., 2008:2) adopted for this study. The comprehensive application of this framework to the study is beyond the scope of this study.

5.3.1 Successful implementation

According to this study, the majority of nurse educators have the necessary knowledge, attitudes, and teaching practices to promote EBP and the processes of EBP. EBP is innovative and nursing students are recipients of that innovation at their respective nursing education institutions.

5.3.2 Innovation construct

In terms of the innovation construct, this study recommends that nurse educators should explore the EBP process, keep up to date, upscale themselves through EBP training, and incorporate it into nursing education teaching and learning.

5.3.3 Recipient construct

As the i-PARiHS framework indicates that there must be a recipient for EBP translation, in this study, the nurse educators have the required knowledge, attitudes and teaching practices to translate EBP to the students, who are recipients. However, it is recommended that further studies be conducted to investigate that EBP is indeed translated to nursing students.

5.3.4 The contextual construct

The contextual construct refers to Lesotho nursing education institutions and, as highlighted in this study, EBP can be incorporated in the institutions by nurse educators once they enhance their EBP knowledge, attitudes, and practices. The contextual construct also refers to the access and utilisation of resources such as electronic databases and EBP experts (administrators, mentors, and colleagues). This study found that nurse educators do access and utilise the resources to inform their EBTPs.

5.4.5 Facilitation construct

The knowledge, attitudes, and practices of nurse educators regarding EBP were explored. These nurses are considered facilitators, according to the framework, when teaching at Lesotho's nursing education institutions. Their knowledge, attitudes, and practices were explored and described through self-reported online questionnaires. This study discovered that, on average, the nurse educators have good knowledge, positive attitudes, and good EBTP.

5.4 Conclusions

This chapter mainly focuses on the study's findings in considerable detail. This study found that a substantial number of nurse educators at Lesotho nursing education institutions have never been trained in EBP, cannot construct focused clinical questions to find necessary evidence, and do not access electronic databases. However, on average, they have good EBP knowledge, positive attitudes, and good practices regarding EBP. An item-by-item discussion of findings was provided, and the study's findings were compared and contrasted with literature to highlight possible discrepancies and implications.

This study also discovered that most nurse educators (n = 44; 85%) search electronic databases for empirical evidence. However, they get a plethora of irrelevant results since they do not know how to create clinical questions using search strategies such as PICO and its variations to yield targeted results. Similarly, whereas most nurse educators (n = 44; 85%) use health science databases to construct course material, a substantial number (n = 25; 48%) do not formulate clinical questions before searching for the best evidence. Consequently, with the vast quantity of healthcare data created daily, such searches may return a vast number of results, resulting in a longer time to find the best evidence to answer the question. Another intriguing conclusion from this study was that most respondents (n = 30; 60%) consult their administrators, colleagues and/or mentors for EBP guidance when preparing teaching material. Despite this, a considerable number of respondents (n = 20; 40%) do not seek EBP guidance from administrators, co-workers, or mentors. This might suggest that a small, but still considerable, number of nurse educators utilise their implicit and traditional knowledge to influence EBTP, which is risky since it could lead to ineffective and unsafe outcomes (Ahmad *et al.*, 2018:270).

The study found the following significant relationships between the following: nurse educators who are trained in EBP, formulate clinical questions; those who know how to access electronic databases, do so in practice; those who know how to critically appraise evidence, do so in practice; nurse educators with positive attitudes towards seeking expert guidance to implementing EBP, do seek such guidance in practice; and those with positive attitudes towards EBP do implement EBP in their teaching.

5.5 Limitations

Study constraints are defined by Grove and Gray (2018:410) as restrictions or challenges in a study that may limit the generalisability of the findings. The following limitations of this study were discovered and should be considered when interpreting the results:

- The knowledge, attitudes, and practices of nurse educators regarding EBP were investigated using self-reported online surveys, which may be limited in terms of a lack of honesty or response bias.
- In order to align with the objectives of this study, the facilitators did not assess whether nursing students learnt about EBP and if they will implement it in practice as guided by the facilitation construct of the i-PARiHS framework.
- Of the 11 questions in the EBP attitudes section of the data collection instrument, two reverse order questions; “I do not like reading scientific articles” and “it pleases me that EBP is only a theoretical concept, and it is not translated into practice” were excluded to calculate the mean attitude score.

- Two validated scales were used to develop the data collection instrument for this study, namely, EBP-COQ and an EBTP data collection tool. Emails requesting the use of items from the scales were sent to the developers, but a response granting permission was only received from the EBTP data collection tool's developers. The EBP-COQ was used regardless, and follow-up emails have been sent to the developers. Internal reliability was confirmed for each of the data collection instrument subscales with Cronbach's alpha being 0.577 for knowledge of EBP; 0.899 attitudes towards EBP; and 0.677 practices of EBP. The knowledge subscale, therefore, had a low reliability Cronbach coefficient. However, sufficient data could be collected from the section.
- Of the 11 questions in the EBP attitudes section of the data collection instrument, two reverse order questions – "I do not like reading scientific articles" and "it pleases me that EBP is only a theoretical concept, and it is not translated into practice" – were excluded to calculate the mean attitude score. Responses to the reverse order questions indicated discrepancies that may imply their misinterpretation.
- Some data collection instrument items required probing questions to establish the frequency at which they occur.

5.6 Recommendations

The findings of this study revealed that nurse educators at Lesotho nursing institutions have generally good knowledge, attitudes, and practices regarding EBP. However, the following recommendations can be implemented to address the discrepancies highlighted in the item-by-item discussion of study findings.

5.6.1 Recommendations to nursing practice

EBP is a universal and professional requirement for all healthcare practitioners to enhance the quality of care (Heaslip & Serrant, 2019:32; Lesotho Nursing Council, 2013:34; Stichler *et al.*, 2011:93). Despite the fact that this study did not investigate EBP implementation by student nurses, it was discovered that while nurse educators should role model the EBP process and use of clinical practice guidelines for students, clinical supervision of students is required to ensure that they indeed implement EBP in their nursing practice. This can be accomplished by developing preceptorship programmes in clinical settings that target both students and working professional nurses. Nursing education institutions can take on such programs and work with the Lesotho Ministry of Health, the Lesotho Nursing Council, and the Lesotho Nurses Association to have the government recognize clinical preceptors as employees who will help both student nurses and working professional nurses implement

EBP. Nurses on the clinical platform will therefore be encouraged to use and taught the EBP process and how to apply it in the context of clinical practice.

5.6.2 Recommendations for nursing practice and education

The growing trend of evidence-based healthcare necessitates EBP training for all health professionals so that they may deliver care based on the best available research evidence (D'Souza *et al.*, 2015:52). Therefore, training of nursing educators in EBP is mandatory to effectively implement EBP in healthcare. This study discovered that a substantial number of nurse educators (n = 20; 38%) had not been trained in EBTP. To ensure that nurse educators can implement EBP using the recommended procedures, they should be trained in EBP on a regular basis. The training should emphasise core EBP processes such as formulating focused clinical questions and searching for relevant evidence from electronic databases in a short period of time.

EBP training can be done through multifaceted teaching strategies used to effectively teach EBP and promote the attainment of EBP knowledge, attitudes, and practices at nursing institutions. It can include establishing an institutional EBP committee, EBP courses, conferences, workshops, journal clubs, educational seminars, didactic lectures, computer sessions, group discussions, computer laboratory sessions, portfolios, assignments, and the use of real clinical issues (Abdulwadud *et al.*, 2017:352; Hosny & Ghaly, 2014:S63; Kim *et al.*, 2019:2; Kyriakoulis *et al.*, 2016:8).

5.6.3 Recommendations for nursing education

To achieve major changes in EBP integration in patient care, instructional models that address evidence-based clinical practice in the nursing curriculum must be developed. The first approach is to incorporate a separate EBP course into the nursing curriculum. This course has to focused on the fundamental content field of EBP through a clinically integrated course or a multifaceted EBP education programme for undergraduate nursing students (D'Souza *et al.*, 2015:52; Kim *et al.*, 2019:8). EBP curricula incorporation has been reported as an effective programme for improving EBP knowledge, skills, attitudes, competencies, future use of EBP, and critical thinking of student nurses. It is, therefore, recommended that EBP processes be incorporated in all nursing programmes so that students graduate with knowledge, positive attitudes, and good evidence-based clinical practices.

5.7 Recommendations for future research

As the practices were self-reported, future research should focus on the practical assessment of nurse educators' knowledge, attitudes, and behaviours addressing EBP. Observational studies can be done to assess real-time experiences. To increase the universality of research findings, such replication studies should be conducted on a bigger sample. Future studies might investigate whether nursing students have gained EBP knowledge and have positive attitudes regarding EBP, thus encouraging them to use it in their practice.

5.8 Dissemination

The thesis will be submitted to Stellenbosch University for inclusion in the Faculty of Medicine and Health Science's thesis database. The research findings will be disseminated to all five Lesotho nursing education institutions that partook in this study, both electronically and through physical presentation. The study abstract will be developed and used in any nursing education abstract presentations. An article will be developed for this research and published.

5.9 Summary

This research sought to explore and describe the knowledge, attitudes, and practices of nurse educators regarding EBP at nursing education institutions in Lesotho. The Lesotho Nursing Council (LNC), the Lesotho Ministry of Health, and the CBC implemented at Lesotho nursing education institutions require nurse educators to implement and role model EBTP to students. Yet, there was no evidence that nurse educators have the required EBP knowledge, positive attitudes toward EBP or that they do implement EBP. This study, however, discovered that although the majority of nurse educators do have EBP knowledge, positive attitudes, and teaching practices, a substantial number lack such attributes in terms of training regarding EBP processes, accessing evidence from electronic databases, formulating clinical questions and seeking expert opinions to inform their EBTPs. It is, therefore, envisaged that while most nurse educators implement EBTP, a substantial number still use outdated textbooks, do not access electronic databases for scientific and up-to-date evidence, and do not conduct research studies.

REFERENCES

Al Qadire, M. 2019. Undergraduate student nurses' knowledge of evidence-based practice: A short online survey. *Nurse Education Today*. 72:1–5.

El Abd, M.A.E.H.F. 2017. Innovation behavior levels and its relation with TIGER-based nursing informatics competencies among critical care nurses. *Egyptian Nursing Journal*. 14(2):59.

Abdulwadud, O., Nyareza, S., Nyarango, P. & Moyo, S. 2017. Awareness, attitudes and knowledge of evidence-based medicine: A cross-sectional baseline survey among academic healthcare practitioners in Namibia. *Global Journal of Pure and Applied Sciences*. 23(2):347.

Ahmad, M.M., Musallam, R. & Allah, A.H. 2018. NURSES AND INTERNET HEALTH-RELATED INFORMATION: REVIEW ON ACCESS AND UTILITY. *Nursing Clujul Medical*. 91(3):266–273.

Akobeng, A.K. 2005. Principles of evidence based medicine. *Archives of Disease in Childhood*. 90(8):837–840.

Al-Yateem, N., Griffiths, J., McCreaddie, M., Robertson-Malt, S., Kuzemski, D., Mathew Anthony, J., Fielding, M., Al Khatib, F., et al. 2019. A National Scoping Study on Barriers to Conducting and Using Research Among Nurses in the United Arab Emirates. *Policy, Politics, and Nursing Practice*. 20(4):216–227.

Almeida, F., Superior, I., Gaya, P., Queirós, A. & Faria, D. 2017. Strengths and Limitations of Qualitative and Quantitative Research Methods. *European Journal of Education Studies*. 3(9):369–387.

Alving, B.E., Christensen, J.B. & Thrysøe, L. 2018. Hospital nurses' information retrieval behaviours in relation to evidence based nursing: a literature review. *Health Information and Libraries Journal*. 35(1):3–23.

Bajpai, R. & Bajpai, S. 2014. Goodness of Measurement: Reliability and Validity. *International Journal of Medical Science and Public Health*. 3(2):112–115.

Balakas, K. & Sparks, L. 2010. Teaching research and evidence-based practice using a service-learning approach. *Journal of Nursing Education*. 49(12):691–695.

Booth, T.L., Emerson, C.J., Hackney, M.G. & Souter, S. 2016.

Botma, Y. 2016. How a Monster Became a Princess: Curriculum Development. *South African Journal of Higher Education*. 28(6):1876–1893.

Breimaier, H.E., Halfens, R.J.G. & Lohrmann, C. 2011. Nurses' wishes, knowledge, attitudes and perceived barriers on implementing research findings into practice among graduate nurses in Austria. *Journal of Clinical Nursing*. 20(11–12):1744–1756.

Brink H., van der Walt C., van R.G. 2012. *Fundamental of Research Methodology for Health*

Care Professionals. 3rd editio ed. Cape Town: Juta. [Online], Available: https://books.google.com/books?hl=en&lr=&id=YZnPYoA4Jk0C&oi=fnd&pg=PA1&dq=Brink,+H.,+Van+der+Walt,+C.+%26+Van+Rensburg,+G.+2012.+Fundamentals+of+Research+Methodology+for+Health+Care+Professionals.+3rd+ed.+Cape+Town:+Juta+%26+Company+Ltd.&ots=9WAfwFlBVT&si [2021, February 03].

CHAL. 2021. *Christian Health Association of Lesotho*. [Online], Available: http://chal.org.ls/nti.html [2021, February 03].

CHE. 2016. *Council on Higher Education*. [Online], Available: http://www.che.ac.ls/private-institutions/ [2021, February 03].

Connolly, S.L., Sullivan, J.L., Ritchie, M.J., Kim, B., Miller, C.J. & Bauer, M.S. 2020. External facilitators' perceptions of internal facilitation skills during implementation of collaborative care for mental health teams: A qualitative analysis informed by the i-PARIHS framework. *BMC Health Services Research*. 20(1):1–11.

Cunningham, C.T., Quan, H., Hemmelgarn, B., Noseworthy, T., Beck, C.A., Dixon, E., Samuel, S., Ghali, W.A., et al. 2015. Exploring physician specialist response rates to web-based surveys. *BMC Medical Research Methodology*. 15(1):4–11.

D'Souza, P., George, A., Norohna, J.A. & Renjith, V. 2015. Integration of Evidence-based Practice in Nursing Education: A Novel Approach. *Manipal Journal of Nursing and Health Sciences*. 1(1):51–56.

Dalheim, A., Harthug, S., Nilsen, R.M. & Nortvedt, M.W. 2012. Factors influencing the development of evidence-based practice among nurses: a self-report survey. *BMC health services research*. 12:367.

Daly, M.M. & DeAngelis, T.M. 2017. Teaching Evidence-Based Practice across Curricula—An Overview of a Professional Development Course for Occupational Therapy Educators. *Occupational Therapy in Health Care*. 31(1):102–109.

Dearholt, S.L. & Dang, D. 2012. [Online], Available: https://www.scirp.org/reference/ReferencesPapers.aspx?ReferenceID=1266896 [2021, March 17].

Drisko, J.W. & Grady, M.D. 2019. Step 3 of EBP: Part 1—Evaluating Research Designs. in *Evidence-Based Practice in Clinical Social Work, Essential Clinical Social Work Series* Springer Nature Switzerland AG. 107–122.

Farokhzadian, J., Khajouei, R. & Ahmadian, L. 2015. Information seeking and retrieval skills of nurses: Nurses readiness for evidence based practice in hospitals of a medical university in Iran. *International Journal of Medical Informatics*. 84(8):570–577.

Fineout-Overholt, E., Melnyk, B.M. & Schultz, A. 2005. Transforming health care from the inside out: Advancing evidence-based practice in the 21st century. *Journal of Professional Nursing*. 21(6):335–344.

Fineout-Overholt, E., Williamson, K.M., Kent, B. & Hutchinson, A.M. 2010. Teaching EBP: Strategies for Achieving Sustainable Organizational Change Toward Evidence-Based Practice. *Worldviews on Evidence-Based Nursing*. 7(1):51–53.

Finotto, S., Carpanoni, M., Turroni, E.C., Camellini, R. & Mecugni, D. 2013. Teaching evidence-based practice: Developing a curriculum model to foster evidence-based practice in undergraduate student nurses. *Nurse Education in Practice*. 13(5):459–465.

Gallagher Ford, L. & Melnyk, B.M. 2019. The Underappreciated and Misunderstood PICOT Question: A Critical Step in the EBP Process. *Worldviews on evidence-based nursing*. 16(6):422–423.

Glover, T. & Mitchell, K. 2013. An introduction to biostatistics. *Journal of Chemical Information and Modeling*. 53(9):1689–1699.

Greenhalgh, T., Howick, J., Maskrey, N., Brassey, J., Burch, D., Burton, M., Chang, H., Glasziou, P., et al. 2014.

Grove, S.K. & Gray, J.R. 2019. *Understanding Nursing Research: Building an Evidence-Based Practice*. 7th editio ed. Texas: Saunders.

Hadgu, G., Almaz, S. & Tsehay, S. 2015. Assessment of Nurses' Perceptions and Barriers on Evidence Based Practice in Tikur Anbessa Specialized Hospital Addis Ababa Ethiopia. *American Journal of Nursing Science*. 4(3):73.

Hagan, J. & Walden, M. 2017. Development and evaluation of the barriers to nurses' participation in research questionnaire at a large academic pediatric hospital. *Clinical Nursing Research*. 26(2):157–175.

Harris, P.A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N. & Conde, J.G. 2009. Research electronic data capture (REDCap)-A metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics*. 42(2):377–381.

Harvey, G. & Kitson, A. 2016. PARIHS revisited: From heuristic to integrated framework for the successful implementation of knowledge into practice. *Implementation Science*. 11(1).

Heaslip, V. & Serrant, L. 2019. Research readiness: A core aspect of fitness for practice? *Nurse Education Today*. 79(May):32–34.

Hines, S., Kynoch, K., Munday, J. & McArdle, A. 2017. Evidence-based practice education for better knowledge, attitudes, and practices in nurses and midwives. *Journal of Continuing Education in Nursing*. 48(6):256–262.

Hosny, S. & Ghaly, M.S. 2014. Teaching evidence-based medicine using a problem-oriented approach. *Medical Teacher*. 36(SUPPL.1).

Huang, F.-F., Zhang, N., Han, X.-Y., Qi, X.-N., Pan, L., Zhang, J.-P. & Li, H. 2017. Improve nursing in evidence-based practice: How Chinese nurses' read and comprehend

scientific literature. *International Journal of Nursing Sciences*. 4(3):296.

Hung, H.Y., Huang, Y.F., Tsai, J.J. & Chang, Y.J. 2015. Current state of evidence-based practice education for undergraduate nursing students in Taiwan: A questionnaire study. *Nurse Education Today*. 35(12):1262–1267.

Hunter, S.C., Kim, B., Mudge, A., Hall, L., Young, A., McRae, P. & Kitson, A.L. 2020. Experiences of using the i-PARIHS framework: A co-designed case study of four multi-site implementation projects. *BMC Health Services Research*. 20(1):1–15.

Iradukunda, F. & Mayers, P.M. 2020. Rwandan nursing students' knowledge, attitudes and application of evidence-based practice. *Curationis*. 43(1).

JBI. 2021. *Joanna Briggs Institute*. [Online], Available: https://jbi.global/about-jbi [2021, September 23].

Kalb, K.A., O'Conner-Von, S.K., Brockway, C., Rierson, C.L. & Sendelbach, S. 2015. Evidence-based teaching practice in nursing education: Faculty perspectives and practices. *Nursing Education Perspectives*. 36(4):212–219.

Kim, J.S., Gu, M.O. & Chang, H. 2019. Effects of an evidence-based practice education program using multifaceted interventions: A quasi-experimental study with undergraduate nursing students. *BMC Medical Education*. 19(1):1–10.

Kitson, A., Harvey, G. & Mccormack, B. 1998. Enabling the implementation of evidence based practice: a conceptual framework. *Quality in Health Care*. 7:149–158.

Kitson, A.L., Rycroft-Malone, J., Harvey, G., McCormack, B., Seers, K. & Titchen, A. 2008. Evaluating the successful implementation of evidence into practice using the PARiHS framework: Theoretical and practical challenges. *Implementation Science*. 3(1):1–13.

Kloda, L. 2020. Evidence Based Library and Information Practice. *Evidence Based Library and Information Practice*. 15(4):3.

Kyriakoulis, K., Patelarou, A., Laliotis, A., Wan, A.C., Matalliotakis, M., Tsiou, C. & Patelarou, E. 2016. Educational strategies for teaching evidence-based practice to undergraduate health students: systematic review. *Journal of educational evaluation for health professions*. 13:34.

Labrague, L.J., McEnroe-Petitte, D., D'Souza, M.S., Cecily, H.S.J., Fronda, D.C., Edet, O.B., Ibebuike, J.E., Venkatesan, L., et al. 2019. A Multicountry Study on Nursing Students' Self-Perceived Competence and Barriers to Evidence-Based Practice. *Worldviews on Evidence-Based Nursing*. 16(3):236–246.

Lam, C.K. & Schubert, C. 2019. Evidence-Based Practice Competence in Nursing Students: An Exploratory Study With Important Implications for Educators. *Worldviews on Evidence-Based Nursing*. 16(2):161–168.

Larsen, C.M., Terkelsen, A.S., Carlsen, A.M.F. & Kristensen, H.K. 2019. Methods for teaching evidence-based practice: A scoping review. *BMC Medical Education*. 19(1).

Leonardo, R. 2018. PICO : Model for Clinical Questions Evidence Based Medicine and Practice PICO : Model for Clinical Questions. *Evid Based Med Pract*. 3(2):1–2.

Lesotho Ministry of Health and Social Welfare. 2011. *Lesotho NEPI assessment: Condensed report*. Maseru.

Lesotho Nursing Council. 2013. *Standards for Nursing and Midwifery Education*. [Online], Available: https://drive.google.com/file/d/1PfsCehUoKotHxGJkM_HcAeiDFrWuCDX2/view [2021, February 15].

Lin, F., Gillespie, B.M., Chaboyer, W., Li, Y., Whitelock, K., Morley, N., Morrissey, S., O'Callaghan, F., et al. 2019. Preventing surgical site infections: Facilitators and barriers to nurses' adherence to clinical practice guidelines—A qualitative study. *Journal of Clinical Nursing*. 28(9–10):1643–1652.

Lin, S.H., Murphy, S.L. & Robinson, J.C. 2010. The issue is - Facilitating evidence-based practice: Process, strategies, and recourses. *The American Journal of Occupational Therapy*. 64(1):164–1171. [Online], Available: www.otseeker.

LoBiondo-Wood, G. & Haber, J. 2019. *Nursing Research: Methods and Critical Appraisal for Evidence-Based Practice*. 9th editio ed. New York: Elsevier.

MacHowska, A., Sihavong, A., Eriksen, J., Vongsouvath, M., Marrone, G., Sychareun, V., Hanson, C., Keohavong, B., et al. 2020. Containment of Antibiotic REsistance-measures to improve antibiotic use in pregnancy, childbirth and young children (CAREChild): a protocol of a prospective, quasiexperimental interventional study in Lao PDR. *BMJ open*. 10(11).

Mackey, A. & Bassendowski, S. 2017. The History of Evidence-Based Practice in Nursing Education and Practice. *Journal of Professional Nursing*. 33(1):51–55.

Malik, G., McKenna, L. & Plummer, V. 2015. Perceived knowledge, skills, attitude and contextual factors affecting evidence-based practice among nurse educators, clinical coaches and nurse specialists. *International Journal of Nursing Practice*. 21(S2):46–57.

Marshall, A.P., West, S.H. & Aitken, L.M. 2013. Clinical credibility and trustworthiness are key characteristics used to identify colleagues from whom to seek information. *Journal of Clinical Nursing*. 22(9–10):1424–1433.

McInerney, P. & Suleman, F. 2010. Exploring Knowledge, Attitudes, and Barriers Toward the Use of Evidence-Based Practice Amongst Academic Health Care Practitioners in Their Teaching in a South African University: A pilot study. *Worldviews on Evidence-Based Nursing*. 7(2):90–97.

McPeake, J., Bateson, M. & O'Neill, A. 2014. Electronic surveys: how to measure success. *Nurse Researcher*. 21(3):24–26.

Melnyk, B.M., Fineout-Overholt, E., Stillwell, S.B. & Williamson, K.M. 2010. Evidence-based

practice: Step by step: The seven steps of evidence-based practice. *American Journal of Nursing*. 110(1):51–53.

Melnyk, B.M., Fineout-Overholt, E., Gallagher-Ford, L. & Kaplan, L. 2012. The state of evidence-based practice in US nurses: Critical implications for nurse leaders and educators. *Journal of Nursing Administration*. 42(9):410–417.

Melnyk, B.M., Gallagher-Ford, L., Long, L.E. & Fineout-Overholt, E. 2014. The establishment of evidence-based practice competencies for practicing registered nurses and advanced practice nurses in real-world clinical settings: Proficiencies to improve healthcare quality, reliability, patient outcomes, and costs. *Worldviews on Evidence-Based Nursing*. 11(1):5–15.

Michaleff, Z.A., Costa, L.O.P., Moseley, A.M., Maher, C.G., Elkins, M.R., Herbert, R.D. & Sherrington, C. 2011. Databases Indexing Randomized Interventions. *Physical Therapy*. 91(2):190–197.

Ministry of Health, L. 2010. *The nursing and midwifery strategic plan 2010 - 2012*. Maseru.

Mohajan, H.K. 2017. TWO CRITERIA FOR GOOD MEASUREMENTS IN RESEARCH: VALIDITY AND RELIABILITY. *Annals of Spiru Haret University. Economic Series*. 17(4):59–82.

Mohsen, M.M., Safaan, N.A. & Okby, O.M. 2016. Nurses' Perceptions and Barriers for Adoption of Evidence Based Practice in Primary Care: Bridging the Gap. *American Journal of Nursing Research*. 4(2):25–33. [Online], Available: http://pubs.sciepub.com/ajnr/4/2/1.

Moore, C.G., Carter, R.E., Nietert, P.J. & Stewart, P.W. 2011.

Morris, J. 2016. The use of team-based learning in a second year undergraduate pre-registration nursing course on evidence-informed decision making. *Nurse Education in Practice*. 21:23–28.

Murараneza, C., Gloria, N. & Mtshali, F. 2016. Issues and challenges of curriculum reform to competency- based curricula in Africa : A meta-synthesis. *Nursing and Health Sciences*. 19(August 2017):5–12.

Nevo, I. & Slonim-Nevo, V. 2011. The myth of evidence-based practice: Towards evidence-informed practice. *British Journal of Social Work*. 41(6):1176–1197.

NICE. 2021. *National Institute for Health and Care Excellence guidelines*. [Online], Available: https://www-nice-org-uk.ez.sun.ac.za/guidance?action=byType&status=3&type=2 [2021, September 23].

Nyoni, C.N. & Barnard, A.J. 2016. Professional nurses' perception of their clinical teaching role at a rural hospital in Lesotho. *African Journal of Health Professions Education*. 8(2):166.

Oh, E.G. & Yang, Y.L. 2019. Evidence-based nursing education for undergraduate students:

A preliminary experimental study. *Nurse Education in Practice*. 38(March):45–51.

Orta, R., Messmer, P.R., Valdes, G.R., Turkel, M., Fields, S.D. & Wei, C.C. 2016. Knowledge and competency of nursing faculty regarding evidence-based practice. *Journal of Continuing Education in Nursing*. 47(9):409–419.

Petrie, A. & Sabin, C. 2020. *Medical Statistics at a Glance*. Fourth edi ed. Oxford: Wiley-Blackwell.

Polit, D.F. & Beck, C.T. 2012. *Nursing Research Generating and Assessing Evidence for Nursing Practice. 9th Edition, Lippincott, Williams & Wilkins, Philadelphia. - References - Scientific Research Publishing*. 9th Editio ed. Philadelphia. [Online], Available: https://www.scirp.org/(S(i43dyn45teexjx455qlt3d2q))/reference/ReferencesPapers.aspx?ReferenceID=1596228 [2021, February 15].

Polit, D.F. & Beck, C.T. 2018. *Essentials of nursing research: Appraising evidence for nursing practice*. 9th editio ed. Philadelphia: Wolters Kluwer Health.

Porta, M. & Last, J.M. 2018. *A Dictionary of Public Health*. Vol. 1. Oxford University Press.

Al Qadire, M. 2019. Undergraduate student nurses' knowledge of evidence-based practice: A short online survey. *Nurse Education Today*. 72:1–5.

Ramsay, A., Wicking, K. & Yates, K. 2020. In what ways does online teaching create a positive attitude towards research in nursing students studying a first year evidence-based practice undergraduate subject online? *Nurse Education in Practice*. 44(February):102744.

Richardson, W.S., Wilson, M.C., J., N. & Hayward, R.S.A. 1995. The well-built clinical question: A key to evidence-based decisions. *ACP Journal Club*. 123:A12-13.

Ritchie, K.C., Snelgrove-Clarke, E. & Murphy, A.L. 2019. The 23-item Evidence Based Practice-Knowledge Attitudes and Practices (23-item EBP-KAP) survey: Initial validation among health professional students. *Health Professions Education*. 5(2):152–162.

RNAO. 2021. *Registered Nurses Association of Ontario Nursing Best Practice Guidelines*. [Online], Available: https://rnao.ca/bpg [2021, September 23].

Rocchi, A. & Sette, P. Del. 2016. Lesotho : rural development and migration. (May):1–29. [Online], Available: http://www.centrosaluteglobale.eu/site/wp-content/uploads/2016/05/Migration-and-Rural-Development-in-Lesotho-PDF.pdf [2021, November 11].

Rogers, E.M. 1995. *Diffuison of Innovations*.

Ruzafa-Martinez, M., Lopez-Iborra, L., Moreno-Casbas, T. & Madrigal-Torres, M. 2013. Development and validation of the competence in evidence based practice questionnaire (EBP-COQ) among nursing students. *BMC Medical Education*. 13(1):1.

Salbach, N.M. & Jaglal, S.B. 2011. Creation and validation of the evidence-based practice confidence scale for health care professionals. *Journal of Evaluation in Clinical Practice*.

17:794–800.

Saleh, A. & Bista, K. 2017. Examining Factors Impacting Online Survey Response Rates in Educational Research: Perceptions of Graduate Students. *Online Submission*. 13(2):63–74.

Saunders, H. & Vehviläinen-Julkunen, K. 2015.

Shamsaee, M., Mangolian shahrbabaki, P., Ahmadian, L., Farokhzadian, J. & Fatehi, F. 2021. Assessing the effect of virtual education on information literacy competency for evidence-based practice among the undergraduate nursing students. *BMC Medical Informatics and Decision Making*. 21(1):1–12.

Shayan, S.J., Kiwanuka, F. & Nakaye, Z. 2019. Barriers Associated With Evidence-Based Practice Among Nurses in Low- and Middle-Income Countries: A Systematic Review. *Worldviews on Evidence-Based Nursing*. 16(1):12–20.

Siedlecki, S.L. 2020. Understanding Descriptive Research Designs and Methods. *Clinical Nurse Specialist*. 34(1):8–12.

Sim, J.Y., Jang, K.S. & Kim, N.Y. 2016. Effects of education programs on evidence-based practice implementation for clinical nurses. *Journal of Continuing Education in Nursing*. 47(8):363–371.

Slocum, T.A., Detrich, R., Wilczynski, S.M., Spencer, T.D., Lewis, T. & Wolfe, K. 2014. The evidence-based practice of applied behavior analysis. *Behavior Analyst*. 37(1):41–56.

Smith, S.B. & Kennedy, S. 2020. Authentic Teaching to Promote Active Learning: Redesign of an Online RN to BSN Evidence-Based Practice Nursing Course. *Journal of Professional Nursing*. 36(2):56–61.

South African Nursing Council. 2020. *Nursing education and training standards*. [Online], Available: www.sanc.co.za [2021, November 09].

Spek, B., de Wolf, G.S., Dijk, N. & Lucas, C. 2012. Development and Validation of an Assessment Instrument for Teachiing Evidence-Based Practice to Students in Allied Health Care. *Journal of Allied Health*. 41(2):77-82(6). [Online], Available: https://www.ingentaconnect.com/content/asahp/jah/2012/00000041/00000002/art00005 [2021, July 13].

Spruce, L., Van Wicklin, S.A., Hicks, R.W., Conner, R. & Dunn, D. 2014. Introducing AORN's New Model for Evidence Rating. *AORN Journal*. 99(2):243–255.

Squires, J.E., Reay, T., Moralejo, D., LeFort, S.M., Hutchinson, A.M. & Estabrooks, C.A. 2012. Designing strategies to implement research-based policies and procedures: A set of recommendations for nurse leaders based on the PARiHS framework. *Journal of Nursing Administration*. 42(5):293–297.

Stannard, D. 2019. A Practical Definition of Evidence-Based Practice for Nursing. *Journal of Perianesthesia Nursing*. 34(5):1080–1084.

Stellenbosch University. 2022. Stellenbosch University research data management regulations. 1–20.

Stevens, K.R. 2013. The impact of evidence-based practice in nursing and the next big ideas. *Online journal of issues in nursing*. 18(2):4. [Online], Available: http://web.a.ebscohost.com/ehost/detail/detail?vid=4&sid=51947a58-84c1-4c69-a131-f2c209dbc738%40sessionmgr4007&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3D%3D#AN=90012507&db=aph [2021, March 21].

Stichler, J.F., Fields, W., Kim, S.C. & Brown, C.E. 2011. Faculty knowledge, attitudes, and perceived barriers to teaching evidence-based nursing. *Journal of Professional Nursing*. 27(2):92–100.

Stucky, C.H., De Jong, M.J. & Rodriguez, J.A. 2020. A Five-Step Evidence-Based Practice Primer for Perioperative RNs. *AORN Journal*. 112(5):506–515.

Wakibi, S. 2019. The Evidence Available to Teach Evidence-Based Nursing Practice by Nurse Educators. University of Saskatchewan.

Weng, R.-H., Chen, W.-P., Huang, C.-Y., Hung, C.-H. & Hsu, C.-T. 2016. Can nurse innovation improve customer perception of service quality and experience? *Journal of Clinical Nursing*. 25(13–14):1950–1961.

Winters, C.A. & Echeverri, R. 2012. Teaching strategies to support evidence-based practice. *Critical Care Nurse*. 32(3):49–54.

Wonder, A.H. & Spurlock, Darrell, J. 2020. Anational study across levels of nursing education: Can nurses and nursing students accurately estimate their knowledge of evidence-based practice. *Nursing Education Perspectives*. 41(2):77–82.

Woods, A.D. 2013. Implementing evidence into practice. *Nursing Center*. 43(2 SUPPL.1):4–6.

Zeleníková, R., Beach, M., Ren, D., Wolff, E. & Sherwood, P. 2014. Faculty Perception of the Effectiveness of EBP Courses for Graduate Nursing Students. *Worldviews on Evidence-Based Nursing*. 11(6):401–413.

APPENDICES

APPENDIX 1: ETHICAL APPROVAL FROM STELLENBOSCH UNIVERSITY

Approved with Stipulations

New Application

11/03/2021

Project ID: 19308

HREC Reference No: S21/01/010

Project Title: The knowledge, attitudes, and practices of nurse educators regarding evidence-based practice at nursing education institutions in Lesotho

Dear Miss Tholoana Kamohelo

The **Response to Modifications** received on 05/03/2021 10:23 was reviewed by members of the **Health Research Ethics Committee** via Minimal Risk Review procedures on 11/03/2021 and was approved with stipulations.

Please note the following information about your approved research protocol**:**

Protocol Approval Period: **11-March-2021 – 10-March-2022**.

The stipulations of your ethics approval are as follows:

1. Data storage: It is mentioned on the ICF that the participants can opt in or out of data storage, but the option to opt in or out is not clearly indicated on the ICF. A tick box should be added. E.g. By partaking in this study, you consent to data retention for anonymous possible reuse, you are however free to opt out. I agree to the retention of my data Yes/No
2. Budget: the submitted revised budget still includes the prizes.

Please remember to use your project ID 19308and ethics reference number S21/01/010on any documents or correspondence with the HREC/UREC concerning your research protocol.

Translation of the consent document(s) to the language(s) applicable to your study participants should now be submitted to the HREC.

Please note that this decision will be ratified at the next HREC full committee meeting. HREC reserves the right to suspend approval and to request changes or clarifications from applicants. The coordinator will notify the applicant (and if applicable, the supervisor) of the changes or suspension within 1 day of receiving the notice of suspension from HREC. HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

After Ethical Review:

Please note you can submit your progress report through the online ethics application process, available at: https://apply.ethics.sun.ac.za and the application should be submitted to the Committee before the year has expired. Please see Forms and Instructions on our HREC website for guidance on how to submit a progress report.

The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.

Provincial and City of Cape Town Approval

Please note that for research at a primary or secondary healthcare facility, permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Please consult the Western Cape Government website for access to the online Health Research Approval Process, see: https://www.westerncape.gov.za/general-publication/health-research-approval-process. Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.

For standard HREC forms and instructions, please visit: Forms and Instructions on our HREC website (www.sun.ac.za/healthresearchethics)

If you have any questions or need further assistance, please contact the HREC office at 021 938 9677.

Yours sincerely,

Mrs. Brightness Nxumalo

HREC 2 Coordinator

National Health Research Ethics Council (NHREC) Registration Number:

REC-130408-012 (HREC1)·REC-230208-010 (HREC2)

Federal Wide Assurance Number: 00001372
Office of Human Research Protections (OHRP) Institutional Review Board (IRB) Number:
IRB0005240 (HREC1)·IRB0005239 (HREC2)

The Health Research Ethics Committee (HREC) complies with the SA National Health Act No. 61 of 2003 as it pertains to health research. The HREC abides by the ethical norms and principles for research, established by the World Medical Association (2013). Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects; the South African Department of Health (2006). Guidelines for Good Practice in the Conduct of Clinical Trials with Human Participants in South Africa (2nd edition); as well as the Department of Health (2015). Ethics in Health Research: Principles, Processes and Structures (2nd edition).

The Health Research Ethics Committee reviews research involving human subjects conducted or supported by the Department of Health and Human Services, or other federal departments or agencies that apply the Federal Policy for the Protection of Human Subjects to such research (United States Code of Federal Regulations Title 45 Part 46); and/or clinical investigations regulated by the Food and Drug Administration (FDA) of the Department of Health and Human Services.

APPENDIX 2: ETHICAL APPROVAL FROM THE LESOTHO MINISTRY OF HEALTH RESEARCH ETHICS COMMITTEE

Ministry of Health
P.O. Box 514
Maseru 100

Category of Review:
[x] Initial Review
[ ] Continuing Annual Review
[ ] Amendment/Modification
[ ] Reactivation
[ ] Serious Adverse Event
[ ] Other _____

REF: ID 25-2021
Date: May 10, 2021
To
Tholoana Joyce Kamohelo
Student #: 22271147
Stellenbosch University,

Dear **Ms. Kamohelo**

RE: The knowledge, attitudes and practices of nurse educators regarding evidence-based practice at nursing education institutions in Lesotho

This is to inform you that the Ministry of Health Research and Ethics Committee reviewed and **APPROVED** the above named protocol and hereby authorizes you to conduct the study according to the activities and population specified in the protocol. Departure from the approved protocol will constitute a breach of this permission.

This approval includes review of the following attachments:
[x] Protocol
[x] **Informed Consent Form**: Participant information leaflet and consent form for online survey
[x] **Data Collection Tool**: Data collection instrument
[ ] Participant materials
[x] Other materials: Letter of permission to conduct a study dated 16th March 2021, CV_Tholoana Joyce_Kamohelo, Letter of approval from Health Research Ethics Committee Stellenbosch University

This approval is **VALID** until May 16, 2022.

Please note that an annual report and request for renewal, if applicable, must be submitted at least 6 weeks before the expiry date.

All serious adverse events associated with this study must be reported promptly to the MOH Research and Ethics Committee. Any modifications to the approved protocol or consent forms must be submitted to the committee prior to implementation of any changes.

We look forward to receiving your progress reports and a final report at the end of the study. If you have any questions, please contact the Research and Ethics Committee at rcumoh@gmail.com (or) 59037919/58800246.

Sincerely,

DR. 'NYANE LETSIE
Director General Health Services

DR. LLANG BRIDGET MAAMA-MAIME
Member of National Health Research
Ethics Committee (NH-REC)

APPENDIX 3: APPROVAL FROM CHRISTIAN HEALTH ASSOCIATION OF LESOTHO NURSES TRAINING INSTITUTIONS

PARAY SCHOOL OF NURSING
P.O. Box 2
Thaba-Tseka 550
Lesotho, Southern Africa
Tell: +266 22900319/66102264
Email: info@parayson.ac.ls
Web site: www.parayson.ac.ls

June 14, 2021

Ms Tholoana Joyce Kamohelo

Student # 22271147

Stellenbosch University

Dear Ms Kamohelo

RE: AUTHORIZATION TO CONDUCT REASEARCH AT PARAY SCHOOL OF NURSING

This letter serves to authorize Miss Tholoana Kamohelo to conduct research entitled "The knowledge, attitudes and practices of nurse educators regarding evidence –based practices at nursing education institutions in Lesotho"

Upon the review of your letter, I am glad to inform you that our institution is glad to offer you an opportunity to conduct the study virtually in Paray School of nursing. All interviews questions can be sent to our Nurse Educators. I hope you have their emails and personal numbers.

If you have any concerns or require additional information feel free to contact me.

PARAY SCHOOL OF NURSING P.O. BOX 2 THABA-TSEKA 550 PHONE 22900319-27032156

Yours Faithfully

Sr I Pooka

(Principal Nurse Educator)

SCOTT COLLEGE OF NURSING
LIFE LONG LEARNING

Private Bag
Morija 190
Lesotho

Tel: (00266) 52500110/1
Email: scottnursingschl@gmail.com
Website: www.scottcon.ac.ls

16 June 2021

Tholoana Joyce Kamohelo
Maluti Adventist College
Mapoteng

Dear Madam,

Student number: 22271147
Ministry of Health ethics approval number: 25-2021
Stellenbosch University HREC number: 19308
Degree: Master of Nursing Science

Approval to collect data at Scott College of Nursing

The College management received your letter requesting to conduct a research study and administer online survey to nurse educators at Scott College of Nursing. The title 'The knowledge, attitudes, and practices of nurse educators regarding evidence-based practice at nursing education institutions in Lesotho' has been noted.

The management is pleased to inform you that your request has been approved and you can start data collection. When conducting the study, please maintain all ethical principles that guide research and at the end, you are required to submit a report on the findings of the study to the Principal Nurse Educator. You have also requested to be provided with contact details of nurse educators from Scott College of Nursing. The management requests you to communicate with any nurse educator and request him/her to be your focal person during the data collection so as he/she can assist you with your needs. Best wishes in your studies.

Yours Faithfully,
Makhabiso Ramphoma
Principal Nurse Educator
Scott College of Nursing

Roma College of Nursing
P.O. Box 26, Roma 180
Lesotho
Tel. +266 28340486
Cell: +266 59400444

Email: info@rcn.org.ls
Website: www.rcn.org.ls

Ms Tholoana Joyce Kamohelo

Stellenbosch University

Tygerberg 7505

Student Number- 22271147

Dear Ms Kamohelo

Re: Request to conduct research study at Roma College of Nursing

The Roma College of Nursing Research Ethics Committee is pleased to inform you that your request to conduct a study at the College has been granted.

We wish you success in your studies and look forward to results of the study which we hope you will share with us.

ROMA COLLEGE OF NURSING
TEL: 28340486
01-07-2021
info@rcn.org.ls
P.O. BOX 26
ROMA • 180 • LESOTHO

Sincerely

Ellen Maliapa Motseki

Research Coordinator

MALUTI ADVENTIST COLLEGE

Private Bag X019
Ficksburg, 9730
South Africa

Tel: +266 2254 0203/11
Fax: +266 2254 0230
Email: malutison@gmail.com

P.O. Box 11
Mapoteng, 250
Lesotho

2nd July 2021

TO:

Tholoana Joyce Kamohelo

Stellenbosch University

Department of nursing and midwifery

Faculty of health sciences,education building

Francia van Zijl drive,Tygerberg, 7505

Dear Ms Kamohelo

RE: RESPONSE TO YOUR REQUEST TO CONDUCT RESEARCH STUDY AT MALUTI ADVENTIST COLLEGE

I write on behalf of Maluti Adventist College (MAC) research committee regarding your research study entitled; **THE KNOWLEDGE, ATTITUDES, AND PRACTICES OF NURSE EDUCATORS REGARDING EVIDENCE BASED PRACTICE AT NURSING INSTITUTIONS IN LESOTHO.** MAC research committee sat and reviewed your request to conduct a study at the college. The committee has granted you the approval to conduct the study.

We are also looking forward to receiving your progress report at the end of the study. If you have any questions, please contact the MAC research committee at (+266 22-540-211) or at mac@maluti.adventist.org .

Yours sincerely

Sakoane

Ms. Sebabatso Sakoane

MAC research committee secretary

APPENDIX 4: PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM FOR ONLINE SURVEY

Title of Research Project: The knowledge, attitudes, and practice of nurse educators regarding evidence-based practice at nursing education institutions in Lesotho

I am Tholoana Kamohelo, a second-year student at the Stellenbosch University Faculty of Medicine and Health Sciences. I would like to invite you to take part in a research project which involves the completion of an online survey, the results of which will be used to complete my Master's research project. Your participation is **entirely voluntary,** and you are free to decline to participate or to stop completing the questionnaire at any time, even if you have agreed to take part initially. However, once you have submitted your completed survey online, you will no longer be able to withdraw your responses as there will be no way of linking your responses back to you.

What is the study about?

This study aim is to investigate the level of knowledge, the attitudes, and practices of nurse educators at undergraduate nursing institutions in Lesotho regarding evidence-based practice (EBP). We are conducting this study to establish the knowledge, attitudes, and practices of nurse educators on EBP because the newly implemented competency-based curriculum (CBC) has EBP as one of its main core-competencies (Botma, 2016:1880), the Lesotho Nursing Council (LNC) Standards for Nursing and Midwifery Education enforce EBP generation and implementation through the nursing curricula (Lesotho Nursing Council, 2013:4) and the Lesotho Ministry of Health (LMoH) National Nursing and Midwifery Strategic Plan of 2010 aims to improve quality of care by adopting CBC in nursing and midwifery education (Ministry of Health, 2010:np). This study will be conducted by the researcher who will collect data from all 82 nurse educators and clinical instructors from all four Christian Health Association of Lesotho Nurses Training Institutions (CHAL NTIs) and the National Health Training College. The online questionnaire will entail four sections on demographic data, yes and no EBP knowledge questions and EBP attitude and practices questions on a 5-point Likert scale.

Why are you being asked to participate?

You are being asked to participate because you are a nurse educator or clinical instructor at one of the nursing education institutions in Lesotho that is implementing CBC, thus teaching evidence-based practice.

What will participating in the study entail?

All email correspondence will be blind copied; therefore, other study respondents will not have access to your email address. A 32-items survey link will be sent to you that is subdivided into four sections that will require your demographic and academic data, yes or no EBP knowledge questions and the 5-point Likert scale attitude and practice questions on EBP. The approximate length of time expected to complete the survey is 15 minutes while the data collection period is from the 5th to the 23rd of July 2021.

Will you benefit from taking part in this research?

There are no personal benefits for participating in this study, instead, the participating institutions, LNC and LMoH will receive the study report to give a basis of the knowledge, attitudes, and practices of nurse educators and clinical instructors who implement and those who are about to implement CBC regarding EBP.

To compensate for your time, any inconveniences caused and expenses to be incurred by participating in this study, you will receive 50 ZAR (R50.00) airtime for data through your cell phone number. Your contact details will be stored on a password-encrypted computer and destroyed immediately after you have received the airtime.

Are there any risks involved in your taking part in this research?

The surveys are generated and submitted through a secure web application (REDCap) of the kind typically used to handle credit card transactions, there is therefore a minimal risk for your responses to be viewed by unauthorized third parties.

There are minimal risks involved in participating in this research because the submitted online surveys will not be linked to your personal information. However, should you feel uncomfortable or experience any emotional harm during the survey, please contact me for debriefing and reassurance. Your answers will be kept safe and confidential on a password-encrypted computer. The information will only be accessible to me and my supervisors. Research data will be retained securely according to applicable retention and disposal requirements for future research needs for a period of ten years from the date of storage (Stellenbosch University, 2021:np). By partaking in this study, you consent to data retention for anonymous possible reuse, you are however free to opt out.

You can phone the Principal Investigator of this study, Tholoana Kamohelo at +26668716737 or +26658697540 and 22271147@sun.ac.za if you have any questions about this study or encounter any problems.

This study has been approved by the **Health Research Ethics Committee at Stellenbosch University** (S21/01/010) and **Lesotho Ministry of Health Research Ethics Committee** (REF: ID 25-2021). The study will therefore be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, and the Department of Health Ethics in Health Research: Principles, Processes and Studies (2015).

You can phone the Health Research Ethics Committee at +2721 938 9677/9819 if there still is something that concerns you about how this study is being conducted, or if you have a complaint.

For your own personal records, please take a computer screenshot of this signed consent form.

By clicking **START SURVEY** you are confirming that you have understood the above explanation about the study, and that you agree to participate. You also understand that your participation in this study is strictly voluntary.

APPENDIX 5: DATA COLLECTION INSTRUMENT

SECTION A Demographic data

Choose an answer by making a cross (**x**) in the appropriate option below,

A 1 Age (years) ☐

A2 Teaching the following programme or programmes

☐ Midwifery

☐ Nursing

☐ Nursing Assistant

☐ More than one programme. Specify: _____

A3 Years of teaching ☐

SECTION B Knowledge of nurse educators regarding EBP

Choose the appropriate answer by making a cross (**x**) on either **Yes** or **No.**

Statement	Yes	No
B1 Evidence-based teaching practice is the utilization of best available research results to inform teaching and learning activities.		
B2 Role modelling evidence-based practice to students means teaching them to integrate of best available evidence, clinical expertise, and patient values to maximize patient outcomes.		
B3 I have been trained in evidence based practice and the application thereof in nursing education.		
B4 I know how to formulate clinical questions using the PICO or other search strategies to find the best evidence.		
B5 I know how to access electronic databases that offer scientific health sciences information to guide my teaching.		
B6 I know how to critically appraise different study designs that can be used to inform teaching and learning in nursing education.		
B7 I know the levels of evidence that need to be considered in searching for different studies.		

B8 I know how to interpret results from different study designs in order to assist me incorporate the best evidence into teaching and learning practices in nursing education.		
B9 I know how to use evidence to inform innovative teaching methods in nursing education.		

SECTION C Attitudes of nurse educators regarding EBP

For this section, choose the most appropriate answer by making a cross (X) according to the following key: 1 – strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 – strongly agree.

Statement	1	2	3	4	5
C1 It is important to teach nursing students to base their clinical practice on EBP.					
C2 It is important to critically evaluate the quality of a scientific article before using it for nursing education evidence.					
C3 Nurse educators who teach using EBP are role models for nursing students to learn to also use EBP in nursing practice.					
C4 Nurse educators should be granted time and access to other resources in their teaching environment to participate in EBP.					
C5 Application of EBP when teaching, contributes to student achievement of learning outcomes.					
C6 I do not like reading scientific articles.					
C7 Teaching EBP to nursing students will in turn help students to implement EBP in clinical practice to improve patient outcomes.					
C8 It pleases me that EBP is only a theoretical concept and it is not translated practice.					
C9 I would facilitate an EBP course if I had a chance.					
C10 Supportive academic administrators, peers, and mentors would motivate to teach evidence-based practice to students.					

C11 Research evidence generates new knowledge and best practices that promotes change and improves nursing practice that is taught to students.					

SECTION D Practices of nurse educators regarding EBP

For this section, make a cross (**x**) in the appropriate box according to the following key: 1 – strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 – strongly agree.

Statement	1	2	3	4	5
D1 I use EBP in teaching and learning in order to help nursing students to make informed clinical judgements and decisions					
D2 I formulate clinical questions to search for the best scientific evidence that will inform my teaching					
D3 I search for scientific evidence from health science databases to develop course content					
D4 I formulate clinical questions using the PICO (Population/Patient Problem, Intervention, Comparison, Outcome, Time) or other search strategies to find the best evidence to guide my teaching.					
D5 I critically appraise the quality of scientific articles for best evidence to inform my teaching					
D6 I analyse the validity of scientific study results before adopting them in my teaching					
D7 I consult my administrators, colleagues and / or mentors for EBP guidance when preparing teaching material					
D8 I use the best available evidence to select innovative teaching methods					
D9 I incorporate evidence-based practice recommendations and clinical practice guidelines into teaching					

APPENDIX 6: DECLARATION BY LANGUAGE EDITOR

DECLARATION BY EDITOR

Stellenbosch

2 December 2021

To whom it may concern

RE: Editing of thesis

This letter serves as confirmation that I, Selene Delport, edited the Master's thesis of Tholoana Joyce Kamohelo: "The knowledge, attitudes, and practices of nurse educators regarding evidence-based practice at nursing education institutions in Lesotho". Changes were indicated in track changes and comment boxes. Implementation of these changes was left up to the author.

Sincerely,

Selene Delport

Freelance editor

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APPENDIX 7: TURN-IT-IN REPORT

Document Viewer

Turnitin Originality Report

Processed on: 05-Dec-2021 21:56 SAST

ID: 1720368118

Word Count: 34780

Submitted: 4

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