



The implementation of competency-based education at nursing education institutions in developing countries: A systematic review

MI QHOBOSHEANE

 orcid.org/0000-0002-2604-3864

A Dissertation submitted in fulfilment of the requirements for the degree *Master of Nursing Science* in NuMIQ Research Focus Area of the Faculty of Health Sciences of the North-West University


Supervisor: Dr Belinda Scrooby

Co-supervisor: Prof Anneke van Graan

DECLARATION

I Maseqhobela Mangole Qhobosheane, the undersigned, declare that this dissertation is the result of my own investigation, except where otherwise stated, and that I am aware of and understand plagiarism and its consequences. All work that is not my own has been acknowledged in accordance with the North West University's regulations and a bibliography is appended.

I declare that the study has been approved by the Health Research Ethics Committee at the University of North-West, Potchefstroom Campus,

Signature: 

Date: 08/09/2023

ACKNOWLEDGEMENTS

I would like to pass my sincere gratitude to my supervisor Dr Belinda Scrooby and my co-supervisor Prof Anneke van Graan for their valuable and high-quality support, and their constructive feedback throughout the whole process of my research dissertation. I will not forget Ms Gerda Beukman, the Faculty Librarian for library support, Ms Petra Gainsford for technical editing, Dr Mahao Mahao at the National University of Lesotho for language editing, as well as the Faculty of Health Sciences Postgraduate bursary department for financial support to continue with my studies. Lastly, I would like to thank my family for encouragement and emotional support throughout all the difficult times in my studies.

ABSTRACT

Competency-based education (CBE) plays an integral part in assisting student nurses to increase their problem solving and critical thinking skills which they would need in the future for rendering day-to-day nursing care to patients. CBE is widely used in modern countries while its use in developing countries is very limited. The purpose of this study was to explore the best available evidence on competency-based education implementation at nursing education institutions in developing countries, targeting as the reason for CBE's limited use, what is needed for its better implementation of and the challenges that come with the use of CBE.

Aim: The aim of this study was to explore the best available qualitative evidence on competency-based education implementation at nursing education institutions in developing countries.

Methods: The study was done through a systematic review where only qualitative data was collected. During the identification process, 4529 records were identified which eventually yielded only nine records after all the steps of screening and critical appraisal had been done. Following all the processes, data extraction was done for nine records, and meta-synthesis was carried out to analyse data.

Results: The findings of the study identified a few barriers to CBE implementation including: lack of technology, human resource development, theory-practice integration, motivation, support from professional bodies, and resistance to change. The identified needs of CBE for better implementation are training of implementers on the best way for facilitation and funding of experiential learning.

Summary: Adopters of CBE need to be aware of various factors which hinder its implementation and be flexible enough to move from facilitators' centeredness and adopt a learner-centered approach.

Key terms: competency, competency-based curriculum, competency-based education, facilitator, nursing education institution, health professional, self-directed learning, student nurse,

LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|----------|--|
| ADA | American Dental Association |
| AMA | American Medical Association |
| CASP | Critical appraisal skill programme |
| CBC | Competence Based Curriculum |
| CBE | Competence Based Education |
| CHAL | Christian Health Association of Lesotho |
| CHE | Council on Higher Education |
| DSR | Distiller Systematic review software |
| HREC | Health Research Ethics Committee |
| ICN | International Council of Nurses |
| JHNEBP | John Hopkins Nursing Evidence-Based Practice |
| LNC | Lesotho Nursing Council |
| MOH | Ministry of Health |
| NEPI | Nursing Education Partnership Initiative |
| NEIs | Nursing Education Institutions |
| NuMIQ | Quality in Nursing and Midwifery |
| NWU | North-West University |
| OBE | Outcome Based Education |
| ORCID | Open Researcher and Contributor Identification Number |
| OSCE | Objective Structured Clinical Examination |
| PEPFAR | President's Emergency Plan for Aids Relief |
| PICOS | Population, Intervention, Comparison, Outcome and Setting |
| PRISMA | Preferred Reporting Items for Systematic Reviews and Meta-Analysis |
| PROSPERO | International Prospective Register of Systematic Reviews |
| RNs | Registered Nurses |
| WHO | World Health Organisation |

TABLE OF CONTENTS

| | |
|--|------------|
| DECLARATION | I |
| ACKNOWLEDGEMENTS | II |
| ABSTRACT | III |
| LIST OF ABBREVIATIONS AND ACRONYMS | IV |
| | |
| CHAPTER 1 OVERVIEW | 1 |
| 1.1 INTRODUCTION | 1 |
| 1.2 BACKGROUND AND RATIONALE FOR THE STUDY..... | 1 |
| 1.3 PROBLEM STATEMENT..... | 4 |
| 1.4 RESEARCH QUESTION..... | 5 |
| 1.5 RESEARCH AIM AND OBJECTIVE | 5 |
| 1.5.1 The research aim..... | 5 |
| 1.5.2 The research objectives..... | 6 |
| 1.6 PARADIGMATIC PERSPECTIVE | 6 |
| 1.6.1 Meta-theoretical assumptions | 6 |
| 1.6.2 Theoretical assumptions..... | 8 |
| 1.6.2.1 Central theoretical statement..... | 8 |
| 1.6.2.2 Conceptual definitions | 8 |
| 1.6.3 Methodological assumptions..... | 10 |
| 1.7 STUDY DESIGN..... | 10 |
| 1.8 RESEARCH METHOD..... | 10 |
| 1.8.1 Formulating answerable research question (Step one)..... | 10 |

| | | |
|------------------|---|-----------|
| 1.8.2 | Developing a literature search strategy (Step two)..... | 11 |
| 1.8.3 | Selection of relevant studies (Step three) | 11 |
| 1.8.4 | Assessing quality of each study to be included in the review (Step four)..... | 11 |
| 1.8.5 | Data extraction (Step five) | 11 |
| 1.8.6 | Data synthesis (Step six) | 11 |
| 1.8.7 | Reporting the findings (Step seven)..... | 11 |
| 1.9 | RIGOUR | 11 |
| 1.10 | ETHICAL CONSIDERATIONS..... | 12 |
| 1.10.1 | Risk and use of non-scientific data precautions | 14 |
| 1.10.2 | Dissemination of research results | 14 |
| 1.10.3 | Data management and storage | 14 |
| 1.11 | SUMMARY | 15 |
| CHAPTER 2 | RESEARCH METHODOLOGY | 16 |
| 2.1 | RESEARCH METHOD..... | 16 |
| 2.1.1 | The systematic review as a research method | 16 |
| 2.1.2 | Formulating answerable research question (Step one) | 17 |
| 2.1.3 | Developing a literature search strategy (Step two)..... | 18 |
| 2.1.4 | Selection of relevant studies (Step three) | 19 |
| 2.1.4.1 | Inclusion criteria..... | 19 |
| 2.1.4.2 | Exclusion criteria | 20 |
| 2.1.5 | Assessing the quality of each study to be included in the review (Step four)..... | 23 |
| 2.1.6 | Data extraction (Step five) | 23 |

| | | |
|---|---|-----------|
| 2.1.7 | Data synthesis (Step six) | 23 |
| 2.1.8 | Reporting the findings (Step seven)..... | 24 |
| 2.2 | SUMMARY | 24 |
| CHAPTER 3 REALISATION AND FINDINGS OF THE RESEARCH STUDY | | 25 |
| 3.1 | INTRODUCTION | 25 |
| 3.2 | FORMULATING THE RESEARCH QUESTION..... | 25 |
| 3.3 | DEVELOPING LITERATURE SEARCH..... | 25 |
| 3.4 | SELECTION OF RELEVANT STUDIES..... | 26 |
| 3.5 | ASSESSING THE QUALITY OF EACH STUDY TO BE INCLUDED IN THE REVIEW | 28 |
| 3.6 | DATA EXTRACTION | 40 |
| 3.7 | DATA SYNTHESIS | 40 |
| 3.8 | SYNTHESIS OF FINDINGS | 51 |
| 3.8.1 | Impeding factors | 53 |
| 3.8.2 | Facilitating factors..... | 55 |
| 3.8.3 | The needs for CBE implementation | 56 |
| 3.8.4 | Effective ways of implementing CBC | 57 |
| 3.9 | SUMMARY | 58 |
| CHAPTER 4 FINAL CONCLUSION, LIMITATIONS, RECOMMENDATIONS AND DISSEMINATION | | 59 |
| 4.1 | INTRODUCTION | 59 |
| 4.2 | FINAL CONCLUSION | 59 |

| | | |
|------------|--|-----------|
| 4.3 | EVALUATION OF RIGOUR | 60 |
| 4.4 | LIMITATIONS..... | 60 |
| 4.5 | RECOMMENDATIONS | 61 |
| 4.6 | DISSEMINATION | 62 |
| 4.7 | SUMMARY | 62 |
| | BIBLIOGRAPHY..... | 63 |
| | ANNEXURE A: ETHICS APPROVAL LETTER OF STUDY..... | 74 |
| | ANNEXURE B: CRITICAL APPRAISAL CHECK-LIST..... | 75 |
| | ANNEXURE C: JOHNS HOPKINS NURSING EVIDENCE BASED PRACTICE FOR META-SYNTHESIS..... | 80 |
| | ANNEXURE D: LANGUAGE EDITING | 81 |
| | ANNEXURE E: TURNITIN REPORT | 82 |

LIST OF TABLES

Table 1.1: Direct and indirect benefits..... 14

Table 2.1: Application of PICOS 18

Table 3.1: Application of PICOS 25

Table 3.2: Records found from different databases..... 26

Table 3.3: Studies critically appraised..... 29

Table 3.4: Summary of included studies 41

Table 3.5: Data synthesis summary table 52

LIST OF FIGURES

Figure 2.1: Example of a PRISMA flow chart of realisation of the search strategy..... 22

Figure 3.1: Example of a PRISMA flow chart of realisation of the search strategy at the level of identification, screening, eligibility, and included studies 28

CHAPTER 1 OVERVIEW

1.1 INTRODUCTION

Provision of quality nursing care plays an integral part in patients' recovery. For this reason, the nursing education curriculum should be geared towards developing students' critical thinking skills in order for them to be independent health care professionals, who practice efficiently and competently, to provide comprehensive nursing care (Cant *et al.*, 2013:19). In this regard, competency-based education (CBE) may be a way to help students achieve those skills needed for health professionals to deliver the kind of care that they as the health professional cannot only be proud of, but that will contribute to the patient satisfaction and hence improve their recovery (Garside & Nhemachena, 2012:541). This study was conducted to explore the implementation of CBE at nursing education institutions (NEIs) in developing countries, and this was done through exploring the best available qualitative evidence through a systematic review.

In this chapter, the background, problem statement, research question, aim and objective, the researcher's paradigmatic perspective, rigour and ethical considerations will be discussed in detail. The research methodology and design will only be mentioned but will be discussed in detail in Chapter 2.

1.2 BACKGROUND AND RATIONALE FOR THE STUDY

Competency-based education is an educational approach in which students demonstrate the attainment of certain learning outcomes prior to proceeding in their course of study (Frank *et al.*, 2010:641; Gravina, 2017:117), and through which the assessment ensures that the student has essential knowledge, skills and values needed for nursing practice as they graduate (Pijl-Zieber *et al.*, 2014:677). Students are assessed on the specific content and skills that they have attained, not anything else. Students are given specific content on a topic to deal with, rather than a clutter of information, and they can only pass to the next topic when they have mastered the initial one (Ulfavarson & Oxelmark, 2012:705).

Competency-based education is said, internationally, to have a lot of benefits (Bristow & Patrick, 2014:26) which include: flexibility, students' ability to work at their own pace, personalised way of teaching and timely support from the facilitators. Jobs for the Future (2016:6) also adds that CBE is purpose-driven and emphasises on the unconventionality of its assessment strategy and grading whereby less interest is on how well a student has performed in a particular assessment but more on whether assessment provides a clear evidence that a student knows and can master the competence before they move on to another competence (Marion *et al.*, 2020:14). This is more accurate as compared to the traditional method which is teacher centered (Mapesos,

2017:1) mainly because it measures exactly what the student knows and what she/he can do. Affordability is one of the benefits, as shown by the list prices of the models. Therefore, it reduces the cost for the college, though its cost effectiveness for the students may be seen only if students' progress quickly (Kelchen, 2015:9). Competency-based education relieves students from their tension of learning under pressure, as they can learn at their own specific and comfortable time, especially because some of the nursing or tertiary students are adults who have their families even if they study full time. Moreover, this gives the students an opportunity to think in an open-minded manner (Gravina, 2017:117). In this regard CBE helps and enforces students' learning as it encourages self-directed learning (Gravina, 2017:117).

Competency-based education approach ultimately articulates theory into practice during classroom teaching such as: in solving classroom scenarios, and after being engaged in classroom setting, students go to the simulation laboratory to perform the skill and what they did the theory on in class before they can perform it on real patients in the clinical setting (Franklin & Melville, 2013:26). Therefore, literature, as stated by Mene`ndez *et al.* (2017:1160) and Pijl-Zieber *et al.* (2014:677), support that in CBE, there is theory-to-practice correlation which promotes the ability to perform in real-life situations what was taught in the classroom setting.

Clinical simulation (an active, collaborative learning method) is widely used in nursing education today and is a proven method for improving the development of clinical competence and confidence of student nurses (Agea *et al.*, 2019:64) practising clinical skills in a safe environment (Harper *et al.*, 2013:17). In this educational approach, assessment strategies are used, such as the Objective Structured Clinical Examination (OSCE) that include the use of models, low and high-fidelity simulators which all help mimic the real-life clinical setting (Mene`ndez *et al.*, 2017:1158). High-fidelity simulation training (the use of high-technology, life-like programmed manikins that breathe, talk, blink, and have heart and bowel sounds) allows student nurses to learn through graded experience to accomplish a given scenario rather than 'practising on' potentially distressed and vulnerable patients in real-life consultations (Kim, 2015:283; Nestel & Bearman, 2015).

Simulators therefore promote critical thinking and problem-solving skills among students, as well as providing them with affective, psychomotor and effective skills needed as they repeatedly practise these skills in a safe environment without any patient harm and as it replicates the essential aspects of the clinical situation to enable easy understanding for the students (Kim, 2015:283). This is useful since students need to acquire these competencies before they can go to the clinical setting (Nikolov *et al.*, 2014:2).

According to Gravina (2017:117), CBE also promotes the advancement and growth of the nursing profession, mainly because the facilitators assured that the learning outcomes have been achieved. On the side of the facilitators, the workload is decreased as the work is more student-orientated than teacher-oriented. Gravina (2017:117) also states that CBE has indirect benefits to the patients as it helps the students to have autonomy when it comes to rendering the nursing care to them. Therefore, as the students arrive at the workplace, they can work competently and make sound decisions to solve health care problems. As a result, patients themselves have trust in their nurses which promotes their speedy recovery (Gravina, 2017:117).

As much as CBE has many benefits, it also has some limitations or disadvantages which include pressure and financial commitment to those students who progress slowly, as this requires self-paced and accelerated learning (American Medical Association (AMA), 2016:6). As for the educational institutions, it might pose a challenge while they need to transform to established processes such as the methods of instruction, assessment, and reporting or grading since such transformation is a process not an event. Frequent assessments which are needed to monitor progress as students move from one competency to another may pose a challenge in terms of the time, support and coordination from faculty (AMA, 2016:5).

Well-known universities such as the University of Manichigau and Purdue University in Indiana have been using CBE and have proven its value in education, which includes independence and critical thinking skills of the students (Gravina, 2017:117). The effectiveness of this learning approach which includes the ability of new graduates to deliver socially responsive health care as has been exhibited in many countries around the world such as the United States of America, China, United Kingdom, Canada, Singapore and many more countries that have adopted it (Mene`ndez *et al.*, 2017:1160). But it still seems to be a new approach in some of the developing countries and underdeveloped such as Kenya and Lesotho (Nyoni & Botma, 2018a:74).

South Africa, as one of the developing countries, has been engaged in outcome-based education (OBE) which had its origin from CBE. Outcome-based education, according to Gurukkal (2018:1), is an educational approach through which educational theory integrates every aspect of an educational system with a set of avowed outcomes. This was implemented in the early 1990s, with the emphasis that students who engaged in CBE can apply medical concepts acquired in theory when they get to the clinical practice (Mene`ndez *et al.*, 2017:1158).

In 2012, the Ministry of Health (MOH) in Lesotho formulated a strategic plan which indicated the need for CBE implementation in the Lesotho nursing education institutions, with the first attempt in a Diploma in Midwifery programme (Nyoni & Botma, 2018a:75). Nursing Education Partnership Initiative (NEPI) supported the nursing schools in six countries to implement a competency-based

curriculum, as a means to address the issue of nurses' failure to apply what they were taught in class, which resulted in negative effects such as increased maternal mortality rate. Those NEPI-supported countries were the Democratic Republic of Congo, Ethiopia, Malawi, South Africa, Zambia, as well as Lesotho. This was done with an intention to provide student nurses with critical thinking skills to solve clinical problems (The President's Emergency Plan for Aids Relief (PEPFAR) nursing education partnership, 2012-2016:7).

Lesotho Nursing Council (LNC), in collaboration with the Ministry of Health of Lesotho (2012), made an agreement to utilise this new model of CBC with the advice from the World Health Organisation (WHO) to combat the increasing maternal mortality rate (Nyoni & Botma, 2018a:74). After the WHO's recommendations, NEPI assisted to ensure that the CBE approach became successful in Lesotho and in other developing countries as mentioned earlier (PEPFAR 2012-2016:7).

According to Nyoni and Botma (2018a:73), the need for comprehensive child and maternal health care in Lesotho will necessitate the adoption of an educational approach that will contribute to the reduction of high maternal and mortality rate in the country through workforce provision of capable, skilled and independent professional nurses. According to the Ministry of Health Lesotho (2012), educational approach implementation action would then be rolled out on the other levels of nursing education programmes being: nursing assistant education programme and diploma in general nursing (Nyoni & Botma, 2018a:73). The Lesotho Nursing Council is still working tirelessly to formulate the rules and regulations for its implementation, though this educational approach is already ongoing (Nyoni & Botma, 2018a:74). Currently, only one nursing education institution amongst the six in Lesotho, shows confidence in CBE implementation (Nyoni & Botma, 2018b:75). Therefore, the researcher was interested in exploring best available evidence on the implementation of CBE at NEIs in developing countries.

1.3 PROBLEM STATEMENT

The benefits of CBE have been proven in developed countries in Asia and Africa (Sotco & Mwadanji, 2015:12). These benefits include flexible learning progression, students becoming independent lifelong learners and students' ability to track their own progress and personal development (Bristow & Patrick, 2014:16). Some of the nursing institutions in developing countries have problems implementing CBE, such as absence of educators to provide on-the-job training about CBE, shortage of teaching and learning resources/facilities such as internet, large class size and lack of institutional support (Tijani, 2021:6). However, CBE has shown to have some benefits which include affordability and flexibility in terms of time (Ruth & Ramadas, 2019:47). The success of CBE implementation in developing countries is controversial as some

of the countries are satisfied with it while others are not (Ruth & Ramadas, 2019:47). According to Ruth and Ramadas (2019:47), countries like Rwanda and Cameroon had achieved the desirable effects after implementation of CBE. On the other hand, Ghana, Ethiopia, Tanzania and Kenya have some problems in terms of CBE and its implementation. Such problems include inability of the teachers to comprehend the education approach, and inability of feedback structures which makes it uncertain whether it will lead to improving the needs of the labour market (Ruth & Ramadas, 2019:47). Even though attempts were made to bring CBE into the African context, there is still a problem with the model and its implementation in developing countries as NEIs fail to maintain uniformity in terms of the desired teaching approach (Ruth & Ramadas, 2019:47). Isaboke *et al.* (2021:78), also support that in East Africa, there are countries which face a challenge in using CBE due to the factors such as teacher unpreparedness for institution education, a long time needed for curriculum development, as well as financial constraints (Isaboke *et al.* 2021:74).

Lesotho is one of the developing countries which struggle to implement CBE even after the recommendation by the WHO, which aimed at assisting in reducing high maternal mortality rate (Nyoni & Botma, 2018a:75). The implementation was done with the initiative from PEPFAR and NEPI (Nyoni & Botma, 2018a:75). For the implementation of CBE, infrastructure factors that could hinder the implementation process were initially recognised and solved. The simulation laboratories in all six nursing institutions were constructed and provided with the simulators of high technology through the help of NEPI in 2012-2016. The training of nurse educators was also done together with the familiarisation of the teaching strategies as inherent in CBE (Nyoni & Botma, 2015:3). However, there are no systematic review studies done on the implementation of CBE at the NEIs internationally and locally, therefore this study was meant to explore the best available qualitative evidence regarding CBE implementation at NEIs in developing countries through a systematic review.

1.4 RESEARCH QUESTION

The study sought to answer this research question: *What is the best available qualitative evidence regarding competency-based education implementation at nursing education institutions in developing countries?*

1.5 RESEARCH AIM AND OBJECTIVE

1.5.1 The research aim

The aim of this study was to explore the best available qualitative evidence on the implementation of competency-based education at nursing education institutions in developing countries.

1.5.2 The research objectives

The research objectives of this research study were:

- To explore and summarise the best available qualitative evidence regarding impeding factors of CBE;
- To explore and summarise the best available qualitative evidence regarding facilitating factors of CBE; and
- To explore and summarise the best available qualitative evidence on the effective ways of implementing CBE in developing countries.

1.6 PARADIGMATIC PERSPECTIVE

The research paradigm inherently reflects the researcher's beliefs about the world that she/he lives in and wants to live in. It constitutes the abstract beliefs and principles that shape how a researcher sees the world, and how she/he interprets and acts within that world (Kivunja & Kuyini, 2017:26). The researcher's meta-theoretical, theoretical and methodological assumptions are discussed in the sub-sections that follow below.

1.6.1 Meta-theoretical assumptions

Meta-theoretical assumptions are those that can be used to generate research questions and guide the development and refinement of theories. These assumptions are background beliefs that, for most purposes, are stipulated as true and provide the foundation upon which scholars can construct theories (Kivunja & Kuyini, 2017:27). The views on a student and society are discussed, along with views on education, nursing education, health and nursing.

View on a student as a human being

The researcher views a student as a unique individual who has unique learning capabilities and strategies. Students' learning is enhanced by support from the facilitator or educator in the learning environment. The educator may not be able to support the student in the absence of a clear guide which is based on the curriculum outcomes. Thus, CBE addresses the uniqueness of the student by allowing individualised learning styles (Gravina, 2017:117). Since every student is unique, students may view CBE in different perspectives, and the challenges they experience during implementation may also differ.

View on nursing education

According to Morin (2014:136), nursing education refers to the training offered formally to those who wish to become nurses. It includes functions and duties in the physical care of patients, and a combination of different activities that pertain to the maintenance of patients' health. This kind of education is provided by the nursing institutions which are accredited (Lesotho Nurses and Midwives Act, 1998). Curriculum is one of the factors that determine proficiency of the content delivered in the learning institution. Its effectiveness is judged by ability to develop students who are ready to enter the health care setting confidently and independently as workers (Shanti & Angeline, 2015:76). As a worker, this student must be a caring empathetic critical thinker who is able to bring satisfaction to patients. These traits are acquired in CBE as it allows students to work independently in solving problems encountered during patient care.

View on health

The researcher agrees with refining the World Health Organization (WHO, 2020) definition of health which says it "is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" as well as "the ability to adapt and self-manage" (Huber *et al.*, 2011:343). This is because human health has a set of dynamic features and dimensions that can be measured. The researcher believes that students should be physically, psychologically and socially well for them to learn. Competency-based education equips students with knowledge, competencies and skills required to meet the holistic wellbeing of the patients.

View on nursing

Nursing encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings. Nursing includes the promotion of health, prevention of illness, and the care of ill, disabled and dying people. Advocacy, promotion of a safe environment, research, participation in shaping health policy and in-patient and health systems management, and education are also key nursing roles (International Council of Nurses (ICN), 2002:2). The nurses need all the skills acquired in CBE, as it does not only ensure that students master the content but requires them to prove the mastery of different skills such as how to do procedures for ill patients including demonstration of compassion or affective care.

View on the society

A patient, who is a human being, lives in a society. When the life of the person living in a society is compromised, the society becomes affected too due to the functional loss of their member whose absence may alter some activities in the society. In this regard, the researcher views the health of the community such as the nursing college or nursing education community, as

dysfunctional when the teaching and learning journey has no direction. This may lead to failure of students which ultimately leads to the failure of the institution itself. The teaching and learning stem from a well-developed curriculum. Thus, CBE will facilitate the wellbeing of the education society by instilling critical thinking and problem-solving skills in a nurse so that she will render quality patient care and satisfy the needs of the community (Ulfavarsen & Oxelmark, 2012:705).

1.6.2 Theoretical assumptions

This study was based on constructivism theory. This theory denotes that as individuals experience the world, they build their understanding of the external world. It further states that students have their unique conceptions about the world which they gain through interactions with others or their experiences; therefore, they must construct new knowledge on what they already know. It is for the facilitator to meaningfully model the students' conceptual structure (Taber, 2019:15). According to Sistermans, (2020:683), constructivism elements are experiential, collaborative, active and reflective, and relevant to students who have autonomy and self-directedness. Competency-based education requires a student who is independent and shifts the approach from teacher-centeredness to student-centeredness whereby students need to master self-directedness. The three-constructivist model, design as stated by Vygotsky (cited by Akpan, *et al.* 2020: 51), emphasises that students learn from their experiences and design experiments from that, not the facilitator doing it for them. Then the students solve problems using the concepts derived in the formulation of hypothesis (Vygotsky, cited by Akpan *et al.* 2020: 51). Experiential learning, as one of the elements of constructivism, is very important in CBE as it fosters integration of theory into practice and is where students' socially acquired knowledge will be modelled to the scientifically proven knowledge.

1.6.2.1 Central theoretical statement

This systematic review attempts to summarise the best available qualitative evidence regarding CBE at nursing education institutions in developing countries. This evidence will contribute to the knowledge of the factors that impede and facilitate CBE and therefore promote the development of the necessary strategies to overcome the CBE problems so that NEIs in the developing countries can successfully implement it.

1.6.2.2 Conceptual definitions

The central concepts to this research study were defined as follows:

Competency: Competencies, as defined by European bodies, as well as by educational experts throughout and beyond Europe, consist of three interrelated ingredients: a knowledge component,

a behavioural component, and a value component (including values, beliefs, and attitudes). Competencies consist of a combination of skills, knowledge, and attitudes required for effective performance of a task or activity. A competence is defined as the holistic synthesis of these components (Gravina, 2017:117). In this study, competency refers to psychomotor, affective, and cognitive skills gained by student nurses during learning sessions as constructivists believe that constructivism makes them foster their eagerness to find more by themselves and about the world and how things work.

Student nurse: This is a person who is undergoing education in an approved institution (Lesotho Nurses and Midwives Act, 1998). For this study, a student nurse is a person who is enrolled in a nursing programme at a nursing education institution as accredited by the LNC.

Educator: Nurse educators are registered nurses (RNs) who have obtained nursing degrees that allow them to teach nursing programmes at colleges and universities, teaching and helping to train the future nurses of the world, as well as engaging in research for their institutions (Richter *et al.*, 2020:131). As constructivism is entailed, educator here acts as facilitator who sees that students construct their own knowledge rather than giving the facts (Vygotsky, cited by Akpan *et al.* 2020: 51). In the context of this study, educator is referred to as a person who has undergone training and obtained the education qualification to teach students at an LNC-accredited nursing education institution.

Competency-based education: This is an education approach in which teaching and learning are structured according to the needs of students and allows them to progress towards achieving the competencies in their own time (Tacettin & Mustafa, 2021:67). In this study, it is used to describe the learning approach which fosters evidence of the attainment of certain clinical and theoretical learning outcomes. This is done through constructivist learning as students construct their own knowledge from their past experiences with the world and come up with the conclusion. Competency-based education emphasises the complex outcomes of a learning process (that is, knowledge, skills and attitudes to be applied by students as constructivist learning requires) rather than mainly focusing on what students are expected to learn about in terms of traditionally defined subject content.

Nursing education institution (NEI): This an institution accredited by the Council on Higher Education (CHE) to provide qualifications for nursing (Lesotho Nurses and Midwives Act, 1998). In this study, nursing education institution can be a college or university that offers nursing education programmes and is accredited by CHE to provide qualifications in nursing as approved by the LNC. These institutions can either be belonging to and funded by government or private

sector. Non-governmental nursing institutions belong to Christian Health Association of Lesotho (CHAL).

Developing countries: This is a group of countries that fare relatively poorly in social and economic measures (World Economic Forum, 2017-2018). In this study, the researcher refers to those African countries with weak economies.

1.6.3 Methodological assumptions

Kivunja and Kuyini (2017:28) state that “in considering the methodology for your research, you should ask yourself the question: How shall I go about obtaining the desired data, knowledge and understandings that will enable me to answer my research question and thus make a contribution to knowledge?”. According to the research question, the researcher found it worthy to use a systematic review as a methodological approach due to the limited research participants in cases where participants from one specific country are involved.

1.7 STUDY DESIGN

A systematic review was used as the research design as it entails identifying, locating, appraising, and synthesising quality research evidence to be used to promote evidence-based practice (Higgins *et al.*, 2020:1). In this systematic review research, not only reports were included but also other scientific literature based on research that would answer the research question. Systematic review method was found to be applicable as it would provide the best available evidence on the implementation of CBE at NEI’s in developing countries (Grove *et al.*, 2017:31).

1.8 RESEARCH METHOD

This study followed seven steps of systematic review as recommended by Sriganesh *et al.* (2016:690). These steps are briefly discussed below; a more detailed discussion will be presented in Chapter 2.

1.8.1 Formulating answerable research question (Step one)

Formulating a focused question guiding the search for studies and other documents is important in systematic reviews. The review question in this study was: *What is the best available evidence regarding factors affecting competency-based education and its implementation at nursing education institutions in developing countries?* To come up with a well-structured question, PICOS acronym was used (American Dental Association (ADA), 2013:23). PICOS refers to Population, Intervention, Comparison, Outcome and Setting.

1.8.2 Developing a literature search strategy (Step two)

The second step was to develop a search strategy, where different databases were selected based on the accessibility and availability of relevant studies. This was done with the advice of the study leaders and the Librarian.

1.8.3 Selection of relevant studies (Step three)

Relevant studies were selected according to the inclusion and exclusion criteria. The inclusion and exclusion criteria set boundaries for the systematic reviews and helped the researcher to choose relevant studies (ADA, 2013:23).

1.8.4 Assessing quality of each study to be included in the review (Step four)

Each research article was carefully examined and systemically analysed to determine its trustworthiness, value and relevance to the particular topic (Burls, 2015:80).

1.8.5 Data extraction (Step five)

After identifying the studies that were to be included in the systematic review, the researcher extracted data contained in those studies (ADA, 2013:22).

1.8.6 Data synthesis (Step six)

The results of individual studies were tabulated, and then compared with those of other studies. With the definitive studies identified, a compare and contrast exercise was undertaken.

1.8.7 Reporting the findings (Step seven)

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist was used (ADA, 2013:23) as a guideline when reporting the findings. This clarified the whole process of the systematic review by providing the rationale for all the items included in the systematic review.

1.9 RIGOUR

According to Korstjens and Moser (2017:121), rigour encompasses the strength of a research design regarding ensuring that all procedures have been followed correctly in order to ensure that all the confounding factors were eliminated, and the user finds the results dependable. Rigour in qualitative research involves five concepts namely: credibility, transferability, dependability,

confirmability, and reflexivity, all of which form trustworthiness in research. The definitions and application of these concepts are presented below.

Credibility: This means that the qualitative studies should be judged using the same criteria and terminology as quantitative and the same criteria developed to fit the qualitative (Korstjens & Moser, 2017:121). Credibility measures the value and correctness of research findings and whether the methods used to reach them are credible. Therefore, the researcher assessed the quality of the primary sources with regard to the methodology used in those studies.

Transferability: This means the availability of the description to judge the degree to which results of qualitative research can be transferred to other respondents (Korstjens & Moser, 2017:121). The researcher clearly described the kind of articles to be included or excluded to enable the reader to judge whether they are transferable in their own setting or not. To assess the risk of bias between studies, the reviewers collected the information using Cochrane Collaboration tool for risk of bias assessment which covers sequence generation, allocation of concealment, blinding, incomplete outcome data and selective outcome reporting (Burls, 2015:85). The Librarian assisted by guiding the researcher to undertake the article screening process; this ensured availability of reliable data that could be transferred to the readers.

Dependability and confirmability: This means the research steps are described from the start of the research project to the development and reporting of the research findings (Korstjens & Moser, 2017:121). In this research, the researcher used the CASP tool (see Annexure B) to ensure that the primary studies included meet the required standard. The researcher kept the records of the research in a password-protected computer so that they could not be accessed by an unauthorised person. Both the researcher and the co-reviewer separately engaged in the article screening process and the data extraction process to ensure that the results were valid and to eliminate bias.

1.10 ETHICAL CONSIDERATIONS

This systematic review study did not use humans as participants, but only published literature sources and other documents. Therefore, no informed consent was required, but the researcher still ensured that fundamental ethical principles were followed. To ensure that this study would be done acceptably and ethically, it was reviewed by the scientific committee of Quality in Nursing and Midwifery (NuMIQ) and approved by the Human Research Ethics Committee (HREC) of the North-West University (NWU) (NWU-00487-20-A1) (see Annexure A). Even though the study was

not based on human participants, the researcher adhered to the guidelines by Vergnes *et al.* (2010:772) as follows:

- Making sure that ethical sufficiency is maintained in the original study. The ethical principles followed in the primary studies/documents were checked during critical appraisal.
- Ensuring honesty and integrity were maintained by not fabricating data, falsification or committing plagiarism, by referencing every statement and keeping a list of all sources used.
- Ensuring that only people who had undergone ethics training were involved as assistants in this study.
- Ensuring, acknowledging and giving credit to anyone who supported, guided and helped.
- Ensuring use of reliable scientific data by using known search engines which could be traced and keeping records of both excluded and included articles.
- Risk of bias and trustworthiness of the original studies were assessed to ensure that the results were reliable.
- Ensuring that estimated risk was determined and the precautions to be taken were well explained.
- Indirect benefits to the society, health care institutions and the nursing education institutions were addressed.
- Conflict of interest is any situation in which there is difficulty in making a fair decision because the results of the decision will affect the other party (Grove *et al.*, 2017:711). Any conflict of interest was assessed from the filtered articles to confirm that the studies were in accordance with the requirements of the research committee. The studies which did not state any availability of conflict of interest would not meet the inclusion criteria. The researcher as well assessed if there was any conflict of interest in her review and would clearly state if any.
- Data was analysed to the maximum and without personal feelings (unbiased report findings). Publication bias was assessed with the help of funnel plot. This is a graph designed to investigate the publication bias. The reviewer added the contours of the statistical significance to the funnel plot, and where discrepancy was identified, it was noted, and the study was not included in the review.
- Finally, the systematic review was registered with an International Prospective Register of Systematic Reviews (PROSPERO), so that the registration number could be issued to guarantee that the study was not duplicated.

1.10.1 Risk and use of non-scientific data precautions

No risks were foreseen as literature was used as the source of data. The benefits are presented in Table 1.1.

Table 1-1: Direct and indirect benefits

| Direct benefits for participants | Indirect benefits for society at large or the researchers / institution |
|---|--|
| Not applicable | This study was conducted to improve nursing education, and therefore quality nursing care would be promoted. |

1.10.2 Dissemination of research results

Dissemination is “the targeted distribution of information and intervention materials to a specific public health or clinical practice audience” (Ross, 2017:2). The target audience for this review were mainly other researchers and managers who are interested in CBE implementation. An article manuscript will be submitted for publication in a peer-reviewed journal and an abstract for a presentation at a relevant conference in South Africa and Lesotho will also be submitted.

1.10.3 Data management and storage

All the data was abstracted by the researcher on the proforma and summarised according to importance to the study. Before the review could start, the researcher trained a new member on Distiller Systematic review software (DSR) so that she would help the reviewer to upload the results. Both the reviewer and the chosen member developed, tested and screened the questions and forms for both level one and two assessments basing themselves on the inclusion and exclusion criteria. After the review, the citation abstracts and full text articles were uploaded with screening questions in DSR. All the data from a single subject was kept together in a labelled file folder. All the folders created were labelled to avoid confusion. The researcher ensured that the data was backed up and stored separately in different files on a password-protected computer so that they were not lost if the computer failed.

On completion of the research study, the electronic copies of all data were safely stored on a hard drive in a locked cupboard in the office of the director of NuMIQ (Nursing and Midwifery Inquiry for Quality), School of Nursing Science - NWU, for a period of five years from completion of the

research study. Data was collected on 17th June 2022 to 10th of September 2022 and analysed on the 11th of September 2022. Therefore, these research materials will be destroyed in September 2027 which is after five years in accordance with the University's policy and regulation on data and record management (NWU file plan and disposal schedule, 2018:46).

1.11 SUMMARY

This chapter described the overview of the study. The background, rationale for the study, problem statement, as well as the research question together with objectives were stated. The paradigmatic perspective, concepts used in the study, research design and method were discussed. The steps of the systematic review were also stated. The discussion addressed rigour and ethical considerations as well. In the following chapter, the systematic review as the adopted research design and method will be discussed in detail.

CHAPTER 2 RESEARCH METHODOLOGY

2.1 RESEARCH METHOD

Research methodology refers to the path taken by the researcher to investigate the problem, and the presentation of the results from the collected data (Polit & Beck, 2017:233). The research design is intended to provide the appropriate framework pertaining to the study to be conducted.

2.1.1 The systematic review as a research method

In this study, the systematic review as a research method was used to systematically identify, select and critically appraise all relevant research and to provide an analysis which summarises the best available evidence on the implementation of competency-based education at nursing institutions in developing countries.

According to Curtin University Library (2020), systematic review is a review of a clearly formulated question that uses systematic and reproducible methods to identify, select and critically appraise all relevant research, and to collect and analyse data from the studies that are included in the review.

A systematic review:

- Answers a focused research question
- Employs a comprehensive reproducible research strategy
- Identifies all relevant studies (published and unpublished)
- Assesses all results for inclusion and exclusion, and for quality
- Presents an unbiased summary of the findings
- Involves a team of researchers looking at a complex research question
- Can take months or even years to complete.

A systematic review can be either quantitative or qualitative.

- A **quantitative** systematic review includes studies that have numerical data, while a **qualitative** systematic review derives data from focus groups, observation, interviews, or individual verbal interactions and diaries and focuses on the meanings and interpretations of the participants. For this study, a qualitative systematic review was used as it only derives

data from qualitative studies which helps to produce meanings and interpretations on the interpretation of CBE as trustworthy meaningful evidence (Booth, 2016:74).

Seven steps of the systematic review, as recommended by Sriganesh *et al.* (2016:690), were used in this systematic review. The systematic review involves the steps listed below. These steps will be explained in detail and it will also be indicated how they were applied in this study.

Step 1: Formulating answerable research question

Step 2: Developing a literature search strategy

Step 3: Selection of relevant studies

Step 4: Assessing the quality of each study to be included in the review

Step 5: Data extraction

Step 6: Data synthesis

Step 7: Reporting the findings

2.1.2 Formulating answerable research question (Step one)

Sriganesh *et al.* (2016:690) report that formulating a focused question guiding the search for studies and other documents is important in systematic reviews. The review question was: *What is the best available evidence regarding factors affecting competency-based education and its implementation at nursing education institutions in developing countries?* To come up with a well-structured question, the PICOS acronym was used (See Table 2.1).

PICOS acronym defined:

P – Population refers to the participants of interest, whereby population is a group of people or elements in which the researcher has interest (Grove *et al.*, 2013:474).

I – Intervention needed for practice, that is, deliberative cognitive, physical or verbal activity performed to accomplish an objective task on behalf of an individual (Grove *et al.*, 2013:474).

C – Comparison of the intervention with control, placebo (intervention intended not to give the effect), or different therapies. Its purpose is to account for how the study participants would behave (Grove *et al.*, 2013:474).

O – Outcomes: these are results that are needed for the research and these justify the interventions and costs, and they make monitoring of the intervention visible (Grove *et al.*, 2013:474).

S – Study design or setting: setting is the location where a study is conducted while the study designs is how the study is formulated (Grove *et al.*, 2013:474).

Table 2-1: Application of PICOS

| PICO element | Stand for Operationalisation |
|------------------|--|
| P = Population | Nursing education |
| I = Intervention | Implementation of competency-based education |
| C = Comparison | Use of other traditional teaching approaches in nursing curriculum |
| O = Outcomes | Learner independence and clinical competence |
| S = Setting | Nursing education institutions in developing countries |

2.1.3 Developing a literature search strategy (Step two)

The second step of a systematic review is the development of a protocol, which helps to limit bias (Pham *et al.*, 2014:371).

Only published studies and documents of reputable organisations were searched from different databases which will be listed later in this discussion. This systematic review was intended to include all relevant documents and studies published in English and those for which an English abstract was available, as this is the standard language used in most developing countries. The review included studies done in any developing country. Most research was done on CBE and its implementation. To be as comprehensive as possible, the period for documents in this study was those published between 2010 and 2021 to allow usage of the latest and a vast array of studies, thus helping to obtain accurate results.

To be able to begin the search and retrieve available literature, keywords were used. The main keywords were derived from step one utilising PICOS. To identify all relevant documents and studies, the keywords were combined for each database. The reviewer searched the following keywords: *competency-based education, nursing education, nursing curriculum, problems / factors hindering implementation of nursing curriculums or disadvantages of competency-based*

curriculum and competency-based education, advantages of competency-based education, implementation of competency-based education, and competency-based education in developing countries.

Both hand search and databases in the form of electronic search strategy were combined whereby the internet was used to collect the data. These included: Ovid Medline, Web of Science, EbscoHost, Scopus, ScienceDirect, ProQuest, Pub Med, CINAHL Plus, Cochrane library, Academic Medicine, WHO's library, Database (WHOLIS), teaching and teacher education.

The above databases were selected based on the accessibility and availability of relevant studies based on the advice of the study leaders and the Librarian. In cases where newly identified documents were not easily obtainable, the authors were contacted via e-mail.

2.1.4 Selection of relevant studies (Step three)

Relevant studies were selected according to the inclusion and exclusion criteria explained in the sub-sections below. The inclusion and exclusion criteria set boundaries for systematic reviews and help the researcher to choose relevant studies (American Dental Association (ADA), 2013:23). The initial selection criteria were put into practice so that any other articles that did not meet the criteria could be set aside from the early stage. The decision to include or exclude the articles was done when all of them were read and put in order. The reviewer noted the number of those excluded and included articles during each stage.

Relevant studies were grouped according to the method and design and included in a table form with columns for all the relevant information from each study. The information included title, author, design method used, findings and conclusion of research reports (ADA, 2013:28). The data extraction form was first tested using five included studies to check its reliability, and any problems experienced with the form were fixed (Buchter *et al.*, 2020:529).

2.1.4.1 Inclusion criteria

In this study, a variety of articles were included as follows:

- Articles which reported on the factors which hinder CBE implementation and those that facilitate CBE, and effective ways of implementing CBE, and CBE at nursing education colleges or institutions in developing countries. The intention was to get sufficient studies which are related to the research topic.
- The articles were scholarly and scientifically written to allow analysis of only legitimate information.

- They were published between 2010 and 2021 so that the researcher could get adequate studies with the most recent information to generate credible evidence.
- They were written in English which is the standard language used in many countries.
- They clearly showed the names of the authors, date and place of publication, and that assured quality.
- They stated the trustworthiness of the data collection tools to ascertain the quality of the research results.
- Government publications, grey literature and latest guidelines regarding CBC and CBE were also included.
- Studies of qualitative design as qualitative evidence synthesis can explore the impact of acceptance, feasibility, meaningfulness, and implementation-related factors within a real world setting and this would help in the modification of future interventions (Booth, 2016:74).

2.1.4.2 Exclusion criteria

Identification

The reviewer identified all the relevant studies from the database using the stated search terms. The number of those studies was recorded. Studies found from other sources other than database were identified and their number was also recorded.

Screening

Studies collected were checked thoroughly to identify any duplicates. If found, the duplicates were excluded and only studies that met the inclusion criteria were kept, and their number was recorded. The number of excluded studies was also indicated.

Eligibility criteria

Studies were selected for retrieval after the abstracts and titles were identified in the electronic search and when they had been appraised. All the retrieved studies were examined by two reviewers independently, and they excluded duplicate studies and those that did not have anything to do with CBC/CBE implementation at nursing education institutions in developing countries.

The two reviewers independently screened titles of all selected studies then screened abstracts of the articles to make sure they met the inclusion criteria. Then the reviewers together assessed the titles and full text to ensure that they still met the inclusion criteria.

Included studies

The number of included studies was recorded. The number of excluded studies was as well recorded and the reasons for their exclusion were indicated. A PRISMA flow chart was used to record the search process (Liberati, 2009:1). The flow chart (see Figure 2.1) indicates how many studies were included or excluded at the level of identification, screening, eligibility, and included studies.

PRISMA 2009 Flow Diagram

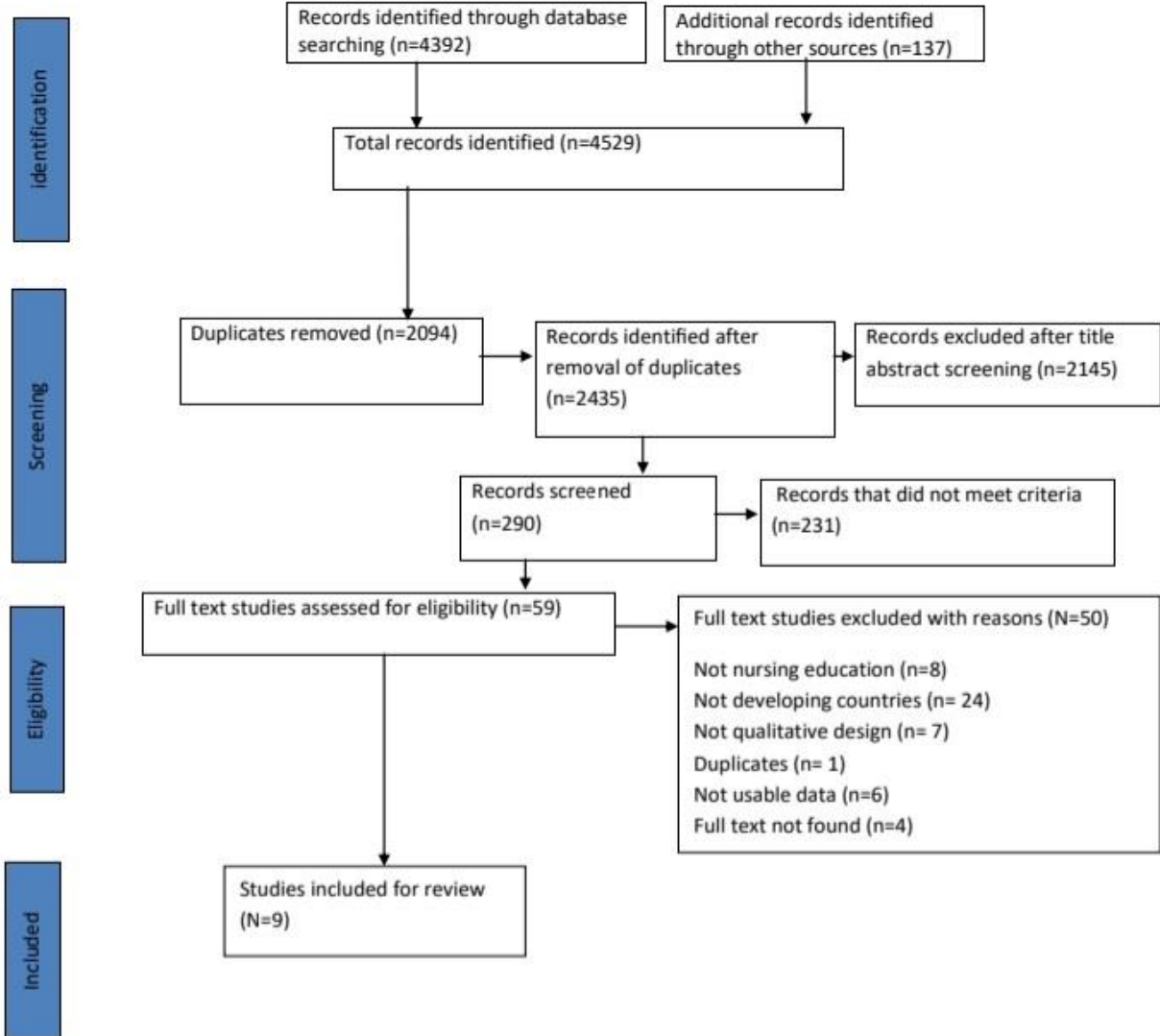


Figure 2.1: Example of a PRISMA flow chart of realisation of the search strategy (Liberati, 2009:339).

2.1.5 Assessing the quality of each study to be included in the review (Step four)

The research article was carefully examined and systemically analysed to determine its trustworthiness, value, and relevance to the particular topic (Burls, 2015:80). The reviewers assessed the research methods in the study for quality, literature search (if it included published or unpublished material), and search if the web consulted included the “Agree” instrument which allows for assessing of the clinical practice guidelines. Sample size of the study, presentation of the results and applicability of the study to the local population were investigated. Critical Appraisal Skills programme (CASP) tool was used to decide whether a review was valid and reliable or not. This tool had 10 questions which helped the reviewers to do a systemic appraisal of the review (Critical Appraisal Skills Programme, 2018:1) (see Annexure B). This helped the researchers to eliminate those studies which did not meet the quality, for example, those which did not have their ethical considerations met as seen on number 7 of the CASP tool. Some studies were removed because their research design was not appropriate to address the research issue as seen from number 3 of the CASP tool. The studies were then scored with the critical appraisal tool. The score was out of 10 and only studies with a score of 7/10 or higher were to be included. The researcher also used John Hopkins Nursing Evidence-Based Practice (JHNEBP) tool to appraise literature reviews, case reports and meta-syntheses (see Annexure C), where the studies which scored 5/8 or more were included. This is shown in Table 3.3.

2.1.6 Data extraction (Step five)

Once all the studies to be included in the systematic review were identified, the researcher extracted data contained in those studies (ADA, 2013:22). Therefore, the Rayyan software was used to sift the literature. These studies were chosen based on inclusion and exclusion criteria (Brink *et al.*, 2018:190), to select evidence related to the review question. In addition, elements related to the review question were gathered and classified, and abstracts and citations were reviewed to identify studies that met the criteria for answering the review question (Higgins *et al.*, 2020:5).

2.1.7 Data synthesis (Step six)

The results of individual studies were tabulated and then compared with those of other studies. With the definitive studies identified, a compare and contrast exercise was undertaken. The original author’s phrases, ideas, concepts, and relations in each study were identified, tabulated and grouped under the refined themes. In each case, the rationale and consequences of the decision were explained along with the excluded studies. Only qualitative studies were picked out from individual studies with the aim to explore the different views of understanding competency-

based education. The themes were studied carefully and put separately to illustrate their interaction in the flow chart. The selection was done based on the inclusion and exclusion criteria. The expected themes to be acquired were disadvantages of CBE, advantages of CBE and implementation of CBE at NEIs in developing countries. Then the results were explained narratively.

2.1.8 Reporting the findings (Step seven)

The PRISMA checklist was used as a guideline when reporting the results. This clarified the whole process of the systematic review by giving the rationale for all the items included in the systematic review. These included the database searched, keywords used, limits applied to research, data extracted, and summary of data reported. The researcher also evaluated:

- that the systematic review answered the clinical question by stating the advantages and disadvantages, as well as ways of implementing CBE;
- that the methods by which the evidence was found were clearly defined and accurate;
- if the studies included were those that met the criteria;
- if there was critical appraisal for each primary study used; and
- if analysis and presentation of the results was appropriate.

The findings of this systematic review with a detailed description of the results together with its conclusion statement are discussed in Chapter 3.

2.2 SUMMARY

This chapter entailed a full description of the of systematic review process, where the steps followed were outlined and discussed. In the next chapter, the overview of the realisation and findings of the research will be discussed.

CHAPTER 3 REALISATION AND FINDINGS OF THE RESEARCH STUDY

3.1 INTRODUCTION

This chapter outlines the overview of the research findings, and will describe step-by-step how the studies were searched, screened and how data extracted. The chapter will conclude by showing how the researcher decided to include selected studies to draw the analysis meant to answer the research question. The sections below demonstrate the steps taken to gather the best available evidence to reach the conclusion.

3.2 FORMULATING THE RESEARCH QUESTION

The researcher formulated the focus research question using the PICOS acronym as shown in the table below. The research question that the researcher came up with was: *What is the best available evidence regarding factors affecting competency-based education and its implementation at nursing education institutions in developing countries?*

Table 3.1: Application of PICOS

| PICO element | Operationalisation |
|------------------|--|
| P = Population | Nursing education |
| I = Intervention | Implementation of competency-based education |
| C = Comparison | Use of other traditional teaching approaches in nursing curriculum |
| O = Outcomes | Learner independence and clinical competence |
| S = Setting | Nursing education institutions in developing countries |

3.3 DEVELOPING LITERATURE SEARCH

The sources were searched from the following databases: Ovid Medline, Web of Science, EbscoHost, Scopus, ScienceDirect, ProQuest, Pub Med, CINAHL Plus, Cochrane library, Academic Medicine, WHO's library, Database (WHOLIS), teaching and teacher education. The key words that were derived during the formulation of the research question with the help of the PICOS acronym were used during the search process. During this process, the researcher used the following key words with the aim to gather all the facts about factors affecting competency-

based education and its implementation at nursing education institutions in developing countries: *competency-based education, nursing education, nursing curriculum, problems / factors hindering implementation of nursing curriculums or disadvantages of CBC, advantages of CBE, implementation of CBE, and CBE in developing countries*. The number of the sources found from each database was recorded as shown in Table 3.2. The number of studies found from different databases were 4392 while those found through hand search from other sources were 137. The number of identified studies therefore totalled 4529. All the sources found were imported to the endnote to make it easy to transfer to the Rayyan software where screening was done.

Table 3.2: Records found from different databases

| Database | Number of records found |
|------------------|-------------------------|
| Google Scholar | 972 |
| Web of Science | 207 |
| Ovid Medline | 174 |
| WHO's Library | 28 |
| Cochrane Library | 249 |
| CINAL Plus | 90 |
| Scopus | 244 |
| EBSCOHOST | 2008 |
| Science Direct | 420 |
| Other sources | 137 |

3.4 SELECTION OF RELEVANT STUDIES

In the first phase, all the 4529 identified studies were imported into the Rayyan software where screening was done. This was done according to the inclusion and exclusion criteria explained below. At that time, removal of the duplicates was done and the number was recorded as 2094 and 2435 studies remained as included studies. From each of the 2435 studies, the title, abstract, design, country where the study was carried out, year of publication and the findings were checked to ensure that they fit into the inclusion criteria.

Studies to be included were grouped together and marked with "I" and these were 2435 in total after screening of the title and abstracts. Excluded studies were marked with "E" and totalled 2145, while included studies remained as 290. The decision to exclude studies was based on the following reasons: duplicate, had nothing to do with CBC/CBE implementation, implementation not in nursing education institutions, not conducted in developing countries, not written in English

language and published before 2010. In the second phase, the 290 remaining studies were further screened according to the inclusion criteria, and 59 studies were yielded for full text review. As studies were entered into the excluded studies' group, the reason for exclusion was attached to each study. The total number of included or excluded studies was automatically recorded by the Rayyan software. The process of study selection is shown by the PRISMA flow chart below.

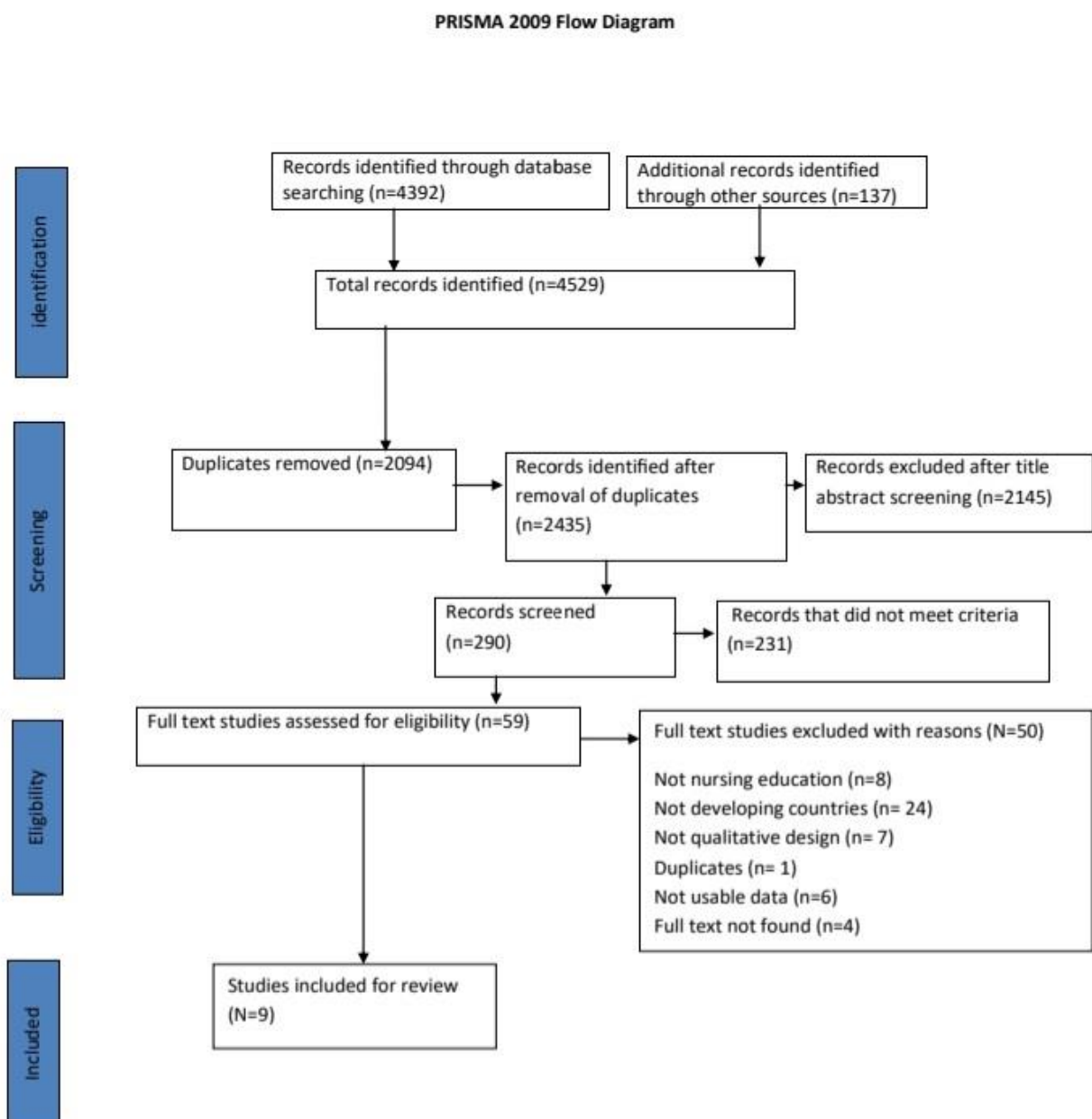


Figure 3.1: Example of a PRISMA flow chart of realisation of the search strategy at the level of identification, screening, eligibility and included studies (Liberati, 2009:339).

3.5 ASSESSING THE QUALITY OF EACH STUDY TO BE INCLUDED IN THE REVIEW

For each of the 59 studies left for critical appraisal, the reviewers assessed the studies for quality of the research methods, if it included published or unpublished material, search if the web consulted included the “Agree” instrument which allows for assessing of the clinical practice guidelines. Sample size of the study, presentation of the results and applicability of the study to the local population was investigated. The Critical Appraisal Skills programme (CASP) tool was used to decide whether a study was valid and reliable or not. This tool had 10 questions which helped the reviewers to do a systemic appraisal of the studies (Critical Appraisal Skills Programme, 2018:1) (see Annexure B). This helped the researcher to eliminate those studies which did not meet the quality, for example, those studies which did not have their ethical considerations met as seen on number 7 of the CASP tool. Some studies were removed because their research design was not appropriate to address the research issue as seen from number 3 of the CASP tool. The studies were then scored with the critical appraisal tool. The scores were out of 10 and only studies with a score of 7/10 or higher were included. The researcher also used the John Hopkins Nursing Evidence-Based Practice (JHNEBP) tool to appraise literature reviews, case reports and meta-syntheses (see Annexure C), where the studies which scored 5/8 or more were included. This is shown in Table 3.4. 50 from the 59 studies included are listed in Table 3.3 with the reason why they were excluded, and the final nine included studies are discussed in Table 3.4.

Table 3.3: Studies critically appraised

| | Author | Year | Title | Reason(s) for exclusion | Critical appraisal |
|----|---|-------------|---|--------------------------------|---------------------------|
| 1. | Bergsmann, E., Schultes M.T., Winter, P., Schober, B. and C. Spiel | 2015 | Evaluation of competence-based teaching in higher education: From theory to practice | Not developing country | CASP 6/10 |
| 2. | Boahin, P. and Hofman, W.H.A | 2012 | Implementation of innovations in higher education: the case of competency-based training in Ghana | Data not usable | CASP 8/10 |
| 3. | Bok, H. G. J., de Jong, L. H. O'Neill, T., Maxey, C. and Hecker, K. G. | 2018 | Validity evidence for programmatic assessment in competency-based education | Not qualitative design | |
| 4. | Bokonjic, B., Racic, M., Masic, S., Oruc, M., L. Rybarova, L., Vidovic, K., Drieghe, B., J. van Wieren, J. E. Curcija, E. and Seiti | 2019 | Competence-Based Curriculum Development in Nursing Education: A Story from the Western Balkans | Not developing country | CASP 6/10 |
| 5. | Brightwell, A and Grant, J. | 2013 | Competency-based training: who benefits? | Not about nursing education | |

| | Author | Year | Title | Reason(s) for exclusion | Critical appraisal |
|-----|---|-------------|--|------------------------------------|---------------------------|
| 6. | Burnette, D.M | 2016 | Developing a work/study programme for midwifery education in East Africa | Data not usable | CASP 5/10 |
| 7. | Chan, E.T., Lockhart, J.S., Thomas, Kronk, R. and Schreiber, J.B. | 2020 | An integrative review of nurse practitioner practice and its relationship to the core competencies | Not developing country | CASP 5/10 |
| 8. | Chimea, T., Kanji, Z. and Schmitz, S. | 2020 | Assessment of clinical competence in competency-based education | Not qualitative design | |
| 9. | Dragoo, A. and Barrows, R. | 2016a | Implementing competency-based business curricula in higher education | No usable data | CASP 6/10 |
| 10. | Dragoo, A. and R. Barrows | 2016b | Implementing Competency-Based Education: Challenges, Strategies, and a Decision-Making Framework | Not nursing education but business | CASP 7/10 |
| 11. | Eaton, P.W. | 2016 | The competency-based movement in student affairs: Implications for | Not nursing education | CASP 8/10 |

| | Author | Year | Title | Reason(s) for exclusion | Critical appraisal |
|-----|---|-------------|---|--------------------------------|---------------------------|
| | | | curriculum and professional development | | |
| 12. | Edwards, G., Hellen, K. and Brownie, S. | 2018 | Developing a work/study programme for midwifery education in East Africa | No usable data | |
| 13. | Fan, J.Y., Wang, Y.H., Chao, L.F., Jane, S.W. and Hsu, L.L. | 2015 | Performance evaluation of nursing students following competency-based education | Not developing country | |
| 14. | Fastré, G.M., van der Klink, M.R., Amsing-Smit, P. and van Merriënboer, J.J. | 2014 | Assessment criteria for competency-based education: a study in nursing education | No usable data | |
| 15. | Fitzgerald, J.T., Burkhardt, J.C., Kasten, S.J., Mullan, P.B., Santen, S.A., Sheets, J.K. Tsai, A., Vasquez, J.A. and L. D. Gruppen | 2016 | Assessment challenges in competency-based education: A case study in health professions education | Not developing country | CASP 7/10 |
| 16. | Foth, T and Holmes, T. | 2017 | Neoliberalism and the government of nursing through | Not developing country | |

| | Author | Year | Title | Reason(s) for exclusion | Critical appraisal |
|-----|--|-------------|---|--------------------------------|---------------------------|
| | | | competency-based education | | |
| 17. | Fullerton, J.T., Thopson, J.B. and Johnson, P. | 2013 | Competency-based education: the essential basis of pre-service education for the professional midwifery workforce Midwifery | A duplicate | |
| 18 | . Goudreau, J., Pepin, J., Larue, C., Dubois, S., Descoteaux, R., Lavoie, P and Dumont, K. | 2015 | A competency-based approach to nurses' continuing education for clinical reasoning and leadership through reflective practice in a care situation | Not developing country | |
| 19. | Gravina, E.W. | 2017 | Competency-Based Education and its Effect on Nursing Education: A Literature Review | Not developing country | CASP 8/10 |
| 20. | Gruppen, I.D. | 2015 | Competency-based education, feedback, and humility | Not developing country | CASP 4/10 |
| 21. | Gruppen, L.D., Burkhardt, L.D., Fitzgerald, T.T., Funnell, M., Haftel, M. | 2016 | Competency-based education: programme design | Not developing country | CASP 6/10 |

| | Author | Year | Title | Reason(s) for exclusion | Critical appraisal |
|-----|--|-------------|---|--|---------------------------|
| | H., Lypson, L., Mullan, P.B., Santen, S.A., Sheets, K.J., Stalburg, C.M. and Vasquez, J.A. | | and challenges to implementation | | |
| 22. | Hakimi, M., Kheirkhah, M., Abolghasemi, J. and Hakimi, R. | 2021 | The effects of competency-based education on midwifery students' knowledge, skills, and self-confidence for postpartum hemorrhage management | Not developing country and not qualitative | |
| 23 | Halman, S., Fu, A.Y.N. and Pugh, A. | 2020 | Entrustment within an objective structured clinical examination (OSCE) progress test: Bridging the gap towards competency-based medical education | Not developing country | 9/10 |
| 24. | Harden, R.M. | 2014 | Progression in competency-based education | Not developing country | |
| 25. | Harris, P., Snell, L., Talbot, M., Harden, R.M. and Int, C.C. | 2010 | Competency-based medical education: implications for | Not nursing education but medical | |

| | Author | Year | Title | Reason(s) for exclusion | Critical appraisal |
|-----|--|-------------|---|--------------------------------|---------------------------|
| | | | undergraduate programs | | |
| 26. | Hodges, L.A., Konicki, A.J., Talley, M.H., Bordelon, C.J., Holland, A.C. and Galin, F.S. | 2019 | Competency-based education in transitioning nurse practitioner students from education into practice | No usable data | |
| 27. | IRCT20180609040017N1 | 2018 | Investigating the Effect of Competency Based Education in Emergency Obstetric Care on the Learning, Behavior and Reaction | No nursing education | |
| 28 | Isaboke, H., Wambiri, G. and Mweru, M. | 2021 | Challenges facing implementation of the competency based curriculum in Kenya: an urban view | Not nursing education | |
| 29. | King, S.B. | 2015 | Competency-based education | Not developing country | |
| 30. | Koeijers, J.J., Busari, O. and Duits, A.J. | 2012 | A Case Study of the Implementation of a Competency-based Curriculum in a Caribbean Teaching Hospital | Full text not found | |

| | Author | Year | Title | Reason(s) for exclusion | Critical appraisal |
|-----|---|-------------|--|--------------------------------|---------------------------|
| 31. | Lurie, H. and Garrett, R. | 2017 | Deconstructing competency-based education: An assessment of institutional activity, goals, and challenges in higher education | Study design not qualitative | |
| 32. | Mukurunge, E., Shawa, M., Nyoni, T., Mutimbe, T., Mahomaile, R., Mokhele, K. and Masava, B. | 2020 | Tutorials to support learning: Experiences of nursing students in a competency-based nursing programme | Full text not found | |
| 33. | Nadery, A., Baghaei, R., Mohammad pour, Y., Aliramaei, N. and Ghorbanzadeh, K. | 2012 | Comparison of the Effect of Competency-Based Education Model and Traditional Teaching on Cognitive and Clinical Skills Learning among ICU Nursing Students | Not developing country | |
| 34. | Nodine, T. and Johnstone, S.M. | 2015 | Competency-based education: Leadership challenges | Not developing country | |
| 35. | Norman, G., Norcini, J. and G. Bordage | 2014 | Competency-based education: milestones or millstones? | Not nursing education | |

| | Author | Year | Title | Reason(s) for exclusion | Critical appraisal |
|-----|--|-------------|--|--|---------------------------|
| 36. | Nyoni, C.N. and Botma, Y. | 2019 | A framework for implementing and sustaining a curricular innovation in a higher education midwifery programme | Not qualitative only but mixed methods | CASP= 10/10 |
| 37. | Pijl-Zieber, E.M., Barton, S., Konkin, J., Awosoga, O. and Caine, V. | 2014 | Competence and competency-based nursing education: finding our way through the issues | Not developing country | |
| 38. | Pillay, P. | 2010 | Towards a competency-based framework for nursing management education | Not qualitative design | |
| 39. | Quiroga-Maraboli, P., Antunez-Riveros, M.A., Jerez, M.A., Saldana, A.B., Peralta-Camposano, J. and Bahillo, M. | 2019 | Perceptions of the educational environment among undergraduate physical therapy students in a competency-based curriculum at the University of Chile | Not developing country | CASP 6/10 |
| 40. | Schumacher, G. and Risco, R | 2017 | Competency-Based Nurse Practitioner Education: An | Not nursing education | CASP 5/10 |

| | Author | Year | Title | Reason(s) for exclusion | Critical appraisal |
|-----|--|-------------|---|--------------------------------|---------------------------|
| | | | Overview for the Preceptor | | |
| 41. | Serdenciuc, N.L. | 2013 | Competency-based education– Implications on teachers' training | Not developing country | CASP 7/10 |
| 42. | Sharma, R., Bakshi, H. and Kumar, P. | 2019 | Competency-Based Undergraduate Curriculum: A Critical View | Not nursing education | |
| 43. | Song, S., Kim, W. and Park, J. | 2021 | What Should Be Considered in the Evidence-Based Practice Competency-Based Curriculum for Undergraduate Nursing Students? From the Student's Point of View | Not developing country | CASP 5/10 |
| 44. | Sullivan, J., Hugill, K., Aelraoush, T.A., JMathias, J. and Al Hetmi, M.A. | 2021 | Piloting of a nursing and midwifery competence framework in the cultural context of a middle eastern country | Not developing country | |
| 45. | Tekian, A., Watling, C.J., Roberts, T.E., | 2017 | Qualitative and quantitative feedback | Study design not qualitative | |

| | Author | Year | Title | Reason(s) for exclusion | Critical appraisal |
|-----|---|-------------|---|--------------------------------|---------------------------|
| | Steinert, Y. and Norcini. J. | | in the context of competency-based education | | |
| 46. | Thompson, T.B., Fullerton, J.T., Carr, C., Elgueta, P., Hebert, E. and Luyben,A. | 2017 | Global Workshops in Midwifery Competency-Based Educational Methodologies: Lessons Learned | Not developing country | |
| 47. | Van der Vleuten, C.P. | 2015 | Competency-based education is beneficial for professional development | Full text not found | |
| 48. | Virgolesi, M., Marchetti, A., Pucciarelli, G., Biagioli, V., Pulimeno, A.M.L., Piredda, M. and De Marinis, G.M. | 2020 | Stakeholders' perspective about their engagement in developing a competency-based nursing baccalaureate curriculum: A qualitative study | Not developing country | CASP 7/10 |
| 49. | Woeber.K. | 2018 | Development and implementation of a competency-based clinical evaluation tool for midwifery education | Not developing country | |

| | Author | Year | Title | Reason(s) for exclusion | Critical appraisal |
|-----|---------------------------------|-------------|--|--------------------------------|---------------------------|
| 50. | Wongnaa, C.A. and Boachie, W.K. | 2018 | Perception and adoption of competency-based training by academics in Ghana | Study design not qualitative | |

3.6 DATA EXTRACTION

After critical appraisal, the studies identified for inclusion into the review were recorded and data contained in those studies was extracted. For all the 59 studies left, the full text was retrieved and the content of the studies was carefully read and examined to ensure that only studies that fit into the inclusion criteria were chosen. According to the various reasons as seen on PRISMA flow chart on Figure 3.1 and Table 3.3, 50 studies were excluded.

Therefore, the Rayyan software was used to sift the literature. These studies were chosen based on inclusion and exclusion criteria, to select evidence related to the review question, and elements related to the review question were gathered and classified, abstracts and citations were reviewed to identify studies that met the criteria for answering the review question (Higgins *et al.*, 2020:5). Nine studies were left out as shown in Table 3.4.

3.7 DATA SYNTHESIS

The results of individual studies were tabulated and then compared with those of other studies. With the definitive studies identified, a compare and contrast exercise was undertaken. The original author's phrases, ideas, concepts, and relations in each study were identified, tabulated and grouped under the refined themes. In each case, the rationale and consequences of the decision were explained along with the excluded studies. Only qualitative studies were picked out from individual studies to explore the different views of understanding competency-based education. The themes were studied carefully and put separately to illustrate their interaction in the flow chart. The selection was done based on the inclusion and exclusion criteria. Then the results were explained narratively.

Table 3.4: Summary of included studies

| Author and title | Context of study/document | Research methods | Critical appraisal | Findings | Conclusion of study | Themes identified | Relevance to this review |
|---|---------------------------|--|--------------------|--|--|--|---|
| Abouzaj, S. 2019. Competency-Based Approach in Training Nurses and Midwives in Morocco Demystify to Better Use. <i>Advances in Medical Education and Practice</i> . 10: 1069-1079 | Morocco | Literature review analysis. Analytical reflection to help facilitators implement CBE. | JHNEBP= 6/8 | Competency-based education concept was clarified in a way that encourages its implementation in the higher nursing institutions. | Adoption of CBC approach is encouraged as teaching according to CBC is not complicated but needs a facilitator who is able to apply effort, creativity, and innovations. | Needs: There is a need for preliminary definition of performance which is needed in teaching. Clinical case should be as close as possible to the reality. Facilitator who is creative, innovative, and able to apply effort. | Clinical setting should mimic the real life. |
| Brownie, S.M., Docherty, C., Al-Yateem, M. H. Gadallah, M.H., and Rossiter, R. 2018. Developing a national competency-based curriculum for technical nurses in Egypt. | Egypt | Developing innovative educational models at school and technical education levels. Report on CBC development | CASP= 10/10 | There are effective ways of implementing CBE as presented in this paper. | As Egypt was developing the national CBC for the technical nurses, it was realised that adequate time and resources were necessary in the development of | Challenges: administrative problems, inability to understand the difference between traditional curriculum and CBC. | There are different effective ways for implementing CBC as described, as well as the challenges inherent in CBE and benefits which go |

| Author and title | Context of study/document | Research methods | Critical appraisal | Findings | Conclusion of study | Themes identified | Relevance to this review |
|--|---------------------------|--|--------------------|---|--|---|---|
| <i>Eastern Mediterranean Health Journal</i> . 24: 922-932 | | project which will be implemented in three technical institutions. | | | the curriculum, and staff with the reform of the educational model. | Needs: Faculty development, a move from teaching dominated by lectures. Benefits: Students' engagement to critical thinking and problem solving. | together with CBE. |
| Fullerton, J.T., Thompson and Johnson, J. 2013. Competency-based education: the essential basis of pre-service education for the professional midwifery workforce. <i>Midwifery</i> .29(10): 1129-36 | United nations | A case report | JHNEBP= 8/8 | The concept of CBE was explored and described based on the approaches to curriculum design, teacher preparation, teacher support and assessment of student learning. Strengthening of midwifery competency-based curricula. | Midwifery and clinical teachers should engage in continuous development to allow them to deliver according to the CBC way. They should also be able to procure and maintain access to essential resources such as ample work and teaching space, libraries, computers, simple anatomic | Benefits: Allows flexibility in terms of time; Promotes students' accountability for learning; Provides problem solving skills, fast students create clinical opportunity; Creates linkage between theoretical and clinical component. | Physical resources are important for CBE implementation for better facilitation and for students to sharpen their skills. |

| Author and title | Context of study/document | Research methods | Critical appraisal | Findings | Conclusion of study | Themes identified | Relevance to this review |
|------------------|---------------------------|------------------|--------------------|----------|--|---|--------------------------|
| | | | | | models/simulators and clinical equipment and supplies. | <p>Challenges: Use of technology occurs when the majority of teaching and learning occurs primarily via use of computer-mediated technology, there is a shortage of resources like computers. Lack of skills-educators do not possess skills to facilitate according to the CBC. Educational programs need to rely on the service of clinical teachers or preceptors to supervise</p> | |

| Author and title | Context of study/document | Research methods | Critical appraisal | Findings | Conclusion of study | Themes identified | Relevance to this review |
|--|---------------------------|--|--------------------|--|---|--|---|
| | | | | | | students in community based setting to perform observation on behalf of the students. | |
| Jan, R. Lakhani, A., Kaufman, K. and Karimi, S. 2016. The first competency-based higher education programme for midwives in the South Asian region - Pakistan. <i>Midwifery</i> . 33:37-39 | Pakistan | Case report on the two-year bachelors program which is currently in progress. The first cohort of 21 midwives graduated in 2014 and the second cohort was enrolled in 2015 | HNEBP=6/8 | | The benefits of developing competence-based higher education in Aga Khan University include employability within as well as outside the region. The challenges include expanding the pathway of entry to the program and securing adequate placements for students. | Benefits: Employability, CBC produces better prepared midwives, provides balance of theory into practice. Challenges: securing adequate student placement places. | Importance for adequate clinical sites for students' placement is necessary in CBE. |
| Muraraneza, C., Mtshali, N.G. and D. Mukamana. 2017. Issues and | Africa | Grounded theory was used as a method of | JHNEBP=8/8 | The issues and challenges associated with CBC in | Some of the African countries have begun designing and | Challenges: Stakeholder involvement is lacking, | Lack of Primary Health care philosophy where the focus |

| Author and title | Context of study/document | Research methods | Critical appraisal | Findings | Conclusion of study | Themes identified | Relevance to this review |
|---|---------------------------|--|--------------------|---|--|---|---|
| challenges of curriculum reform to competency-based curricula in Africa: A meta-synthesis. <i>Nursing & Health Sciences</i> (19). | | literature review. Meta-synthesis through data extraction on 13 full articles. | | undergraduate nursing and midwifery education were explored. The theoretical implications for nurse/midwifery educators and decision-makers to enhance the quality of education were explained. | implementing CBC but there are hindering factors such as lack of training for both classroom and clinical facilitators, lack of and use of wrong resource and teaching techniques, focus which is hospital rather than primary health care-centred low level of education for the nurses and midwives. | Demotivated educators, focus being curative than promotive, Lecturing dominates in classrooms instead of self-directedness, resistance to change, Lack of socialisation in CBC training, Shortage of teaching staff, Inadequate training of staff, Use of inappropriate teaching methods and resources, Too rigid health professional bodies. | is curative than preventive diverts from CBC approach. Lack of self-directedness, teaching staff, adequate training of available staff and use of appropriate teaching methods are all part of deviation from CBC adoption. |
| Muraraneza, C and Mtshali, G.N. 2018. Conceptualization of competency- | Rwanda | Individual interviews with the staff. Focus group interviews | CASP= 10/10 | Meaning of competency-based curriculum in pre-service | CBC promotes the philosophy of primary health care and makes students to | Benefits: Students' ability to make their own decisions. Decentralisation | Amongst the benefits of CBC, independence of the educators, students' ability |

| Author and title | Context of study/document | Research methods | Critical appraisal | Findings | Conclusion of study | Themes identified | Relevance to this review |
|---|---------------------------|--|--------------------|---|---|---|---|
| based curricula in pre-service nursing and midwifery education: A grounded theory approach. <i>Nurse Educ Pract.</i> 28: 175-181 | | with the students and in-depth individual interviews with staff. Microanalysis was used whereby concepts were ranged from lower level to higher level. | | nursing and midwifery education in Rwanda was explored. | become graduates who are critical thinkers. | n in which educators have independence in coordinating and facilitating deep learning. Exploration of electronic technology, collateral learning and ability to focus on Primary Health care. | to make their own decisions and chances for deep learning are depicted. In this approach the philosophy of primary health care is ensured rather than hospital centered care, students are also able to explore more on technological advances. |
| Nyoni, C.N. and Botma, Y. 2018b. Implementing a competency-based programme in Lesotho: A gap analysis. <i>Nurse Education in Practice.</i> 34:72-78 | Lesotho | Gap analysis following qualitative description research. All the NEIs (N=5) that implemented the CBM programme in Lesotho since 2014 were included in | CASP= 9/10 | The experiences of administrators, educators, and students in all the nursing education institutions in Lesotho in relation to the implementation of a competency-based midwifery | Low- and Middle-income countries should be aware of essential structural and operational requirements needed for a nationwide curriculum change processes, as failure to incorporate these may negatively | Challenges: No clear tailor-made faculty development approaches were in place in the NEIs and faculties were not engaged in their own learning. Students were not oriented to self-directed learning | When students are not capacitated in terms of self-directed learning and educators are not trained on the use of available resources necessary for CBC approach such as simulation facilities, this |

| Author and title | Context of study/document | Research methods | Critical appraisal | Findings | Conclusion of study | Themes identified | Relevance to this review |
|------------------|---------------------------|--|--------------------|--|--|--|------------------------------------|
| | | <p>this study. Data was collected through semi-structured interviews with administrators (n=11), facilitators (n=12) and through five focus groups with students (n=48). Data was analysed through deductive reasoning and critical realism.</p> | | <p>programme after three years of continuous implementation were explored and discussed.</p> | <p>affect curriculum development and implementation.</p> | <p>approaches and claimed to be unsupported by their NEI's. Only one institution had managed to develop, print and continuously update their workbooks for their students throughout the entire time of implementation as stipulated in the curriculum document. Students were placed in environments not aligned with their clinical objectives. Limited utilisation of available simulation facilities. The NEIs in this study did not</p> | <p>hinders its implementation.</p> |

| Author and title | Context of study/document | Research methods | Critical appraisal | Findings | Conclusion of study | Themes identified | Relevance to this review |
|--|---------------------------|--|--------------------|---|---|---|---|
| | | | | | | meet the majority of the learning needs and curricular expectations of their students. The promise of simulation-based education was not being realised in the other NEIs. | |
| Nyoni, C.N. and Goddard, V.C.T. 2021. Needs of early adopters in supporting a nursing curriculum innovation in a low resource setting: An exploratory case study. <i>Nurse Education Today</i> (104) | Lesotho | An exploratory qualitative case study design where semi-structured interviews were used. Data was collected from early adopters of CBC and analysed through thematic analysis. | CASP= 10/10 | A critical look at the introduction of one curriculum innovation was done and described, driven by a case study example of the implementation of a competency-based curriculum for an undergraduate nursing | There is a need for professional competency in terms of curriculum development and implementation. Training is needed for adopters, and those trained should be able to train others. Sustainability of CBC in the low resource setting was questioned, and it seems like | Challenges: Lack of resources, human resource development, Information Technology, financial resources, lack of educator support, early adopters trained but forgotten. Limited time, lack of support from | Lack of resources such as physical resources, funds, information technology, support of educators and of NEIs from professional bodies hinder the implementation. |

| Author and title | Context of study/document | Research methods | Critical appraisal | Findings | Conclusion of study | Themes identified | Relevance to this review |
|--|---------------------------|--|--------------------|---|--|---|---|
| | | | | programme in a low-resource context, and the subsequent impact on the educators expected to implement it. | the issue of funds for implementation will be the hindering factor. | professional bodies and limited accountability. Needs: training for adopters, funds for implementation, professional competency in terms of curriculum development and implementation. | |
| Tonhom, S.F.D., da Costa, M.G.C, Hamamoto, C.G. M. Francisco, M., Moreira, H.M and Gomes, R. 2014. Competency-based training in nursing: Limits and possibilities. <i>Revista Da Escola De Enfermagem Da Us.</i> 48: 213-220 | Brazil | Integrative review of the literature which involved qualitative and exploratory research. A total of 41 articles were selected. Analysis of the articles as well as of the survey. | CASP = 10/10 | Analysis of the possibilities and limits of competency-based training in nursing, based on the dialogue between what is being indicated in the literature, and the results of an experiment was carried out | In developing of a CBC curriculum approach, one seeks to articulate: the relationship between the school and the world of work – in the sense of creating a reflexive practice (action-reflection-action), with a view to transforming | Challenges: inability to integrate theory into practice, absence of communication between academic institutions and those formulating and those carrying out education policies, people being unprepared for | Lack of training for educators regarding CBC approach results in inability to integrate theory into practice, while lack of communication between the academic institutions and relevant authority has a negative impact in CBC implementation. |

| Author and title | Context of study/document | Research methods | Critical appraisal | Findings | Conclusion of study | Themes identified | Relevance to this review |
|------------------|---------------------------|------------------|--------------------|----------------------|---|---|--------------------------|
| | | | | and described fully. | reality; integration of practice and theory; and a productive interaction of the various domains (cognitive, affective and psychomotor) that are mobilised in the action. | the various emotional reactions presented by students, the absence of scope for carrying out internships. | |

3.8 SYNTHESIS OF FINDINGS

Data was synthesised using thematic analysis. The themes described below were identified during data extraction; they were grouped and described according to their different authors. The identified themes were those that support the study objectives and were therefore divided according to those objectives. The three objectives were:

- to explore and summarise the best available qualitative evidence regarding impeding factors of CBE;
- exploring the facilitating factors of CBE; and
- effective ways of implementing CBE in developing countries.

The data synthesis summary is shown in Table 3.5 below.

Table 3.5: Data synthesis summary table

| OBJECTIVES | THEMES | SUB-THEMES |
|--|------------------------------------|---|
| 1. To explore and summarise the best available qualitative evidence regarding impeding factors of CBE in developing countries | Impeding factors | <ul style="list-style-type: none"> • Lack of technology • Lack of human resource development • Absence of integration of theory into practice • Resistance to change • Lack of support from the professional bodies and higher authority (policy makers) • Lack of motivation |
| 2. To explore and summarise the best available qualitative evidence regarding facilitating factors of CBE in developing countries | Facilitating factors | <ul style="list-style-type: none"> • Skills • Decentralisation • Use of technology |
| 3. To explore and summarise the best available qualitative evidence regarding effective ways of implementing CBE in developing countries | Needs | <ul style="list-style-type: none"> • Ability to transit from teacher-centeredness to learner-centeredness. • Training of adopters • Funding • Experiential learning |
| | Effective ways of implementing CBE | <ul style="list-style-type: none"> • Theory-to-practice integration • Use of appropriate teaching strategies • Involvement of stakeholders • Use of learner-centered approach • Motivation |

3.8.1 Impeding factors

Lack of technology

According to Fullerton *et al.* (2013:1133), the use of CBC imposes challenges when there is need to deploy technology, and this occurs more in low resource countries. There are other requirements that necessitate the use of phones and SMS technology to make communication easier between facilitators, students and preceptors (Nyoni & Goddard, 2021:75). Muraraneza *et al.* (2017:12) point out that in the absence of resources, such as teaching aids, internet connectivity, computers and constant electricity supply, CBC may not be fully and easily implemented. Technology would facilitate the students' access to information through the internet and electronic libraries. Assessment may also be done easily through video streaming in CBC which is not available in low resource countries (Fullerton *et al.*, 2013:1133).

Lack of human resource development

Human resource development has been seen to be the greatest challenges in the NEIs in terms of CBC facilitation. Facilitators are not capacitated on the implementation of CBC hence they are not able to adopt and utilise a variety of teaching strategies recommended for CBC (Muraraneza *et al.*, 2017:12). Facilitators, therefore, tend to use inappropriate teaching methods (Muraraneza *et al.*, 2017:12) such as lecturing which seems to be like spoon-feeding and does not encourage independence for the students. Brownie *et al.* (2018:927) also add that changing to CBC poses many challenges which are mostly administrative and include supporting faculty development amongst others. Fullerton *et al.* (2013:1133) maintain that reliability and validity of the assessment tools used in CBC need to be ensured which means the facilitators in CBC must be knowledgeable regarding assessment methods and tools, and the authors also state that training is not only needed for facilitators but for clinical supervisors as well. This was also emphasised by Nyoni and Botma (2018b:116) and Nyoni and Goddard (2021:75) who state that in cases where there are tailor-made developmental approaches, both students and facilitators may have a hard time putting approach into practice, as some facilitators claimed to have been trained but forgot. This could also be regarded as lack of active engagement in their own learning.

Absence of integration of theory into practice

Since CBC is based on constructivism (Nyoni & Botma, 2018b:116), integration of theory into practice should be done by ensuring that theory is immediately followed by practice (Tonhom *et*

al., 2014:215). This is not possible in a low resourced setting as stated by Jan *et al.* (2016:34) that there is a challenge when it comes to securing adequate placements for students to sharpen the skills they would have acquired and improve their independence in decision making. Clinical placements for students, which do not meet the demands of the CBC model due to the shortage of resources such as medical equipment, hinder integration of theory into practice. In other cases, however, student objectives during placement were not aligned with their clinical objectives whereas students' learning resources must be aligned with competencies and be the same for all students (Nyoni & Botma, 2018b:116). The learning resources must be appropriate to the level of complexity, be of high quality, accurate, engaging, and be well matched to the learning objectives defined for the course (Tonhom *et al.*, 2014:215). One example would be students learning in class how to master wound dressing using forceps but when other students reach a certain clinical setting, they find that there are no forceps to use, and they have to use gloves, but their counterparts in a different clinical area manage to use forceps as taught in class. According to CBE, assessment of these two groups of students will be difficult as there will be lack of consistency. According to Nyoni and Botma (2018b:116), simulation-based education seems not to be realised hence inadequate exposure in practising what was taught in class.

Resistance to change

In their integrative review, Muraraneza *et al.* (2017:12) identified resistance to change as one of the factors which hinders CBC implementation in the NEIs. This is also supported by Nyoni and Botma (2018b:116) who reported lack of realisation for CBE promise by the NEIs and lack of interest in their training on CBC. Demotivated facilitators (Muraraneza *et al.*, 2017:12), facilitators' unpreparedness for the emotional response of the students as stated by Tonhom *et al.* (2014:216), clearly indicate resistance to change. Tonhom *et al.* (2014:216), further state that resistance is not only among facilitators but among the students as well. According to Brownie *et al.* (2018:229), CBC implementation requires people to transit from lecture-dominated approach to learner-centred approach, but some facilitators still want to teach the way they were taught (Muraraneza *et al.*, 2017:12).

Lack of support from professional bodies and higher authority (policy makers)

Implementation of CBC is made difficult when there is no clear communication and understanding between the NEIs and the stakeholders such as the health system, workplace and policy makers (Tonhom *et al.*, 2014:216). Collaboration with stakeholders such as the health system, from the planning to the implementation phase of CBC development, would enable proper identification of public needs and thus help in the formation of competencies needed to be mastered by students (Muraraneza *et al.*, 2017:12). Lack of involvement of professional bodies such as the Nursing

Council, or their unwillingness or rigidity even if involved, is a barrier to the curriculum implementation (Muraraneza *et al.*, 2017:12). Nyoni and Goddard (2021:4) report one of the barriers as lack of monitoring of implementation of CBC by professional bodies.

Lack of motivation

According to Abouzaj (2019:1073), for the facilitators to effectively implement CBC, they need to have innovation, creativity and ability to apply effort into their work. This is supported by Muraraneza *et al.* (2017:12) who state that demotivated facilitators are also a challenge when it comes to CBC implementation. Lack of motivation is not only seen on the side of the facilitators but also among the students who show huge resistance to self-directedness.

3.8.2 Facilitating factors

Skills

When the facilitators have relevant skills, such as employing different teaching strategies necessary to facilitate the classroom, it would be easy to implement CBE in the NEIs (Abouzaj, 2019:1073). According to Nyoni and Botma (2018b:116), capacitation of nurse educators on the issues of CBC such as ability to instill the self-directed learning concept to the students is necessary. This will motivate the nurse educators to easily refrain from traditional method of teaching.

Decentralisation

When students are given a chance to make their own decisions, CBE is easily implemented as it allows flexibility where students learn at their own pace and in their own space. Decentralisation in which educators have independence in coordinating and facilitating makes it easy to facilitate according to CBE (Muraraneza & Mtshali, 2018:176).

Use of technology

Technology makes CBE easy as the students can find information online and are able to learn wherever they are (Muraraneza *et al.*, 2017:12). Fullerton *et al.*, 2013:1133 and Nyoni and Goddard (2021:75), stress on the need for technology to support CBE implementation. Teaching and learning is enhanced through information searching which is easily done on computers through the internet.

3.8.3 The needs for CBE implementation

Ability to transit from teacher-centeredness to student-centered nursing education

Facilitators should be able to move from the traditional method to CBC as they must change the teaching strategy where lecturing in the classrooms dominates self-directed learning (Brownie *et al.*, 2018:229). This is well supported by Muraraneza *et al.* (2017:12) who emphasise the need for training of staff on CBC issues. This would enable the facilitators and adaptors to understand the difference between traditional curriculum and CBC (Brownie *et al.*, 2018:229). Competency-based curriculum is based more on constructivism philosophy where it is believed that students have their own pre-existing knowledge; they construct new knowledge over what they already know through social interaction. Therefore, in CBC the facilitator should support and allow the students to compare their sets of knowledge and create their own understanding (Nyoni & Botma, 2018b:116).

Training of adopters

Training of adopters would also help the facilitators to engage teaching strategies which are inherent in CBC (Nyoni & Goddard, 2021:75). Students should as well be trained on self-directedness to enhance easy transition from traditional curriculum to CBC. This would equip both facilitators and students with skills to appropriately adopt CBC, as it was stated by Fullerton *et al.* (2013:1133) that failure in CBC implementation is caused by factors which include facilitators' lack of skills (Muraraneza *et al.*, 2017:12).

Funding

For successful implementation of CBC especially in the low resourced countries, funding is necessary. Resources, which include availability of multiple sources of income, are essential as stated by Nyoni and Botma (2018b:116), and Fullerton *et al.* (2013:1133) who further state that NEIs should also be able to procure and maintain access to essential resources such as ample work and teaching space, libraries, computers, simple anatomical models/simulators and clinical equipment and supplies.

Experiential learning

Appropriate CBC occurs when learning is more focused on prevention rather than curative, which means the focus of CBE is on the primary prevention rather than secondary prevention of care (Muraraneza *et al.*, 2017:12). Teaching and learning should start from the community to the hospital not vice versa, and there should be a constructivist approach in learning, that is, students should build new ideas on the connections they already have about the patient as a member of

the community and all health issues surrounding him/her. What they learn in the classroom will add on what they already know, or take out what is wrong (Nyoni & Botma, 2018b:116).

3.8.4 Effective ways of implementing CBC

Theory-practice integration

According to Abouzaj (2017:1073), there should be a preliminary definition of performance regarding the expected ways in which the students have to act in order to acquire the knowledge they are supposed to acquire. He also adds that the performance must be defined in terms of desired outcomes and ability to mobilise resources and use appropriate skills to articulate the tasks done. This emphasises the need to integrate theory into practice. What is done in the theoretical setting should be done in the clinical setting, and the clinical case should mimic the real-life situation (Abouzaj, 2017:1073). Fullerton *et al.* (2013:1133) also add that an appropriately designed CBC results in the desired theory being integrated into practice.

Use of appropriate teaching strategies

Appropriate teaching strategies are necessary in CBC to support learner-centred approach. This emphasises the need to move from traditional methods where students were given lectures to competency-based approach where students take the lead by finding information for themselves and the facilitator only provides support to the process of learning (Muraraneza *et al.*, 2017:12). This is where the facilitator's creativity and innovation are called into play according to Abouzaj, (2017:1073). The facilitator must be creative and innovative enough to create interesting teaching and learning strategies, especially with the use of technology which is one of the resources needed for CBC implementation.

Involvement of stakeholders

From the beginning, all the stakeholders involved should be engaged in the planning and implementation of CBC (Muraraneza *et al.*, 2017:12). This would reduce the rigidity from other stakeholders as stated by Muraraneza *et al.* (2017:12) that professional bodies were hesitant to support the NEIs in the implementation of CBC. Faculty and administration support also plays an important part in CBC implementation as students feel unsupported in the absence of relevant study material such as printed workbooks (Nyoni & Botma, 2018b:117).

Use of learner-centered approach

This has been highlighted in the use of appropriate teaching strategies where facilitators should create a learning environment that allows students to have full control and assume responsibility for their own learning (Abouzaj, 2017:1073; and Muraraneza *et al.*, 2017:12). The philosophy of

constructivism, as stated by Nyoni & Botma, (2018b:116) and Abouzaj, (2017:1073), indicate that learning is diverse as students derive knowledge through interaction with their classmates, or other structures in the world. When they encounter problems, they solve them using any tools at their disposal, and at the end it is their responsibility to get what is correct, and in this matter, the facilitator who used to be a teacher in the traditional curriculum guides the student in acquiring the correct knowledge.

Motivation

Motivation on the side of the facilitators would make it easy for them to easily change from the traditional to the competency-based curriculum (Abouzaj, 2019:1073). In other words when one is motivated, they have extra impetus to achieve and would be driven to explore ways of teaching they may have been reluctant to use previously.

3.9 SUMMARY

The concept of CBC has not yet been fully understood by all stakeholders as the challenges facing its implementation are mainly dependent on these stakeholders who include: NEIs administration, professional bodies, policy makers and adopters being facilitators and students. It is the responsibility of each of the mentioned stakeholders to ensure that CBC is successfully implemented through consideration of all the facilitating factors and measures confirmed to be effective in CBC implementation. This will enable the facilitators and students to gain the benefits of CBE which are embedded in constructivism approach.

CHAPTER 4 FINAL CONCLUSION, LIMITATIONS, RECOMMENDATIONS AND DISSEMINATION

4.1 INTRODUCTION

In this chapter, the limitations which were met in the process of conducting the study and the circumstances which hindered the researcher to satisfactorily reach the goal of getting the best available qualitative evidence regarding implementation of competency-based education at nursing education institutions in developing countries will be stated and conclusions will be drawn. The recommendations will also be suggested for the following groups: future researchers who may want to investigate different angles of the area, the NEIs and other relevant stakeholders who contribute significantly to CBE implementation and nursing practice.

4.2 FINAL CONCLUSION

This study was aimed at answering the question about best available qualitative evidence regarding implementation of competency-based education at nursing education institutions in developing countries. The study concludes that implementation of competency-based education has never been fully accepted in many developing countries, especially in Africa owing to limitations caused by lack of understanding of what CBE is all about. This is compounded by failure to distinguish between traditional curriculum and CBC.

Administrative problems also pose a challenge in terms of facilitating CBE implementation which leads to hesitancy in the supply of necessary resources. Where resources and facilities are available, they are not used. Other challenges include lack of motivation and skills among the facilitators to teach the way CBE proposes, failure to comprehend the concept of CBE and use of inappropriate teaching methods and resources. This is seen where facilitators focus on nursing care that is more promotive than preventive, meaning that care starts in the clinic or hospital while it has to start in the community to prevent occurrence of illnesses. It is also seen where lectures dominate in classrooms suppressing learner-centeredness. This is worsened by lack of training for the staff and the already understaffed NEIs. Stakeholders' rigidity and unwillingness to get involved in CBC matters was another factor. This includes policy makers and professional bodies who seem to have no support for the implementation of CBC by failing to make regulations supporting its use.

For CBE to be efficiently implemented, those involved should have a clear understanding of what it entails. CBE requires facilitators who are creative, innovative, and able to apply effort; and this needs motivation. Equally significant would-be faculty/institutional development and readiness to

move from lecture-dominated classrooms to student-centeredness, and from secondary to primary health care focus. Training for adopters, funds for implementation, professional competency in terms of curriculum development and implementation are also needed.

4.3 EVALUATION OF RIGOUR

The rigour for this study was evaluated throughout the whole process of the systematic review in the following manner:

- Formulation of research question: Extensive literature review was done to find out the problem and all matters surrounding the problem.
- Literature search: Literature was searched comprehensively from various databases using pre stated search words. The duration of published studies was longer as those included were from 10 years ago to date around which this study was conducted. This enabled data search from plenty of studies in order to get accurate results. Different types of studies were considered including: government publications, grey literature and the latest guidelines. The University Librarian was consulted during the search period to ensure that the search was done correctly, and that all key words were used to get all the relevant studies.
- Data appraisal: After data collection, critical appraisal of all the studies where data was obtained was done in order to ensure that data was of high quality.
- Data extraction: The studies with relevant data were downloaded and data extracted, and the studies were kept for future reference.
- Data synthesis: The results of individual studies were tabulated, and then compared with those of other studies. With the definitive studies identified, a compare and contrast exercise was undertaken. The original author's phrases, ideas, concepts, and relations in each study were identified, tabulated and grouped under the refined themes. This was to ensure that the information from each author was shown independently for easy synthesis.

4.4 LIMITATIONS

The following limitations were encountered during the research:

- Failure to obtain some of the studies which were not available on the North-West University-supported databases.
- Some of the studies were available only with the abstract not the full body text.

- Most of the studies which could answer the research question were for medicine and not specific to nursing education.
- The COVID-19 outbreak delayed the whole process of the study as there was instability in the health of the researcher and the overall state of living which hindered the daily normal activities of people's lives.

4.5 RECOMMENDATIONS

The following recommendations are for research, education and nursing practice:

Research

- The nursing education institutions (NEIs) in the developing countries, which have already implemented CBE, are encouraged to do surveys as further investigation on the outcomes of CBE and publish them in scientific journals for wider dissemination.
- More studies should be conducted on how best the challenges of CBE implementation may be defeated.

Nursing education

- Higher Nursing Institutions should strategically plan for CBE implementation. This should be in terms of resources, and training of staff and students.
- NEIs should collaborate with policy makers to incorporate the use of CBC so that the governments can support such implementation.
- NEIs in developing countries should benchmark from the NEIs in the developed world on the use of CBE so that they get a better understanding of how CBE is implemented.
- Funds should be made available to support CBC implementation.

Nursing practice

- Health facility managers should train their staff on what is entailed in CBE so that they would appreciate how students work in the clinical setting.
- Health facilities which are no longer engaged in primary health care should seek clarification from the NEIs engaged in CBC so that they are flexible enough to arrange clinical placement for students for primary health care activities.

- Health facility managers should be fully engaged in curriculum development and understand that they are part of the implementers, and be informed what is required of them to support students in their learning.

4.6 DISSEMINATION

As part of the preliminary process of disseminating the results of this study, copies of the dissertation will be sent to the North-West University's Library, the Ministry of Health Lesotho National Library, Lesotho Council on Higher Education and to a scientific journal for publication.

4.7 SUMMARY

In NEIs in developing countries, nursing schools are still unable to implement competency-based education due to various reasons as stated in this study. It is in their power to ensure that the challenges are addressed and dealt with timely, and they can only do so if they understand the benefits of CBE as stated in this study, as well as understanding what is needed to implement CBE the right way. This study also outlined the effective ways for CBE implementation which would be valuable to those who still need to implement this approach.

BIBLIOGRAPHY

- Abouzaj, S. 2019. Competency-Based Approach in Training Nurses and Midwives in Morocco Demystify to Better Use. *Advances in Medical Education and Practice*. 10: 1069-1079.
- Akpan, V.I., Iqwe, U.A., Mpamah, I.B.I. & Okoro, C.O. 2020. Social constructivism: Implications on teaching and learning. *British Journal of education*. 8(8):49-56.
- Agea, J.L.D., Nicolás, A.M., Méndez, J.A.G., Martínez, M.G.A. & Costa, C.L., 2019. Improving simulation performance through self-learning methodology in simulated environments (MAES©). *Nurse Education Today*, 76(2019):62-67.
- American Dental Association (ADA). 2013. How to conduct and Publish Systematic Reviews and Meta-analysis. <https://ebd.ada.org> Accessed: 22 March 2020.
- American Medical Association (AMA). 2016. *The Implications of Competency-based Medical Education for Undergraduate Medical Education*. Report 7 of the Council on Medical Education (a-16) <https://www.ama-assn.org/system/files/2021-05/a16-cme-07.pdf> Accessed: 19 October 2021.
- Bergsmann, E., Schultes, M.T., Winter, P., Schober, B. & Spiel, C. 2015. Evaluation of competence-based teaching in higher education: From theory to practice. *Evaluation and Program Planning*. 52:1-19.
- Boahin, P., & Hofman, W. H. A. 2012. Implementation of innovations in higher education: the case of competency-based training in Ghana. *Innovations in Education and Teaching International*. 49(3): 283-293.
- Bok, H. G. J., de Jong, L. H., O'Neill, T., Maxey, C. & Hecker, K. G. 2018. Validity evidence for programmatic assessment in competency-based education. *Perspect Med Educ*. 7(6): 362-372.
- Bokonjic, D., Racic, M., Masic, S., Oruc, M., Rybarova, L., Vidovic, K.,... Seiti, L. 2019. Competence-Based Curriculum Development in Nursing Education: A Story From the Western Balkans. *Nursing Education Perspectives*. 40(6): E28-E30.
- Booth, A. 2016. Searching for qualitative research for inclusion in systematic reviews: a structured methodological review. *Systematic reviews*. *Open Access*. (74)5. DOI 10.1186/s13643-016-0249-x

- Brightwell, A. & Grant, J. 2013. Competency-based training: who benefits? *Postgraduate Medical Journal*. 89(1048): 107-110.
- Brink, H., Van der Walt, C., & Van Rensburg, H. 2018. Fundamentals of Research Methodology for Health Professional. 4th Edition. Cape Town. South Africa. Juta and Company (Pty) Ltd.
- Bristow, S.F. & Patrick, S. 2014. An international study in competency education: *Postcards from abroad*. *International association for k-12 Online learning*.
<https://files.eric.ed.gov/fulltext/ED56128> Accessed: 17 May 2020.
- Brownie, S. M., Docherty, C., Al-Yateem, N., Gadallah, M. H. & Rossiter, R. 2018. Developing a national competency-based curriculum for technical nurses in Egypt. *Eastern Mediterranean Health Journal*. 24: 922-932. <https://doi.org/10.26719/2018.24.9.922> Accessed 22 July 2022.
- Buchter, R.B., Weise, A. & Pieper, D. 2020. Development, testing and use of data extraction forms in systematic reviews: a review of methodological guidance. *BMC Medical Research Methodology* (2020) 20:259. <https://doi.org/10.1186/s12874-020-01143-3> Accessed: 21 November 2022.
- Burls, A. 2015. Evidence based practice skills. What is critical appraisal?
https://ebh.quintessenz.de/ebh_2015_02_s0080 Accessed: 20 March 2019.
- Burnette, D. M. 2016. The Renewal of Competency-Based Education: A Review of the Literature. *Journal of Continuing Higher Education*. 64(2): 84-93.
- Cant, R., McKenna, L. & Cooper, S. 2013. Assessing preregistration nursing students' clinical competency: A systemic review of objective measures. *International Journal of Nursing Practice*. 19: 163-176.
- Chan, T. E., Lockhart, J. S., Thomas, A., Kronk, R. & Schreiber, J. B. 2020. An integrative review of nurse practitioner practice and its relationship to the core competencies. *Journal of Professional Nursing*. 36(4): 189-199.
- Chimea, T., Kanji, Z. & Schmitz, S. 2020. Assessment of clinical competence in competency-based education. 54(2): 83-91.
- Critical Appraisal Skills Programme, 2018. CASP Qualitative research checklist. www.casp-uk.net Accessed: 20 February 2020.

Curtin University library. 2020. Systematic reviews in health sciences.

<https://libguides.library.curtin.edu.au/systematic-reviews> Accessed: 20 February 2020

Dragoo, A. & Barrows, R. 2016a. Implementing competency-based business curricula in higher education. *Journal of Education for Business*. 21(7): 374-379.

Dragoo, A. & Barrows, R. 2016b. Implementing Competency-Based Education: Challenges, Strategies, and a Decision-Making Framework. *Journal of Continuing Higher Education*. 64(2): 73-83.

Eaton, P. W. 2016. The competency-based movement in student affairs: Implications for curriculum and professional development. *Journal of College Student Development*. 57(5): 573-589.

Edwards, G., Hellen, K. & Brownie, S. 2018. Developing a work/study programme for midwifery education in East Africa. *Midwifery*. 59: 74-77.

Fan, J. Y., Wang, Y. H., Chao, L. F., Jane, S. W. & Hsu, L. L. 2015. Performance evaluation of nursing students following competency-based education. *Nurse Educ Today*. 35(1): 97-103.

Fastré, G. M. J., van der Klink, M. R., Amsing-Smit, P. & van Merriënboer, J. J. G. 2014. Assessment criteria for competency-based education: a study in nursing education. *Instructional Science*. 42(6): 971-994.

Fitzgerald, J. T., Burkhardt, J. C., Kasten, S. J., Mullan, P. B., Santen, S. A., Sheets, K. J. & Gruppen, L. D. 2016. Assessment challenges in competency-based education: A case study in health professions education. *Med Teach*. 38(5): 482-90.

Foth, T. & Holmes, D. 2017. Neoliberalism and the government of nursing through competency-based education. 24(2)

Frank, J.R., Snell, L.S., Cate, O.T., Holmboe, E.S., Carraccio, C., Swing, S.R., & Harris, P. 2010. Competency-based medical education: *theory to practice*. *Med. Teach*. 32, 638-645. <https://www.ncbi.nlm.nih.gov/pubmed> Accessed: 8 February 2020.

Franklin, N. & Melville, P. 2013. Competency assessment tools: An exploration of the pedagogical issues facing competency assessment for nurses in the clinical environment: ScienceDirect. Elsevier. 22, 25-31. <https://daneshyari.com/article/preview/2646549.pdf> Accessed: 5 March 2023.

- Fullerton, J.T., Thompson J.B. & Johnson. P. 2013. Competency-based education: The essential basis of pre-service education for the professional midwifery workforce. *Midwifery*.29(10): 1129-36. <https://www.ncbi.nlm.nih.gov/pubmed/23906879> Accessed: 22 July 2022.
- Garside, J.R. & Nhemachena, J.Z.Z. 2012. A concept analysis of competence and its transition in nursing: *Nurse education today*. Elsevier. 33(5), DOI:10.1016/j.nedt.2011.12.007
- Goudreau, J.,Pepin, J., Larue, C., Dubois, S., Descoteaux, R.,Lavoie, P. & Dumont, K. A. 2015. Competency-based approach to nurses' continuing education for clinical reasoning and leadership through reflective practice in a care situation. *Nurse Educ Pract*. 15(6): 572-8.
- Gravina, E. W. 2017. Teaching and learning in nursing. *Competency Based Education and its effect in nursing education: A literature review*. Rowan College at Burlington County, Pemberton, NJ. <https://www.educationdive.com> Accessed: 20 March 2019.
- Grove, S. K., Burns, N. & Gray, J. R. 2013. *The Practice of Nursing Research: Appraisal, Synthesis, and Generation of Evidence*. 7th Edition. St. Louis. MO. Elsevier.
- Grove, S.K., Burns, N. & Gray, J.R. 2017. *The practice of nursing research: Appraisal, synthesis, and generation of evidence*. 8th Edition. Elsevier. Saunders.
- Gruppen, L. D. 2015. Competency-based education, feedback, and humility. *Gastroenterology*. 148(1): 4-7.
- Gruppen, L. D., Burkhardt, J. C., Fitzgerald, J. T., Funnell, M., Haftel, H. M., Lypson, M. L.,... Vasquez, J. A. 2016. Competency-based education: programme design and challenges to implementation. *Med Educ*. 50(5): 532-9.
- Gurukkal, R. 2018. Towards outcome – based education. Centre for Contemporary Studies, Indian Institute of Science, Bengaluru, Karnataka, India. <https://journals.sagepub.com/doi/full/10.1177/234763111774045>. Accessed: 8 October 2020.
- Hakimi, M., Kheirkhah, M., Abolghasemi, J. & Hakimi, R. 2021. The effects of competency-based education on midwifery students' knowledge, skills, and self-confidence for postpartum hemorrhage management. *Nursing and Midwifery Studies*. 10(3): 137-144.
- Halman, S., Fu, A. Y. N. & Pugh, D. 2020. Entrustment within an objective structured clinical examination (OSCE) progress test: Bridging the gap towards competency-based medical education. *Med Teach*. 42(11): 1283-1288.

- Harden, R. M. 2014. Progression in competency-based education. *Med Educ.* 48(8): 838.
- Harper, M., Eales-Reynolds, L. & Markham, C. 2013. Transforming simulation in clinical education: is pre-placement hybrid learning valuable to healthcare students? *Journal of Contemporary Medical Education*, 1(1):15-24.
- Harris, P., Snell, L., Talbot, M., Harden, R. M. & Int, Cbme Collaborators. 2010. Competency-based medical education: implications for undergraduate programs. *Medical Teacher.* 32(8): 646-650.
- Higgins, JPT., Thomas, J., Chandler, J., Cumpston, M., Li, T., Page, MJ. & Welch, VA. 2020. *Cochrane Handbook for Systematic Reviews of Interventions* version 6.1 (updated September 2020). Cochrane, 2020. <https://training.cochrane.org/handbook> Accessed 27 February 2021.
- Hodges, A. L., Konicki, A. J., Talley, M. H., Bordelon, C. J., Holland, A. C. & Galin, F. S. 2019. *J Am Assoc. Nurse Pract.* 31(11): 675-682.
- Huber, M., Knottnerus, J.A., Green, L., Horst, H., Jadad, A.R., Kromhout, D., Lorig, K., Loureiro, M.S. 2011. *How should we define health?* The BMJ. International forum on quality and safety in health care. Europe. Available from: <https://www.bmj.com/content/343/bmj.d4163.full> Accessed: 12 October 2021.
- International Council of Nurses. 2002. *Definition of nursing.* <https://www.icn.ch/nursing-policy/nursing/defination> Accessed: 19 March 2021.
- IRCT20180609040017N1, 2018. Investigating the Effect of Competency Based Education in Emergency Obstetric Care on the Learning, Behavior and Reaction. <https://www.cochranelibrary.com/central/doi/10.1002/central/CN-01905424/full>. Accessed: 22 July 2022.
- Isaboke, H., Wambiri, G. & Mweru, M. 2021. Challenges facing implementation of the competency-based curriculum in Kenya: an urban view. *International Journal of Education and Research.* 9(9):2411-5681.
- Jan, R., Lakhani, A., Kaufman, K. & Karimi, S. 2016. The first competency-based higher education programme for midwives in the South Asian region - Pakistan. *Midwifery.* 33:37 -39 <http://dx.doi.org/10.1016/j.midw.2015.12.004> Accessed: 22 July 2022

- Jobs for the Future. 2016. Expanding competency-based education for all learners. <https://files.eric.ed.gov/fulltext/ED593365.pdf> Accessed: 20 October 2020.
- Kelchen, R. 2015. The landscape of competency based education. Enrolments, Demographics and affordability. AEI Series on Competency - Based Higher Education. American Enterprise Institute. <https://files.eric.ed.gov/fulltext/ED566651.pdf> Accessed: 12 October 2020.
- Kim, J. 2015. Competency based Curriculum: *A effective Approach to Digital Education*. <https://files.eric.ed.gov/fulltext/EJ1082900.pdf> Accessed: 12 October 2021.
- King, S. B., 3rd. 2015. Competency-based education. *JACC Cardiovasc Interv.* 8(2): 374-375.
- Kivunja, C. & Kuyini, A.B. 2017. Understanding and Applying Research Paradigms in Educational. *International Journal of Higher Education*. Vol. 6, No. 5; 2017 pg 26. <https://doi.org/10.5430/ijhe.v6n5p26>.
- Koeijers, J. J., Busari, J. O. & Duits, A. J. 2012. A Case Study of the Implementation of a Competency-based Curriculum in a Caribbean Teaching Hospital. *West Indian Medical Journal*. 61(7): 726-732.
- Korstjens, I. & Moser, A. 2017. Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal of General Practice*. https://www.researchgate.net/publication/321588179_Series_Practical_guidance_to_qualitative_research_Part_4_Trustworthiness_and_publishing/link/5a339c960f7e9b2a288a9eea/download
- Lesotho Nurses and Midwives Act, 1998. Lesotho. <https://lesotho.eregulations.org> Accessed: 12 February 2020.
- Liberati, A., 2009. The PRISMA statement for reporting systematic reviews and meta- analyses of studies that evaluate healthcare interventions: Explanation and elaboration. [www.bmj.com>content>bmj](http://www.bmj.com/content/bmj) Accessed: 25 January 2020.
- Lurie, H. & Garrett, R. 2017. Deconstructing competency-based education: An assessment of institutional activity, goals, and challenges in higher education. *The Journal of Competency-Based Education*. 2(3): e01047.
- Mapesos, RLM., 2017. Traditional Approach. https://www.researchgate.net/publication/321134079_Traditional_Approach. Accessed: 12 January 2022.

Marion. S., Worthem. M. & Evans C. 2020. How systems of assessments aligned with competency-based education can support equity. <https://files.eric.ed.gov/fulltext/ED603989.pdf>. Accessed: 17 January 2023.

Mene`ndez z. H., Mene`ndez, M. (1), , M. Mene`ndez (2) & Ruben, 2017. *Competency based education- current global practice. 3rd International conference on higher education advances, HEAd'17*. Technologico de Monterrey, Mexico. DOI:<http://dx.doi.org/10.4995/HEAd17.2017.5536>

Ministry of Health (Lesotho), 2012. *The Nursing and Midwifery Strategic Plan 2010- 2012*. Maseru. Lesotho.

Morin, K.H. 2014. Nursing education: The past, present and future. *Journal of Health Specialties*. 2(4), DOI:[10.4103/1658-600X.142781](https://doi.org/10.4103/1658-600X.142781)

Mukurunge, E., Shawa, M., Nyoni, T., Mutimbe, P., Mahomaile, R., Mokhele, K. & Masava, B. 2020. Tutorials to support learning: Experiences of nursing students in a competency-based nursing programme. *African Journal of Health Professions Education*. 12(3): 96-96.

Muraraneza, C., Mtshali, N. G. & Mukamana, D. 2017. Issues and challenges of curriculum reform to competency-based curricula in Africa: A meta-synthesis. *Nursing & Health Sciences*. (19). DOI: 10.1111/nhs.12316

Muraraneza, C. & Mtshali, G.N. 2018. Conceptualization of competency-based curricula in pre-service nursing and midwifery education: A grounded theory approach. *Nurse Educ Pract*. 28: 175-181

Nadery, A, Baghaei, R, Mohammad pour, Y, Aliramaei, N & Ghorbanzadeh, K. 2012. 12(9): 698-708.

Nestel, D. & Bearman, M. 2015. *Simulated patient methodology: theory, evidence and practice*. Chichester: Wiley Blackwell.

Nikolov, R., Shoikova, E. & Kovatcheva, E. 2014. Competence Based Framework for Curriculum Development. *PICTET: EQF – based professional, ICT training for Russia and Kazakhstan*. Za bukвите, O'pismeneh. Sofia.
https://www.researchgate.net/publication/285404039_Competence_Based_Framework_for_Curriculum_Development/link/565de2ef08ae4988a7bd11a4/download Accessed: 12 April 2020.

Nodine, T. & Johnstone, S.M. 2015. Competency-based education: Leadership challenges. *Change: The Magazine of Higher Learning*. 47(4): 61-66.

Norman, G., Norcini, J. & Bordage, G. 2014. Competency-based education: milestones or millstones? *J Grad Med Educ.* 6(1): 1-6.

North West University File Plan and disposal schedule. 2018. North West University. https://intranet.nwu.ac.za/sites/intranet.nwu.ac.za/files/files/2.11.1.1_2022.pdf Accessed: 21st November 2022.

Nyoni, C. & Botma, Y. 2015. What went wrong? A critical reflection on educator midwives' inability to transfer education knowledge. *Journal of Nursing Education and Practice*, Vol.5, No. 6. Pg 8.

Nyoni, C. & Botma, Y. 2018a. Implementing a competency-based midwifery programme in Lesotho: *A gap analysis*. ELSEVIER. <https://www.researchgate.net> Accessed: 12 February 2020.

Nyoni, C. & Botma, Y. 2018b. Sustaining a newly implemented competency-based midwifery programme in Lesotho: Emerging issues. ELSEVIER. <https://www.researchgate.net> Accessed: 9 February 2020.

Nyoni, C. N. & Botma, Y. 2019. A framework for implementing and sustaining a curricular innovation in a higher education midwifery programme. *African Journal of Health Professions Education.* 11(3): 96-100.

Nyoni, C. N. & Goddard, V. C. T. 2021. Needs of early adopters in supporting a nursing curriculum innovation in a low resource setting: An exploratory case study. *Nurse Education Today* (104). <https://doi.org/10.1016/j.nedt.2021.105002> Accessed: 22 July 2022.

Pham, T., Rajic, A., Greig, D., Sargeant, J.M., Papadopoulos, A., & McEwen, SA. 2014. A scoping review of scoping reviews: *advancing the approach and enhancing the consistency*. <https://ncbi.nlm.nih.gov/pmc/articles/PMC4491356> Accessed: 21 January 2020.

Pijl-Zieber, E.M., Barton, S., Konkin, J., Awosonga, O. & Caine, V. 2014. Competency and competency-based nursing education: Finding our way through issues. *Nurse Educ Today.* 34(5): 676 – 678. Doi:10.1016/j.nedt.2013.09.007

Pillay, R. 2010. Towards a competency-based framework for nursing management education. *International Journal of Nursing Practice.* 16(6): 545-554.

Polit, D.F., & Beck, C.T. 2017. Nursing research: generating and assessing evidence for nursing practice. 10th edition. Philadelphia, Wolters Kluwer.

Quiroga-Maraboli, P., Antunez-Riveros, M. A., Jerez, M. A., Saldana, A. B., Peralta-Camposano, J. & Bahillo, M. 2019. Perceptions of the educational environment among undergraduate physical therapy students in a competency-based curriculum at the University of Chile. *Journal of Educational Evaluation for Health Professions*. 6.

Richter, S., Yarbrough, A., & Welch, S. 2020. The value of Doctorate of Education in nursing Education. Faculty Development. https://journals.lww.com/nurseeducatoronline/Citation/2021/05000/The_Value_of_the_Doctorate_of_Education_in_Nursing.1.aspx. Accessed: 14 May 2021.

Ross, C. 2017. Dissemination and Implementation Research in Health. *Translating science to practice*. 2nd Edition. Oxford. University Press.

Ruth, C., & Ramadas, V. 2019. The “Africanized” Competency Based Curriculum: The Twenty-First Century Strides. *Shanax International Journal of Education*. Vol.7, no. 4. pp. 46-51. <http://www.shanlaxjournals.in> Accessed: 12 April 2020.

Schumacher, G. & Risco, K. 2017. Competency-Based Nurse Practitioner Education: An Overview for the Preceptor. *Jnp-Journal for Nurse Practitioners*. 13(9): 596-602.

Serdenciuc, N. L. 2013. Competency-based education—Implications on teachers’ training. *Procedia-Social and Behavioral Sciences*. 76: 754-758.

Shanti, S. & Angeline, P. 2015. Curriculum Development in Nursing Education. Where is the pathway? *Journal of Nursing and Health Science*. Volume 4, PP 76-81. <http://www.iosrjournals.org> Accessed: 5 May 2020.

Sharma, R., Bakshi, H. & Kumar, P. 2019. Competency-Based Undergraduate Curriculum: A Critical View. *Indian Journal of Community Medicine*. 44(2): 77-80.

Sisttermans, I.J. 2020. Integrating competency-based education with a case-based or problem-based learning approach in online health science. *Asia Pacific Education Review*. 21. 683–696 <https://doi.org/10.1007/s12564-020-09658-6> Accessed: 6 March 2023.

Song, C., Kim, W. & Park, J. What Should Be Considered in the Evidence-Based Practice Competency-Based Curriculum for Undergraduate Nursing Students? From the Student's Point of View. *International Journal of Environmental Research and Public Health*. 18(20).

Sotco, C. & Mwanjani, M. 2015. Reflections on the implementation of competence-based curriculum in Tanzania secondary schools. *Journal of Education and Learning*. Canadian center of Science and Education. Vol.4, no.4. pp. 73.

Sriganesh, K., Shantanna, H. & Busse, J.W. 2016. A brief overview of systematic reviews and meta-analyses. *Indian Journal of Anaesthesia*. 60(9). 689-694. doi: 10.4103/0019-5049.190628.

Sullivan, J., Hugill, K., Aelraoush, T. A., Mathias, J. & Al Hetmi, M. O. 2021. Piloting of a nursing and midwifery competence framework in the cultural context of a middle eastern country. *Nurse Education in Practice*. 51.

Tacettin, A. & Mustafa Cem, B. 2021. Competency-based education: theory and practice. *Psych-Educational Research Review*. Vol 10, No. 3.

<https://perjournal.com/index.php/perjournal/article/view/15> Accessed: 22 November 2022.

Taber, K.S. 2019. Constructivism in education: Interpretation and criticism from science education ResearchGate. DOI: 10.4018/978-1-5225-7507-8.ch015

Tekian, A., Watling, C. J., Roberts, T. E., Steinert, Y. & Norcini, J. 2017. Qualitative and quantitative feedback in the context of competency-based education. *Med Teach*. 39(12): 1245-1249.

The President's Emergency plan for Aids Relief (PEPFAR) Nursing Education Partnership Initiative (NEPI), 2012-2016. Transforming Nursing and midwifery Education in Sub-Saharan Africa. <https://icap.columbia.edu>ICAP> Accessed: 21 October 2019.

Thompson, J. B., Fullerton, J. T., Carr, C., Elgueta, P., Hebert, E. & Luyben, A. 2017. Global Workshops in Midwifery Competency-Based Educational Methodologies: Lessons Learned. *International Journal of Childbirth*. 7(1): 4-17.

Tijani, F. 2021. Competency based education in Africa: *Exploring teachers' perceptions, understanding and practices*. University of Pretoria.

https://www.researchgate.net/publication/349716636_Compentency-Based_Education

Accessed: 23 March 2021.

Tonhom, S.F.D., da Costa, M. C. G., Hamamoto, C. G., Francisco, A. M Moreira & R.Gomes H. M., . 2014. Competency-based training in nursing: Limits and possibilities. *Revista Da Escola De Enfermagem Da Us*. 48: 213-220. DOI: 10.1590/S0080-623420140000800031

Ulfaverson, J. & Oxelmark, L. 2012. Developing and assessment tool for intended learning outcome in clinical practice for nursing students. *Nurse Education today*. Department of Neurobiology. Elsevier. 32 (2012) 703-708.

Van der Vleuten, C. P. 2015. Competency-based education is beneficial for professional development. *Competency-based education is beneficial for professional development*. 4(6): 323-5.

Vergnes, J.N, Marchal-Sixou, c., Nabet, C., Maret, D. & Hamel, O. 2010. Ethics in systematic reviews. *Journal of Medical Ethics*, 36 (12), 771-774.

Virgolesi, M., Marchetti, A., Pucciarelli, G., Biagioli, V., Pulimeno, A. M. L., Piredda, M. & De Marinis, M. G. 2020. Stakeholders' perspective about their engagement in developing a competency-based nursing baccalaureate curriculum: A qualitative study. *Journal of Professional Nursing*. 36(3): 141-146.

Woeber, K. 2018. Development and implementation of a competency-based clinical evaluation tool for midwifery education. *Midwifery*. 62: 92-95.

Wongnaa, C. A. & Boachie, W. K. 2018. Perception and adoption of competency-based training by academics in Ghana. *International Journal of Stem Education*. Vol 5.

World Economic Forum, 2017-2018. The Global competitiveness Report, Columbia University. <https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018> Accessed: 24 February 2020.

World Health Organisation. 2020. Definition of health. <https://www.who.int/about/who-we-are/frequently-asked-questions> Accessed: 17 January 2020.

ANNEXURE A: ETHICS APPROVAL LETTER OF STUDY



Private Bag X1290, Potchefstroom
South Africa 2520

Tel: 086 016 9698
Web: <http://www.nwu.ac.za/>

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

Tel: 018 299-1206
Email: Ethics-HRECAppl@nwu.ac.za (for human
studies)

26 November 2020

ETHICS APPROVAL LETTER OF STUDY

Based on approval by the North-West University Health Research Ethics Committee (NWU-HREC) on 26/11/2020, the NWU-HREC hereby approves your study as indicated below. This implies that the NWU-HREC grants its permission that, provided the general conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

| | | | | | | | | | | | | | | | |
|--|--|----------|----------|----------|----------|----------|--------------|----------|----------|----------|----------|----------|----------|----------|----------|
| Study title: The implementation of competency-based education at nursing education institutions in developing countries: A systematic review | | | | | | | | | | | | | | | |
| Principal Investigator/Study Supervisor/Researcher: Dr Belinda Scrooby | | | | | | | | | | | | | | | |
| Student: MI Qhobosheane - 30966035 | | | | | | | | | | | | | | | |
| Ethics number: | N | W | U | - | 0 | 0 | 4 | 8 | 7 | - | 2 | 0 | - | A | 1 |
| | Institution | | | | | | Study Number | | | | Year | | | Status | |
| | <i>Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation</i> | | | | | | | | | | | | | | |
| Application Type: Systematic review | | | | | | | | | | | | | | | |
| Commencement date: 26/11/2020 | | | | | | | | | | | | | | | |
| Expiry date: 30/11/2021 | | | | | | | | | | | | | | | |
| Risk: | Minimal | | | | | | | | | | | | | | |
| Approval of the study is provided for a year, after which continuation of the study is dependent on receipt and review of an annual monitoring report and the concomitant issuing of a letter of continuation. A monitoring report is due at the end of November annually until completion. | | | | | | | | | | | | | | | |

| |
|--|
| General conditions: |
| <i>While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, the following general terms and conditions will apply:</i> |
| <ul style="list-style-type: none">• <i>The principal investigator/study supervisor/researcher must report in the prescribed format to the NWU-HREC:</i><ul style="list-style-type: none">- <i>annually on the monitoring of the study, whereby a letter of continuation will be provided annually, and upon completion of the study; and</i>- <i>without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study.</i>• <i>The approval applies strictly to the proposal as stipulated in the application form. Should any amendments to the proposal be deemed necessary during the course of the study, the principal investigator/study supervisor/researcher must apply for approval of these amendments at the NWU-HREC, prior to implementation. Should there be any deviations from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited.</i>• <i>Annually a number of studies may be randomly selected for active monitoring.</i>• <i>The date of approval indicates the first date that the study may be started.</i>• <i>In the interest of ethical responsibility, the NWU-HREC reserves the right to:</i><ul style="list-style-type: none">- <i>request access to any information or data at any time during the course or after completion of the study;</i>- <i>to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process;</i> |

ANNEXURE B: CRITICAL APPRAISAL CHECK-LIST



CASP Checklist: 10 questions to help you make sense of a **Qualitative** research

How to use this appraisal tool: Three broad issues need to be considered when appraising a qualitative study:

- ▶ Are the results of the study valid? (Section A)
- ▶ What are the results? (Section B)
- ▶ Will the results help locally? (Section C)

The 10 questions on the following pages are designed to help you think about these issues systematically. The first two questions are screening questions and can be answered quickly. If the answer to both is “yes”, it is worth proceeding with the remaining questions. There is some degree of overlap between the questions, you are asked to record a “yes”, “no” or “can’t tell” to most of the questions. A number of italicised prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.

About: These checklists were designed to be used as educational pedagogic tools, as part of a workshop setting, therefore we do not suggest a scoring system. The core CASP checklists (randomised controlled trial & systematic review) were based on JAMA ‘Users’ guides to the medical literature 1994 (adapted from Guyatt GH, Sackett DL, and Cook DJ), and piloted with health care practitioners.

For each new checklist, a group of experts were assembled to develop and pilot the checklist and the workshop format with which it would be used. Over the years overall adjustments have been made to the format, but a recent survey of checklist users reiterated that the basic format continues to be useful and appropriate.

Referencing: we recommend using the Harvard style citation, i.e.: *Critical Appraisal Skills Programme (2018). CASP (insert name of checklist i.e. Qualitative) Checklist. [online] Available at: URL. Accessed: Date Accessed.*

©CASP this work is licensed under the Creative Commons Attribution – Non-Commercial-Share A like. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-sa/3.0/> www.casp-uk.net

Paper for appraisal and reference:

Section A: Are the results valid?

1. Was there a clear statement of the aims of the research?

| | |
|------------|--------------------------|
| Yes | <input type="checkbox"/> |
| Can't Tell | <input type="checkbox"/> |
| No | <input type="checkbox"/> |

- HINT: Consider
- what was the goal of the research
 - why it was thought important
 - its relevance

Comments:

2. Is a qualitative methodology appropriate?

| | |
|------------|--------------------------|
| Yes | <input type="checkbox"/> |
| Can't Tell | <input type="checkbox"/> |
| No | <input type="checkbox"/> |

- HINT: Consider
- If the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants
 - Is qualitative research the right methodology for addressing the research goal

Comments:

Is it worth continuing?

3. Was the research design appropriate to address the aims of the research?

| | |
|------------|--------------------------|
| Yes | <input type="checkbox"/> |
| Can't Tell | <input type="checkbox"/> |
| No | <input type="checkbox"/> |

- HINT: Consider
- if the researcher has justified the research design (e.g. have they discussed how they decided which method to use)

Comments:

4. Was the recruitment strategy appropriate to the aims of the research?

| | |
|------------|--------------------------|
| Yes | <input type="checkbox"/> |
| Can't Tell | <input type="checkbox"/> |
| No | <input type="checkbox"/> |

HINT: Consider

- If the researcher has explained how the participants were selected
- If they explained why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study
- If there are any discussions around recruitment (e.g. why some people chose not to take part)

Comments:

5. Was the data collected in a way that addressed the research issue?

| | |
|------------|--------------------------|
| Yes | <input type="checkbox"/> |
| Can't Tell | <input type="checkbox"/> |
| No | <input type="checkbox"/> |

HINT: Consider

- If the setting for the data collection was justified
- If it is clear how data were collected (e.g. focus group, semi-structured interview etc.)
- If the researcher has justified the methods chosen
 - If the researcher has made the methods explicit (e.g. for interview method, is there an indication of how interviews are conducted, or did they use a topic guide)
 - If methods were modified during the study. If so, has the researcher explained how and why
 - If the form of data is clear (e.g. tape recordings, video material, notes etc.)
 - If the researcher has discussed saturation of data

Comments:

8. Was the data analysis sufficiently rigorous?

| | |
|------------|--------------------------|
| Yes | <input type="checkbox"/> |
| Can't Tell | <input type="checkbox"/> |
| No | <input type="checkbox"/> |

HINT: Consider

- If there is an in-depth description of the analysis process
- If thematic analysis is used. If so, is it clear how the categories/themes were derived from the data
- Whether the researcher explains how the data presented were selected from the original sample to demonstrate the analysis process
- If sufficient data are presented to support the findings
 - To what extent contradictory data are taken into account
- Whether the researcher critically examined their own role, potential bias and influence during analysis and selection of data for presentation

Comments:

9. Is there a clear statement of findings?

| | |
|------------|--------------------------|
| Yes | <input type="checkbox"/> |
| Can't Tell | <input type="checkbox"/> |
| No | <input type="checkbox"/> |

HINT: Consider whether

- If the findings are explicit
- If there is adequate discussion of the evidence both for and against the researcher's arguments
- If the researcher has discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)
- If the findings are discussed in relation to the original research question

Comments:

Section C: Will the results help locally?

10. How valuable is the research?

HINT: Consider

- If the researcher discusses the contribution the study makes to existing knowledge or understanding (e.g. do they consider the findings in relation to current practice or policy, or relevant research-based literature)
- If they identify new areas where research is necessary
- If the researchers have discussed whether or how the findings can be transferred to other populations or considered other ways the research may be used

Comments:

ANNEXURE C: JOHNS HOPKINS NURSING EVIDENCE BASED PRACTICE FOR META-SYNTHESIS

| Appraisal of Meta-Synthesis Studies | | |
|--|------------------------------|-----------------------------|
| Were the search strategy and criteria for selecting primary studies clearly defined? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Were findings appropriate and convincing? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Was a description of methods used to: | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Compare findings from each study? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Interpret data? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Did synthesis reflect: | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| • New insights? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Discovery of essential features of phenomena? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| • A fuller understanding of the phenomena? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Was sufficient data presented to support the interpretations? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Complete the Quality Rating for Qualitative Studies section (below) | | |

ANNEXURE D: LANGUAGE EDITING

THE NATIONAL UNIVERSITY OF LESOTHO

Telephone: +266 22340601
+266 52213632
+266 52213639
Fax : +266 22340000
Website: <http://www.nul.ls>



P.O. Roma 180
Lesotho
Southern Africa

FACULTY OF EDUCATION

14th August 2023

The Supervisor
Faculty of Nursing Sciences
North-West University
Potchefstroom

Dear Supervisor

Re: proof of language editing

This letter proves that I read and edited 'Manapo Qhobosheane's dissertation titled: *The implementation of competency-based education at nursing education institutions in developing countries: A systematic review.*

Sincerely,

A handwritten signature in black ink, appearing to be 'Mahao Mahao', written over a horizontal line.

Mahao Mahao (PhD)
Department of Language and Social Education
Faculty of Education, National University of Lesotho

ANNEXURE E: TURNITIN REPORT



Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

Submission author: BELINDA SCROOBY
Assignment title: MI QHOBOSHEANE
Submission title: 12335746:Manapo_Qhobosheane_August_2023_(1).docx
File name: 1-4564-b8ae-d7d93d1df2c3_Manapo_Qhobosheane_August_...
File size: 1.16M
Page count: 90
Word count: 19,848
Character count: 117,159
Submission date: 14-Aug-2023 01:04AM (UTC-0700)
Submission ID: 2145623805

