EFFECT OF AN INTEGRATED TEACHING MODEL ON CLINICAL JUDGEMENT AND LEARNING EXPERIENCES OF UNDERGRADUATE NURSING STUDENTS IN KENYA: A CASE OF UNIVERSITY OF NAIROBI

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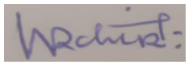
DECLARATION

I declare that this research dissertation report is my original work and has not been presented in any other university for examination.

Signature:  …… Date…06/10/2021

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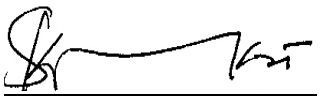
Signature:  Date: 07/102021

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DEDICATION

This research work is dedicated to all nursing faculty focusing on making a difference in the nursing profession by ensuring the graduates they release are ready for the ever-dynamic health care system. This work is also dedicated to the student nurses globally, regionally, and locally who wish to develop their clinical judgment skills to face the professional nurse's challenges with courage and confidence.

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LIST OF ABBREVIATIONS AND ACRONYMS

BSc - Bachelor of Science

BScN - Bachelor of Science in Nursing

CJ - Clinical Judgment

CR - Clinical Reasoning

ERC - Ethics and Research Committee

KNH - Kenyatta National Hospital

KNH-UON- Kenyatta National Hospital/ University of Nairobi

LCJR - Lasater Clinical Judgment Rubrics

NACOSTI - National Commission for Science, Technology and Innovation.

NCK - Nursing Council of Kenya

NCP - Nursing Care Plan

QDA - Qualitative Data Analysis

SBAR - Situation Background Assessment Recommendation

SPSS - Statistical Package for Social Sciences

UoN - University of Nairobi

WHO - World Health Organization

IERC - Institutional Ethics Review Committee

SPSS - Statistical Package for the Social Sciences

SANC - South African Nursing Council

RCN - Royal College of Nursing

OPERATIONAL DEFINITION OF KEY TERMS

BSc Nursing student: an undergraduate student in the four-year program of study

Clinical judgment: ability to notice patient data, interpret it, respond to it by intervention and anticipating physician orders as well as evaluate the response.

Learning experience: The learning occurrences that take place as the learner negotiates the clinical environment.

Concept Mapping: A schematic device for displaying the patient data based on the nursing process. Student displayed their patient assessment data, interpretation of findings and the linkages with theory learnt in the class. With arrows showing linkages or causation.

Contamination: mixing up of study participants in control and intervention group within the clinical environment.

Integrated clinical teaching strategy: a clinical instruction for nursing students that incorporates the use of concept maps and reflective journaling

Maturation: clinical experiences that are due to being exposed to the clinical environment rather than the intervention.

Reflective journaling is the documentation in a notebook on the student experiences during clinical placement guided by Gibbs' reflective cycle.

Traditional Clinical teaching strategy: use of nursing care plans during clinical learning and teaching.

Year of study: Progression in the 4year program of study from first year to fourth year

Preceptor: a qualified nurse drawn from the clinic's environment working with the students to give them feedback on their assignments.

ABSTRACT

The need to improve clinical judgment competencies during training has been necessitated by the demand for the preparation of new nurse graduates to face an arena characterized by nurse shortage and acutely ill yet more informed clients. In Kenya, the nursing process has been the primary tool to help student nurses develop clinical judgment. However, local studies show glaring clinical judgment gaps among new nurse graduates that threaten safe patient care. There is, therefore, a need to examine how a combination of more evidence-based tools can enhance clinical judgment development to improve training outcomes. The objective of this study was to evaluate the effect of an integrated teaching strategy on clinical judgment and learning experiences of undergraduate nursing students during clinical attachment in the medical surgical ward.The study was carried out between February to August 2018. The target population was undergraduate nursing students from a Kenyan public university who were on medical surgical nursing clinical practicum at a National Referral Hospital. A mixed method approach was used to correct data. The study adopted a pre-test post-test quasi-experimental design for the quantitative part of the study. The pre-test was administered before the clinical practicum commenced to the 82 consenting participants. The students were conveniently allocated to the wards in groups. Simple random sampling was done to allocate the groups into either comparison or intervention. The students in the intervention group developed one concept map and one reflective journal entry per week for 4-8 weeks. Participants in the control group developed one nursing care plan per week. The pre-test and post-test scores were compared to identify the effect of the model. SPSS version 26 software and NVIVO version 11 were used for quantitative and qualitative data analysis respectively. Qualitative data was scrutinized using content analysis for the learning experiences and thematic analysis for the level of reflection. The study findings revealed that use of integrated teaching strategy is more likely to improve the clinical judgement of student nurses compared to the nursing care plans ($p < 0.0001$). Eight themes emerged from the reflective journals analysis: Professional practice gaps, learning new skills and knowledge, confidence levels, resource availability, professional support system, emotional reaction and the ward reality. The student perceived the learning tools helped improve clinical skills, confidence and ability to integrate knowledge to clinical practice. The findings showed an integrated teaching model is an effective strategy in improving nursing students' clinical judgment competencies. Nursing students experience both positive and negative encounters that build their confidence as well as frustrate their desire to learn respectively. However, application of self -directed learning-based clinical teaching and learning strategies help students to gain new knowledge, integrate their theory to clinical practice and build their confidence despite the handles of the unpredictable clinical environment. The study findings imply the need to review clinical nurse training to incorporate more evidence-based strategies. However, the study recommends similar research to be carried out in multiple clinical sites to enhance the evidence's strength and the generalizability of the results and outcomes.

CHAPTER ONE

INTRODUCTION

This chapter captures the background to the study on the integrated clinical teaching model and how this affects student nurses' clinical judgment and clinical experiences. The study background aligned to foreground questions identifies what other researchers have found in the same area globally, regionally, and locally. It also helps ascertain how the findings relate to the study in question and what gap has not been addressed by those studies (Polit & Beck, 2018). Therefore, the chapter brings out the gap that this study set out to fill, the objectives that the study set out to meet, the hypothesis tested, as well as the study justification, significance, and purpose. The chapter further provides an in-depth description of the research problem and identifies and how this study will fill the gap recognized.

1.1 Background to the Study

Clinical judgment (CJ) is a construct term defined as an “interpretation or conclusion about a patient’s needs, concerns or health problems, and/or the decision to take action (or not), use or modify standard approaches or improvise new ones as deemed appropriate by the patient’s response” (Tanner, 2006, p. 204). Further, Tanner described the concept as the ability to “thinking like a nurse” (Tanner, 2006, p. 209).

On the other hand, a concept maps is a diagrammatic representation of a concept. In this case, students develop concept maps on patient data identified in the clinical area and link the data as it relates with concepts learnt in class. Concept maps help students to link data by creating pictorial maps (Novak, 2010). When students develop concept maps, they can integrate the new knowledge of a concept encountered to the previously known, and generate new information out of this linkage, that they can apply in future

encounters (All & Havens, 2003). The process of graphical presentation helps the students become analytical and develop critical thinking skills.

Reflective writing involves documenting an experience as encountered, for instance, a clinical situation that helped a student learn or raised a concern for the learner. Reflection denotes the practice of gaining new knowledge from one's experiences and interpreting what was known before through the eyes of current clinical encounters to inform engagements in the future (Jasper, Rosser, & Mooney, 2013). Reflective writing involves the documentation of one's insights about a particular occurrence. The integrated teaching model incorporates the use of concept maps and reflections to enhance the CJ of student nurses.

The term CJ has been used interchangeably with clinical reasoning, clinical decision-making, and sometimes critical thinking (Manetti, 2019). CJ manifests when critical thinking is applied in identifying the appropriate interventions in a given client situation (Simmons, 2010). It is a cognitive process that utilizes thinking tactics to construe client assessment data in order to formulate a plan of care that will meet the identified needs appropriately. The provision of safe patient care requires sound clinical decision-making.

Various researchers have described CJ and come to the conclusion that it is a construct that cannot be defined exclusively owing to its complexity (Tanner, 2006). For instance, Victor-Chmil (2013) described it as a clinical situation analysis guided by critical thinking. The nurse analyses the client's status and utilises his or her critical thinking skills to determine how to address the identified needs. Benner, Sutphen, Leonard, and Day (2009), on the other hand, stated that the manifestation of nurse thinkers is in their clinical reasoning abilities. Nurse thinkers express their capabilities in the way they pick cues from client assessment data and institute timely responses to those findings

(Benner et al., 2009). It is the responsibility of the nurse to detect the often instant changes in client assessment data, implement nursing and collaborative actions, and evaluate response to therapy. CJ is viewed as an essential skill for virtually every health professional.

The founder of empirical nursing, Florence Nightingale, established that the hallmark of trained nursing practice is making observations and interpreting the assessment findings (Tanner, 2006). Recently the widely used nursing process model of nursing practice has become synonymous with CJ (Tanner, 2006). The nursing process steps of assessment, nursing diagnosis, planning, implementation, and evaluation display CJ as a problem-solving activity. Although the nursing process is beneficial in educating nursing students in solving patient problems, it is deficient in fully describing how nurses carry out clinical decision-making (Tanner, 1998). Thus, complete dependence on only this archetypal to direct training may substantially disservice nursing students.

Effective CJ is essential in ensuring that patient care is not compromised (Gerdeman, Lux, & Jacko, 2013). Several studies have concluded that lack of CJ increases the odds of medical errors and have, therefore, associated increased medical errors with poor CJ (Aiken et al., 2014; Faisy et al., 2016; Thompson, Aitken, Doran, Dowing 2013). Hence, it can be inferred that acquiring CJ is a key teaching objective of nursing curricula. Teaching faculty in nursing education are faced with the crucial task of implementing clinical teaching strategies that enhance CJ development in student nurses (Yang et al., 2019).

Researchers have documented that freshly qualified nurses are unaware of the complexity of thinking and problem solving that occurs in the clinical setting. The new nurse graduates are unable to think on their feet and change plans of action in response to what is happening with a specific patient (Etheridge, 2007). New graduate nurses

lack experience regarding interacting with physicians. According to Dyess and Sherman (2009), this can become a patient safety issue as graduates may avoid contacting physicians until a situation is serious due to their own insecurities and lack of confidence with regard to contacting the physician in good time. Dyess and Sherman further observed that new graduates reported feeling overwhelmed and professionally isolated when not knowing what to do in a situation and feeling that there is no one to guide them. This was particularly evident in complex units where graduates were faced with high care patients requiring regular critical CJs. Thus, in view of the struggle that new graduates exhibit in settling down as practitioners, there is an urgent need to restructure teaching strategies so as to grow these competencies to some extent during training.

The current demand for the inclusion of emerging issues, such as changing disease patterns, technology, and knowledge explosion into the curriculum, has expanded the amount of content to be covered for the undergraduate nursing program. This is important for the preparation of students who would be able to function in the ever-dynamic healthcare arena. These changes have affected the duration of time the student nurses spend in the clinical environment so that there is not enough time to learn required clinical skills (Chojecki et al., 2010). Limited clinical skills lead to student nurses qualifying without the confidence of handling various clinical situations. The situation is further compounded by the shortage of qualified nurses, especially to mentor the student nurses. To address this disquiet, effective strategies for student learning and teaching need to be explored. This will help in improving training outcomes. For the student nurses to be able to acquire higher-order skills in an already constrained human resource environment, the clinical teaching methods applied must enhance self-directed learning.

Regulatory bodies have expressed concern about the association of novice nurses and medical errors due to poor clinical decision-making skills (Nursing Council of State Board of Nursing, 2018). It has, therefore, become imperative to embrace strategies for developing CJ early during student nurse training. Furthermore, Theisen and Sandau (2013) maintained that CJ is an essential ingredient for nurses to be defined as successful and competent as they enter the healthcare arena. Nurse researchers have expressed the need for evidence-based strategies in developing CJ competencies in nursing students rather than wait until they qualify for practice with gaps in their theory to practice integration (Berkow, Virkstis., Stewart, & Conway 2008; Lasater, Nielsen, Stock, & Ostrogorsky, 2015). In addition, some of the regulatory bodies, such as the Nursing Council of State Board of Nursing (2018) have developed strategies through the use of case scenarios to allow students to develop clinical reasoning early during training.

The amalgamation of theory and clinical practice is key in the practice of nursing to provide quality and safe patient care. The main objectives of nursing education, as stated by Edeer and Sarıkaya (2015), are patient care quality improvement, enhancing patient safety, and preparation of skilled nurses. Students easily transfer knowledge to practical situations when they interact with real-life experiences in the clinical setting (Gaberson & Oermann, 2010). The need for this interaction shows the crucial role that clinical learning plays in the role of any student nurse in inculcating the beliefs of the profession.

Nurse educators need to adopt innovation in educating the nurses of tomorrow to ensure that the nurses do not just qualify for certification but can deliver competent, patient-centered care. A clinical learning environment that is supportive, resourceful, and individualised ensures that student nurses fit in the healthcare team and are comfortable

learning from their mistakes (Papastavrou, Lambrinou, Tsangari, Saarikoski, & Leino-Kilpi, 2010). The challenge is that the clinical environment is highly dynamic; therefore, creating a safe environment for the student nurses is an ongoing strategy for every educator.

The focus of clinical education should be on developing a critical thinker and reflective nurse practitioner (Walker et al., 2014). If nursing students are to develop CJ skills and integrate theory into clinical practice, there is a need for evidence-based novelty in clinical teaching. The focus should be on whether the strategy chosen for clinical teaching helps the student nurses integrate what they learn in the classroom with what they encounter in the clinical setting and whether it addresses individual student needs, consequently preparing them sufficiently to practice as professionals (Newberry, 2007; Rodger, Fitzgerald, Davila, Millar, & Allison, 2011). According to Walker et al. (2014), clinical nursing skills involve not only being able to perform tasks but also being able to identify patient needs, prioritize the identified needs, come up with a plan for meeting the needs, and evaluate the outcome of the intervention. These elements are characteristic of sound CJ.

There is no clinical teaching approach that is perfect in all aspects; each has strengths and weaknesses. An integration of several approaches could bring about the synergistic effect and quality mix, which can promote effective learning. This study adopted two clinical teaching strategies, namely concept mapping and reflective writing. Concept mapping as a clinical teaching tool has been used widely as a strategy that helps build critical thinking among qualified nurses and student nurses. This tool has also been adopted in other fields apart from nursing to help learners break down complex concepts and form relationships among those concepts in a way that is meaningful to them (Senita, 2008). Moreover, Wheeler and Collins (2003), in their study to evaluate

the effect of concept mapping on critical thinking skills in undergraduate nursing students, found an association between the use of concept maps and critical thinking skills development. Concept mapping links several concepts together, helping to synthesize the information obtained; a higher-order cognitive function according to Bloom's taxonomy (Wilgis & McConnell, 2008).

Using a modified self-evaluation tool, Kaddoura, VanDyke, Cheng, and Shea-Foisy (2016) assessed how junior undergraduate nursing students perceive concept maps' role in improving their CJ abilities. The tool by Gerdeman et al. (2013) showed a positive correlation between using concept maps and CJ development (Kaddoura, VanDyke, Cheng et al., 2016). However, the findings were mainly descriptive and relied on student perception rather than actual quantification of CJ as a construct. Nguyen, Blackmon, and Cook (2015) evaluated the effectiveness of concept mapping as a teaching tool to improve critical thinking in a sub-acute care setting. The findings indicated that the intervention of concept mapping was significantly linked to improved critical thinking scores. Although the study asserted the importance of concept mapping, it was limited by a small sample size of 21 and the absence of a control group as it was based on a descriptive study design that lacks rigor for valid results. Replicating this study on a larger scale and through using a control group would strengthen the validity of concept mapping in improving the CJ of nurses.

Evaluation of the effectiveness of concept mapping in improving decision-making has been the focus of other researchers. For instance, Gerdeman et al. (2013), through a pilot study conducted among junior nursing students in the undergraduate program, validated the significant role of concept maps in improving CJ and critical thinking. However, the sample in Gerdeman et al.'s study may have been too small for generalization. Still, it can apply in discussions concerning the choice of a teaching

strategy for improving clinical outcomes of nursing students. Lin, Han, Pan, and Chen (2015), using a qualitative content analysis of reflection reports, evaluated how the teaching strategy affects the development of critical thinking among 109 Taiwanese undergraduate nursing students. The students stated that concept mapping, case studies, self-directed learning, and the student realization of what they knew or not enhanced the development of CJ among them.

Reflective writing or journaling, on the other hand, is the documentation of one's lived experiences in a solicitous manner. It can also be described as the deep exploration of a given situation (Kuiper & Pesut, 2004). Reflections about an experience help the learner evaluate the situation, analyze what happened, and learn from the situation (Di Vito-Thomas, 2005; Kuiper & Pesut, 2004). Reflection helps students to identify their learning needs (Silvia, Valerio, & Lorenza, 2013). Further, it supports the development of confidence among the student nurses and significant learning that triggers critical thinking (Bjerkvik & Hilli, 2019). Reflections can act as avenues for venting painful experiences relating to the clinical environment (Hwang et al., 2018). Analysis of such observations helps improve the clinical learning environment for better training outcomes. Utilizing documented reflections can enhance student experiences, strengthening their incorporation into the profession (Chaffey, de Leeuw, & Finnigan, 2012).

There is a need to assess the reflective work of students with the aim of identifying education enhancers and barriers that can help improve the outcome of nurse training. Although reflective writing has been an ongoing clinical nurse education practice globally, analysis of journal reflections to identify clinical experiences of student nurses is lacking, especially in the local setting. The majority of the studies have focused on the assessment of the level of reflection (Bjerkvik & Hilli, 2019; Jensen & Joy, 2005;

Lasater & Nielsen, 2009a); or on improving reflections (Karimi, Haghani, Yamani, & Kalyani, 2017; Silvia et al., 2013).

The few studies that have analyzed student reflections found that most students were concerned about whether they were acting professionally in communicating with the patient and performing nursing skills (Chong, 2009). Another study identified feedback, taking responsibility, and the opportunity to practice as factors that promoted students' clinical learning. Obstructing factors included inconsistent supervision and feelings of personal inadequacies (Löfmark & Wikblad, 2001). An improved clinical learning experience for student nurses cannot be overemphasied since it enhances the development of CJ, integration of theory to clinical practice, and ease of transition as professionals (Tiwaken, Caranto, & David, 2015).

Studies by Mahlanze and Sibiya (2017) and Zhang et al. (2017) have pointed out that through journaling, students develop the ability to identify and analyze their difficulties, as well as make sound clinical decisions. Further support for the use of reflective writing in improving critical thinking is supported by Bussard (2014). The findings point to the need for nursing educators to adopt journaling in nursing education. However, the aforementioned studies failed to capture the effect of other clinical teaching methods in nursing education. They serve to show that the two methods (concept mapping and reflective journaling) have been utilized to produce nurse graduates who can make sound clinical decisions informed by all-encompassing clinical reasoning skills.

Although concept mapping and reflective writing as individual clinical teaching tools have demonstrated success, none of them can be said to provide all the skills required for the new graduate to function in the ever-changing clinical environment. This

compels the necessity to develop and test the outcomes of integrating the clinical teaching methods to improve nursing students' CJ.

Multiple studies have been done to examine the optimal clinical teaching strategies with varying reports. Curl, Smith, Chisholm, McGee, and Das (2016) did a study to identify the optimal clinical teaching strategy. This study identified the need to integrate different strategies in order to draw from each of their strengths and minimize their weaknesses. Curl et al. (2016) evaluated the effectiveness of using high-fidelity simulations to substitute half of the time spent in clinical practicum for nursing students. The combined model had higher scores in pre-graduation examinations compared to clinical experience alone. Another study (Hasanpour-Dehkordi & Solati, 2016). compared the efficacy of context-based learning, collaboration, and traditional clinical experience as separate clinical learning methods. The study found out that when collaboration and context-based learning were employed, the students gained new insights into their self-awareness and self-evaluation; and their ability to take on new responsibilities and communicate better, compared to the traditional method, was enhanced (Hasanpour-Dehkordi & Solati, 2016). These studies compared different clinical teaching strategies but did not focus on CJ.

Zarifsanaiey, Amini, and Saadat (2016) conducted a quasi-experimental study to establish the impact of blending simulation and critical thinking strategies versus simulation only among 40 nursing students. This difference was statistically significant, with students in the blended clinical teaching strategy having significantly higher performance than simulation only ($P < 0.001$). Thus, the study concluded that the students' performance level was increased by the application of integrated models. However, the study was carried out in a simulation laboratory rather than a clinical setting.

Most integrated teaching/learning strategies have been tested in a controlled simulation laboratory rather than in the clinical area. Pai (2016) conducted a research study among 80 undergraduate nursing students in Taiwan to develop a combined model that considers the relations among learning effectiveness, self-reflection, and anxiety when students were exposed to either a real-life clinical environment or, did their skills in a simulation laboratory. The findings revealed that being in the real clinical environment significantly enhances the students' performance in each of the three domains tested. Additionally, Aein and Aliakbari (2017) compared the effect of concept mapping and nursing care plans (NCPs) among 60 undergraduate nursing students and established that although each of the two tools had a significant impact on critical thinking skills, concept mapping had a greater statistical magnitude.

A research study done by Hansen and Bratt (2017) to evaluate the competency scores of student nurses measured serially before, during, and after each block of simulation and clinical experience found no significant improvement in competency scores. The researchers recommended the use of alternative models of clinical and simulation learning to bridge the gap in clinical education faced by nursing schools. Another study was done in Jordan among 40 undergraduate nursing students. The study utilized a pre-test post-test design on a convenient sample, whereby an evaluation of the effect of the combination of concept mapping and concept-based learning on CJ skills was done. The findings indicated significant improvement in CJ skills, with the integration model compared to each method alone (Alfayoumi, 2019). This finding encourages embracing multiple clinical teaching strategies to improve clinical reasoning and clinical decision-making.

Kim and Shin (2016) investigated the effect of the nursing process-based simulation among 49 undergraduate students. The study concluded that the use of the nursing

process with simulation improved nursing students' CJ skills. Integration of the traditional lecture method of teaching versus a combination of concept mapping and lecturing was done in a study by Kaddoura, Van-Dyke, and Yang (2016). This study showed improvement in critical thinking skills in the integrated intervention group, amplifying the value of concept mapping in improving the critical thinking skills of nursing students.

Locally, there has been minimal use of reflections in student learning and clinical experience evaluation. The shortage of nurses in Kenya poses a great challenge to the training, supervision, and mentorship of undergraduate nursing students within the clinical environment. In their struggle to fill for the shortage, the students end up being task-oriented and lacking meaningful learning. Thus, the need to implement and evaluate the effects of using an integrated clinical teaching tool that is evidence-based, student-centered, and student-led. This is in an attempt to improve the nursing students' integration of theory to practice and enhance patient safety. Several studies have been done to identify the effect of concept mapping and reflective journaling on the CJ skills as individual clinical teaching tools. Yet, not much is known regarding how a combination of these tools would enhance nursing students' CJ skills in comparison to the widely used NCPs.

1.2 Research Problem

Nursing students in training need exposure to guided experience to enable them to assimilate theoretical knowledge acquired in the classroom with what occurs in the clinical environment. The need for nursing students to become clinically competent while in their training has been supported by many studies that have linked poor quality healthcare to nurses' knowledge and skills, including CJ and decision making (Boibanda, Kangethe, Mutema, & Orodho, 2014; Kyalo, 2008). Despite the recognition

of this by the Nursing Council of Kenya (NCK), evidence locally clearly shows that newly qualified nurses are still deficient in making sound clinical decisions (Wachira, Mageto, & Mapesa, 2017).

A cascade of gaps has been cited between preparation, proficiency, and training in Kenya, with studies showing that not all graduates possess adequate clinical decision-making skills. These findings indicate the need to analyze each of the steps from policy development to training, training to competency enhancement, and competency to practice so as to pinpoint barriers and opportunities to bridge the gaps in health delivery (Smith et al., 2016; Syombua & Omondi, 2016; Wachira et al., 2017). In the light of the gaps in CJ skills exhibited among graduates, several studies have proposed a shift to integrated clinical teaching methods (Alfayoumi, 2019; Curl et al., 2016; Hansen & Bratt, 2017; LaMartina & Ward-Smith, 2014).

Embracing evidence-based teaching and learning strategies has, therefore, become imperative towards enhancing the attainment of higher-order thinking skills among student nurses so that they can execute sound CJ. However, there is a lack of consensus among faculty on what tools to employ in clinical teaching to improve CJ. Most decisions on the tool to use are based on what the faculty is familiar with rather than what works in improving clinical teaching outcomes. Hence, this research sought to evaluate the effect of an integrated clinical teaching strategy on CJ skills and clinical experiences of Bachelor of Science in Nursing (BScN) students on clinical placement in Kenya to enhance CJ skill development.

1.3 Purpose of the Study

The purpose of this study was to evaluate the effect of an integrated clinical teaching strategy on CJ and the clinical learning experiences of undergraduate nursing students

on clinical placement in Kenya. The study aimed to enhance outcomes in clinical education, clinical learning, and clinical experiences for nursing students.

1.4 Research Objectives

1.4.1 Main Objective

To evaluate the effect of concept mapping and reflective writing as an integrated teaching strategy on CJ and learning experiences of BScN students on clinical placement in Kenya, focusing on the University of Nairobi (UoN).

1.4.2 Specific Objectives

i. To assess the entry-level CJ skills of BScN students commencing their clinical placement at Kenyatta National Hospital.

ii. To establish the effect of combining concept mapping and reflective writing on the CJ of the undergraduate nursing student during clinical attachment in the area of;

   a) Identifying significant assessment data
   b) Interpreting findings
   c) Developing prioritized independent care
   d) Anticipating physician's orders
   e) Evaluating planned interventions

iii. To apply the role of NCPs in improving CJ skills of undergraduate nursing students during their clinical experience at Kenyatta National Hospital.

iv. To evaluate the level of reflection of undergraduate nursing students during their medical-surgical clinical placement at Kenyatta National Hospital.

v. To analyze the reflected experiences of undergraduate nursing students during their clinical placement at Kenyatta National Hospital.

vi. To establish the perceived experiences of undergraduate nursing students at the end of their clinical placement at Kenyatta National Hospital.

1.5 Research Questions

The questions of research that guided this study are;

i. What are the entry-level CJ scores of BScN students at the commencement of their medical-surgical clinical placement?

ii. Does combining concept mapping and reflective journaling improve CJ competencies?

iii. Do the widely used NCPs have a role in improving CJ competency scores of undergraduate nursing students?

iv. What is the level of reflection of undergraduate nursing students during their medical-surgical clinical placement?

v. What are the reflected experiences of undergraduate nursing students during medical-surgical clinical placement?

vi. What are the perceived experiences of undergraduate nursing students at the end of the clinical experience at Kenyatta National Hospital?

1.6 Research Hypotheses

The null hypothesis for this study was;

H_o: The use of concept mapping and reflective writing as an integrated teaching model compared to the NCP does not improve the CJ competency scores of undergraduate nursing students during medical-surgical clinical placement.

1.7 Justification for the Study

The value of using a method of clinical teaching that enhances critical thinking in nursing practice has been alluded to by many researchers (All & Havens, 1997; Daley, Shaw, Balistrieri, Glasenapp, & Piacentine, 1999; Wheeler & Collins, 2003). In Kenya, there has been a minimal implementation of different clinical teaching methodologies that can assist the student nurses in developing CJ early as well as integrating theory into clinical practice.

The BScN curriculum prescribed by the NCK Kenya (as cited in Kavili, 2020) has stipulated the use of the nursing process in clinical teaching as well as an objective structured clinical evaluation for assessment of clinical skills. However, it does not specify the clinical instruction model. Most of the faculty use the nursing process as a tool for learning in the clinical setting, but its use is not structured. Currently, there is no local study so far done on evaluating the effect of an enhanced clinical teaching methodology to improve CJ outcomes for student nurses. The need to develop CJ as students go through their nursing education has been necessitated by the nature of the clinical environment that requires the student nurses to graduate and immediately take up decision-making roles.

Nurses are a fundamental component of the health system's strengthening, as highlighted in the Vision 2030 health sector strategy. Kenya has a shortage of skilled nurses, and to address this, several strategies have been proposed to strengthen a health workforce, including improving training programs (Government of Kenya, Ministry of Health, 2015). Education institutions play a great role in offering pre-service training to nurses, and by extension, in improving healthcare quality. As of 2012, the NCK reported that Kenya had 82 accredited nurse training institutions. These institutions are mandated to churn out new graduates who must be ready for practice. However,

concerns have been raised about the competencies of the graduates and the teaching methods used in nursing institutions. Thus, the need to identify clinical teaching models that are evidence-based to improve the product of nurse training institutions.

1.8 Significance of the Study

This study would be significant to policymakers in the nursing profession, such as the NCK, which is the licensing body for nurses as well as the body that stipulates the syllabus for the nursing program. The NCK can utilize the CJ evaluation tool to quantify the CJ skills before graduation in order to identify gaps in training. Based on the outcome of the study, the NCK can recommend the adoption of modification of clinical teaching methodology by embracing clinical teaching tools that are evidence-based towards enhancing critical thinking in student nurses.

The study would benefit all faculty and healthcare institutions where undergraduate student nurses do their clinical placement. Faculty and healthcare institutions can adopt the proposed method as a way of enhancing learning and better outcomes for the nursing programs in Kenya and beyond. The fact that the proposed model encourages self-directed learning would be of benefit to students, especially in situations where supervision and mentorship may not be forthcoming.

Moreover, the study would be significant to researchers and scholars as it will provide a background for further studies on the effect of an enhanced clinical teaching methodology on the clinical learning experiences of student nurses. It would add to the arsenal of existing knowledge as well as fill the gaps of the knowledge on the concept of innovations in clinical teaching and learning.

Teaching institutions, which include BScN offering universities and Kenya Medical training colleges, would benefit from the recommendations generated by this study to

aid in curriculum formulation and development of nursing content. Furthermore, these institutions pride themselves on regulating and inspecting the students during their clinical training. Hence, the study suits them well to ensure they remain relevant in the content offered.

The ministry of education and the ministry of health would appreciate the information generated by this study in the development of both contents consumed by the students and the service the students provide during their clinical experience.

The study provided recommendations that can guide in ensuring that the service offered by the nursing students after graduation is up to standard. The study aimed to improve service delivery and nursing students' competencies.

1.9 Limitations of the Study

i. The sample size was smaller than expected, affecting the power of the study. The interpretation of findings and generalization should be guided by this fact.

ii. The initial proposal was to target undergraduate nursing students from institutions utilizing Kenya National Hospital (KNH) for their medical-surgical rotation. At the time of data collection, only the UoN students were on site. This may affect the generalizability of the research findings to the private sector nurse training colleges because of differences in curriculum implementation. However, since the NCK's prescribed syllabus and the competencies required are the same for all BScN students in Kenya, the findings may not be too far from how it is in the private sector.

iii. The study should have incorporated faculty as part of the participants to evaluate their knowledge of evidence-based clinical teaching. Hence, it recommends

future studies to establish knowledge and practice of clinical teaching among nursing faculty.

iv. The study's findings may be affected by maturation since the data was collected at two points in time: the second time after the 4-8 weeks' clinical placement, which may affect internal validity.

v. There was the risk of contamination considering that the students in the two groups were likely to meet and share what they were learning. Although it was difficult to control this occurrence, the researcher allocated the participants in the intervention group and those in the control group to different wards to minimize this effect.

1.10 Delimitations of the Study

The study was carried out at KNH among undergraduate students from the UoN. At the time of data collection, there was a new policy that limited the number of undergraduate students from other universities on basic medical surgical placement at KNH. The undergraduate students' schedules to rotate in the medical-surgical wards were the target population because medical-surgical rotation constitutes 40% of clinical experience for the nursing students. Thus, it allows time for an effective intervention. The pre-test and post-test scores were used to evaluate CJ, while clinical experiences were identified from the reflection journals and evaluation questionnaire.

1.11 Assumptions of the Study

i. The respondents will provide honest information according to the questions asked questions as captured in the tests and questionnaire.

ii. The NCPs, concept maps, and reflections will be documented weekly.

iii. Respondents will be second and third-year undergraduate nursing students on clinical attachment in the medical-surgical wards at Kenyatta National Hospital.

iv. Respondents sampled will be representative of the entire population.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the relevant literature relating to CJ, clinical learning experiences of student nurses, and the integration of clinical teaching strategies in clinical teaching. Literature review provides an in-depth analysis of what is known about a phenomenon, reveals the gap that informs a research study, and highlights the importance of a particular study in filling an existing empirical gap.

The chapter also provides a description of the theoretical framework guiding the study, presents the proposed research conceptual model, and describes the various study variables relevant to the study.

2.2 Evolution of Paradigms for Nursing Research

2.2.1 Positivism Philosophy

According to Babbie (2010), positivism was pioneered by Auguste Comte, a philosopher whose view was that people are a phenomenon that ought to be studied scientifically. Therefore, positivism is a social approach to research that explores a social phenomenon and explains the social world using natural science as a model (Denscombe, 2010). In particular, positivism holds that methods, generalizations, patterns, case-and-effects, and procedures are issues that apply to social science. Accordingly, human beings, who are the objects of social sciences, are appropriate for the implementation of scientific methods.

As a way of thinking, positivism sticks to the view that solitary "genuine" information increased through perception (the faculties), including estimation, is reliable.

Positivism considers the part of the analyst as restricted to information assortment and understanding in a goal way. In these kinds of studies, research discoveries are typically recognizable and quantifiable.

Positivism relies upon quantifiable perceptions that lead to factual investigations. It has been noticed that;

> as a way of thinking, positivism is as per the empiricist see that information originates from human experience. It has an atomistic, ontological perspective on the world as including discrete, recognizable components and functions that collaborate in a detectable, decided, and ordinary manner. (Collins, 2010, p. 38)

In addition, positivism contemplates that the scientist is free to structure the examination, and there are no arrangements for human interests inside the investigation. Crowther and Lancaster (2008) contended that when in doubt, positivist investigations, for the most part, receive deductive methodology, though the inductive exploration approach is generally connected with a phenomenology theory. Also, positivism identifies with the perspective that scientist needs to focus on realities, while phenomenology focuses on the significance and has arrangement for human interest.

Analysts caution that on the off chance that you accept a positivist way to deal with your investigation, at that point it is your conviction that you are free of your examination and your exploration can be absolutely objective. Autonomous implies that you keep up negligible association with your examination members when completing your research (Wilson, 2010). The positivist worldview depends absolutely on realities and believes the world to be outer and objective. The positivism approach focuses on formulating laws that apply to populations. It explains the causes of measurable and observable behavior. Positivist researchers often use observable social reality, which in

turn generates generalizations similar to the ones of natural scientists. Positivists also believe that an objective reality exists outside personal experiences with its cause-and-effect relationships. Positivist researchers hold that when conducting a study, investigators can adopt a neutral, detached, non-interactive, and distant position. Through such a position, researchers can hold the position of an objective analyst and thus make impartial interpretations on the phenomenon under investigation (Weaver & Olson, 2006).

Secondly, the positivism position holds that it is necessary to undertake direct observation through the five senses: smell, sight, taste, hearing, and touch, to produce valid knowledge. Such an approach involves measuring as well as recording the knowledge. Accordingly, it is impossible to use the approach to investigate a phenomenon that cannot be observed directly using sight and experience or indirectly through instruments (Houghton, Hunter, & Meskell, 2012). Thirdly, the position holds that to generate scientific knowledge, it is necessary to accumulate verified facts. Such facts depend on the theoretical edifice relating to a particular knowledge domain. Accordingly, empirical research is expressed and reflected by theory. Bryman and Teevan (2005) held the view that such findings are often called empirically established regularities.

Fourthly, positivists view scientific theories as the basis for hypothesis, which is in turn subjected to empirical testing. Based on this assumption, science is deductive and seeks to obtain specific propositions from general accounts of reality. Logically, this implies that a specific model is constructed to define laws in a specific field. Therefore, a hypothesis is formulated to enable investigators to submit the hypothesis to a rigorous empirical test before being rejected, accepted, or revised. Lastly, positivism is considered to include a certain position concerning values (Coleman, 2019). Therefore,

the values are purged by researchers so as maintain objectivity and ensure that the knowledge is valid.

The concept of positivism is a phenomenon not necessarily utilized in nursing research due to the accusation that it leads to the exclusion of the art of nursing as a principle of practice. Based on the attributes of the concept of positivism, such as experience, the system of facts, objective, human, and natural phenomena, the approach did not premise the current study.

2.2.2 Post-positivism

Post-positivism was developed as scholars became increasingly dissatisfied with positivism. As the position became increasingly popular, works on post-positivism became increasingly credible throughout the social science community. Rather than being a distinct position, Creswell (2009) noted that post-positivism is an extension of positivism because it captures most thoughts on the earlier philosophy. However, it challenges the conventional approach in the social sciences of the objectivity and absolute truth of knowledge. Proponents of post-positivism, such as Gratton and Jones (2010), have argued that, in reality, an understanding of knowledge cannot be merely gained through measurement.

Post-positivism ventured forward as a response of instructive researchers to the constraints of positivism as a worldview. Instructive scientists found that positivism cannot satisfy the necessities for sociologies' exploration. As a response to its universal nature towards quantitative experimental scientific-based exploration, the specialists of sociologies and instruction postulate taht blended worldview consolidated positivism and interpretivism, making another worldview named post-positivism (Deluca, Gallivan, & Kock, 2008; Petter & Gallivan, 2004).

Accordingly, post-positivism is more open to various methodological approaches and often includes both quantitative and qualitative methods. As such, it is easy to generate alternative strategies of research to obtain data creatively and unpredictably. Furthermore, post-positivists usually believe in multiple perspectives rather than a single reality from participants (Corry, Porter, & McKenna, 2019). Moreover, unlike positivism which holds that an objective reality that needs to be examined, captured as well as understood exists, post-positivists contend that reality can only be approximated but not fully understood (Ryan, 2019).

Post-positivism rejects the neutrality and human detachment that are characteristic of logical positivism. While the truth may lie "out there," for post positivists, the limitations of humans to observe and apprehend phenomena must be accounted for when making truth claims. Post-positivists assume that reality and truth can be understood in different ways since they are conditional. That is not to say that post-positivism arose as an outright rejection of the scientific method. Post-positivist methods require accuracy, sound reasoning, and production of evidence. However, they view the use of different methods of data collection as increasing the ability of the researcher to infer but not to know with certainty (Davies & Fisher, 2018).

Post positivism, in some way, can be seen as challenging empiricism by allowing knowledge generation through engagement with phenomena and not necessarily through human senses. The post-positivist position recognizes the need to approach research from different perspectives, influenced by history, context, philosophy, and experiments. Researchers in this school of thought support the notion that though objects exist, not all can be tested empirically, and thus, knowledge can also be learned through non-empirical means (Tanlaka, Ewashen, & King-Shier, 2019).

The post-positivistic worldview advances the triangulation of subjective and quantitative strategies that investigate the variety of realities researchable through different sorts of examinations, however, regarding and esteeming all discoveries as the basic parts for the improvement of information (Clark, 1998; Fischer, 1998).

The post-positivist approach offers numerous benefits to nursing research as it allows for the application of multiple perspectives, which can allow for the engagement of different stakeholders (may include other researchers, clinicians, patients) or the use of different/multiple research approaches. For instance, unlike other approaches that select either the quantitative or qualitative design, post-positivists stress the need to use different approaches together. This allows the researcher to benefit from the advantages of triangulation by viewing an issue from multiple perspectives, thereby reducing the inherent bias of using only one particular method. Through this, the validity of research findings is enhanced. However, the approach fails with regard to providing links on findings' interpretation in answering the research question as the emphasis is only on the use of different methods.

2.2.3 Interpretivism

The interpretive/phenomenological paradigm was developed because of various limitations linked with positivism. Based on Wilhelm Dilthey's view, science can fundamentally be divided into two: human and natural science. Natural science is based on abstract explanation or Erklärung, whereas human science is rooted in Verstehen, or an understanding of peoples' lived experience (Ryan, 2018). On the other hand, Weber held that people try to make sense of their world; therefore, human beings continuously seek to create, interpret, give meaning, justify, define and rationalize their daily actions (Ryan, 2018). Consequently, the main focus of interpretivism is to generate knowledge by examining the complexity of a social phenomenon. Based on this, the research seeks

to understand and interpret daily events/happenings, social structures, experiences, and the values attached to the phenomena by people (Halcomb, 2018).

Interpretivism, otherwise called interpretivist, entails analysts trying to decipher components of the investigation. Consequently, interpretivism coordinates human premium into an examination. As need be, "interpretive scientists accept that admittance to the real world (given or socially built) is just through social developments, for example, language, awareness, mutual implications, and instruments" (Myers, 2008). The development of interpretivist reasoning depends on the study of positivism in sociologies. Likewise, this way of thinking stresses subjective examination over quantitative investigations.

Interpretivism is "related with the philosophical situation of vision, and is utilized to amass different methodologies, including social constructivism, phenomenology and hermeneutics; moves toward that reject the objectivist see that significance lives inside the world autonomously of consciousness" (Collins, 2010). As indicated by the interpretivist approach, it is significant for the analyst, as a social entertainer, to acknowledge contrasts between people (Saunders, Lewis, & Thornhill, 2012). Moreover, interpretivism concentrates ordinarily on the importance and may utilize various strategies so as to reflect various parts of an issue.

Interpretivism also holds that social reality is nuanced and subjective because it is influenced by the participants' perceptions and the aims and values of the investigator. It is directed by meaning and understanding of the social interactions among people. Therefore, the mind is used to interpret events and experiences and constructs meanings from them. The three main principles of interpretivism are as follows: human beings subjectively give meaning and construct the social world; people are subjects with a mind or consciousness, while their behavior is influenced by knowledge of the social

world that exists only about human beings; and the investigator is part of the research phenomenon, and research is driven by interests. According to interpretivism, the complexity of social phenomena cannot be explained by simple fundamental laws (Davies & Fisher, 2018).

Interpretivism contends that it is impossible to make an objective observation of the social world because it has meaning for humans only and is constructed by intentional actions and behavior. Interpretivism is an approach that views the social world as something that can only be produced and reproduced daily by human beings. Something that holds for the moment (now) might not necessarily hold tomorrow or in another society (social environment) (Horrigan-Kelly, Millar, & Dowling, 2016). Since this approach fits purely with qualitative research design, it was not adopted in the current study.

2.2.4 Realism

Realism, according to Blumberg, Cooper, and Schindler (2011), is a research paradigm that is built on the principles of both interpretivism and positivism. Notably, the existence of reality does not rely on the behavior or beliefs of people. Nonetheless, to understand the behavior and beliefs of people, it is necessary to acknowledge the subjectivity inherent in them. In the view of the realists, some social forces and processes are beyond peoples' control, affecting their behavior and beliefs. These forces and processes operate at the macro-level, that is, at the level of each person, where subjective interpretations of reality are necessary for full comprehension of what is happening (Schiller, 2016).

In realist terms, the social world can be explained in terms of three critical linked philosophical assumptions that underpin the different positions: epistemology (the knowledge science), ontology (what one believes), and methodology (the science of

discovering). First, Aspinall, Jacobs, and Frey (2019) pointed out that investigators who view their world realistically consider the principles of social and natural science to be the same. Empirical evidence is a piece of evidence for valid knowledge; however, it is not enough in itself. Hence, realism seeks to go past the description of relationships and establish how such relationships are developed. Realists argue and are convinced that it is necessary to understand the social world in its totality. Notably, the social world is interlinked, with all parts affecting each other.

Realism research theory depends on the possibility of freedom of reality from the human psyche. This way of thinking depends on the presumption of a logical way to deal with the advancement of information. Realism can be separated into two gatherings: immediate and basic. Direct realism, otherwise called guileless realism, can be depicted as "what you see is the thing that you get" (Saunders et al., 2012). All in all, immediate realism depicts the world through close-to-home human detects. Basic realism contends that people do encounter the sensations and pictures of this present reality. As per basic realism, sensations and pictures of this present reality can be beguiling, and they typically do not depict the genuine world (Novikov & Novikov, 2013).

The standpoint for a critical realist is that an understanding of the world is almost always constructed from a personal standpoint, perception, and own experiences, rather than attaining an independent viewpoint. Besides, critical realists believe that observation and experience (the actual domain), or what we can know or interpret, brings a deeper reality. Critical realism allows for a qualitative investigation of facets of reality without ignoring the empirical evidence. It has been applied as a philosophical paradigm for grounding mixed methods approaches to research (Williams, Rycroft-Malone, & Burton, 2017).

The current study used a realist approach in terms of study design: a combination of qualitative and quantitative methods of data collection was used to evaluate the effect of an integrated clinical teaching strategy on CJ skills and clinical learning experiences of BScN students on clinical placement in Kenya. The critical realist approach was useful to the researcher in the evaluation of CJ skills (through pretest-posttest quasi-experimental research design) and clinical experiences (reflective journals). The quantitative data brought out the perspective of the observable world, while the qualitative data of student experiences brought out the 'real' world as experienced by the individual student and how the students perceived those experiences based on their previous exposures, personalities, and perceptions.

2.3 Theoretical Framework

A framework is the conceptual underpinning of a study (Polit & Beck, 2018). The process of identifying a theoretical framework that fits in a study involves:

- examining the main concepts of the study,
- reviewing the research questions, and
- reading empirical literature that has applied that theory.

The search for a theory by the researcher to guide this study was anchored on the need to show how students reflect the construct of CJ: the definition and operationalization and applying the theoretical model in developing the CJ evaluation tools. According to Vinz (2015), the key concepts in research can be delineated by the theoretical framework. Vinz further explained that the theoretical framework proposes a relationship between the concepts. A well-written theoretical model gives one's research a robust scientific basis, demonstrates the researcher's understanding of

existing literature, provides the analysis with direction, and allows construing, clarifying, and generalization of findings.

The theoretical framework of this study was based on the Levett-Jones clinical reasoning cycle, Gibbs' reflective model, and the Lasater CJ evaluation theoretical framework. The Levett-Jones clinical reasoning model was developed to depict the process of a nurses' clinical reasoning in a clinical situation that, if completed successfully, can provide timely patient-centered interventions (Levett-Jones et al., 2010). Gibbs's reflective cycle by Gibbs (1988) proposed experience-based reflections to self-evaluate and learn from the experience. The six-step model provides a structured approach to reflections for student nurses. A structured review can be a way of standardizing expectations. The reflective cycle focuses on learning from experiences by involving feelings, thoughts, and recommendations for future actions.

The 2007 Lasater CJ evaluation model was developed from the work of Tanner (2006), who analyzed over 300 studies in 30 years to come up with an empirical definition of CJ. The model proposes four steps that can be used to analyze the depth of documented reflections to assess CJ skills through the eyes of reflective writing. In this study, the Lasater model was used to evaluate the level of thinking for undergraduate nursing students to evaluate CJ development in the participants.

2.3.1 The Levett-Jones Clinical Reasoning Model

The Levett-Jones et al. (2010) clinical reasoning conceptual framework is an educational model that captures clinical reasoning that aligns well with the nursing process. The model can enhance nursing students' clinical reasoning skills and, as a result, be able to recognize patients who can potentially deteriorate. This model was used in this study to guide the development of the pre-test and post-test CJ evaluation tools. Clinical reasoning is a process that nurses can use to identify patient care

priorities through the analysis of clinical data. It involves eight steps: "nurses collect cues, process the information, come to an understanding of a patient problem or situation, plan and implement interventions, evaluate outcomes, and reflect on and learn from the process" (Levett-Jones et al., 2010, p. 517). These steps can be summed up as collecting assessment data both objective and subjective, interpreting that data, coming up with an appropriate collaborative plan of action, implementing and evaluating the outcome of the action.

Practical clinical reasoning depends upon the nurse's ability to "collect the right cues and to take the right action for the right patient at the right time and the right reason" (Levett-Jones et al., 2010, p. 515). The Levett-Jones clinical reasoning cycle aligns with the aspects of CJ in nursing in that sound CJ is the result of appropriate Clinical Reasoning (Sommers, 2018). The terms clinical reasoning, critical thinking, and CJ have been used interchangeably to describe the ability of the nurse to provide safe patient care. However, critical thinking is a broad term encompassing clinical reasoning and CJ, and that CJ is the result of clinical reasoning (Manetti, 2019).

According to Levett-Jones et al. (2010), clinical reasoning is a non-linear process utilized by nurses to identify the pertinent patient objective and subjective data that requires well thought timely interventions. It also involves evaluating the outcome of care given and reflecting on own gaps in the whole care process. The cycle involves these eight steps: “consider the patient situation, collect cues or information, process information, identify the problems or issues, establish goals, take action, evaluate the outcome, and reflect on the process” (Levett-Jones et al., 2010, p. 516).

Clinical thinking is a primary segment to "taking on a similar mindset as a nurse," as it is essential, imaginative, logical, and formal criteria thinking (Benner, Sutphen, Leonard, & Day, 2010). Proper clinical thinking aptitudes are fundamental to skills in

nursing. Current practice requires that even new alumni must be set up to settle on troublesome choices for patients with multisystem brokenness (Banning, 2008; Lasater, 2007; Levett-Jones et al., 2010). The term clinical thinking is regularly utilized conversely with basic reasoning and CJ in writing. Clinical thinking is characterized as "the intellectual cycles and techniques that medical attendants use to comprehend the essentialness of patient information, to recognize and analyze real or possible patient issues, to settle on clinical choices to aid issue goal and to accomplish positive patient results" (Fonteyn & Ritter, 2008). When given similar data and similar situations, scientists have revealed that clinical thinking among experienced attendants shifts (Sedgwick, Grigg, & Dersch, 2014).

Accordingly, nursing students require schooling to perceive applicable patient signs and see how to make associations between precise appraisal and patient results through usage of the nursing cycle (Benner, 2001). Nursing students need to learn rules that determine how cues shape clinical decisions and the connections between cues and outcomes (Benner, 2001). Learning clinical reasoning is not automatic or by chance. It requires a different approach than that of learning a new skill. The skill of active engagement, determination and deliberate practice is required in unculcating sound clinical reasoning and CJ. Moreover, reflection, especially on actions that can improve performance characterize clinical reasoning (Ericsson, Whyte, & Ward, 2007). A health care provider’s way of dealing with basic reasoning and thinking is accepted to influence the precision of the nursing conclusion. In this manner, it is legitimately connected to affecting patient concern and results (Paans, Sermeus, Nieweg, Krijnen, & van der Schans, 2012). The advancement of basic reasoning aptitudes is multifaceted and incorporates a few boundaries of metacognitive mindfulness. These combine the capacity to adjust to intricate and shifted circumstances, use hypotheses to rehearse,

self-inspiration and venture some practices, work adequately with different individuals from the patient-care group to achieve critical reasoning, and practical evaluation of one's qualities and shortcomings (Conley, 2012).

This study's researcher application of this clinical reasoning model informed the development of case study questions for the pre-test and post-test tools. The model aligns well with the nursing process, which is more familiar to nursing students in Kenya. Most core nursing courses embrace the nursing process in identifying essential assessment data and independent nursing action.

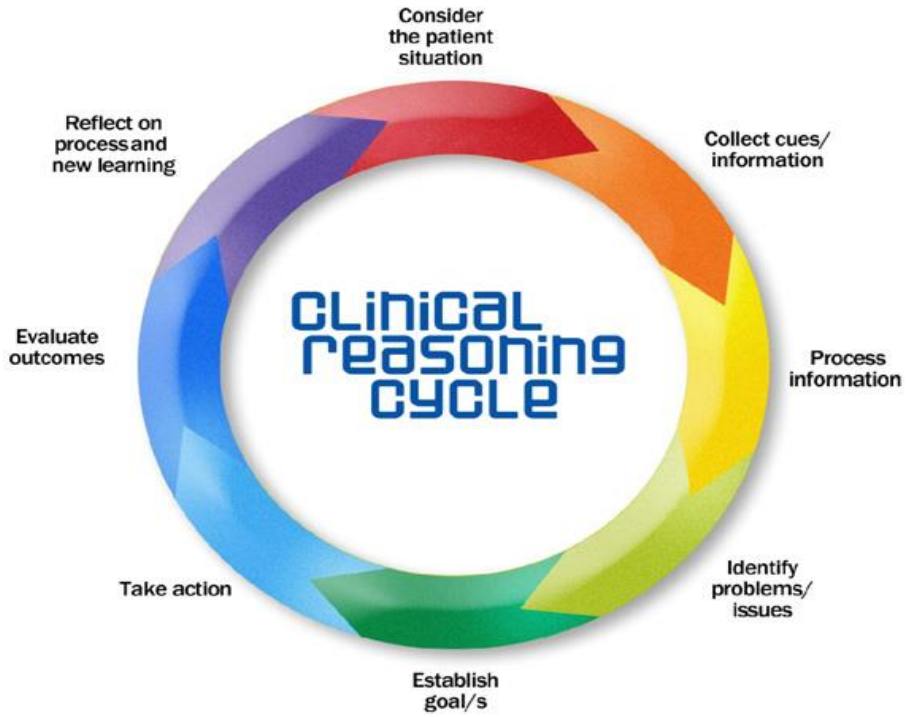

Figure 2.1: Levett-Jones Clinical Reasoning Model
Source: Levett-Jones et al. (2010)

2.3.2 Gibbs' Reflective Model

This reflective model was developed by Graham Gibbs, an American sociologist and psychologist who published his reflective cycle model in his book 'Learning by Doing.' Gibbs reflective model inspires people to think methodically about their experiences

during an event, an activity, or a specific situation (Gibbs, 1988). This model begins with the student nurse describing what happened without interpreting the events. The learner then proceeds to explore the feelings and emotions of the experience. The feelings could be either negative or positive. The third stage involves an evaluation of what went well and what did not happen as expected from the student's eyes. In the fourth stage, the student nurses analyze the events in line with what is expected based on what they have learned in theory or what is generally accepted as good practice. This analysis helps them draw a conclusion and develop an action plan for a future encounter with similar problems (Gibbs, 1988).

There are other reflection models that have been applied in structuring reflections. However, the Gibbs' model is more popular with nursing and medical students because it allows reflection on any sistuation at hand whether patient care or health environment related situation (Tawanwongsri & Phenwan, 2019). Other models of reflection include; Atkins and Murphy (1994) reflective model, Johns's what model (1996), and the Barksby, Butcher, and Whysall (2015) reflection model. The Gibbs reflective cycle comprises six steps, namely description, feeling, evaluation, analysis, conclusion, and action plan (Gibbs, 1988).

This model can be applied in helping nursing students make sense of problems in the clinical environment and commit to doing better in the future. The extract from the six steps in Gibbs' reflection model embraces both the cognitive and affective aspects of learning through reflective writing (Gibbs, 1988). The subject matter influences the content and the structure of the reflection but the model helps to maintain the focus and extract experiences through the six steps. Gibbs model has been linked to the art of learning from experiences and is an important model for professionals who desire lifelong learning, such as nurses (Wikström, 2012).

Gibbs' model has been applied in identifying experiences of qualified nurses when faced with severe adverse events. The nurses stated that the application of this model helped them think through the events, identify what caused the events and how to prevent negative events from occurring. This reflection deepened their clinical reasoning skills for future encounter (Li, Chen, Liu, & Deng, 2020).

The transition from student to graduate worker requires a significant shift in thinking, including acquiring the ability to self-reflect and evaluate one's efforts. Students need to be familiar with reflective practice before entering the world of work and demonstrate transferable skills such as the ability to reflect and learn from their experiences (Smith & Pilling, 2007).

Although the Gibbs' reflective model critics contend that it is complex, difficult to recall, and may have some steps repeated, the model is more familiar in local setting and engraved in most curricula in nursing (Barksby et al., 2015). Furthermore, Li et al. (2020) did a study of how nurses perceive the application of the model in documenting adverse events in clinical practice. The findings showed that the nurses perceived the model as easy to use, and conducive to the analysis of clinical reasoning that lead to their CJ, especially among the junior nurses (Li et al., 2020).

Reflection is a process of learning from experiences, considering and evaluating previous knowledge in light of these experiences, and then incorporating this new knowledge to inform future practice (Jasper et al., 2013). Students can use the theoretical framework of Gibbs's reflective cycle during the clinical experience to guide their documentation of reflections (Husebo, O'Regan, & Nestel, 2015). Gibbs's reflective cycle has been applied in teaching reflections in nursing and other health-related fields (Gibbs, 1988). Several researchers have expressed the need for structured

reflections to guide the students to capture pertinent information that can be analyzed to infer CJ development (Husebo et al., 2015; Lasater, 2007a).

Lasater (2007a) observed that some students could analytically and thoughtfully document their reflections without much provocation while others tend to report a chronological description, unable to ascertain clinical implications or effects on their professional development. Thus the need to structure a reflection for standardization. Structuring of thoughts using Gibbs' reflective model has been found to improve the level of thinking among students (Mahlanze, Sibiya, & Govender, 2015). The model helps to challenge assumptions, explore new approaches, promote self-improvement and to link the cognitive know how to the psychomotor application of the knowledge (Jootun & McGarry, 2014).

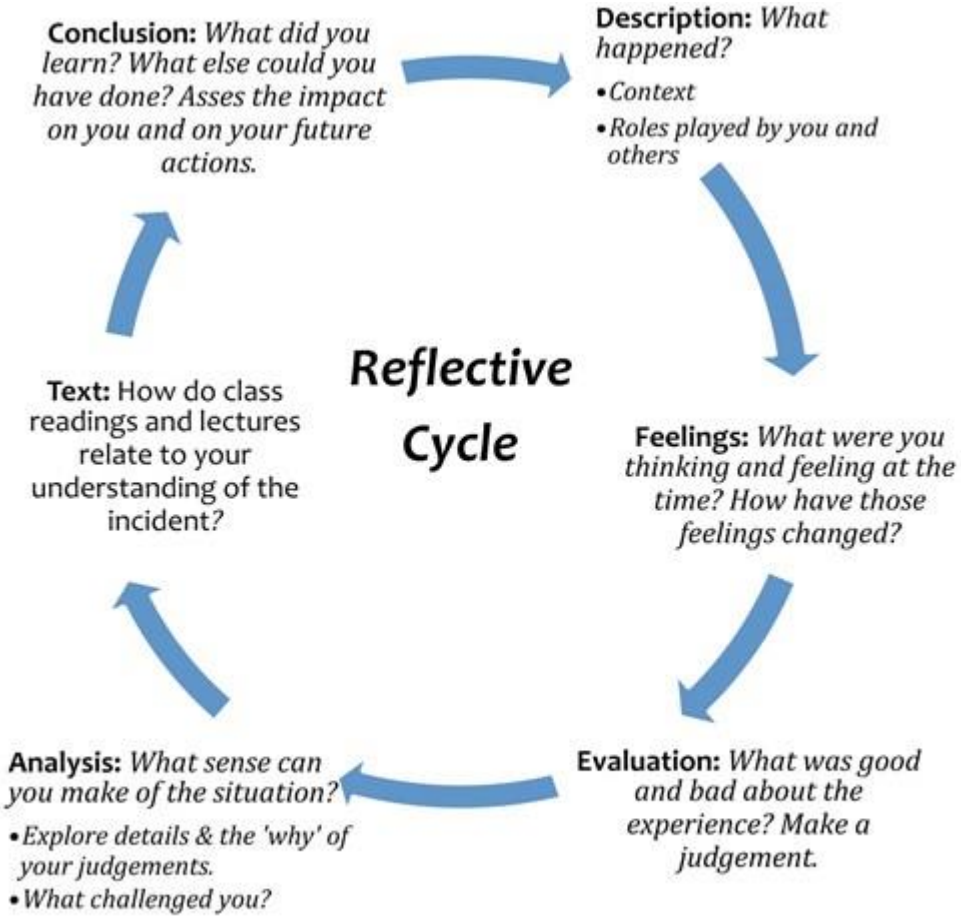

Figure 2.2: Gibbs' Reflective Cycle
Source: Gibbs (1988)

2.3.3 Lasater CJ Model

The Lasater CJ evaluation model was developed from the Tanner (2006) theoretical framework that focused on student instruction. Tanner developed this model based on a systematic review of over 200 research studies. Tanner concluded that a student's academic knowledge brings to the clinical environment is key in unraveling the mystery engraved in interpreting patient assessment data. The patient process of interaction with the nurse pre-empts possible responses of clients that can be easily identified. This process brings out the need for interaction time between the patient and the nurses to identify salient cues that require intervention. A variety of reasoning patterns among

nurses were identified. Reflection on practice was mainly triggered by a breakdown in CJ and was vital in developing clinical reasoning and CJ (Tanner, 2006).

Four cyclically enunciated facets comprise the model of CJ developed by Tanner (2006). The first step is "Noticing" which refers to identifying patient clinical manifestations. The aspect of 'Noticing' is influenced by the knowledge the nurse has of the clinical situation, their previous experience with the same situation, and the context within which it occurs (Nunes et al., 2020). The second step is, "Interpreting" the process of assigning meaning to the data gathered. The nurse employs their analytical skills in the light of their theoretical knowledge and experience. According to Benner (1984), nurses who possess a high level of CJ are said to employ their intuition to infer the actual or potential problem as they interpret their findings. The third step involves "Responding". This stage involves taking the necessary action to meet the patient identified needs. The final stage is "Reflecting". In this stage, Tanner (2006) described reflection as being binary; 'reflection in action' or 'reflection on action.' The nurses ponder on the outcome of the intervention and review what they went done well and what they would have done differently. The action plans from this stage inform future encounters with a similar problem (Nunes et al., 2020).

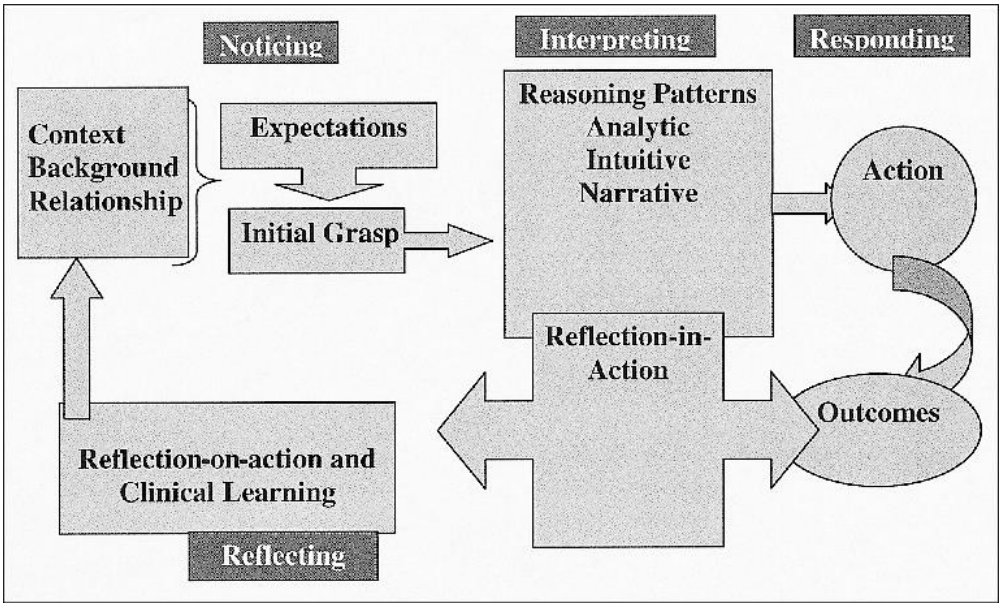

Figure 2.3: Tanner CJ Model
Source: Tanner (2006, p. 208)

Lasater (2007a) developed a CJ assessment rubric from the work of Tanner. The motivation for developing an assessment rubric was to unravel the methodology for student CJ scoring, which was not characteristic in the Tanner (2006) model. The assessment rubric was tested in a simulation laboratory in an exploratory study with multiple assessments and assessors scoring the students. Lasater unpacked the Tanner four aspects of CJ to make it easier for students to interpret. The elements of 'Noticing' measurements were stated as the ability of the student to make a focused observation, recognize deviation from usual pattern, and questioning. 'Interpreting' dimensions included the ability of the student nurse to make sense of the data obtained and prioritize. Responding measurements included the way the student communicates, confidence, clarity, proper planning, and skillfulness. Finally, reflecting aspect was described as the ability to self-analyze and develop action plans that show commitment to improvement (Lasater, 2007b).

The CJ model of assessment has been applied to evaluate the CJ of both qualified nurses and student nurses. Fenske, Harris, Aebersold, and Hartman (2013) used this tool in a

study to assess the self-assessed CJ skills of qualified nurses after a video-based simulation activity. It has been found to be a tool that is valuable in preceptor student assessment, student self -evaluation and as a guide for reflections as well as to enhance CJ development in newly qualified nurses (Fenske et al., 2013; Miraglia & Asselin, 2015; Nielsen, Stragnell, & Jester, 2007).

Different studies in different contexts have validated the Lasater CJ evaluation model. It is one of the models that has been customized to evaluate student nurses' CJ as opposed to qualified nurses CJ. For instance, the Korean version of Lasater CJ Rubrics (LCJR) validation showed good construct validity for the four aspects of CJ. Cronbach's alpha coefficient for item analysis was reported to be high at 0.897 and 0.909, with an internal consistency reliability score of 91% (Shin, Park, & Shim, 2015). This study concluded that the LCJR was a reliable tool for CJ evaluation of student nurses in Korea. This tool has also been validated in other countries like China (Yang et al., 2019) and Dutch (Vreugdenhil & Spek, 2018). Similar findings of the tool possess a high level of construct validity and interrater reliability.

The Dutch study by Vreugdenhil and Spek (2018) tested the use of the tool in evaluating CJ skills of student nurses within a real clinical environment making it an appropriate tool for this study. The four aspects of the model: noticing, interpreted in this study as identifying the significant patient history and assessment data; interpreting, customized as analyzing patient assessment data; responding, documented as coming up with an independent nursing action as well as anticipating physician's orders; and reflecting, which was captured in the reflective journal. The customization of this model was necessitated by the need to align to the students' language, that is, the nursing process to prevent ambiguity. Recently, there has been a recommendation to use the tool in situations where there may not be direct observation, such as in the case of this study

where the tool was used to evaluate reflections without necessarily observing student behavior (Lee, 2021).

2.4 Empirical Literature Review

2.4.1 Clinical Judgment (CJ) Skills of Student Nurses

The term CJ has been used interchangeably with clinical reasoning, clinical decision making, and sometimes critical thinking (Manetti, 2019). CJ manifests when critical thinking is applied in identifying the appropriate interventions in a given client situation (Simmons, 2010). It is a cognitive process that utilizes thinking tactics to construe client assessment data to formulate a plan of care to meet the identified needs appropriately. The provision of safe patient care requires sound clinical decision-making by the health care team (Benner, Hughes, & Sutphen, 2008).

Several scholars have described clinical reasoning that normally informs CJ Victor-Chmil (2013), for instance, described CJ as a clinical situation analysis guided by critical thinking. The nurses analyze the clients' status and utilize their critical thinking skills to determine the way forward in addressing the identified needs. Benner et al. (2010), on the other hand, stated that nurse thinkers are characterized by their clinical reasoning ability over and above the skills they possess. Nurse thinkers depict their capabilities in picking cues from client assessment data and institute timely responses to those findings (Benner et al., 2010). It is the responsibility of the nurse to detect the often instant changes in client assessment data, implement nursing and collaborative actions, and evaluate response to therapy.

The current health care environment is characterized by complex patient care needs that require a well-trained professional nurse to unravel and collaborate with the health care team in making sound decisions. Nurses must exercise timely, appropriate clinical

interventions to reduce mortality and morbidity now more than ever before (Gul & Boman, 2006). Research indicates that nurses who are critical thinkers provide clinically competent care because they recognize changes in patient conditions and address those changes (Fero, Witsberger, Wesmiller, Zullo, & Hoffman, 2009).

The ability of the nurse to recognize and respond to a patient showing signs of deterioration is a great predictor of patient survival (Purling & King, 2012). Over 50% of adverse effects are associated with poor CJ and deficient clinical decision-making (Tomlinson, 2015). Every training program, therefore, should aim at enhancing quality, safe, and evidence based care delivery (Mc Cartney, 2017). Thus the appeal for salient CJ skills. Exercising CJ is a complex process because the nurse is required to be observational in obtaining relevant information and link the data to inform timely, sound clinical decision-making. The nurse takes full responsibility for their action or lack of it in their decisions (Mc Cartney, 2017).

If nurses are to deal effectively with complex change, increased demands, and greater accountability, they must become skilled in higher-level thinking and reasoning abilities. The timeliness of making comprehensive CJ is directly proportional to the nurse's experience (Mc Cartney, 2017). Junior nurses may struggle due to lack of experience, while a senior nurse can engage their intuition and quickly make a life-saving decision (Mc Cartney, 2017). It is imperative, therefore, that focused development of CJ begins during training. Clinical reasoning, which result in sound CJ requires the students to be actively engaged through deliberate practice since it is a learned skill and develops over time due to the complex nature of the health care environment (Benner et al., 2008).

The readiness of new graduates to function as Registered Nurses (RNs) continues to be in question. Del Bueno (2005), in reviewing 10 years of data for new nurses on the

performance-based development system, found that 65%-76% of inexperienced RNs did not meet the expectations for entry-level CJ, and the majority had difficulty translating knowledge and theory into practice. This situation emphasizes the need for faculty to rethink clinical training that inculcates higher-order thinking early to ease the student transition to professional practice at graduation.

Nurses' training should focus on producing professionals capable of making clinical decisions appropriate to the patient care situation. These abilities should be enhanced and deliberately inculcated (Atay & Karabacak, 2012). The undergraduate program has shifted from a clinical focus to academics. Nurse Educators need to be deliberate in ensuring that students can meet the clinical objectives effectively and competently integrate what they learned in class into the clinical practice, thus the need for an enhanced clinical teaching and learning strategy (Papastavrou et al., 2010).

Clinical training for nursing students occurs in a highly unpredictable social environment where the needs of patients are met and student learning takes place (Ip & Chan, 2005). Student learning experiences that exemplify efficient mentoring, constructive feedback, and application of theory to practice, produce meaningful learning (Kaphagawani & Useh, 2013). According to the Institute of Medicine, as reported by Greiner and Knebel (2003), clinical practice should prepare nursing students to become skilled professionals able to promote the people they serve to provide quality health care. Skilled professionalism will only be feasible if clinical teaching and learning are deliberate and evidence-based.

Nurse educators are tasked with preparing nursing students to function independently in a highly dynamic health care arena. Research conducted by Del Bueno (2005) identified gaps in clinical decision-making among newly qualified nurses. The study found that the nurses could not identify patient care priorities, lacked confidence in

managing complex patient needs, and could not anticipate physician's orders—the survey associated these gaps with a lack of deliberate inculcation of critical thinking skills during training. Early stimulation of CJ through guided self-directed learning can go a long way in improving nurse graduate competency outcomes.

Simmons (2010) described clinical reasoning as manifest when critical thinking is applied in identifying the appropriate interventions in a given client situation. It is a process cognitive in nature that utilizes thinking tactics to interpret client assessment data to formulate a plan of care to meet the identified needs collaboratively. The provision of safe patient care requires sound clinical decision-making. Multiple researchers have described clinical reasoning; Victor-Chmil (2013) explained CJ as a clinical situation analysis guided by critical thinking.

The nurse analyses the client's status and utilizes her critical thinking skills to determine how forward in addressing the identified needs. Benner et al. (2010), on the other hand, stated that the manifestation of nurse thinkers is in their clinical reasoning abilities. Nurse thinkers express their capabilities in picking cues from client assessment data and institute timely responses to those findings (Benner et al., 2010).

It is the responsibility of the nurse to detect the often instant changes in client assessment data, implement nursing and collaborative actions, and evaluate response to therapy. A systematic review to analyze the evidence on CJ skills of undergraduate nursing students found that the knowledge and the skills the student brings to the clinical environment coupled with self-confidence and self-efficacy are essential in CJ development (Guerrero, 2019). Thus, curriculum implementers need to ensure prerequisite knowledge in the form of theory is gained before exposing the student to the clinical environment. This subject matter sequencing enhances theory-to-practice integration.

A study done in Sweden to evaluate CJ skills of pre-licensure nursing students using a simulated case study showed low CJ scores. The Lasater CJ model was used to analyze scores. The student's study assessed the ability of the student to notice, interpret, and respond to the patient care situation. The majority of the students were at the stage of beginning and developing (Hallin, Bäckström, Häggström, & Kristiansen, 2016). From this study, it can be concluded that most of the students do not possess an acceptable level of CJ that would help them function as safe practitioners by the time they graduate. In light of these findings, it has become imperative to institute strategies to support student nurses achieve these irreplaceable competencies way before they graduate.

In another survey to assess the CJ skills of qualified nurses in Iran, the findings revealed deficient ability to come up with relevant intervention for patient care situations. Higher performance was in identifying the patient's problem (Mirsaidi, Lakdizaji, & Ghojazadeh, 2012). Using the LCJR, Manetti (2018) evaluated the CJ skills of junior and senior students. This study showed that junior nurses are at an accomplished level. At the same time, senior students are exemplary in their CJ skills. This finding indicates that CJ development is a process and, with proper attention to instruction, can be developed over time.

2.4.2 Integrated Clinical Teaching/Learning Strategies

Multiple studies have examined the optimal clinical teaching strategies with varying reports. Curl et al. (2016) did a study to identify the optimal clinical teaching strategy; this study identifies the need to integrate different approaches to draw from each of their strengths and minimize their weaknesses. The research evaluated the effectiveness of using high-fidelity simulations to substitute half of the time spent in clinical practicum for nursing students. It concluded that combining simulations with conventional clinical experiences resulted in significantly higher scores on the pre-

graduation exit exam than traditional clinical experiences alone (Curl et al., 2016). These studies compared different clinical teaching strategies but did not focus on CJ.

Zarifsanaiey et al. (2016) conducted a quasi-experimental study to establish the impact of blending simulation and critical thinking strategies versus simulation only among 40 nursing students. This difference was statistically significant, and students in the blended clinical teaching strategy had significantly higher performance than simulation only ($P<0.001$). The study concluded that the integrated models positively impact students' level of performance. However, this study was carried out in a simulation laboratory rather than a clinical setting.

Most integrated teaching/learning strategies have been tested in a controlled simulation laboratory rather than in the clinical area. Pai (2016) conducted a research study in Taiwan among nursing students using an integrated model. They wanted to identify if the rollout of the model in a clinical environment was more impactful on student performance than if it was applied in the simulation laboratory. The study concluded that real-life clinical experience has a more substantial effect on enhancing clinical performance than a simulation experience. Additionally, Aein and Aliakbari (2017) compared the development of concept mapping and NCPs among 60 undergraduate nursing students, the findings showed that each of them had a significant impact on critical thinking skills. Still, concept mapping had a greater statistical magnitude.

Hansen and Bratt (2017) evaluated the sequential combination of simulation and clinical learning experience on student competencies. They recommended using alternative clinical and simulation learning models to bridge the gap in clinical education faced by nursing schools. The balance is not in whether they are in the clinical area or simulation lab but within the context to improve student nurses' CJ skills.

A study was done in Jordan among 40 undergraduate nursing students utilizing a pre-test post-test design on a convenient sample examining how constructivist approaches of concept-based learning and concept mapping affect CJ skills. The findings showed a significant improvement in CJ skills compared to each method alone (Alfayoumi, 2019). This finding encourages embracing multiple clinical teaching strategies to improve CJ.

Kim and Shin (2016) carried out a study to identify the effect of the nursing process-based simulation among 49 undergraduate students. The study concluded that the nursing process with simulation improved the CJ skills of nursing students. Integration of traditions lecture method of teaching versus a combination of concept mapping and lecturing was done in a study by Kaddoura, Van-Dyke, and Yang (2016). This study showed improvement in critical thinking skills in the integrated intervention group. They were amplifying the value of concept mapping in improving the necessary thinking skills of nursing students.

Conceicao and Taylor (2007) conducted a research that combined the use of reflections and concept maps to evaluate the critical thinking abilities of student nurses. This study concluded that integrating the two essential thinking tools during online learning enhances the power of the students to link classroom theory to clinical experience and authenticate the existing information, which are necessary ingredients for clinical reasoning. However, the study was in an online context, not a clinical context, and the focus of reflections was not on patient/client-related encounters.

2.4.3 Concept Mapping and CJ

Concept mapping as a learning strategy was developed based on Ausubel assimilation theory by Novak and Gowin (1984). Clinical concept maps contain all aspects of patient assessment data generated by both the nurse and the health care team. The data should

be well labeled, categorized, and linked (Schuster, 2015). The concept map should show how each concept of patient assessment link with what is known, the collaborative investigations, and the treatment the client is on. As a learning tool, it promotes meaningful learning by displaying concepts in an interrelated ordered manner that helps the student visualize how each aspect of patient assessment influences another (Schuster, 2015).

Concept maps help students to link data by creating pictorial maps (Novak, 2010). Concept maps help students integrate the new knowledge of a concept encountered to the previously known and generate new information out of this linkage that they can apply in future encounters (All & Havens, 2003). The process of graphical presentation helps the students become analytical and develop critical thinking skills. Nurse educators need to critically consider how they can enhance training outcomes through the early development of critical thinking skills in nursing students.

The students in developing concept maps are able to clarify what they already know, and fill in gaps for missing data and see interrelationships in clinical data (Khrais & Saleh, 2020). The individualized nature of concept maps makes them superior to NCPs that can easily be downloaded and applied to a client situation without much customization. Furthermore, concept mapping has been directly associated with improvement in academic scores among nursing students. It is an essential tool in enhancing the integration of theory to practice, which has been an area of concern for many researchers (Levett-Jones & Fitzgerald, 2005; Nicol & Young, 2007; Romyn et al., 2009; Smith & Crawford, 2003).

Most studies have linked the use of concept maps by nursing students with the ability to integrate theory to the practice of nursing, solve problems effectively and provide holistic nursing care to patients (Chen et al., 2011; Kaddoura, VanDyke, Cheng et al.,

2016; Lee et al., 2013; Trevisani et al., 2016). The value of concept mapping was identified by Kaddoura, VanDyke, Cheng et al. (2016) and Lee et al. (2013) in knowledge transformation, building student confidence, and improvement of CJ skills. They recommended the integration of concept maps with other clinical teaching tools, such as case studies, simulations, especially in an actual clinical site. Trevisani et al. (2016) further reiterated that the students can identify cases of clients in the clinical area and link the textbook knowledge with the clinical manifestations and diagnostic findings. In doing this, they are able to apply their classroom knowledge to real-life scenarios. Moreover, Jaafarpour, Aazami, and Mozafari (2016) in their study, concluded that concept mapping improves academic performance of nursing students over and above clinical reasoning skill development.

Constructing concept maps requires the critical skills associated with critical thinking: insight, reflection, and ingenuity (Harrison & Gibbons, 2013). Studies done over the last ten years have demonstrated that the use of concept maps aids in developing CJ skills in both qualified nurses and student nurses (Schuster, 2000; Vacek, 2009; Wilgis & McConnell, 2008). Several researchers have found concept maps to be superior to the nursing process in helping students plan patient care (Koehler, 2001; Mueller, Johnston, Bligh, & Wilkinson, 2002; Schuster, 2000).

Nursing students need to be assisted as they work with patients in the clinical environment to see these linkages to the assessment data they generate (Tanner, 2006). The undergraduate program is highly intense, with much content to internalize. Most student nurses come into the clinical environment with information overload and may not figure out what applies. Strategies to build on the knowledge learned in the class in the clinical setting will help them find meaning in what they are doing and become competent practitioners. Therefore, there is a need to create a platform for the students

to break down the knowledge into manageable portions for meaningful learning and provide a forum for them to express their challenges and experiences for continuous improvement of their education. The use of concept maps allows the restructuring of information visually to promote clinical reasoning in the nursing student and enhance learning evaluation (Schuster, 2015).

In the clinical area, the tool can be used to compare a patient's symptoms, diagnosis outcome criteria, treatment interventions, and evaluation (Gerdeman et al., 2013). The use of concept maps can indirectly help evaluate CJ development in student nurses as one monitors how they relate concepts meaningfully on a continuum (All & Havens, 1997; Massarweh, 1999; Wheeler & Collins, 2003). Clinical decision-making provides interplay between textbook knowledge, patient assessment data, nursing care, and learning through experience (O'Neil, Dluhy, & Chun, 2005).

Daley et al. (1999) examined how concept mapping affects the critical thinking skills of student nurses. He concluded that the more one develops patient care concept maps, the more their necessary thinking skills improved, as demonstrated by the improved quality of concept maps. Atay and Karabacak (2012) studied the effects of concept-based care plans on the higher-order thinking skills of nursing students. The sample was composed of 80 participants in the first year and second year of the undergraduate program. The study concluded that concept mapping has a positive effect on critical thinking skills. Although this study compared the outcome among first-year and second-year students, it was not inclusive of students with more clinical experience to show the differences in entry-level CJ skills and whether the CJ improves with overtime or without using concept maps.

A study conducted among fourth-year nursing students by Moattari, Soleimani, Moghaddam, and Mehbodi (2014) to determine the effect of clinical concept mapping

on critical thinking had similar results. However, this study had only fourth-year students, meaning that the findings cannot be generalized to all nursing students. Multiple researchers have done similar studies with similar results (Daley et al., 1999; Hicks-Moore & Pastirik, 2006; Wheeler & Collins, 2003). Nurse educators and students have mutually agreed that the use of concept maps ensures that the nurse analyzes all patient assessment data holistically and assists students to internalize the theory learned in class to the realities of the clinical environment (Castellino & Schuster, 2002).

Concept mapping has also been applied in teaching theory in the classroom. A pretest-posttest quasi-experimental study done in Taiwan in a medical-surgical ward among nursing students by Chen et al. (2011) concluded that concept mapping improves critical thinking. Although this study demonstrated the effect of concept mapping on the necessary thinking skills of nursing students, the setting was in the classroom environment, not in the clinical setting. The application of concept mapping cuts across clinical and classroom settings and in both applications has been shown to help students learn meaningfully.

A systematic review and meta-analysis by Yue, Zhang, Zhang, and Jin (2017) on the efficacy of concept mapping revealed a significant effect on critical thinking development in student nurses. However, most of the tools used focused on general aspects of critical thinking rather than CJ. It is clear from the literature that concept mapping is evidently linked to meaningful learning that influences CJ skill development. However, it is not without limitations, thus the need for integration. A study done by Hsu (2004) recommended the integration of concept maps with other tools. They stated that the post-test scores after the application of concept maps did not show significant improvement in critical thinking disposition. Therefore, it is very

important to implement concept maps gradually, and it is suggested to integrate them early with traditional lectures.

2.4.4 Reflective Writing and CJ

Reflection denotes the practice of gaining new knowledge from one's experiences and interpreting what was known before through the eyes of current clinical encounters to inform engagements in the future (Jasper et al., 2013). Reflective writing involves the documentation of one's insights about a particular occurrence. The documentation can be done during the practice or after the clinical encounter. The use of reflective thinking began with John Dewey but was later developed by Schon (1987). He described reflection as being two dimensional; "thinking thoughts" and thoughts around an action. Schon concluded that the ability to reflect and learn from an experience characterizes a professional.

Dewey (1933) stated that learning occurs when people reflect on the experience rather than encountering the experience itself. He explicitly delineated the value of reflection in improving future encounters. In regard to patient care, Dewey linked better patient outcomes to reflection on or in practice. There is no consensus on the frequency of reflection documentation. However, the Nursing and Midwifery Council (2019) revalidation guidelines recommend at least five documented accounts within the last three years of practice. Some researchers recommend a period of quiet to gather the thoughts and enhance focus on positive aspects of an experience rather than the negative encounters in the experience (Oelofsen, 2012).

When students use reflective journals, the expressions of their experience over time help them develop critical thinking skills because they commit to improvement by identifying gaps in what they did (Duffy, 2008). The journal becomes a tool of self-evaluation as well as an assessment of how one relates to others. Reflective writing

effectively facilitates knowledge sharing among nurses on their clinical experiences, which enhanced knowledge transfer in future events (Chirema, 2007). When students document their learning experiences, they can pick their learning needs and later refer to that documentation as a learning tool in future encounters (Epp, 2008). Also, Lasater and Nielsen (2009a) alluded to the fact that reflection equips the student nurses with the ability to analyze the care given to a client as well as expand their CJ abilities.

Silvia et al. (2013) conducted a study among second-year and third-year nursing students. The researchers identified how reflective journaling enhances experiential learning among nursing students in clinical practice. The findings showed that clinical experiences for nursing students were improved when reflective writing was used as a clinical learning strategy. The students were able to develop a questioning mind on their experience, which helps them improve how they handle similar situations in the future and share with their peers to learn from their mistakes or experiences.

According to Dye (2005), successful student learning can be maintained through written reflections and clear faculty feedback. Increased student engagement through reviews strengthens student competencies in applying theoretical concepts to clinical concepts, requiring competent practitioners. For students entering the nursing profession, this reflective practice incorporating the textbook knowledge into real-life clinical encounters is vital to building safe practitioners. As Dye pointed out, expertise in professional practice requires critical reflection on one's performance.

A systematic review conducted by Bjerkvik and Hilli (2019) explored the impact of reflective writing on student learning. This study found that when reflections were used as clinical learning tools, clinical reasoning skills improved, and students were more conscious of the clinical situations they encountered. However, the reflections focused on describing the clinical situation rather than developing solutions. The students

focused on their strengths and weaknesses in handling the clinical situation and the emotions evolving as they managed the clients but had difficulties reflecting on how these encounters influenced their decision-making and challenged their knowledge. The author identified mixed tools for learning as a factor that contributes to learning. This study supports the proposition that reflective journaling alone is limited in enhancing clinical reasoning skills.

Hwang et al. (2018) explored the role of reflective journaling in facilitating student learning in a mental health clinical practicum. The type of events reflected on included therapeutic relationship boundaries, response to patient symptoms, and own attitude to patient illness. The majority of the participants stated that reflective journaling enhanced their clinical experience and gave them an avenue for venting painful experiences relating to the clinical environment and the terminal nature of client illness. However, the focus of this study was not necessarily on CJ development.

Mamede, Schmidt, and Penaforte (2008) did a study to identify if reflection improved the ability to precisely diagnose a case situation. They concluded that reflection improved the ability to accurately diagnose, especially in complex cases compared to simple cases. However, the study was done among medical students, although the focus was on CJ skills. This study demonstrated the value of reflection in reducing diagnostic errors which have been linked to a lack of CJ skills among health care providers.

Although a lot is said about the benefit of reflective writing, the process is not without pitfalls, calling for integrating clinical teaching strategies rather than one size fits all policy. Some of the potential barriers cited by researchers, such as Craft (as cited in Barksby et al., 2015) include students not been adequately prepared to document their reflections, structuring issues, time constraint, and confidentiality as students are concerned about who will read their reflections. The fact that reflections may be part of

graded academic work can easily bias students to document what they think the instructor wants to hear rather than their exact experience and the learning that took place (Hannigan, 2001).

Differences in the way students reflect exist across gender, although this is an area that has not been explored significantly in literature. A study to explore nursing students' clinical experiences as documented in reflection diaries found the female students to be more reflective. The female students focused more on patient care, while their male counterparts focused on aspects of their personal learning experience and organizational operations (González-García, Lana, Zurrón-Madera, Valcárcel-Álvarez, & Fernández-Feito, 2020).

In another study, the female students were found to be keener to operate within their scope of practice motivated by fear of making mistakes, especially in situations where the client showed deterioration despite treatment (Fernández-Feito, Basurto-Hoyuelos, Palmeiro-Longo, & García-Díaz, 2019). Moreover, Clavero et al. (2010) identified the gender differences among nurses, with the male nurses more likely to prioritize decision-making rather than client outcome and the practical aspects of care. Moreover, the female nurses are more concerned about the progression and consequence of client care.

The use of reflective writing in nursing education is scanty in sub-Saharan Africa. There is no documented local study that has attempted to analyze the way students reflect or their level of reflection. There is a need to explore its use and how it can influence students' ability to integrate their theory to practice in a resource-constrained clinical setting.

2.4.5 Nursing Process and CJ Development

The nursing process has been used across the practice of nursing for decades. It has, over time, been referred to as the critical thinking tool for nurses. Components of the nursing care plan include

- objective and subjective assessment of clinical cues,
- coming up with the nursing diagnosis,
- developing a prioritized plan of care,
- implementing the planned care and evaluating patient response to the interventions.

The nursing process is described as a tool or a guide that nurses use to make clinical decisions informed by higher-order thinking. The utilization of NCPs in student learning is a global practice. However, the developed countries are now adopting map-based care plans rather than traditional linear care plans.

Nursing care plans have been used across nursing practice for decades (Lambie, Schwend, & Scholl, 2015). It has, over time, been referred to as the critical thinking tool for nurses. Components of the nursing care plan include; objective and subjective assessment of clinical cues, coming up with a nursing diagnosis, developing a prioritized plan of care, implementing the planned care, and evaluating patient response to the interventions (Doenges, Moorehouse, & Murray, 2014). The nursing process is seen as a decision-making approach that promotes critical thinking and evidence-based nursing. It also focuses the nurse on providing individualized patient-centered care (Hooks, 2016). The utilization of NCPs in student learning helps them holistically identify patient needs and come up with strategies to address those needs (Hooks, 2016).

According to Mwangi, Meng'anyi, and Mbugua (2019), NCPs, when applied in the clinical environment, enhance patient care quality and promote evidence-based practice. Kim and Shin (2016), on the other hand, maintained that the use of the NCPs improved CJ, especially the domains of evaluation and nursing diagnosis. Although NCPs in inpatient care documentation has been a practice for a long time, little is known on how it impacts CJ as a clinical learning strategy. Most of the application has been in the simulation laboratory, where it has been used to assess improvement of clinical reasoning after a simulation experience (Lambie et al., 2015).

In a comparative study, Aein and Aliakbari (2017) identified that the NCPs helped improve the critical thinking skills of student nurses. However, its effect was lower compared to other tools like concept maps. For the nurse to be able to come up with an appropriate nursing diagnosis of a specific client, they need to be well-versed with the art of carrying out a thorough physical examination and evaluating the collaborative findings.

Although NCPs have been used in training and clinical practice in Kenya for a long time, little is known on how they improve the CJ skills of student nurses. Studies globally have identified the challenges in developing NCPs rather than their usefulness in improving clinical reasoning abilities (Salvador et al., 2020). Studies have shown that reliance on one type of problem-solving tool, such as NCPs as enshrined in the nursing process, limits the description of the complexity of factors in CJ (Higuchi & Donald, 2002; Tanner, 2006).

The majority of studies in sub-Saharan Africa have concentrated on evaluating its uptake (Mangare, Omondi, Ayieko, Wakasiaka, & Wagoro, 2016; Mbithi, Mwenda, & Karonjo, 2018) and influencing the utilization across different clinical sites (Kamau, Maingi, Ndungu, & Karonjo, 2016; Mwangi et al., 2019). Some of the researchers have

identified the factors hindering the implementation as lack of knowledge, time constrain, and low staffing (Folami, Olowe, & Olugbade, 2019). Most of the findings show a knowledge gap among the qualified nurses on developing NCPs and the uptake, which means there may be gaps in how the nursing process is adopted and implemented during training. Therefore, this study aimed to identify the role of NCPs in improving the CJ skills of undergraduate nursing students. The focus is to strengthen the claim for its effectiveness and hopefully improve uptake among qualified nurses to enhance their critical thinking skills and safe patient care.

According to Mwangi et al. (2019), NCPs, when applied in the clinical environment, enhance patient care quality and promote evidence-based practice. On the other hand, Kim and Shin (2016) identified that the use of the nursing process improved CJ, especially the domains of evaluation and nursing diagnosis. Although the nursing process has been the dominant tool in clinical education, especially in the local setting, it is deficient in fully describing CJ as a process because complex factors influence it (Higuchi & Donald, 2002; Tanner, 2006). Thus the need for subjecting its use to empirical testing to enhance evidence-based practice.

2.4.6 Learning Experiences of Nursing Students in the Clinical Environment

The amalgamation of theory and clinical practice is vital in training student nurses to provide quality, safe patient care as professionals. Students quickly transfer knowledge to practical situations when interacting with real-life experiences in the clinical setting (Gaberson & Oermann, 2010). A clinical learning environment that is supportive, resourceful, and individualized ensure that student nurses fit in the health care team and are comfortable learning from their mistakes (Papastavrou et al., 2010).

The present clinical nursing climate is more intricate than any other time in recent memory. As a quickly propelling calling, nursing requests higher psychological

abilities from medical attendants. Basic inventive reasoning and CJ are seen as basic abilities for each well-being proficient (Potgieter, 2012). Perceptions and their translation were solidly settled by Nightingale (1992) and Lin, Hsu, and Tasy (2003) as trademarks for prepared nursing practice. As of late, CJ in nursing has gotten inseparable from the nursing cycle model of training seen as critical thinking. The nursing cycle has ruled nursing instruction since the 1960s as scholars attempted to interface their speculations with the CJ measure and connect the nursing hypothesis with clinical practice. Studies by Higuchi and Donald (2002) and Tanner (2006) showed that instructing just one sort of critical thinking, such as the nursing cycle, neglects to satisfactorily depict the process required for nursing multifaceted nature of elements impacting CJ.

This study utilized reflective journaling as a student-directed learning strategy to help them reflect on their clinical experiences. Reflection help students identify gaps in their learning (Silvia et al., 2013). It supports the development of profound knowledge, critical thinking skills, and confidence (Bjerkvik & Hilli, 2019). Reflections can act as opportunities for voicing painful experiences encountered during clinical practice (Hwang et al., 2018). Analysis of such observations helps improve the clinical learning environment for better outcomes of training. The use of documented reflections can enhance student experiences to strengthen their incorporation into the profession (Chaffey et al., 2012).

There is a need to assess the reflective work of students to identify learning enhancers and barriers that can help improve the outcome of nurse training. Although reflective writing has been an ongoing clinical nurse education practice globally, analysis of journal reflections to identify clinical experiences of student nurses is scanty, especially in the local Kenyan setting. The majority of the studies have focused on assessing the

level of reflection (Bjerkvik & Hilli, 2019; Jensen & Joy, 2005; Lasater & Nielsen, 2009a); or improving reflections (Karimi et al., 2017; Silvia et al., 2013). The few studies that have analyzed student reflections found that most students were concerned about whether they acted professionally in communicating with the patient and performing nursing skills (Chong, 2009). Another study identified feedback, taking responsibility, and the opportunity to practice as factors that promoted students' clinical learning. Hindering factors included inconsistent supervision and feelings of personal inadequacies (Löfmark & Wikblad, 2001).

Multiple studies have been done using questionnaires, interviews, and observational data collection methods rather than analysis of reflections. A study done to evaluate clinical learning experiences of student nurses through observation and interviews found that the participants had the opportunity to gain new skills but felt intimidated by the negative attitude of the qualified nursing staff towards them. This experience affected their confidence in attempting new procedures (Jamshidi, Molazem, Sharif, Torabizadeh, & Kalyani, 2016). Another study by Warne et al. (2010) set out to identify the enhancers of clinical experiences for nursing students from nine European countries. The study concluded that the students had a pleasant experience with a supportive mentoring system. Similar studies have found a correlation between student-preceptor relationship and clinical experience. Lawal, Weaver, Bryan, and Lindo (2016), for instance, observed that when students' relationships with the preceptor were enhanced, the clinical experience was pleasant.

Papastavrou, Dimitriadou, Tsangari, and Andreou (2016) did a study to evaluate student satisfaction within the clinical environment. They sampled 463 students across the years of undergraduate research from three universities. This study identified the role of close supervision by mentors, nurse educators, and qualified staff in creating an

environment conducive to clinical learning. The students had a good learning experience that they attributed to the frequency of mentor-to-student meetings that enhanced the supervisory relationship and the students feeling the nursing team accepts them. This study did not clearly state the methodology used to correct the student experiences and included first years, which is not the case in this study.

A Malawian study done by Mbakaya et al. (2020) to establish the clinical experiences of student nurses found multiple factors that negatively affected the learning experiences of the students. The researchers cited three key aspects: resource constraint, strained relationship with the qualified nurses, and lack of supportive clinical preceptors. Another study done in South Africa identified various challenges that affect the clinical learning of student nurses. Issues of poor relationships with qualified staff keep emerging in studies as a major challenge. The students stated they were also discriminated against; there was a conflict between what was taught in class and the encounters in clinical practice (Fadana & Vember, 2021).

Four recurring themes emerged in a study done to evaluate the perceived clinical experiences of 90 second, third, and fourth-year undergraduate nursing students by Sharif and Masoumi (2005). Firstly, apprehension in facing clinical practice. Secondly lack of knowledge integration to clinical issues. Thirdly, the kind of professional role they played in that they felt they were allocated tasks that demeaned their theoretical instruction. Finally, the role supervision of qualified nurses and clinical educators played in enhancing their learning experience. This study, however, utilized focused group discussions rather than reflection analysis.

Atakro et al. (2019) conducted a study to explore the clinical experiences of 35 undergraduate nursing students in two different clinical sites using structured interviews identified four main themes. The student felt isolated in the clinical site and

was excited to come across complex medical devices. However, they were displeased by the inadequate utilization of the nursing process and physical examinations by the qualified nurses. Although this study was done among undergraduate nursing students in a clinical site, the data extraction was via interview guides rather than reflections. The use of reviews allows the learner to digest their experience and pen it as per what meaning that experience brings rather than just what the occasion is.

Three main themes emerged in a qualitative study by Reljić, Pajnkihar, and Fekonja (2019) to analyze undergraduate nursing student reflections concerning their clinical experiences. The students expressed issues that triggered their emotions and how interpersonal relationships affected their knowledge and opportunities in the clinical environment. This study used self-reflection analysis done by students in their first clinical experience. A research was done by Mirlashari, Warnock, and Jahanbani (2017) to explore the experiences of senior undergraduate nursing students through content analysis of their reflections and interviews during a pediatric oncology rotation. This study concluded that students could integrate their classroom learning into the clinical experience by using meditations that help them adapt to the nursing profession despite their emotionally draining encounters.

Msiska, Smith, and Fawcett (2014) identified various challenges of clinical teaching in a Malawian hospital environment. Their study reported that Most students identified resource constraint as a major hindrance to their learning. There has been minimal use of reflective journaling in Nursing Education in Kenya despite the benefits cited globally. Some of the Universities and colleges using reflective journals apply Gibbs' reflective model. This study aimed at identifying the clinical experiences of undergraduate nursing students through the eyes of reflective journals.

2.4.7 Perception of Student Nurses Concerning Use of Concept Maps and Reflective Journals

In Lebanon, a study was conducted to evaluate the perception of 20 nursing students concerning the use of concept maps as a clinical learning strategy utilizing a qualitative approach. This research concluded that concept mapping improved the learning experience, promoted self-directed learning, enhanced the patient's holistic care, and developed their clinical reasoning skills (Fawaz & Kavuran, 2021). In another study, Harrison and Gibbons (2013) analyzed the perception of student nurses on the use of concept maps as a learning tool using semi-structured interviews. They found that when students are motivated to use concept maps, receive constructive feedback, and are open-minded, they enhance positive experiences in clinical learning. This study utilized the interview method to correct data rather than reflection analysis.

Khan, Ali, Vazir, Barolia, and Rehan (2012) did a descriptive mixed method research study to evaluate the perception of 74 nursing students about how effective various clinical learning and teaching tools were. The findings of this study revealed that student nurses perceive reflection writing as a way of helping them to improve their clinical skills and attitude, while the concept maps helped improve their knowledge. Torre et al. (2007) explored the perception of 134 medical students concerning the use of concept maps in their clinical learning. They concluded that concept maps help enhance knowledge transfer and the ability to think critically. This study shows the impact of concept maps on students' experiences, but the focus was on medical students.

An ethnographic interpretive study conducted to evaluate the perspective of student nurses and faculty towards reflections found that reflections help both the students and faculty analyze the logic of their practice (Bulman, Lathlean, & Gobbi, 2012). This analysis helps them to come up with action plans for future encounters within the

clinical environment. Action planning demonstrates that the learner has been able to identify their clinical gaps and come up with a plan of action to fill those gaps.

2.5 Conclusion

Nurses in training require to be deliberate in gaining CJ skills that will help them function independently as competent practitioners and provide safe, quality patient care in different healthcare settings. A timely, appropriate CJ will guide the development of a plan of action by both the nurses and all other health care providers (Phaneuf, 2008). It is, therefore, essential for the nurse to have the intuition that can only develop over time as they get exposed to different clinical situations and get to solve those clinical problems. Thus the need for nurse educators to be deliberate in ensuring that the chosen teaching and learning method is geared towards developing CJ in student nurses' way before they graduate so that by the time they graduate, they are safe for practice.

Although many studies have been done on factors that enhance the CJ of student nurses, very minimal data exist on the effect of an integrated model of concept mapping and reflective writing on the CJ skills of student nurses. Most of the studies have utilized any one of them, not a combination. Studies that have used these tools have been done in the simulation laboratory rather than the clinical environment. Although simulation labs provide a safe environment to develop CJ, they may lack incorporating the challenges salient in the clinical setting that may not be predictable and require the student nurse to think on their toes. Thus, the need to carry out this study to identify how the tools combined impact student learning in the clinical area and CJ skills.

2.6 Conceptual Framework

A conceptual model deals with generalizations or concepts assembled together since they are relevant to the common subject. Conceptual prototype exhibits the relationship

between variables. It demonstrates the phenomena variables as they appear to the designer of the conceptual model (Polit & Beck, 2018). Conceptual frameworks can be a basis for generating hypotheses. Conceptual models can be schematic (graphical portrayal of concepts as visual synopses for complex ideas) or statistical (based on statistically tested comparisons). It is the organization of ideas geared towards achieving the purpose of the study (Shields & Rangarajan, 2013) and guiding the formulation of research questions and research hypotheses (Polit & Beck, 2018). Conceptual model development ideas vary based on the researcher's understanding of how the various concepts relate and their operational definitions, which should be clarified in every research study.

The conceptual framework to guide this research study was developed by the researcher. The independent variables were the integrated clinical teaching/learning models (use of reflective writing and concept mapping) and the traditional clinical teaching model, which involves the use of NCP as a clinical teaching tool. The dependent variables are CJ skills scores and clinical learning experiences drawn from the reflective journals. The intervening variables included the year of study and maturation since the level of progression in the training program has an impact on the abilities of the students based on their current theoretical preparation and clinical exposure. Sensitization to the pretest that can influence post-test scores has also been identified as an intervening variable because exposure to pretest questions can make it easier for the students to attempt posttest questions and score better without necessarily being the model effect. The outcome variable was the improvement in CJ abilities of undergraduate nursing students, as demonstrated by the level of reflection and the improved post-test scores as compared to the pretest scores.

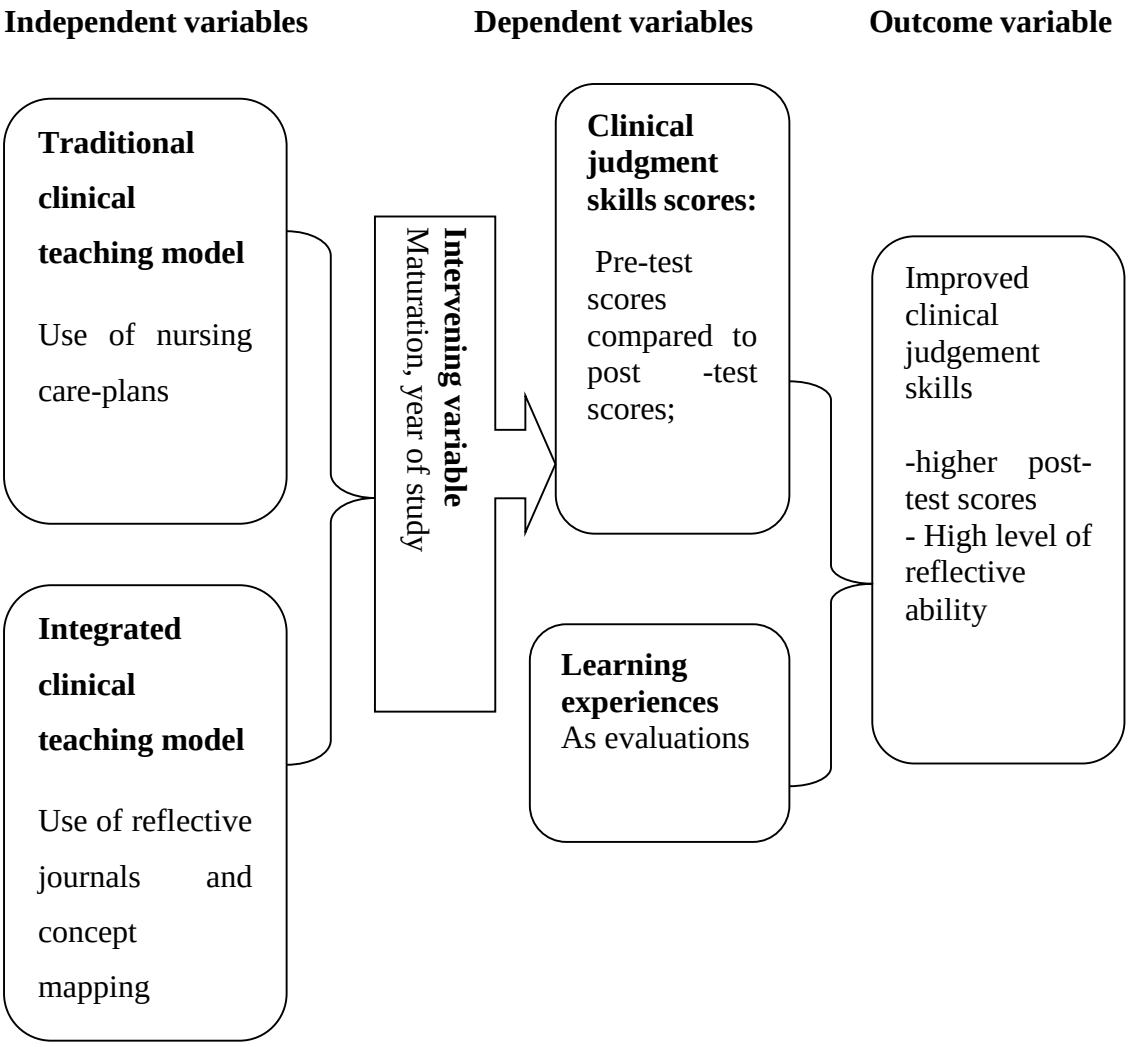

Figure 2.4: Conceptual Framework
Source: Researcher (2017)

The conceptual model shows the relationship between the study variables. The independent variables include the integrated clinical teaching model that combines concept mapping and reflective writing and the traditional clinical teaching model that utilizes NCPs as teaching tools. The intervening variables that could interfere with the causal relationship included the year of study, whether second-year or third year; maturation in terms of the inevitable learning that occurs because of learner exposure to a clinical environment; and the sensitization. The outcome variable is improved CJ skills which will be inferred based on improved case study-based post-test scores compared to the pre-test scores.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methods and procedures followed to test the hypothesis and meet the research objectives as laid out in chapter one. A clear description of the target population, data collection method and instruments, and the data analysis techniques used are outlined.

3.2 Research Design

This study adopted an embedded convergent parallel mixed-method approach. This design entails conducting quantitative and qualitative elements synchronously in the same phase of the research process. The methods have the same weighting, the two components are analyzed independently, but the result is a compliment of the other (Creswell & Plano Clark, 2011).

Creswell (2014) stated that mixed methods involve the integration of both qualitative and quantitative data in a research study. The need to triangulate is informed by the fact that each of the data brings out an aspect of the study that may not be well presented if one or the other was missing. An embedded design, according to Creswell, encompasses either the convergent or sequential use of data. However, the primary idea is either quantitative or qualitative data is entrenched within a larger design, for instance, in an intervention study. The overall design is supported primarily by the data sources.

The use of mixed-method approaches in nursing has become more embraced because the study of nursing as a phenomenon may not be exhaustive using any of the other two research paradigms: qualitative and quantitative methods. According to Tashakkori and

Creswell (2007), mixed methods research is an approach of integrating both qualitative and quantitative research paradigms in data collection, analysis, and in drawing conclusions about a phenomenon under study. Triangulation, that is, mixed method approaches helps to compare and contrast particular aspects of a situation under study (Bernardi, Kleim, & Von der Lippe, 2007).

Mixed method approaches take an analytical stance with three distinct methods of analysis. The concurrent analytical method provides a complete picture after the two data sets- qualitative and quantitative have been merged (Onwuegbuzie & Teddlie, 2003). In parallel data analysis, the data is collection and analysis is done independently, and findings are compared only at the interpretation stage. Thirdly, sequential data analysis is where the data is collected for the purpose of informing the other method. For instance, qualitative data is collected to inform the quantitative data collection and analysis and vice versa.

According to Ostlund, Kidd, Wengstrom, and Rowa-Dewar (2011), the outcome from the analysis can either be convergent (same conclusion of both data sets), divergent (combined data provide different findings which can be contradictory at times), or complementary (data set supplementary to each other). In this study, the researcher utilized the parallel data analysis paradigm with an outcome focused on complementary data set combination. Quantitative data was collected at the same time as qualitative data. The quantitative data was utilized to infer CJ development. Qualitative data was used in identifying the level of reflection, which is a characteristic of CJ as well as identifying learning experiences that enable or hinder CJ development.

Quantitative data was computed using a two-group pretest-posttest Quasi-experimental design which involves intervention with or without randomization and control group (Polit & Beck, 2018). Quasi-experiments identify a comparison group that is analogous

to the treatment group in terms of baseline characteristics or closely related. The comparison group captures what would have been the outcomes if the teaching method had not been implemented (that is, the counterfactual). Hence any difference in outcomes between the treatment and comparison groups can be associated with the teaching program implementation rather than chance.

This design was appropriate for this study because there was a pre-evaluation of CJ skills in both the control group and the experimental group. The respondents were assigned to the groups randomly. However, the population of students sampled was convenient sampling because it was those who were starting their clinical placement in medical-surgical wards at the time of data collection. Therefore, the design is not a true experiment since it lacks randomization. The intervention in the experiment group was the use of an integrated clinical teaching method that combines the use of concept maps and reflective journaling.

The comparison group used a traditional method of clinical teaching as envisaged in the NCK syllabus, which utilizes the nursing process to analyze patient data and come up with a plan of action. The qualitative methodology design was used to analyze undergraduate nursing students' lived experiences during their clinical placement at KNH. A qualitative methodology was deemed appropriate for the research because of the study setting (Creswell & Plano Clark, 2006), as it was limited to the lived experiences of undergraduate nursing students during clinical placement at KNH.

3.3 Study Area Description

The study was carried out in the KNH medical-surgical wards. KNH is a tertiary national referral hospital located on Ngong Road in Nairobi, Kenya. The UoN's medical schools, including the School of Nursing, utilize this tertiary hospital as their clinical

training site and the principal teaching hospital. The hospital has in operation 1800 beds. It is equipped to handle medical, surgical, obstetrics, gynecology, and paediatric patients. This study was conducted in the adult medical-surgical units, which have a total of 14 wards.

This site was appropriate because it is the principal clinical training site for the UoN BScN students. The medical-surgical wards were chosen because the nursing students spend a longer time in this setting, making the intervention period ample for a meaningful transformation of experience. It also constitutes about 40% of the required clinical competencies in the program (NCK as cited in Kavili, 2020). KNH is also the largest referral hospital in Kenya and provides a big pool of patients for the learning experience. The wards chosen had similarities in terms of the type of patients and the type of skills and learning experiences the student nurse was to go through.

3.4 Study Population

A study population is a group of individuals taken from the general population who share a common characteristic. In this case, the common characteristics were: undergraduate student nurses on clinical practicum. The study population comprised 117 UoN Nursing School undergraduate students in the second year and third years of training. UoN was chosen for being among the first universities in the country to start a degree in nursing courses. Besides, the university has a large number of students in training who utilize KNH as their core training hospital. The target population was BScN students commencing clinical placement in the medical and surgical wards at the time of data collection.

3.4.1 Inclusion Criteria

Inclusion criteria is a guideline for choosing participants who possess similar characteristics. The principal purpose of inclusion criteria is to limit the potential for selection bias by an objective selection of prospective participants in a study (Houser, 2015). Selection bias is a threat to the validity of the study. This study included all 2nd year and the 3rd-year UoN undergraduate nursing students commencing clinical placement in the KNH medical-surgical wards. These were expected to be in the four-year program of study, and they needed to consent to be part of the study.

3.4.2 Exclusion Criteria

Exclusion criteria eliminate the superfluous outcome that certain characteristics of a participant can have on the study (Houser, 2015). This study excluded any student who did not consent to take part in the study despite being a nursing student. Also, the study excluded first-year nursing students since their medical-surgical rotation was only in specialized areas with a maximum of two weeks per placement which was not adequate for the intervention. Another category of nursing students excluded in this study was fourth-year nursing students, any nursing student who is upgrading, and nursing students on the E-learning module. Since the study was targeting nursing students, students from any other program were excluded as well.

3.5 Sample Size Determination

This study aimed to determine whether an integrated clinical teaching approach would lead to improved CJ skills scores. We hypothesized that the intervention would lead to a modest increase in the mean scores by 5 points. The average mean score for students in the medical-surgical units for undergraduate Nursing students at the UoN is 50 (SD ±10) (UoN Nursing School exams department). The sample size estimation approach,

therefore, aims at determining the minimum sample required to detect a 5-point increase in the students' means (from 50 to 55) after implementing the integrated training approach.

Therefore, the required sample size for this study was determined using the following equation:

$$n = (Z_{\alpha/2}+Z_{\beta})^2 * 2*\sigma^2/d^2$$

where:

n is the estimated sample size in one group (either before or after implementation)

$Z_{\alpha/2}$ is the critical value for normal distribution and 95% confidence level (0.05)

Z_{β} is the power of the study (80%)

σ^2 is the population variance (10)

$d^2$is the hypothesized effect size of the intervention – the difference we want to detect (10%)

Using the above equation, the determined sample was 104 (52 in each arm) students. However, when adjusted for a 10% non-response (missing outcome data) gave a final sample size of 114 students in the intervention and control groups. Nevertheless, it is logistically difficult to select a group of students and use two different methodologies of teaching within the same ward since this would increase the risk of contamination. To control for the risk of contamination, the students in the intervention arm were placed in different wards compared to those in the control group. Students who did not consent to participate in the studies were allowed to sit in the clinical conferences for ethical purposes.

The proportion calculation was based on:

% proportion in each stratum = (X÷total number of students) × 104, where X is the population elements in given strata (year of training).

Table 3.1: Distribution of Sample Concerning the Year of Study

Target group	Target population	Procedure	Minimum Sample Size
2nd-year students	72	72/117*104	64
3rd-year students	45	45/117*104	40
Total	117		104

Source: Research Data (2020)

3.6 Recruitment and Consenting Procedure

A list of all second- and third-year undergraduate nursing students from the School of Nursing of UoN was obtained from the clinical coordinators of each class. Serial numbers were used to identify the participants for the purpose of this study. All those reporting for their medical-surgical clinical experience at the time of data gathering in KNH were approached to participate in the study. The study engaged only the students who voluntarily consented to participate. Participants were recruited at the School of Nursing of UoN a week before the commencement of their clinical attachment. Those who consented to participate in the study were 82 (79%) out of the targeted 104 participants.

The consenting participants were grouped into their clusters based on the year of study. The groupings and ward allocation were already done by the UoN clinical coordinators based on the competencies required. The second years were in 8 groups of 8-9 students, while the third years were in 5 groups of 8-9 students. The students rotated in a ward as a group of 8-9 students according to the clustering done by the UoN clinical coordinator for medical surgical rotation. Stratified simple random sampling from the existing groups (8*8 groups 2nd yr; 8*5-groups 3rd yr) 4 (2nd yr) groups randomly allocated to control and 4 to intervention; 2(3rd yr) groups allocated to control, 2 – to intervention.

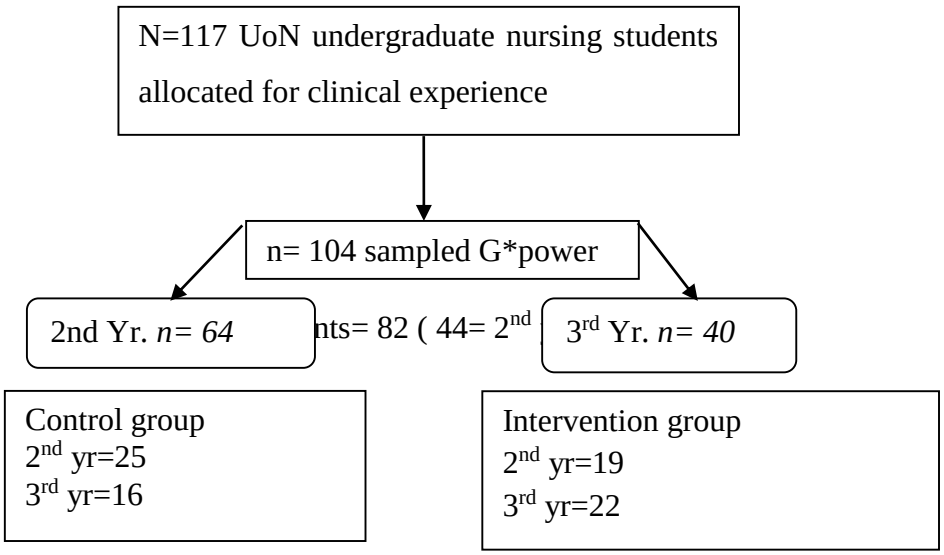

Figure 3.1: Sampling Procedure Illustration
Source: Research Data (2020)

Allocation to the wards was based on competencies required, and the students were already in predetermined groups of 8-9 students. Those in the control group were allocated separate wards to those in the intervention group to reduce the incidence of contamination bias.

3.7 Sampling Method

A table of random numbers was used to sample from the 13 groups which had already been constituted for the purpose of clinical placement and the required competencies. Out of the 13 groups, 8 s were in second year, while 5 were in the third year. To determine which groups to sample from, the online random numbers generator was used (https://stattrek.com/statistics/random-number-generator.aspx#error). Out of the 13 groups, we needed to pick an even number for the purpose of comparison. Number 12 was, therefore, identified.

12 Random Numbers

11 13 03 02 01 08 04 07 06 12 05 10

This Table of 12 random numbers was produced according to the following specifications: Numbers were randomly selected from within the range of 1 to 13. Duplicate numbers were not allowed. In order to allocate the groups to either control or intervention, a second randomization was done

To ensure the comparison groups were similar, the random numbers were picked for each cohort separately. For the second-year cohort 4, groups were picked: 5 4 2 1 This table of 4 random numbers was produced according to the following specifications: Numbers were randomly selected from within the range of 1 to 8. Duplicate numbers were not allowed. The third-year cohort had four groups, and we needed to identify two groups for each cohort. The result from the random number generator was as follows: 12 11 This table of 2 random numbers was produced according to the following specifications: Numbers were randomly selected from within the range of 10 to 13. Duplicate numbers were not allowed. Therefore, group 1,2,4,5,11 and 12 were allocated to the intervention group while group 3,6,7,8,10,13 was allocated to the control group.

3.8 Data Collection Procedures

Quantitative data were the scores in case-study-based CJ aspects pre-test and post-test assessments. Qualitative data was collected from the document analysis of reflections as documented in the student journals. The researcher, in collaboration with the KNH nursing department, identified 8 preceptors who helped implement the integrated clinical teaching model. The preceptors were drawn from nurses working in the ICU who had completed their undergraduate training. They were chosen because their level of preparation was standard. The researcher carried out a two-day training session for the preceptors to introduce them to the tools and the aspects of supervision. Their role

included working closely with the students as they developed concept maps, giving student feedback, and reading through the journals weekly, assisted by the researcher. The same team of 8 preceptors acted as data collection assistants. The preceptors engaged with the students in the control group were to read their NCPs once a week and give them feedback.

The students were taken through two-hour training during a preclinical conference on how to develop a concept map and to do reflective journal entries. During the pre-clinical conference, they were introduced to the preceptors who would meet them weekly to mark their concept maps and give them feedback. The students developed at least one concept map per week based on a patient they had taken care of in the ward. The concept map was submitted to the preceptor for marking and feedback given at the end of the week. The students were issued reflection journals. They were instructed to write their reflections at the end of the week after work. The focus of their reflections was the encounters in the ward that stood out for the students both positively and negatively, whether patient care related or health care environment-related.

Three clinical conferences were held as follows: before commencing the clinical experience, midway through the clinical experience, and at the end of the clinical experience. The clinical conferences provided an opportunity to identify student expectations and objectives, to evaluate progress in meeting objectives, and to evaluate the clinical learning experience.

The case study-based pretest was administered to the students before clinical attachment in a hall at the UoN School of Nursing. The integrated model intervention took 4-8 weeks after which the post-test was administered in the same setting for all the students who participated in the study. The variation of the duration of the intervention was based on the fact that the second-year cohort had two clinical days per week while

their third-year counterparts were fully in the clinical setting. Thus the second year cohort duration of intervention was eight weeks, while for the third year was four weeks. After the post-test, a brief (30min) clinical conference was held to evaluate their clinical experience and attainment of clinical learning objectives. The reflective journals were also picked for analysis.

Those in the comparison group were allowed to participate in the general clinical conferences so that their learning experience was ensured. They developed NCPs, which were graded by the respective preceptors and feedback given. The intervention period was interrupted after four weeks due to the nurses' and doctors strike experienced in February 2018. The study resumed back in June 2018. This affected the participant morale; some of them opted to drop out. The energy to complete the assignment was also affected. Thus the impact interpretation needs to put this confounder into perspective.

3.9 Data Collection Instruments

Quantitative data was collected using the pre-test/post-test case study-based CJ evaluation tool developed by the researcher. This tool described the case study, and the students were supposed to identify significant history and assessment data from the case study, interpret the findings, develop prioritized independent nursing action, anticipate what orders the physician would give, and specify what they will evaluate after the intervention. The key components of the assessment items were developed using the Levett-Jones (2013) clinical reasoning cycle theoretical model. The model is also informed by the critical thinking tool in nursing: the nursing process as well as the stipulated competencies for undergraduate Nursing graduates in Kenya (NCK, 2012). The evaluation was based on carefully developed case scenarios identified in the clinical setting in KNH.

Qualitative data was collected using reflective journals guided by the six steps of the Gibbs (1988) reflective model. In the reflection, the students was supposed to describe a specific event, positive or negative, that they encountered in the clinical environment. They were to specify the feelings associated with the event, evaluate how the encounter changed their thinking or way of doing things, analyze what is appropriate versus what was done, draw conclusions from that experience, and come up with an action plan on how they would handle future encounters. A sample reflection was provided to guide the respondents.

3.10 Pretesting of Study Instruments

The researcher carried out a pilot testing of the pretest and post-test at AIC Kijabe Hospital among 18 Daystar University undergraduate students to assist in editing and alignment. The evaluation questions were found to be clear to the students. The instruments were therefore retained. The reflection journal documentation guided by Gibbs' reflective cycle was also tested. The students were able to follow the steps and document appropriately.

3.10.1 Validity and Reliability

Consistency of the measurements was ascertained by evaluating the instrument reliability and validity. Internal consistency of the CJ scoring tool was ascertained by sharing the tool with three experts from different universities teaching undergraduate Nursing to evaluate the tool for both construct and face validity. Once the tool was adjusted to the suggestions of the three experts, it was pilot tested with BScN students on clinical placement at Kijabe hospital to ensure the case study was clear.

The tool was again subjected to reliability evaluation by ensuring that the randomly selected student response sheets were rated by three different faculty members from

different universities at the time of pilot testing. Simple interrater reliability was calculated to ascertain the appropriateness of the marking key and clarity of questions. Interrater reliability quantifies the stability of a measure across raters. An interrater reliability of 85% is normally recommended (Houser, 2015). The result revealed interrater reliability of 0.73, as shown in Table 3.2, which is slightly below the recommended 85%.

Table 3.2: Interrater Reliability Calculation Based Percent Agreement

Rated items	**Rater 1**	**Rater 2**	**Rater 3**	**R1/R2**	**R2/R3**	**R1/R3**	**% agreement**
Q 1	5	5	5	1	1	1	3/3
Q2	9	8	8	0	1	0	1/3
Q3	4	6	4	0	0	1	1/3
Q4	4	4	4	1	1	1	3/3
Q5	2	2	2	1	1	1	3/3
Interrater reliability calculation (3/3+1/3+1/3+3/3+3/3) divided by 5 items							**0.73 =73%**

Source: Research Data (2020)

The formula used was derived from Statistics How To (n.d.).

3.11 Operationalization of Study Variables

Table 3.3: Description of Variables

Independent variables			
Concept	variable	Operational definition	Measures/values
Clinical teaching strategy	An integrated clinical teaching model	Use of concept maps, and reflective writing in combination	Categorical 0. Yes 1. No
	A traditional clinical teaching model	Use of NCPs	Categorical 0. Yes 1. No
Demographic data	Age	In years	Continuous
	Gender	Female or male	Dichotomous
	Year of study	2nd, 3rd, year	Categorical
	Clinical ward placed	Medical or surgical ward	Categorical
Intervening variables	Sensitization	Exposure to pretest contamination	Categorical
	Year of study	Differences in CJ skills from 2nd year to 3rd year at entry	Categorical
	Maturation	CJ skills gained as a result of exposure to the clinical environment	Categorical
Dependent variables			
Level of CJ	CJ skills test scores	Pre-test and post-test scores based on case studies (0-100%)	Continuous
Clinical learning experience	Journal reflections	Student lived experiences	Qualitative
Level of reflection	Lasater CJ model analysis of reflections	Level of reflection	Quantitative

Source: Research Data (2020)

3.12 Ethical Considerations

Authorization to carry out the study was obtained from the KNH-UON Ethics and Research Committee and the KNH nursing department through the Deputy Director, Nursing Services, and the assistant chief nurse in charge of medical-surgical wards. Permission was also obtained from the National Commission for Science, Technology and Innovation (NACOSTI) and the Ministry of Health. The approval documents are

attached as appendices. Informed consent was maintained by ensuring thtat the respondents understood the purpose and objectives of the study, data collection methods, and the significance of the study. Written informed consent was obtained from the study participants, and confidentiality of responses to both the journals and personal data was ensured through the use of codes to identify the participants.

The research study posed no harm to participants, therefore, there were no compensation considerations to be discussed. The respondents were also informed of their right to withdraw at any time without victimization. Students who withdrew from the study for one reason or another continued to receive instruction and supervision from the preceptors. All the study data was kept in locked cabinets and all computers having data related to the study had passwords where only the principal researcher could access.

3.13 Data Analysis

3.13.1 Quantitative Data Analysis

The data collected was analyzed for completeness by checking whether all the pre-test and post-test questions had been answered and whether the journal entries were complete. The majority of the score sheets had all the questions attempted by the students. Consequently, none of the score sheets was discarded. The raw data was coded to allow for entry into the computer for analysis. The data was analyzed using the Statistical Package for the Social Sciences (SPSS), version 26. Descriptive statistics were used to describe participant characteristics by intervention and control arms as absolute numbers and proportions. Comparison of proportions and cluster adjusted confidence intervals were done for the intervention and control arms.

Association between the various student characteristics and the intervention was

examined using the chi-square test of independence. For the primary outcome (change in the average CJ skills mean score), a test for a difference in means for the intervention and control arms using a two-sided student t-test was undertaken. However, since the t-test does not show the strength of the association, a logistic regression analysis was done to explore the magnitude of effect for the intervention and the various associations of the different student characteristics. A secondary analysis was undertaken to explore which domains: identifying patient assessment data, interpreting the findings, coming up with an independent nursing intervention, anticipating physician orders, and evaluating the intervention outcome; had the most improvement following the use of the integrated clinical teaching approach.

Odds ratios and accompanying confidence intervals for these associations are presented in chapter 5. The level of significance was set at 5% (p value<0.05), and corresponding 95% confidence intervals adjusted for clustering have been reported. Descriptive and inferential statistics are presented in tables and charts.

3.13.2 Qualitative Data Analysis

The reflective journal analysis constituted the qualitative data. Content analysis was used to extract student experiences from the reflective journals. The themes were manually constructed through a familiarisation process. The process of familiarization involves intense analysis of the write-up by going through the documents over and over, and subsequently identifying and deciding upon common themes and sub-themes that were pertinent to the research question as narrated by the participants. Thematic analysis was used to identify the level of reflection of the student nurses from the journal entries using the Lasater CJ Model.

Gibbs' 2008 reflective model was used to structure the journal entries. The model has been established as an effective method as it enables students to benefit from a clinical

event by focusing their thoughts (Watkins, 2018). In addition, the simplicity of the model in helping students in reflective thinking was also a motivating factor for the model use entails.

The transcribed text was analyzed through NVIVO, version 11, where word clouds were used to find common words in line with the project map. The common words formed codes were further categorized into sub-themes and main themes. To ensure credibility and validity of the findings, another independent researcher was allowed to code and develop themes. The themes developed were later compared to the researcher's and refined through consensus that led to the study themes and sub-themes. The independent author who participated in the study was skilled and educated in reflective learning as the researcher. Thematic analysis of the journal entries to identify the level of reflection of student nurses was done using the LCJR themes as a guide. The LCJR thematic areas include noticing, interpreting, responding, and reflecting (Lasater, 2007b). According to Lasater and Nielsen (2009b), the level of reflection for the student nurse can be used to infer CJ development.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the findings of the research study for both the qualitative and quantitative data. The results are presented in tables, figures, and narratives. They include the CJ skills scores before the model intervention and after the model intervention comparing both the intervention and control group. The clinical experiences are presented in tables and narratives as extracted from the reflective journals of the students in the intervention group. The level of reflection was analyzed using the Lasater CJ assessment tool. The data is presented in tables and pie charts. The end of clinical experience evaluation is also presented in tables.

This study was conducted from February 2018 to August 2018 and aimed to evaluate whether the integrated clinical teaching model (use of concept maps and reflective journaling) significantly impacted the CJ skills scores of undergraduate nursing students. The respondents were second-year and third-year undergraduate nursing students. They sat a pretest case study based CJ skills evaluation before commencing their clinical placement in medical-surgical nursing and a post-test after completing 4-8 weeks of clinical placement. The 2nd Year cohort did an eight weeks' clinical placement in medical-surgical units, while the 3rd year cohort did a 4-week clinical placement. This is because the 2nd year students were in the ward two days a week while the 3rd years were in the clinical area 5 days a week.

4.2 Response Rate

Out of a calculated sample size of 104, only 82 (79%) of the respondents participated in the study. The other 22 declined to participate. The 82 who gave a written consent

sat a pretest assessment individually in the UoN School of Nursing before the commencement of the clinical experience. At the end of the study, only 69 sat the post-test assessment recording an attrition rate of 16%.

Table 4.1: Response Rate Analysis

Item	Count	Rating in %
Calculated sample size	104	-
Accessible respondents	117	83% of 141
Declined to participate	22	21%
Those who signed consent form	82	79%
Control group	41	50%
Intervention group	41	50%
Those who completed the study	69 (39 intervention) (30 control)	84% (95%) (73%)
Attrition rate	13 Intervention-2 Control- 11	16%

Source: Research Data (2020)

4.3 Demographic Data

The study was conducted among the nursing student, and the participants had the following demographics characteristics.

4.3.1 Participant Baseline Characteristics

The majority of the respondents 65.9% (n= 54) who participated in this study were female with 34.1% (n=28) being male. Nursing has over the years been a female-dominated profession, although the demographics are changing as more and more male students enroll in the profession. The mean age was 21 years with a standard deviation of 1.34 to 1.43. The majority of the participants were second years (53.7%; n=44), while their third-year counterparts were 46.3% (n-38). The third-year cohort allocated to the intervention group was 53.7% (n-22) versus 46.3% (n=19) being the second-year cohort. The ratio of those in the intervention group versus the control group was 1:1 in the study, as shown in Table 4.2.

Table 4.2: Participant Baseline Characteristics

	Intervention group 41(%)	**Control group 41(%)**
Age (yrs.) (mean, SD)	**(21.50, 1.34)**	**(21.59, 1.43)**
Gender		
male	14(34.15)	14(34.15)
Female	27(65.85)	27(65.85)
Year of study		
2nd Yr.	19(46.34)	25(60.98)
3rd Yr.	22(53.66)	16(39.02)

Source: Research Data (2020)

4.4 Clinical Judgment (CJ) Skills Scores of BScN Students

To achieve the first objective of assessing the entry-level CJ skills of BScN students commencing their clinical placement at KNH, an evaluation of the CJ skills scores was done. The respondents were subjected to an individualized supervised pre-clinical and post-clinical placement assessment in a classroom setting. The examination was based on a clinical case study analysis examining five domains; the ability to identify significant assessment data, interpret the data, design a prioritized care plan, anticipate physician's orders and design an evaluation strategy.

4.4.1 Pre-test and Post-test Scores Across Cohort

The scores were grouped as per the NCK pass mark for nursing students. The overall findings showed that the majority of the respondents (67.1%) scored less than 50% in all domains inclusive at pre-test for both cohorts. Nevertheless, but at post-test there was improvement in the overall scores, with most of them 63.8% scoring at expectation. Further analysis shows that the improvement in post-test scores was more apparent in the intervention cohort, with some of the respondents 4.3 % attaining an above expectation mark which was not the case in the control group, as shown in Table 4.3 below. Furthermore, the results yielded showed an improvement across the groups with the students below expectation <49% improving from 67.0% (n=55) during pre-test to 36.2% (n=25) at post-test. Respondents who were at expectation 50-79% at pre-test

were 32.9% (n=27) to 59.42% (n=41) during post-test. At pre-test, there was no student who scored above expectation (80-100%), but at post-test, 4.35% (n=3) of the respondents did score 80% and above.

Table 4.3: Pre-test and Post-test Scores Across Cohort

	Pretest			Posttest		
	Cohort		Total	Cohort		Total
	Control	Intervention		Control	Intervention	
below expectation <49%	25(30.5%)	30(36.6%)	55(67.1%)	13(18.8%)	12(17.4%)	25(36.2%)
at expectation 50-79%	16(19.5%)	11(13.4%)	27(32.9%)	17(24.6%)	24(34.8%)	41(59.4%)
above expectation 80-100%	0	0	0	0	3(4.4%)	3(4.4%)
Total	41(50%)	41(50%)	82(100%)	30(43.5%)	39(56.5%)	69(100%)

Source: Research Data (2020)

4.4.2 Pretest/post Test Scores Across Year of Study

Further analysis showed that the majority of those who scored below expectation at pre-test were second-year respondents compared to their third-year counterparts. Post-test results show that improvement in CJ scores was evident regardless of the year of study after the clinical teaching intervention (Table 4.4). However, being a third-year increased the odds of scoring higher after the clinical intervention.

Table 4.4: Pretest/post Test Scores Across Year of Study

	Pretest			Posttest		
	YEAR		Total	YEAR		Total
	2nd Year Students	3rd Year Students		2nd Year Students	3rd Year Students	
below expectation <49%	32(39.2%)	23(28.1%)	55(67.0%)	20(29.0%)	5(7.3%)	25(36.2%)
at expectation 50-79%	12(14.3%)	15(18.3%)	27(32.9%)	16(23.2%)	25(36.2%)	41(59.4%)
above expectation 80-100%	0	0	0	2(2.9%)	1(1.5%)	3(4.4%)
	44(53.7%)	38(46.3%)	82(100%)	38(55.1%)	31(44.9%)	69(100%)

Source: Research Data (2020)

4.4.3 Performance by Domain Across Cohort

A further analysis was done to identify the improvement across the five domains examined in the pre-test and the post-test. The domain areas to be investigated were 1) Identifying significant assessment data, 2) Interpreting findings, 3) Developing prioritized independent care, 4) Anticipating physician's orders, and 5) Evaluating planned interventions. The participants did a case study-based pre-clinical test to evaluate their level of CJ skills before exposure to the intervention.

The mean score at pre-test ranged between 30-57% for all five domains regardless of the cohort that the respondents were in. At post-test, the mean score improved to a range of 37-66% across all domains. Improvement for both control and intervention was noted across all five domains except the domain of evaluation, which dropped by 9% in the control group. Improvement for the traditional model was more pronounced in the domain of assessment (mean score improvement +14.6%) and interpreting findings (mean improvement +7.9%) compared to other domains. The integrated model improved the mean score of all domains, especially the higher-order domains of prioritizing (mean improvement +17.1%), anticipating findings (mean improvement+ 17.4%), and evaluating (mean improvement +9.1%). The assessment domain mean

improvement (21.5%) was higher compared to the control cohort. The interpreting domain was lower comparatively (Table 4.5).

Table 4.5: Performance by Domain Across Cohort at Pre-test and Post-test

Cohort		Assess	Interpret	Prioritize	Anticipate	Evaluate
Control	Mean	51.8**(66.4)**	57.1(**65**)	35.8(**40.5**	30.3(**37.3**)	54.5(**45.5**)
	N	41(30)	41(30)	41(30)	41(30)	41(30)
	SD	32.2(23.1)	18.3(13.3)	14.7(24)	22.3(19)	29.6(21.4)
Intervention	Mean	41.9**(63.4)**	55.2(**61.7**)	33.2(**50.3**	29.5(**46.9**)	44.3**(53.4)**
	N	41(39)	41(39)	41(39)	41(39)	41(39)
	SD	28.6(25.6)	17.1(13.7)	19.7(19.3	20.4(20.1)	30.2(24)
Total	Overall Mean	46.9(64.7)	56.1(63.1)	34.5(46)	29.9(42.8)	49.4(50)
	N	82(69)	82(69)	82(69)	82(69)	82(69)
	SD	30.7(24.4)	17.6(13.5)	17.3(21.8	21.2(20)	30.1(23.1)

Source: Research Data (2020)

The integrated model group mean score improved across all domains compared to the control group. Moreover, the findings indicate higher mean scores in higher-order thinking domains: prioritizing, anticipating orders, and evaluating. The use of NCPs, on the other hand, was more likely to improve lower-order CJ skills: assessment and interpreting patient assessment findings. The finding shows that the integrated model is more likely to improve the higher-order CJ scores compared to the traditional model. However, the use of NCP still has a role in helping students develop the skill of making sense of the data obtained through patient assessment.

4.4.4 Post-test Scores Correlations by Domain Across Cohort and Year of Study

An evaluation of the relationship between the domain variables was conducted using Pearson correlations. The ensuing results showed that the year of study the student was

in was significantly related to the identification of assessment data (*P*=.026), and to some extent evaluating the care given based on the interventions (*P*=.035; 95% CI). Participants who could identify the assessment data were also able to prioritize (*P*=.037). Interpreting findings accurately had a moderate correlation to the ability to evaluate care given (*P*=.009). Participants who could prioritize the nursing care were more likely to anticipate the likely collaborative treatments (*P*=.001) and evaluate response to therapy *P*=.009 (Table 4.7). Noticeably, the cohort a participant was in showed mild correlation with the domain of anticipating collaborative treatments (*P*=.048), as shown in Table 4.7. However, the total mean improvement across domains was more likely to be higher in the integrated model cohort compared to the traditional model.

Table 4.6: Post-test Scores Correlations by Domain Across Cohort and Year of Study

		Cohort	Year	Assess	Interpret	Prioritize	Anticipate	Evaluate
Cohort	Pearson's r	1						
	Sig.							
	N	82						
Year	Pearson's r	-.147	1					
	Sig.	.188						
	N	82	82					
Assess	Pearson's r	-.063	.268*	1				
	Sig.	.609	.026					
	N	69	69	69				
Interpret	Pearson's r	-.123	.127	.198	1			
	Sig.	.314	.300	.103				
	N	69	69	69	69			
Prioritize	Pearson's r	.223	.227	.252*	.134	1		
	Sig.	.065	.061	.037	.274			
	N	69	69	69	69	69		
Anticipate	Pearson's r	.239*	.205	.205	.180	.386**	1	
	Sig.	.048	.091	.091	.140	.001		
	N	69	69	69	69	69	69	
Evaluate	Pearson's r	.170	.255*	.159	.310**	.312**	.197	1
	Sig.	.162	.035	.193	.009	.009	.105	
	N	69	69	69	69	69	69	69
*. Correlation is significant at the 0.05 level (2-tailed).								
**. Correlation is significant at the 0.01 level (2-tailed).								

4.4.5 Relationship between Improvement of CJ Skills Scores Across Gender, Cluster, and Cohort

Chi square test of independence was done to evaluate whether gender, year of study, and cohort influenced the test scores. The change in score was set at least a 5% improvement and above. The finding shows that being male or female and being a second-year or a third-year is not likely to contribute to improvement in CJ score. The results from the Chi-square test of independence show that the scores were insignificant with Gender (*P*= 0.609; 95%CI) and Year of study (*P*=0.093; 95%CI). However, being in the integrated clinical teaching cohort is more likely to improve the scores regardless of gender and year of study. This was shown by a significant score on the chi-square test of independence (*P*=.035; 95%CI).

Table 4.7: Relationship between Improvement of CJ Skills Scores Across Gender, Cluster and Cohort

General Characteristics		Improvement in CJ scores by <5% (Post - Pre-test scores) N(%)	Improvement in CJ scores by >5% (Post-Pre-test scores) N(%)	Total N(%)	*P(95% CI)*
Cohort	Intervention	16(41)	23(59)	39(56.5)	.035*
	Control	20(66.7)	10(33.3)	30(43.5)	
	Total	36(52.2)	33(47.8)	69(100)	
Gender	Male	11(47.8)	12(52.2)	23(33.3)	.609
	Female	25(54.3)	21(45.7)	46(66.7)	
	Total	36(52.2)	33(47.8)	69(100)	
Year	2nd Year students	20(52.6)	18(47.4)	38(55.1)	.933
	3rd Year students	16(51.6)	15(48.4)	31(44.9)	
	Total	36(52.2)	33(47.8)	69(100)	

Source: Research Data (2020)

4.4.6 Relationship between Pre-test and Post-test Scores Across Cohort and Year of Study

Logistic regression was conducted to ascertain how much of the change in score was attributable to the integrated model rather than chance and whether the year of study

was a contributing factor to the change in score. The findings showed that the use of the integrated model as a clinical teaching strategy is four times more likely to increase the odds of improving CJ skills scores compared to NCP alone (*OR* 3.821; *P*=0.017; 95% *C.I*), as shown in table 4.10. On the other hand, the year of study, whether one was in the second year or third year, may not be a significant contributing factor to the improvement of CJ scores (*OR* 1.059; *P*=0.913).

Table 4.8: Relationship between CJ Skills Scores and Cohort Across Year of Study

	Coefficient	S.E. of Coefficient	p-value	OR	95% C.I. for OR	
					Lower	Upper
Cohort	1.340	.560	.017	3.821	1.275	11.452
YEAR	.058	.530	.913	1.059	.375	2.995

Source: Research Data (2020)

4.5 Effect of the Integrated Model on CJ Skills Scores of Nursing Students

The second objective of the study was to establish the effect of combining clinical teaching tools on the CJ abilities of the undergraduate nursing student during their clinical attachment.

4.5.1 T-test Scores for the Mean Difference Across Cohort

For a succinct understanding and evaluation of the role played by the integrated model in improving CJ skills of undergraduate nursing students during their clinical experience at KNH, the mean of the pre-test and post-test scores were compared using student t-test. This was done to identify which of the two clinical teaching models (Traditional or integrated) had a more significant effect on the CJ skills scores of the undergraduate student nurses. The findings (Table 4.10) showed that the application of the integrated model in clinical teaching is more likely to result in improvement of CJ skills scores in undergraduate nurse training compared to the use of NCP alone (M14.10±14.40, t (38) = 6.116, *P*=.0001 at 95% CI). The above outcomes were evident from the results realized from the control post-test - control pre-test depicting a mean

of 2.95±15.17, *t* (29) = 1.064, *P*=.296. This shows the traditional model is deficient in improving overall CJ skills scores compared to using concept mapping and reflective writing as an integrated model.

Table 4.9: Effect of the Integrated Model Vs. the Traditional Model on CJ Skills Scores

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% CI of the Difference				
					Lower	Upper			
Pair 1	Control Post-Pretest	2.95	15.17	2.77	-2.7194	8.6127	1.064	29	.296
Pair 2	Intervention post- Pretest	14.10	14.40	2.31	9.4327	18.7673	6.116	38	**.000**

Source: Research Data (2020)

4.5.2 Mann Whitney *U*-test for the Median Difference Across Cohort

A further confirmatory test was conducted on a two-tailed Mann-Whitney test for CJ. The confirmation was informed by the finding of highly dispersed data, as evidenced by the large standard deviations. The Intervention group scored a median of (*Mdn* = 85.03), which was significantly higher than the median for the control group (*Mdn* = 61.62). Table 4.11 presents the result of the two-tailed Mann-Whitney *U* test.

Table 4.10: Two-Tailed Mann-Whitney Test for CJ Score by Group

	Mean Rank				
Variable	Intervention group	Control group	U	z	P
Post-intervention score	85.03	61.62	19280.50	-3.04	.002

4.6 Role of NCPs in Improving CJ Skills

The third objective of the study sought to identify the role of NCPs in improving the CJ skills of undergraduate nursing students during their clinical experience at KNH. The NCP as a clinical teaching tool improved the domain of identifying significant patient

assessment findings from a mean score of 51.8% to 66.4% (15% increase) and interpreting from 57.1% to 65% compared to the other three domains. There was an evident drop of 9% in the domain of evaluating. The NCP does not seem to improve the ability of the students to evaluate the care given, thus the need for integration to enhance patient care quality. However, the role of NCPs in improving basic level CJ skills includes identifying significant history and assessment data and interpreting findings should not be overlooked. Integration, rather than doing away with the NCP, could be considered.

4.7 Levels of Reflection of Undergraduate Nursing Students

The study's fourth objective sought to evaluate the level of reflection of undergraduate nursing students during their medical-surgical clinical placement at KNH. For the study to achieve this objective, it was imperative to evaluate the level of reflection of the respondents during the intervention. First, the journal entries were subjected to the four domains of the 2007 Lasater CJ model which include noticing, responding, reflecting, and interpreting (Lasater, 2007a). Figure 4.1 shows the overall distribution of the most common area of reflection. The majority of the participants (53%) were able to notice a deviation from the normal, whether it was patient-related or health care environment-related. The majority struggled with interpreting their findings but were able to reflect on their practice and somehow respond to the situation at hand.

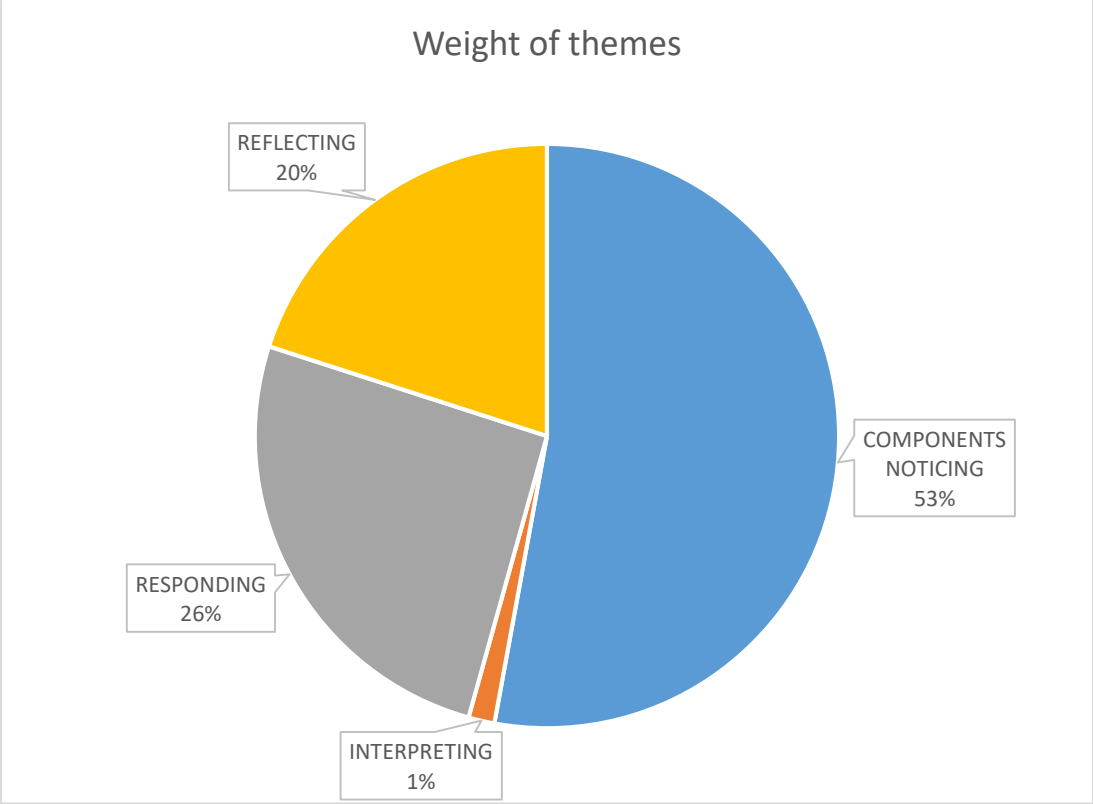

Figure 4.1: Distribution of Themes and Codes on the Level of Reflection Based on the Lasater CJ Model
Source: Research Data (2020)

The Lasater (2007a) CJ model embraces four components that can be evaluated to identify the level of reflections in reflective journals of nursing students. Each of the four domains is broken down into components to identify areas of strength or weakness. Noticing component is represented by; focused observation, information seeking, recognizing deviation; responding; being skillful, well-planned interventions, clear communication, calm, confident manner; reflecting involves a commitment to improvement, evaluation/self-analysis while interpreting involves prioritizing data and making sense of the data as shown in Figure 4.2 below

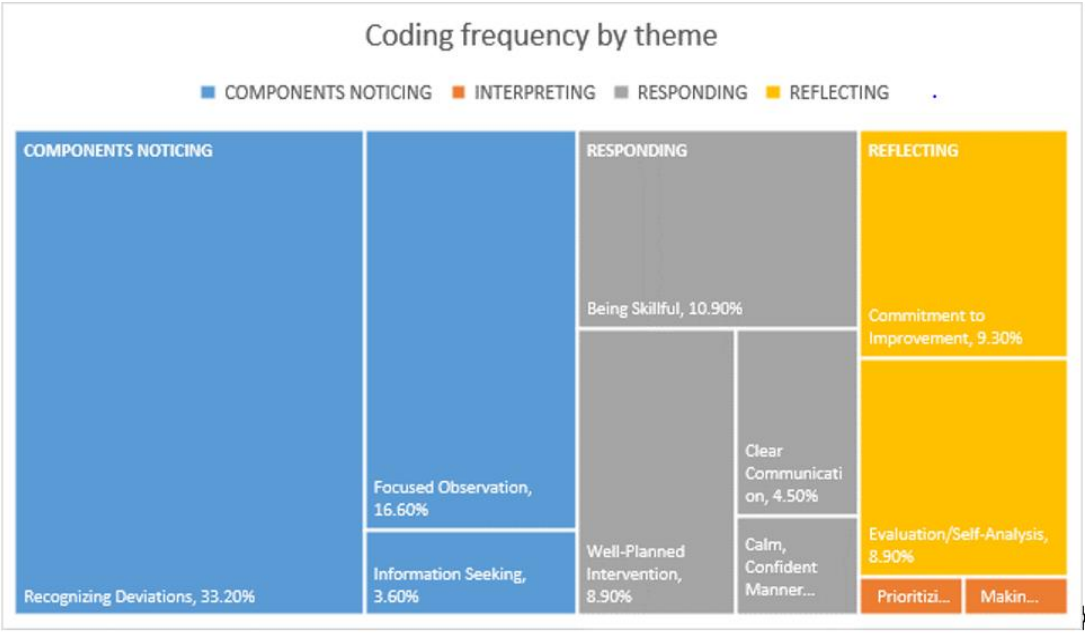

Figure 4.2: Summary of the Component on Level of Reflection
Source: Research (2020)

Figure 4.2 above shows the distribution of the component nodes and how the students were able to bring them out in their reflections. The findings confirm that the students' reflections were more based on component noticing and very minimal on prioritizing and making sense of the data. A greater percent of recognizing deviation from expected findings is distinct, with few of the students questioning the findings further. However, the majority were able to analyze how they responded to the situation and committed to work on their own skill gaps through documentation of relevant action plans.

This finding demonstrates a level of CJ developed in the students as they navigated the clinical environment, although prioritizing and making sense of the data can be improved with other interventions. It is clear that the integrated model may have a gap in helping students nurses learn to prioritize patient nursing care. Furthermore, the refelctive processes were supported by the upsurge of the theme and the need to know more. The post-test scores showed an improvement in the ability to interprete findings more in the control group than the intervention group. This finding is supported by an analysis of journal reflection, which showed the participants in the intervention group

had difficulty interpreting the clinical situation. Further analysis to identify the differences in the reflective abilities across the year of study and gender was done using NVIVO codes as attributes. The specific findings are presented in narrative form based on the four thematic areas of the Lasater CJ evaluation model.

4.7.1 Theme One: Component Noticing

The thematic area of component noticing includes recognizing findings that deviate from normal and focused observation and information seeking. Further analysis to identify the reflective abilities based on gender and year of study attributes was done. The findings showed that the female student nurses demonstrated a better ability to notice the change from the norm whether they were second-year or in the third year of study compared to their male counterparts. Information seeking attribute was more associated with the third-year nursing students comparatively.

4.7.2 Theme Two: Interpreting

The second theme was interpreting the situation, whether patient or otherwise. The sub-themes included making sense of the data and prioritizing the data. This attribute was not as evident compared to the others. A few male first-year students demonstrated this attribute, focusing on making sense of the data. The female students prioritized regardless of whether they were in their second year or third year of study.

4.7.3 Theme Three: Responding

The responding attribute was evident among the female nursing students regardless of their year of study. In their second year of study, the students focused on being skillful, while their third-year counterparts focused on ensuring their interventions were well planned. Of importance is the fact that the second-year female students identified being calm and confident as an essential attribute in their reflections.

4.7.4 Theme Four: Reflecting

This theme was represented by the ability of the students to develop action plans that identified their gaps and how they would work towards improvement, as well as evaluating how they handled the issue based on what should be. The female nursing students were identified as possessing the attribute of reflection compared to their male counterparts regardless of the year of study. Commitment to improving attributes was evident in the female students across the year of study, while self-evaluation was identified among the female students in their third year of study

4.8 Clinical Experiences of Undergraduate Nursing Students

To achieve the study's sixth objective of exploring the reflected experiences of undergraduate nursing students during their clinical placement, the study undertook a qualitative survey of the respondents. The findings presented in this section emanate from content analysis of 138 journal entries extracted from 36 second-year and third-year students' reflection journals. Although 39 students were enrolled in the intervention group, three of the students did not document anything in their reflective journals; thus the sample size dropped to 36, which represented 92% of the participants. Corner and Lemonde (2019), after analysis of multiple nursing studies, identified a consensus that most studies response rate is at least 70% which means the response rate for this study was high. The journal entries were based on the Gibbs reflective model. Gibbs' model is clear and exact in taking into account portrayal, examination, and assessment of the experience helping the intelligent specialist to sort out encounters and analyze the outcomes of the respondents. From the current study, the average length of the journal entries was four, with the lowest journal entry and highest journal entry being two and seven, respectively. The themes of the reflective journal entry analysis are presented for both second-year students and third-year students. The first section

results in the themes of the second-year students, and the second section represent the third-year students.

4.8.1 Second Year Reflective Experiences

A hierarchy chart spread was used to display the themes and sub-themes identified in the data analysis. A hierarchy visually represents the themes and sub-themes data in a rectangular format of different sizes, with the size representing the amount of coding at each node. Results in Figure 4.5 below show that the second-year nursing students lived experiences were mostly on learning new skills and knowledge, professional practice gaps, and confidence levels. Emotional reactions were seen as having the lowest representations of lived experiences. Each of these themes and sub-themes is discussed in more depth in the following sections.

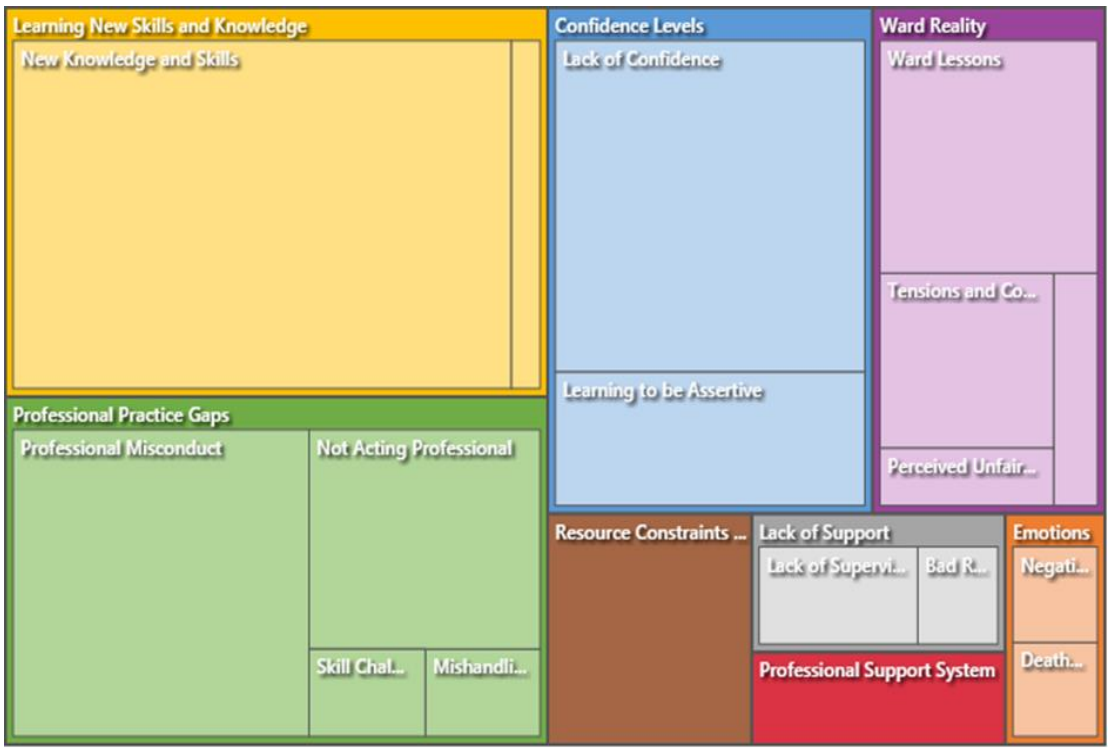

Figure 4.3: Second Year Themes and Sub-themes Spread Hierarchy Chart

Cluster analysis was also conducted through NVIVO, version 11 as a way of establishing the relationships between themes in terms of similarities of words and

codes. Cluster analysis (Figure 4.3) was further simplified in tabular form, as shown in Table 4.12. Cluster analysis shows the links that cut across different themes, thereby helping in describing similarities and differences between themes. Discussion on these links has been provided in the discussion below.

Table 4.11: Table on Cluster Analysis Findings on Themes Association

Themes	Associate Themes
Ward Reality	Learning to be assertive, professional misconduct, lack of confidence, not acting professional
Lack of supervision	New knowledge and skills
Negative feelings of fear	Skills challenges
Lack of critical thinking	Bad role models, resource constraints and misuse
Confidence levels	Emotions
Mishandling of patients	Professional practice gaps
Nursing philosophy and ethics	Death experiences, professional support system
Lack of support	Learning new skills and knowledge

Source: Research Data (2020)

The analysis of the data yielded eight main themes and 18 sub-themes. These themes emerged from the data and were derived from the participants' voices within the narratives. The familiarisation process in qualitative data analysis was used to manually construct the themes. Familiarization involves the process of intently reading the reflections over and over. After which, common themes and sub-themes are identified from the participants' narratives that are relatable to the research question. Supporting quotations from the narratives that aligned to the various themes and subthemes were used to explain the data further in the following section.

4.8.1.1 Theme One: Learning New Skills and Knowledge

Common among the second-year students was the theme of learning new skills and knowledge within the clinical setting. The nursing students expressed that they acquired new skills concerning clinical practice. Besides, the nursing students also mentioned that they have been able to perfect their skills as well as learn how the allocation of duties and responsibilities is done within the hospital setting.

Respondent code 28 stated,

"I had an opportunity to do suctioning, NG tube feeding… I felt an urge for fulfillment and success in achieving what I thought before was complex…the experience and practical doing on real patients is fulfilling."

Respondent 045 had an experience of dressing a *'massive wound'* …

"*I was initially feeling a lack of confidence but the presence of an experienced staff who was willing to support helped achieve the objectives."*

In most situations, students gained new knowledge or learned when they were faced with a new challenge or lacked knowledge to handle a given situation during the clinical practice. An accompanied feeling for most students during such situations was a feeling of helplessness.

Student 030 stated

"A client passed on (died) who I had taken care of an hour ago. Had not done last offices before was really frightened felt heart-broken because I had cared for this client, for 3 days. I learnt from the consultant how to break bad news to family."

Student 024 stated that

"I had difficulty explaining to the client what needed to be done. I learnt from the mentor the technique of using symbols and simple language to communicate. I resolved to work on communication skills to handle such situations."

According to the student, the learning opportunities available to them were dependent on the presence of competent and willing nurses available, as revealed in this reflection by student 044.

"The qualified nurse was so organized and willing to teach me."

However, in some situations, students gained new knowledge outside the theory they had learned earlier. Thus it was evident that learning new information was in line with their theoretical knowledge or outside their theoretical knowledge in class.

Student 005 stated,

"On insertion of a nasogastric tube although the doctor did the procedure, he did not follow the aseptic technique."

The results of learning experience for most students was accompanied with sense of satisfaction and happiness and joy for their achievement, as demonstrated through this reflection amongst the students.

Student 045 stated

"Was able to do a dressing with minimal supervision "I felt good" at the achievement."

Of interest was the realization that some of the students' desire to learn and acquire skills and knowledge was motivated by failure in role models and supervision during the clinical placement. Students exhibited positive attitude, amidst unfriendly learning environment, to learn by themselves new skills, as shown in the reflection below from student 027.

Student 027 stated

"I was assigned a patient with a qualified nurse, but the qualified nurse "disappeared from the ward". I recognized I had to meet the needs of the clients' despite being alone. I decided to take responsibility. "I decided not to let fear overcome me" Was able to meet clients' needs. I learnt to take charge of situations and not rely on help all the time."

4.8.1.2 Theme Two: Professional Support System

It referred to the types of support given to the participants, lack of support system, or teamwork in the clinical setting. Participants frequently used the word 'teamwork' or

'team spirit' to describe the supportive environment that exists in the clinical setting. Among the participants, sources of support in the course of their duties came from role models, nurse preceptors, fellow students, and lecturers themselves.

Although most of the participants' experiences with the existing support sources was mostly very positive and encouraging, some of them had a negative feeling about the lack of support from some of the nurses.

Another sub-theme that emerged during the study was about role models. Concerning this, there were mixed feelings, with some of the participants expressing that they have good role models amongst the nurses while some felt that they lack a role model. In most cases, a lack of role models was linked to failure by nurses to adhere to professional standards in the presence of students.

Respondent 046 encountered new drugs in the ward and learning from *"a primary nurse who was nice to me…This nurse allowed me to do many procedures under her supervision and instruction…I had the best feeling ever in my life."*

Respondent 002-

"*As a student, I was amazed to find registered nurses who could learn from students, … correct… teach the students…Wow! is all I can say for the health practitioners in this ward."*

4.8.1.3 Theme Three: Action

Being proactive in terms of learning was also mentioned by some of the students concerning putting effort to gain new knowledge and skills, all as a way of overcoming some of the challenges the students face in the clinical environment.

Respondent 027 was assigned a patient with a qualified nurse, but the qualified nurse

"Disappeared from the ward... I recognized I had to meet the needs of the clients' despite being alone. I had to take responsibility…I decided not to let fear overcome me… I was able to meet the clients' needs."

4.8.1.4 Theme Four: Confidence Levels

All participants regarded the confidence level as a challenge or positive factor in their clinical environment. Among the students' nurses, there were two categories of nursing students those with low confidence levels and those who are assertive. The majority of the second-year nursing students were in the former category, and in most cases, they felt helpless to face nurses who engage in malpractices. This suggests that most students in the second year generally lack aspects of critical thinking by not being assertive enough. However, some of the nursing students, although few, were assertive enough to report the nurse to another nurse for correction.

For instance, Respondent 003 journal reported;

"*I observed a qualified nurse doing a dressing without observing aseptic technique…this occurred more than once… fear of being ridiculed stopped me from speaking up … I was just a level II with nothing to show and several years to go."*

Respondent 34-

"I could not say a word to my primary nurse since she was more experienced than I so I had no option but to follow what she said."

Respondent 032-

'*I later reported to a qualified nurse who confronted the doctor on the issue.'*

4.8.1.5 Theme Five: Professional Malpractices

This theme identified that nearly all the participants were in agreement that they had experienced professional malpractices in one way or another. These experiences were mainly focussed on clinical nursing practice situations. Professional practices

experienced by the nursing students revolved around noncompliance to nursing standards of practices, poor communication between the nurses and students, mishandling of patients, and nurses abusing each other in the wards. In expressing their experiences on malpractices, it was evident from the reflective journals that most of the second-year nursing students were "helpless" to face the nurses and correct them. However, some of the nursing students were able to face nurses whenever they felt the nurses did something wrong. Of interest in this was that they confronted them on all other issues except matters of non-adherence to professional standards.

Respondent 002 had an experience of a qualified nurse doing dressing without obeying the rules of aseptic technique.

"*I noticed that she did not maintain aseptic technique… I was shocked because I expected a registered nurse to follow what Nursing Council of Kenya states about aseptic technique…I felt intimidated because she was more experienced than me."*

Respondent 003 expressed;

"Patients are exposed during procedures such as wound dressing, drug administration, and bed baths…has been a common situation in the past 4 days."

Respondent 026-

"A qualified nurse exposed a client during a procedure did not close curtains I had no courage to confront the nurse or suggest they close the curtains. I got to know that the nurses reasoning was that all the patients were sick and not even aware of the privacy."

4.8.1.6 Theme Six: Resources

Another theme that emerged among a few nurses related to resources. From the views of the second-year students, it was evident that they felt that limited resources had been allocated to support the nursing operation. Other nursing students felt that the limited resources were being misused, thus making their clinical training more difficult.

Respondent 002-

"I was shocked… some were sharing linen. I got so much worried about our patients and also the profession itself since what we are taught is not what we reflect in our practice…"

Respondent 003-

"Currently the ward has only one BP machine and no thermometer. How can one take and monitor the vital signs of almost 60 patients? a single nurse has to take care of almost 15 patients in the wards. Such a situation makes patient care ineffective and poor… I felt frustrated."

4.8.1.7 Theme Seven: The Ward Reality: Tensions and Conflict

Ward reality emerged as a common theme amongst most of the participants. Some students talked about the challenges that they experienced when dealing with a client and the lessons that they learned from these experiences. Several students expressed that some of the lessons they acquired included the need to listen to the patient, the need for self-awareness, and the need for one to be an effective communicator with other team members.

Ward's reality was manifested in different ways. Discrimination was one of the sub-themes on the ward reality, with some of the students complaining about discriminatory behaviors they were seeing in how nurses were dealing with the patients. Inadequate knowledge and deficient practical skills were also cited as a common experience among some of the student nurses. Student nurses are faced with certain situations where they struggle to handle a client. Some of the students did not have sufficient knowledge to care at the bedside when dealing with the clinical learning environment, and providing care to the patients was challenging for them. Some of the students were deficient in communicating with nurses and even patients in the clinical learning environment. The

students also identified the presence of tension among the nurses, mentioning that some of the nurses were afraid of the nurse in charge.

Lastly, the sub-theme of the Inferiority complex also emerged from the students. The inferiority complex was more evident among female students than male ones.

Student 034 stated,

"*I witnessed rough handling of a bed ridden patient by a qualified staff while turning the patient. I had no courage to confront the nurse. I learnt the need to be assertive and do the right thing. I also learnt the need to listen to the patient and involve them in their care."*

Tension and conflict were common sub-themes amongst the students. These were commonly manifested in terms of team needs vs. patient needs provided by students, preceptor needs vs student's obligation to patient care, and relationship between different healthcare workers. These are supported by the following reflections.

Student 024 stated

"I felt patient care needs should be met before attending to my own learning needs but this caused conflict with the preceptor who wanted the assignment she had given be handed in immediately."

Fear of the nurse in charge by the qualified nurses was also identified in this theme. The students stated that the nurses seemed uncomfortable when the nurse in charge was around the ward compared to when not. They also mentioned that the nurses did not seem confident enough to speak up for where they were facing challenges, as expressed by student 027

Student 027 stated

"*Most nurses were afraid of the nurse in charge to the point they are not free to air their issues."*

Ward's reality was manifested in different ways. Discrimination was one of the sub-themes on the ward reality, with some of the students complaining about the perception of unfair treatment they were seeing in how nurses were dealing with them or with the patients. Student 046 stated that *"The qualified nurse was 'rude' and 'hard' on the student."*

Inadequate knowledge and deficient practical skills were also cited as a common experience among some of the student nurses. Student nurses are faced with certain situations where they struggle to handle a client. Some of the students did not have sufficient knowledge to care at the bedside when dealing with the clinical learning environment, and providing care to the patients was challenging for them.

Respondent 029 wrote;

"*I felt confused because of not being given an orientation in a new working environment. I was left to work unsupervised had to rely on another student to know what to do."*

Respondent 024 -experienced conflict with prioritizing patient care versus meeting the demands of the preceptor on an assignment.

"*I felt patient care needs should be met before attending to my own learning needs but this caused conflict with the preceptor who wanted the assignment she had given be handed in immediately."*

Some of the students had challenges dealing with the nature of the clinical environment that is characterized by long hours of standing and unpredictable events that can lead to one not making time to have a meal, as expressed by student 045,

Respondent 045-

"I felt dizzy when performing a wound dressing procedure…I had not eaten anything."

Ward reality was linked to other themes such as professional malpractices and not acting professional. This shows that the experience of most of the students on ward reality related to professional practice Gaps. This either exposed the students to a sense of helplessness and fear on acting to correct such malpractices. In addition, some of the students were motivated by prevailing ward realities to be more assertive in expressing themselves, thus helping in correcting the wrongs.

Student 045 stated,

"Went to theatre to pick a client after operation with another student. Qualified nurse was not in the ward, normally a student would be accompanied by a qualified staff but did not consult. identified the need to communicate with other colleagues when there is a problem, rather than operating out of scope."

Student 024 stated

"I Struggled to handle a client situation that closely related with a personal experience in the past. Learnt that previous experiences can dictate one's attitude towards a situation: The need to be self-aware."

A common view expressed by students who experienced a lack of critical thinking in ward reality was its connection with bad role models and resource constraints/misuse of resources. This points out that to most students, good role models and resource availability can contribute to enhanced critical thinking and feeling of satisfaction within wards.

4.8.1.8 Theme Eight: Emotional Reactions

Some of the students participating in this study became distressed and overwhelmed in dealing with new experiences within the clinical learning environment. Besides new experiences, death experience was a challenge to some who had difficulties in dealing with emotions from death experience. The presence in the clinical setting and exposure

to new events cause emotional reactions in students. Such reactions have a significant effect on the learning process.

Respondent 001 documented;

"*…that was my first time to lose a patient that I had nursed…it was so tough and quite heavy for me…I remember I thought of how the family would take the bad news…I felt that my nurse did the right thing to make the patient comfortable… during his last moments...she made nursing look quite compassionate… everything was handled well… privacy, confidentiality, and comfort…"*

Respondent 045-

"The pain of losing a patient or relative is the same, I felt bad that I was the last to care for him and he had to pass on"

Respondent 050-

"This was emotional for me, seeing a man the age of my father crying…he felt hopeless and just wanted to die…I had no idea on how to encourage him…I felt deficient in skills of encouraging the client to face a difficult situation. I was able to ask for help from the mentor."

4.8.2 Themes and Sub-Themes for Third Year Nursing Students

The themes and sub-themes discovered in the data were visually presented through spread in a hierarchy chart. Hierarchy visually represents the themes and sub-themes data via rectangular of different sizes, with the size representing the amount of coding at each node. Results in Figure 4.4 show that the third-year nursing students lived experiences were mostly on professional practice gaps and confidence levels. Ward reality was seen as having the lowest representations of lived experiences. Each of these themes and sub-themes is discussed in more depth in the following sections.

Figure 4.4: 3rd Year Themes and Sub-Themes Clinical Experiences
Source: Research Data (2020)

The codes and themes were further subjected to analysis to identify the relationship between various themes. Table 4.13 illustrates the main themes and their related sub-themes.

Table 4.12: Third Year Students Themes and Sub-Themes Association as Revealed through Cases and Word Similarity

Main Theme	Sub-Theme
Attitude, Action Planning	Skills challenges, Ward lessons
Proactiveness	Death Experiences
Knowledge, Assertiveness	Professional Misconduct
Professional support system	Lack of consultation
Lack of confidence	Overconfidence
Discrimination	Lack of support, Non-Adherence to nursing practices standards

Source: Research Data (2020)

4.8.2.1 Theme One: Professional Practice Gaps

Professional malpractices were mentioned as commonly experienced amongst the third-year students. The manifestation of professional practice gaps took the form of negligence or malpractices committed by nursing preceptors. However, professional negligence was the dominant theme amongst the third years nursing students, with professional malpractices mentioned by a few. Regarding negligence committed by nursing preceptors, there was a general expression amongst the students' non-adherence

that the standard of nursing practice was the main type of negligence experienced. This is exemplified in the statement below.

Respondent 092-

"*A fellow student did a drug error… I was unable to correct the person…later handle the issue with the nurse in charge."*

Respondent 094 wrote-

"*A client had not been notified pre-operatively on the operation to be done which involved the removal of the right eye (RE). The patient seemed very low and it was evident she was undergoing postoperative shock on the loss of her RE… I was perplexed since patient rights encompass total knowledge of all medical procedures…"*

Non adherence to nursing practices and standards was also one of the sub-themes expressed by students in regard to professional practice gaps. Non adherence was a challenge committed by both students and nurses but predominantly among the nurses. Students non-adherence was experienced through drug errors as shown in the reflection below by student 096,

"Fellow student did drug error. Unable to correct the person was able to later handle the issue with the nurse in charge future action plan: further reading to be sure of procedures, be more assertive."

Students who stated non-adherence as commonly committed by nurses mentioned issues to do with the right to information violation, lack of patient history documentation, and non-adherence to waste control policy in the hospital.

Student 092

"*Observed that the patients lacked orientation in the word to ensure adherence to infection control policy (waste disposal) client disposing food staff in the wrong bin."*

Skill-related challenges and lack of consultation were also raised by the students as some of the professional practice gaps experienced during clinical placements. These issues emanated from the students who were deficient in handling certain procedures or situations, or deemed themselves competent enough to carry out procedures without consultation with preceptor.

Student 091 *"Reported that a student did not consult another nurse to assist in a procedure."*

Some students also expressed their displeasure at the professional misconduct of the nurses either by reporting them to other nurses or by challenging them on their mistakes. This was based on their theoretical knowledge of what is expected of a nurse during practice. In some cases, students only reported any misconduct after not achieving anything from directly confronting the nurses. It can be implied from the self-reflection that assertiveness is strongly associated with the theoretical knowledge of the student nurses. This is supported by the following self-reflection from student 096,

"Was able to stand up to a qualified nurse who was taking short cuts in wound dressing-did not follow aseptic technique. Regrets not acting promptly because the student waited till the end of the procedure."

Student overconfidence in administering a procedure or drug only served to manifest their lack of confidence, as evidenced in some of the mistakes they made. This is because such students lacked the confidence to correct the situation but only had to turn to the preceptors for help. This shows that even the student with overconfidence, lack of confidence was still lurking underneath with them. Hence it can be stated that overconfidence was only, but a manifestation of the lack of confidence in different ways. For instance, student 092 stated that

"Being focused /engrossed on a procedure and forgetting there is a patient beyond the procedure. Was over confident but ended up making mistakes which she did not pick till the preceptor prompted."

The level of proactiveness amongst the students was connected to ward reality, more their death experiences witnessed during their placement. Students who witnessed death of a client were more predisposed to seeking counselling from nurses or counsellors.

Student 098 expressed that

"I witnessed a death that overwhelmed me and was able to seek help from a counselor which helped me deal with similar incidences in future.

4.8.2.2 Theme Two: Confidence Levels

The theme of confidence levels was a common occurrence in the experiences of third-year students. Although confidence level theme was a dominant among the students, the students' experiences were biased toward assertiveness and lack of confidence as opposed to overconfidence.

The experience of overconfidence was mostly mentioned by the student regarding adherence to drug administration procedures or certain procedures, with some of the students making non-fatal related errors from their overconfidence. The issue of overconfidence demonstrates that some of the students had not mastered the necessary skills to administer clinical procedure as evidenced in the self-reflection by student 081.

"Case of being overconfident yet had not mastered the skill well leading to a drug error, was to prepare ceftriaxone but prepared Cefazolin and did not confirm with the qualified nurse."

Assertiveness amongst the students was also conveyed through students correcting nurses by administering a right procedure instead of wrong procedure conducted by the

nurses, by reporting them to nurses in charge, and by confronting the nurses directly over a mistake or an issue. For instance, one of the students (098) stated that;

"A qualified nurse removes from beside a new regimen for a patient. Student confronts the nurse on the issue but the nurse is rude. Students escalate the matter to clinical mentor who handles the issue culminating in the nurse apologizing to the student."

The manifestation of lack of confidence amongst the third-year nurse students occurred to conducting certain procedures. Some of the students were afraid to attempt certain procured for fear of failure and the resultant consequences to patients. However, for some students, lack of confidence was in regard to conducting a procedure that they deemed as outside the standard operating procedure, as shown in the student 087 self-reflection below.

"Issue of being unable to be assertive when instructed to do a procedure in a way that is against standard operation procedure."

4.8.2.3 Theme Three: Learning New Skills and Knowledge

Some of the participants highlighted that their experiences revolve around the new skills they have gained through the interaction with fellow students and nursing preceptors. In the process of gaining new skills, some of the participants reported that they had acquired important learning attributes. Most of them mentioned that learning happened through collaboration contribution to patient management, as shown in the following self-reflection.

Student 089 reported that

"I was able to do first male catheterization with supervision. Client was however very aggressive requiring to be sedated for the procedure. The nurse 'guided me through it and was able to complete the procedure appropriately."

Also, the students gained knowledge through the challenges that they faced in their course of duty. During such challenges, some of the students' demonstrated critical skills in handling the emerging situation in nursing rooms or with a patient in terms of objectivity, the student nurses also learned the need not to be routine but assess the patient before administering medication to patients.

During the knowledge acquisition, several nursing students demonstrated critical skills a feeling of satisfaction and happiness occasioned by the new skills that they were acquiring in the clinical setting. Learning of new knowledge and skills occurred in both positive and negative situations in the clinical setting. Students stated that they learn via self-motivation from negative experiences, more during challenges experienced when administering a procedure. Hence to some students, learning from challenges exhibits a positive attitude amongst some students. For example

Respondent 091 wrote-

"A qualified nurse assisted us in identifying a device on the patient that we were not familiar with… a PEG tube. It felt satisfying when the qualified nurse came in and we."

Respondent 097-

"*I did not know tracheostomy interferes with communication. The experience was a challenge for me…I had to go the extra mile to learn. Not everything you will be taught in school…it's always your interest… learning something new was satisfying."*

Some students demonstrated a positive attitude in the learning settings for the students by being open to new knowledge that may not have been taught in classes. For instance, student 097 stated that

"I recognized that some things learnt in the clinical area may not have been taught in class-being open to new knowledge."

The relationship between attitude, skill challenges and ward lessons was investigated. From the students' self-reflection, it was observed that students who experienced skills challenges but had a positive attitude were more likely to pick important ward lessons. This is because, as revealed in the self-reflection, most of these students were proactive.

4.8.2.4 Theme Four: Action-Oriented

The students' action-orientedness was expressed in terms of action plans and proactiveness. Action plan development emerged very strongly from the data. This related to two sub-themes (a) action plan for nurse students and (b) action plan towards the client. Many participants who discussed the client action plan talked about the need to develop an action plan to ensure patients are protected more. This would be through adhering strictly to standard procedures, developing assertive skills to protect clients, timely response in dealing with patients, and empowering patients to be more independent. Being proactive amongst student nurses was highlighted in the form of student nurses that seek help from nursing preceptors and counselors. Nurses provided more knowledge and skills while the counselors helped the students deal with the emotional burden related to clinical placement. The following self-reflection highlight these issues.

Respondent 089 wrote;

"The patient I was monitoring on blood transfusion started showing signs of a reaction. I immediately stopped the blood transfusion and got help. The qualified nurse demonstrated expertise in handling the situation… I was able to learn what to do if this was to happen again."

Respondent 095-

"One of the guys inserted the NG tube while the client was lying flat on bed…we tried aspirate nothing came out…I dipped the tip in a cup of water...bubbles came out, I removed the tube immediately."

4.8.2.5 Theme Five: Emotional Reaction

Emotional reactions from the students were expressed in two situations of death experiences and discrimination. Emotions experienced when dealing with the death of a client involved sadness, feeling overwhelmed, uneasiness, blaming oneself, and feeling uncomfortable in such a situation. This was epitomized in the following reflection:

Student 082 stated

"I found it difficult to accept" patient was signed DNR I was traumatized by the loss". I blamed myself". I recognized that such challenges make us strong and courageous."

Respondent 082

"The patient passed away…I couldn't stand the situation… it was my first time… the situation was traumatizing, challenging and hurting… I felt so down."

Respondent 095

"I keep on thinking I made a mistake which led to the loss of a patient. I regret that I did not act immediately…"

Some of the respondents identified their difficulties in dealing with death and sought help from counselors, mentors, or a qualified nurse who was working with them, as exemplified by respondent 082 and 098.

Respondent 082

"I decided to seek help from the mentor and had to leave the ward for a while to manage the negative feelings."

Respondent 098

"The patient passed on…I was overwhelmed with fear and I went to discuss the issue with a counselor. He helped me overcome the situation and move on"

This tendency to seek help is a sign that the students are able to identify their limitations in handling distressing situations; an element in critical thinking.

4.8.2.6 Theme Six: Discrimination

The other form of emotional reaction that emerged from some of the third year nursing students was expressed as discrimination, with students expressing the feeling of being despised and being hated, based on how some nurses treated them. Individual-level discrimination is the most common discriminatory behavior expressed by the nursing students. There was no evidence of institutional discrimination from the students. From the perspective of nursing students, discrimination comes from other nurses and not the nursing in charge. When the students were allocated routine tasks to perform daily, they felt that they were looked down upon and were not allowed to learn other more sophisticated skills, as expressed by respondent 088,

"The qualified nurses treated us like nurse helpers like we knew nothing… we were allocated basic tasks, (vital signs, bed baths) and not allowed to participate in other procedures (drug administration) for learning."

4.8.2.7 Theme Seven: Professional Support System

Overall, positive views were expressed regarding the support system that exists. The third-year nursing students talked about how there was good nurse involvement in round realization and the support they received from nursing receptors whenever they encountered something unfamiliar to them. Role modeling was also a common way through which some of the students expressed their views about the professional support they received from the nursing preceptors.

Respondent 092 diarized;

"I was Impressed by nurses involved in the ward round realized that nursing is not only manual tasks it involves a collaborative contribution to patient management."

Respondent 082-

"I couldn't continue feeding since I was in fear…' My preceptor encouraged me to keep trying… my mentor and preceptor understood me and took a step to ensure I overcame my failure."

4.8.2.8 Theme Eight: The Ward Reality

The manifestation of the ward reality theme varied, according to the participants. The participants who voiced their opinion on the ward reality expressed both individual and organizational challenges. In terms of organizational challenges, the participants felt that there was a lack of adherence to certain policies (more so waste disposal policy) and violation of the right to information of the clients. On an individual front, the nurses felt that it was a challenge for them to manage time properly with the patients they require individual attention.

To the students, ward reality was expressed in terms of ward lessons that students learned from challenges they experienced during their placement. To this extent, one of the students stated that.

Student 082.

"Managing time was a challenge with many patients requiring my attention… I need to learn to prioritize…"

4.8.3 Comparative Analysis of Themes for Second- and Third-Year Nursing Students

A comparative analysis of the themes revealed that both second-year and third-year students had eight themes. However, resources as the theme were expressed among the second-year and not third-year students, while discrimination was found among third-year students and not second-year students. Interestingly the findings revealed that

third-year students were much more assertive to the extent that some were overconfident in handling their nursing duties.

On the contrary, the majority of the second-year nursing students lacked confidence and thus were not generally assertive. They ended up not voicing their discontent with the way the patients were being handled. The students across the second and third years expressed acquired new skills and were open to learning as expressed through action plan development in both groups. Both clusters encountered good and bad role models that helped shape their attitude towards the profession. Some of the students reflected that although they may have witnessed nurse models who did not represent the profession well, part of their learning from them was to identify the kind of a nurse graduate they do not want to become when they qualify from nursing school.

4.9 Student Perception of their Learning Experience

To attain the final sixth objective of the study which aimed at establishing the perceived experiences of undergraduate nursing students at the end of their clinical placement at KNH, the respondents were quantitatively evaluated. At the end of the medical surgical clinical placement, the students were given evaluation forms to document whether they achieved their learning objectives and whether the use of the various tools enhanced their learning. Their responses were ranked by a Linkert scale, with responses being disagree, least agree, moderately agree, agree, and strongly agree. The type of the Linkert scale was influenced by the positive nature of the expected responses from the respondents. These responses were mostly positive, and the research sought to determine the magnitude of the experience gained.

The responses gained showed that the majority 47% (n=31), agreed that they were able to meet their learning objectives during the period of clinical placement. When asked

whether reflective writing enhanced their ability to reflect on their practice and commitment to improve, most 56.3% (n=36) of the respondents strongly agree. Contrastingly 9% (n=6) were on moderately agreed. The third question asked was on whether concept mapping helped the students integrate what they learned in class into clinical practice. Most 53% (n=35) strongly agreed that they were assisted by the concepts they had learned in class to navigate the clinical practice. The fourth question asked was whether the respondents had learned from the clinical/case conferences, which offered them an opportunity to clarify information.

These clinical conferences referred to were the continuous medical education and others. Majority 62.1 (n=41) strongly agreed while 4.5% (n=3) moderately agreed. The fifth question raised was aimed at determining whether the preceptor feedback offered to the nursing student was helpful. The majority, 76.9% (n=58), strongly agreed that they gained valuable help from the feedback offered to them by the receptor during the period of clinical practice. The sixth question asked was whether the respondents gained enrichment on their clinical experience. A higher percentage, 73.8% (n=48) strong agreed that they had been highly enriched by the clinical experience. 76.9% (n=50) strongly agreed that the assignments offered were within the scope of learning, while 81.3% (n=52) strongly agreed that they felt more confident as a student nurse after the clinical experience. Finally, 78.8% (52) strongly agreed that their clinical skills improved, while 87.9% (58) strongly recommended the use of these tools to other students.

The above responses are summarised in Table 4.14, showing that the majority, 89% (n=58), of the participants were able to meet their learning objectives during the guided clinical practicum. Students in the intervention group strongly agreed the reflective writing helped them reflect on their practice (56%), and concept mapping helped them

integrate what they learned in class into clinical practice. A great deal of students (84.8% n=56) expressed an agreement that clinical conferencing gave them an opportunity to clarify information. Preceptor feedback was also rated highly, with 90.7% agreeing that it was helpful to their learning experience. Most of them agreed they would recommend the use of the clinical teaching and learning tools applied to other students. From these findings, it is clear that the students' perception of their clinical experience was positive despite the negative encounters identified in their reflections. Thus, although faculty may not have influence on the dynamic clinical environment that is highly unpredictable, they can tailor the experience of student nurses through supportive clinical learning strategies that allow self-directed learning so long as feedback is given.

Table 4.13: Student Perceptions of Learning Experience

		Disagree	**Least agree**	**Moderately agree**	**Agree**	**Strongly agree**
I was able to meet my learning objectives	n	0	1	6	31	28
	%	0	1.5	9.1	47	42.4
Reflective writing enhanced my ability to reflect on my practice and commit to improve	n	1	1	6	20	36
	%	1.6	1.6	9.4	31.3	56.3
Concept mapping helped me integrate what I learnt in class to clinical practice	n	3	1	8	19	35
	%	4.5	1.5	12.1	28.8	53
Clinical/case conferences gave me an opportunity to clarify information	n	0	3	7	15	41
	%	0	4.5	10.6	22.7	62.1
Preceptor feedback was helpful	n	0	2	4	9	50
	%	0	3.1	6.2	13.8	76.9
My clinical learning experience was enriched	n	0	0	1	16	48
	%	0	0	1.5	24.6	73.8
The assignments were within my scope as a student	n	0	1	2	12	50
	%	0	1.5	3.1	18.5	76.9
I feel more confident as a student nurse	n	0	1	1	10	52
	%	0	1.6	1.6	15.6	81.3
	n	0	0	1	13	52

My clinical skills improved	%	0	0	1.5	19.7	78.8
I would recommend use of these tools to other students	n	0	0	1	7	58
	%	0	0	1.5	10.6	87.9

Source: Research Data (2020)

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter describes the findings of this study in reference to existing literature to delineate the agreement or not with other researchers who have published research studies in this area or to present new knowledge generated. The structure for this chapter aligns with the stated objectives in chapter one, identifying the findings per each objective and how those findings relate to the existing literature. The chapter also describes the study conclusions and recommendations for future researchers.

This study confirmed the hypothesis that the application of concept mapping and reflective writing as an integrated teaching model is more likely to improve CJ scores of undergraduate student nurses compared to NCP as a single tool. Most of the respondents in this study had a mean age of 21.55. This age compares well with the expected age for university students in the second year and third year in Kenya. The majority of students will enter university education at age 19, having completed 12 years of primary and secondary education. The finding that the majority of the respondents were female (65%) agrees with Walling (2011), who stated that the nursing profession continues to be female-dominated. However, there is a trend of increase in the number of males entering the profession.

The discussion that follows explains the findings in line with existing literature for each of the study objectives.

5.2 Summary of the Findings

5.2.1 Entry-level CJ Skills of BScN Students

The current study findings support that evaluation of student nurses' CJ skills can help identify appropriate evidence-based strategies to enhance the integration of book knowledge into clinical practice. Results across the cohort groups showed that the majority of the respondents (67.1%) scored less than 50% of all domains inclusive at pre-test for both cohorts. At post-test, there was an improvement in the overall scores, with a high number, 63.8%, scoring at expectation. Researchers are of the opinion that focus on theoretical credentials, which is characteristic in undergraduate nurse training, needs to be evaluated to improve clinical reasoning skills at all levels of training. Kavanagh and Szweda (2017), in a study evaluating the clinical competencies of 5000 new graduates, found that only 23% of them possessed competencies that show they are ready to handle unpredictable patient care situations.

Nurses who lack clinical reasoning skills result in poor CJ, implicated in multiple incidences of failure to recognize the need to act on given patient parameters (Aiken, Clarke, Cheung, Sloane, & Silber, 2003). Moreover, the multiple incidences have been linked to increasing legal suites due to healthcare-related complaints (NSW Health, 2006). The status of the current health care system, especially in resource-poor countries, is such that new graduates have to take up more responsibilities as soon as they graduate due to a shortage of qualified nurses. This situation exemplifies the need for clinical competency capacity building during training rather than after training.

The finding that the students had difficulty identifying patient care needs at pre-test aligns with the findings of a study done by Lasater and Nielson (2009a), which revealed students had difficulty noticing salient client data, however, the setting of this study was in a simulation laboratory. Alfayoumi (2019) also documented similar findings that

the students lacked the ability to identify significant assessment data, an aspect he termed as 'engagement' (p. 56). This study, however, was conducted in a class setting rather than a clinical site; thus, the findings may not account for the differences in the clinical environment. Assessing training needs prior to a clinical practice can help the planning of individualized clinical teaching for health care professionals in the unpredictable clinical environment (Grant, 2002).

Some local studies have linked poor quality health care to a lack of sound clinical decision-making among qualified nurses (Benner et al., 2008). Evidence locally is extremely reminiscent in reporting that newly qualified nurses are still deficient in making sound clinical decisions (Wachira et al., 2017). Thus a model of teaching that enhances the development of CJ early in training will go a long way in improving patient outcomes in clinical settings.

Findings of the current study showed a significant improvement of CJ across the groups, with the students below expectation <49% improving from 67.0% of students in the category during pre-test to 36.2% at post-test. This means that 31% of the participants moved from one level of CJ to a higher level after the clinical teaching experience. These findings were supported by Gerdeman et al. (2013), who validated the significant role of concept maps in improving CJ as well as critical thinking through a pilot study conducted among junior nursing students in the undergraduate program. These illustrate that there is an absolute need to aid in improving the CJ of nursing students.

Clinical judgment gaps have also been described by Del Bueno (2005), although the findings were based on newly qualified undergraduate nursing students. He identified that prioritizing and anticipating physician's orders, just like in this study, were part of the glaring CJ competency gaps. The finding that the majority of student nurses had

difficulty identifying patient problems differs from Mirsaidi et al. (2012), who found a higher performance in nursing diagnosis based on client assessment data.

However, it is possible that differences in curriculum content, sequencing, and the nature of the clinical environment could contribute to the differences. Wolff, Pesut, and Regan (2010) have also documented deficiencies in CJ, especially in the area of setting priorities, although the study was done among new graduates. The need for critical thinking skills for students is necessitated by the acute shortage of qualified nurses, an increase in the acuity of patients in the current health care settings that requires the students once they qualify to take up more responsibilities for patient care than before (Potgieter, 2012).

5.2.2 Effect of the Integrated Clinical Teaching Model on CJ Skills Scores

Combining concept mapping and reflective journaling had an overall positive significant impact on CJ skills scores compared to the nursing process alone. This finding agrees with multiple studies that have found that students' performance level in critical thinking and CJ skills is improved by the application of integrated models (Alfayoumi, 2019; Curl et al., 2016; Hansen & Bratt, 2017; Zarifsanaiey et al., 2016).

However, the majority of these studies were done fully or partially in a simulation laboratory context rather than an actual clinical site, and the clinical teaching tools combination varied across the various studies. Thus, the current study findings provide new knowledge on the fact that integrated models that involve the use of concept maps and reflective journals in a real-life clinical experience that is highly unpredictable improves CJ skills of student nurses. In resource-constrained environments, such as Kenya, where most simulations are low fidelity, this finding is of great importance and will be valuable in informing strategies to improve clinical education in similar settings. Hospitals in sub-Saharan Africa are characterized by overcrowding of students, limited

teaching personnel, and minimal hands-on experience for students in undergraduate programs (Gemuhay, Kalolo, Mirisho, Chipwaza, & Nyangena, 2019). Thus the need for student-led clinical teaching models.

The intervention in this study improved the ability of the students to identify patient care needs and interpret their findings. These findings differ with Alfayoumi (2019), who found out that the intervention of combining clinical teaching tools improved all domains of CJ except the domain of engagement which involves the extent to which the student identifies something as a problem in a client. However, the discoveries that interpreting findings domain improved confirms Alfayoumi's findings that the intervention of integrating multiple tools in clinical teaching improves the background information of normal and abnormal findings among student nurses. Although a student being able to identify patient needs and interpret assessment data is regarded as the basic level CJ (Noticing) according to Tanner (2006), it is a crucial stage that informs the plan of action and future decisions on how to handle the clinical situation appropriately and in a timely manner. As documented by Wu et al. (2020), blended clinical teaching strategies have been applied in improving the teaching skills of professional nurses who are involved in clinical instruction.

5.2.3 The Role of NCPs in Improving CJ Skills

According to the third objective, this study found that the nursing process still has a role to play in improving some aspects of CJ. Specifically, the aspect of identifying significant history and assessment data as well as interpreting findings. Although the integrated model was more likely to improve CJ skills scores for higher-order skills, the NCP as a clinical teaching strategy tended to improve the low order skills of CJ that are foundational in being able to perform the higher-order skills. This means that the nursing care plan, if enhanced, has a great potential to prepare nursing students to

possess high-level CJ by graduation. These findings agree with Mwangi et al. (2019), who found that NCP has the potential to improve patient care quality through the identification of significant assessment data, both objective and subjective.

The findings of the current study featured that understanding evaluation is an insightful factor and essential for CJ. It begins with the efficient evaluation so as to decide patients' physical, mental, and feelings followed by nonstop appraisal for the conclusion of their level of mischief and looking at the impact of CJ. Wallace (2013) indicated that thorough evaluation is characterized as discovering objective and abstract information in six physiological, mental, sociological, formative, profound, and social measurements. These outcomes were concurrent with the current study findings, which discuss that CJ was influenced by the nursing students' impressions. The current study found out that the role of NCPs in improving basic level CJ skills to include identifying significant history and assessment data as well as interpreting findings should not be overlooked. This was also echoed by other studies undertaken on the same subject, which highlighted that the majority, 78.9%, of the students nurses were critical in identifying that CJ as an important aspect of clinical practice (Curl et al., 2016; Zarifsanaiey et al., 2016).

Respondent's highlighted certain factors, for example, follow-up requests, clinical conversation and examination, upgrading the inquisitive, and critical thinking ability in nursing students. Another investigation found a huge connection between scholarly examination abilities, basic reasoning, and students' clinical exhibition (Ghazivakili et al., 2014). The above study highlights and emphasizes the outcomes of the current study, which showed that clinical experience was integral for the advancement of the CJ ability. Further to the above findings of the current study, Kim and Shin (2016) carried out a study and found that the use of the nursing process with simulation

improved the CJ skills of nursing students. This study showed improvement in critical thinking skills in the integrated intervention group, amplifying the value of concept mapping in improving the critical thinking skills of nursing students.

Other studies have accepted that in spite of the fact that instinct is molded through encounters and generally in talented nursing students. Such perspective can likewise be found in students at some level. Seidi and Alhani (2014) likewise characterized instinct as prompt information and experience-based response in medical attendants. Hence students have a more grounded instinct that lasts a long time than the main years. This mirrors the current study's outcomes, which show that nursing students expressed that they acquired new skills concerning clinical practice. Besides, the nursing students also mentioned that they have been able to perfect their skills and learn how the allocation of duties and responsibilities is done within the hospital setting.

As per the current study outcomes, moral CJ capability in nursing students may fundamentally impact the nature of CJ, and inadequacy of clinical principles contrarily influences their exhibition on proficient morals and skills. Analysts accepted that insufficiencies in clinical settings, for example, the absence of proficient association, and over-the-top work, are significant variables that decrease the nature of moral issues and patient care. This may contradict other studies which have shown that the current demand for inclusion of emerging issues, such as changing disease patterns, technology, and knowledge explosion into the curriculum has expanded the amount of content to be covered for the undergraduate nursing program so as to prepare the students to function in the ever-dynamic health care arena. These changes have affected the duration of time the student nurses spend in the clinical environment so that there is not enough time to learn required clinical skills (Chojecki et al., 2010). The above

outcome shows that they significantly affect the outcomes of the study and the study objectives on clinical practice on nursing students.

The finding shows that being male or female and being a second-year or a third-year is not likely to contribute to the improvement in CJ score. The results from the Chi-square test of independence show that the scores were insignificant with Gender (P< 0.609; 95%CI) and Year of study (P< 0.093; 95%CI). This current study indicated proof based on the consideration, including utilization of information, experience, and proof as major critical variables for CJ. These findings correspond to the investigation by Brooke, Hvalič-Touzery, and Skela-Savič (2015) in which nursing students applied proof-based practice to improve their insight strengthening and create responsibility and expert advancement.

This current study also indicated proof based on the consideration, including the use of information, experience, and proof as critical essential components for CJ. These outcomes agree with the study conducted by Brooke et al. (2015) in which nursing understudies applied proof-based practice for strengthening their insights and creating responsibility. In the current investigation, the natural boundaries of CJ were discovered to be no continuous, long periods of temporary position; ecological burdens; absence of clinical chances; separation among clinical and nursing understudies; patients and their families' doubt in understudies; and lack of engagement of understudies in nursing calling. These outcomes compare with an examination done in Iran in which understudies highlighted factors, for example, obligations forced by medical caretakers, absence of learning openings, and a huge number of understudies as hindrances to their choice-making options (Heidari & Norouzadeh, 2015).

The finding that NCP does not improve the ability of the student nurse to evaluate the care given differs from Kim and Shin’s (2016) observation that NCP improves the

ability to develop nursing diagnosis and evaluate nursing care given. Lambie et al. (2015) utilized the nursing process to identify the clinical reasoning skills of student nurses after a simulation. This study concluded that NCP could provide a structured opportunity to identify significant patient assessment and prioritization of patient needs which agrees with the findings that students who utilized the nursing care plan as a clinical learning strategy had a higher mean score comparatively in the area of assessment and interpretation of client's findings. Aein and Aliakbari (2017) also agreed that NCPs, if appropriately utilized, NCPs have the potential to enhance critical thinking in student nurses. Levett-Jones' (2013) clinical reasoning model identified the step of assessment and interpretation of findings as extremely important in defining the care to be given.

5.2.4 The Level of Reflection of Undergraduate Nursing Students

The fourth objective for this study was to examine students' level of reflection as deduced from the student documented reflections. The reflections were examined through thematic analysis based on the four Lasater (2007a) CJ model themes of noticing, interpreting, responding, and reflecting or coming up with an action plan. This study found that the majority of the participants were able to notice a deviation from normal whether it was patient-related or health care environment-related; although they struggled with interpreting their findings but were able to reflect on their practice and somehow respond to the situation at hand. The findings confirm that the students' reflections were more based on component noticing and very minimal on prioritizing and making sense of the data. This finding concurs with the study done by Bjerkvik and Hilli (2019) that found that the majority of the student reflections were mainly descriptive.

However, the majority were able to analyze how they responded to the situation and committed to working on their own skill gaps through documentation of relevant action plans. This finding aligns with Silvia et al. (2013), who found that students who were engaged in reflections developed a questioning mind and improved their response in handling similar situations in the future.

Analysis of current study data indicated that reflection is an issue with a wide reach that impacts an assortment of nursing experience at two levels of individual and expert. At the individual level, reflection prompts good sentiments, for example, fulfillment, joy and self-assurance; hence, it spurs the nursing students more to give medical care administrations. As per Fernández-Feito et al. (2019), the demonstration of reflection is an enthusiastic function, a function where complex psychological cycles are formed by passionate encounters inside the structure of giving nursing care administrations people to suddenly take a self-removed or submerged point of view when they consider a previous encounter.

Branch and Paranjape (2002) accepted that reflection, to the degree that psychologically impacts the students' capacities, similarly prompts the advancement of a person in different parts of morals, character, psychology, and feeling. Prominently, most of the exploration on reflection has considered the result of reflection as profound learning on board following improving information and intellectual abilities (Amini, Bilan, Ghasempour, 2015; Tsingos-Lucas, Bosnic-Anticevich, Schneider, & Smith, 2016). The above studies have laid a better groundwork for the current study in discussing the outcomes of clinical reflections of the encounters that nursing students have experienced in their clinical learning environment. Current study outcomes show that nursing students preferred to know and understand more while longing to acquire information in clinical practice was one of the viable components in the reflection cycle

on clinical experience. Nursing students in experiencing obscure conditions started to think about clinical encounters and assemble data from various sources to kill the information needs. The above results are concurrent with studies by Amini et al.'s (2015) and Tsingos-Lucas et al.'s (2016) studies' outcomes, which showed that nursing students experienced the urge to undertake knowledge acquisition and understand further through clinical experience and expertise.

Practically all the students partaking in this subjective study accepted that their qualities were considered as a primary goal for reflection. The issue of strict convictions was significant for the respondents in the current study. This was not withstanding for other studies applying these models. The emphasis is on the feelings associated with difficulties experienced and needing being overseen (Vince, 2001). All in all, the outflow of sentiments and spotlight on feelings related to experience is the developing element and impetus of reflection. Besides, reflection dependent on the current examination can assist with developing good inclination and feelings. The discoveries of this examination uphold the estimation of reflection for understudies in lessening uneasiness and making a liberating sensation, which positively affects understudies' psychological wellness. At the point when the understudies understood a more viable part in thinking about the patient after reflection, they had the sentiment of convenience, which was compelling on the accomplishment of a good feeling and tranquility in them. Rogers, in his examination, depicted the enthusiastic results of reflection to incorporate expanded differences in feelings, perspectives, and qualities (Rogers, 2001).

The nursing students expressed that they acquired new skills concerning clinical practice. Besides, the nursing students also mentioned that they have been able to perfect their skills as well as learn how the allocation of duties and responsibilities is done within the hospital setting. This study was supported by another study conducted

by Hsiang (2016), which additionally demonstrated that uneasiness is decreased after self-reflection alongside clinical understanding and experience, prompting the improvement of fitness of attendants in genuine clinical conditions (Pai, 2016). As per an investigation directed by Okuda and Fukada on nine medical attendants, a relationship was determined between reflection, mental development of medical caretakers, and improvement of polished methodology. Additionally, it was indicated that psychological wellness upgrades through reflection (Okuda & Fukada, 2014). Subsequently, when nursing understudies, in the strained clinical learning climate, discover a reflection opportunity and become fruitful in their work, they increase a sentiment of viability and helpfulness and are furnished with the fundamental need of having tranquility, accomplishing true serenity prompts emotional wellness and self-improvement, which thusly may prompt an effect on the nature of nursing administrations.

At the expert level, aftereffects of this investigation show that the intelligent understudies place the patient at the focal point of care. They use reflection on their encounters to give exact, appropriate, and quality caring administrations. Here, the understudies communicated that reflection on clinical encounters, by decreasing mistakes, brought about suitable execution of nursing exercises and expanded nature of care for patients. As per the investigation by Mamede et al. (2008), non-intelligent methodologies during the indicative thinking cycle may bring about blunders; nonetheless, no proof has been given in association with the intuitive methodology and diminishing symptomatic mistakes.

Today, nursing has entered a time of quick worldwide change, which needs positive instructive help to improve the outcome of nursing students in the learning (Iglesias et al., 2006). In this manner, changing and complex clinical circumstances require nursing

instructors to utilize instructing strategies that encourage and upgrade the nature of caring administrations. Among different results of reflection on clinical involvement with nursing understudies is sharing of encounters. The students, due to having worries for the wellbeing of patients, mutual the consequences of reflection identified with ideal consideration with others so as to forestall rate of clinical mistakes or harm to the patient and along these lines, they expected to secure patients, however, had the aim to give invulnerability to their cohorts against clinical mistakes. The consequences of this study demonstrated that the nature of care doesn't just mean patient consideration; it likewise incorporates care for self and other nursing understudies by sharing the results of reflection on the encounters. This has been echoed by other studies conducted on the same topic, which allude that nursing students do not intend to have mistaken in the clinical experiences and would rather be calm during the experience (Conceicau & Taylor, 2007; Kaddoura, Van-Dyke, & Yang, 2016).

The outcomes of several researches have additionally extensively diagnosed the percentage of nursing in accomplishing high satisfactory results for learners (Aiken, Clarke, Sloane, Lake, & Cheney, 2008; Needleman, Buerhaus, Mattke, Stewart, & Zelevinsky, 2002). In different studies, the problem of sharing findings as the result of reflection has been much less considered. Based on the findings of the preset study, the method of reflection has led the learners to actively cooperate and interact with each other as well as help every student to integrate the content learnt into their clinical practice. Sharing experiences leads to improved clinical performance and knowledge transfer. Furthermore, helping every student makes the scientific decisions using surroundings, increasing the patients' delight. Consequently, encouragement to share the reflection results among nursing students is vital to improving clinical decision

making in health care and must be taken into consideration by educators and nurse managers.

Vreugdenhil and Spek (2018), however, found that the student scored higher in interpreting and responding than noticing and reflecting, which contrast with the findings in this study that the students were able to notice deviation from normal and reflect on their practice compared to their ability to interpret and respond to the situation. Bussard (2014), in a study to describe nursing students' development of CJ in reflective journals found that the students were able to notice significant patient situations, interpret the findings, and respond to the findings.

This study found disparities in the way male and female students reflect. The majority of the female students possessed the attribute of recognizing deviation from the norm, prioritizing, responding in a calm, confident manner, and self-evaluation as an attribute of reflection. On the other hand, the male students were more focused on making sense of the data or interpreting their findings. The finding aligns with González-García et al. (2020), who found a difference between how male or female students reflect on their practice. As identified in this study, the female students focused on patient care and were more emotional and reflective. On the other hand, the male students focused more on their learning and quality of care delivery. However, there was evidence that both cohorts improved their learning and abilities in delivering personalized patient care.

Regarding the level of study, the senior students were more likely to seek further information, develop well-planned interventions and commit to self-improvement. The attributes, in this case, demonstrate higher-order reflective abilities developing as the students navigate through their training (Lasater & Nielsen, 2009a). It is also evident that higher-order skill acquisition occurs over time as the novice student nurses navigate

the clinical environment (Benner, 2012) and can be enhanced by timely, appropriate faculty or preceptor feedback (Nielsen et al., 2007).

5.2.5 The Learning Experiences of Student Nurses

The findings from this study indicate that student nurses in Kenya face various enhancers and hurdles to their learning in the clinical environment that affects their ability to achieve their learning objectives. Enhancers of clinical experiences for student nurses include a professional support system, opportunities for learning new knowledge and skills, and self-motivation. Confidence or lack of it is a considerable determinant of self- motivation to engage in performing new skills. When qualified nurses do not follow standard operating procedures in the care of the patient, the student nurses end up frustrated in their desire to learn and struggle to integrate into the profession.

In other research, the problem of sharing reports as the end result of reflection has been less taken into consideration. Based totally on the findings of the present study, the technique of reflection has led them to actively cooperate and interact with each other and help each different throughout the mastering procedure. Sharing stories results in progressed caring performance and getting to know. Furthermore, helping different students to make the medical experience a driving environment which will increase patient satisfaction. Therefore, encouragement to share the CJ and consequences amongst nursing college students is important to improve the high-quality of health care and has to be taken into consideration by way of nursing managers and policy makers.

The scholars referred to that they generalized the consequences in their reflection on medical conditions to different conditions inside the scientific placing and applied them in exercise. In this regard, McGlinn and Chung (2014) stated that reflection on enjoyment has a massive impact on improving the potential of surgeons to address

similar experiences inside the future and ends in the learner's fitness. Therefore, by reflecting on clinical reviews, college students are seeking to get admission to know-how that may be applicable in exceptional clinical conditions. As a result, a comparative study conducted by Dewey (1933) agreed with the present study and other researchers that regarded getting to know as the mixture of revel in and reflection, now one must say that mastering is a process that involves a combination of enjoying, CJ on experience, and use of the obtained outcomes in other associated conditions.

The clinical environment offers an excellent opportunity for learning new skills, as demonstrated in this study. These findings agree with Chong (2009), who found that exposing students to the clinical environment automatically led to the acquisition of new knowledge and skills. The majority of students' self-confidence challenged the performance of new skills or facing cases of professional malpractice committed by qualified nurses. Jamshidi et al. (2016) identified that self-confidence was necessary for building a clinical skills portfolio. However, the lack of a supportive nurse-student relationship hampers its development. Moreover, student have documented that writing their reflections reduces anxiety and stress as well as help them improve their competencies.

The theory-practice gap has been depicted as the dissimilarity between what has been realized in the study classroom setting and what is drilled in the clinical setup. Proof from writing recommends that there is a hole in coordinating hypotheses to rehearse, which has been a wellspring of worry for quite a while in nursing schooling. As indicated by Sharif and Masoumi (2005) in Iran, Elcigil and Sari (2007) in Turkey, and Safadi, Saleh, Nassar, Amre, and Froelicher (2011) in Jordan, students announced variations between what was found out in class and reenactment research facility and the genuine practice in clinical practice. Theory frames a reason for learning which

students need to apply in the clinical practice so as to make significance from the theory. The findings of the current study have been confirmed these studies. Furthermore, there's resembling evidence that clashing practices between the ideal nursing instructed and that of clinical setting results in students being befuddled, focused, and on edge may show that students are not successfully figuring out how to set them up for clinical practice after qualifying (Evans & Kelly, 2004; Sharif & Masoumi, 2005).

A Malawian study done by Mbakaya et al. (2020) to establish the clinical experiences of student nurses found multiple factors that negatively affected the learning experiences of the students. The researchers cited three key aspects: resource constraint; strained relationship with the qualified nurses; and lack of supportive clinical preceptors, which closely relates with the findings in the current study. Another study done in South Africa identified various challenges that affect the clinical learning of student nurses. Issues of poor relationship with qualified staff keep emerging in studies as a major challenge. The students stated they were also discriminated against. There was conflict regarding what was taught in class and the encounters in clinical practice (Fadana & Vember, 2021).

The professional support system in the form of good role models enhanced learning in this study. Lawal et al. (2016) found that 74% of student nurses express satisfaction with their clinical learning when they relate well with other nursing staff. Role models influence the students towards deciding on the type of practitioner they want to be or not (Jack, Hamshire, & Chambers, 2017). The study by Jack et al. (2017) also found that exposure to wrong role models discourages students from nursing work and can be a factor in professional attrition. Students in this study experienced similar feelings of discouragement and shock on encountering nurses who did not maintain the standards of nursing practice or a caring atmosphere.

Grealish and Ranse (2009), on the other hand, found that when student nurses were exposed to bad role models, and were able to form imagery of the type of nurse they want to be in the future. This finding was not apparent in this study. However, it is possible the students' notice of what they did not like in how the qualified nurses handle the patient was part of a concern that could illustrate what the students would not want to become. It is clear that negative encounters with qualified staff are a glaring concern for most students. Fadana and Vember (2021), in their study, identified strained relationships between students and qualified staff as a great hindrance to the achievement of learning objectives. Furthermore, the attitude of the qualified staff towards the students discouraged them from pursuing nursing as a profession.

The reality of the clinical environment is such that it is unpredictable and can present challenges to novice student nurses. The findings in this study of students facing various unprecedented events like discrimination, tension, and conflicts cited in other studies found the clinical environment to be characterized by stressors impairing the learning process (Jamshidi et al., 2016; Msiska et al., 2014). Further, Sharif and Masoumi (2005) identified there is a relationship between students feeling incompetent to carry out clinical procedures and apprehension. This study concluded that clinical strategies that help students integrate theory into clinical practice could be useful in enhancing clinical experiences and reducing anxiety.

The clinical learning setup can impact nursing students adapting emphatically or contrarily. The current study outcomes show that a helpful clinical learning setup is one that is steady with a great ward climate and great connections what is more, is seen to deliver positive learning results. These results are mirrored by other studies that show the clinical setup was alluded by respondents to having offered a difference in the clinical experience of the students (Edwards, Smith, Courtney, Finlayson, & Chapman,

2004; Papp, Markkanen, & von Bonsdorff, 2003). Furthermore, the current study has shown that clinical setup has emphatically impact on learning, having been accounted for as where staff are cheerful, agreeable with confidence and mentality, helpful and ready to instruct and direct students while giving quality patient consideration. These findings have been supported by a study conducted by Papastvrou et al. (2010), which alluded that clinical experience has been influenced by the clinical environment that the nursing students are exposed to. Furthermore, the nursing students feel certain and aroused to learn in a climate where they are regarded. Perceived, upheld, and viewed as a feature of the group.

The finding that the majority of the students felt their clinical experience was enriched, felt more confident and their clinical skills improved agrees with Harrison and Gibbons (2013), who found that when students used concept maps, they had a positive clinical learning experience. The findings also agree with Fawaz and Kavuran (2021), who found that concept maps improve the critical thinking of student nurses.

The few studies that have analyzed student reflections found that most students were concerned about whether they were acting professionally in communicating with the patient and performing nursing skills (Chong, 2009). Another study identified feedback, taking responsibility, and the opportunity to practice as factors that promoted students' clinical learning. Obstructing factors included inconsistent supervision and feelings of personal inadequacies (Löfmark & Wikblad, 2001). An improved clinical learning experience for student nurses cannot be overemphasized because it enhances the development of CJ, integration of theory to clinical practice, and ease of transition as professionals (Tiwaken et al., 2015).

5.3 Conclusions of the Study

The outcomes of this investigation indicated that nursing educators can assist nursing students with building up their CJ abilities. This they can do through giving a safe mental climate, appropriately preparing conditions, utilizing instructional methodologies to fortify profound thought measures, schooling of expert morals, and applying logical proof and standards. The evaluation of entry-level CJ skills through real-life case studies is useful in assessing the value of clinical placement for student nurses. It is also notable that CJ develops over time, as demonstrated in the differences in CJ skills scores at entry and exit of the clinical site among the second year and third-year students.

The World Café strategy for information assortment gave rich depictions of nurses' comprehension of the idea CJ and components hampering its advancement in the clinical field. Nurses' comprehension of the idea of CJ in nursing is by all accounts shallow and lacking, particularly with respect to the connection between a sound information base, thinking, and basic reasoning abilities and its effect on powerful translation, and eventually dynamic. This investigation uncovered the multifaceted nature of theory practice joining, clinical backup, and reflection as basic components in the help of CJ and the requirement for a system to encourage it in the nursing climate. The proposals should improve the learning encounters in the advancement of reasoning aptitudes, traits, and information on nursing students during their situation in the clinical learning climate.

There is a need to embrace evidence-based practice in clinical teaching to enhance CJ development. There is overwhelming evidence that no single clinical teaching tool is adequate in enhancing CJ skills. Integrating tools will go a long way in helping student nurses become competent practitioners. This study revealed that the combination of

reflective journaling and concept mapping helps to improve the ability of student nurses to identify significant patient history and assessment data as well as to interpret the findings but does not improve their ability to anticipate physician orders. Improvement is more pronounced in the area of the ability to identify patient care needs and interpret findings, which are the basis for further interventions in most client situations. The NCP, on the other hand, is instrumental in improving the ability to prioritize care, and, therefore,, its role in clinical education cannot be underestimated.

The outcomes acquired in this study indicated that appearance in the clinical learning setup prompts individual and expert advancement of nursing students. Reflection on encounters by nursing students gives the grounds to the arrangement of internal CJ and change of expert conduct. The consequences of this examination can be utilized to create instructive mediations so as to improve clinical learning among nursing students. In incorporation of appearance in the educational program, mental advancement of nursing students ought to likewise be noted. As indicated by this investigation, execution and learning depend both on intelligent conduct and practices identified with sharing the consequences of intelligent conduct just as its speculation, as can be additionally concentrated in future exploration. As per this investigation, reflection on clinical encounters is compelling in building up a framework to move towards the exchange and sharing of information and improving the quality of service offered to the patients.

Nursing students experience both positive and negative encounters that build their confidence as well as frustrate their desire to learn, respectively. Improving the clinical environment in terms of the provision of resources, both material and human, can improve student learning. Good role models in qualified nurses create a greater impact in influencing student nurses' integration into the profession. Analysis of student

reflective journals is a useful tool in identifying student needs and gaps in the clinical environment that can be addressed to improve student learning encounters. However, protecting student identity is of paramount importance.

The use of various clinical teaching tools improves student clinical skills, their confidence and enriches their clinical learning experience. From this finding, it is clear that the students' perception of their clinical experience was positive despite the negative encounters identified in their reflections. Thus, although faculty may not have an influence on the dynamic clinical environment that is highly unpredictable, they can tailor the experience of student nurses through supportive clinical learning strategies that allow self-directed learning so long as feedback is given.

5.4 Recommendations of the Study

Based on the current research findings, the following recommendations are made in relation to nursing research, nursing education, and nursing practice. Sustenance of the kind of outcome demonstrated in this study could be enhanced if;

5.4.1 Recommendation for Nursing Research

i. There is need for further investigation of appropriate teaching–learning strategies to enhance critical thinking and the development of assessment instruments for assessment of CJ as an integral skill in nursing.

ii. There can be better investigation of students' perspective on CJ as well as the relationship between clinical guidance and CJ. This would clearly aid in drawing the line and effectively affecting the knowledge dispensed by the educators to the nursing students.

iii. The NCK that is mandated by the government to maintain a high level of nurse training standards can incorporate reflective writing as part of undergraduate

curricula to improve the clinical skills of student nurses. The incorporation could also be an indirect way of evaluating the suitability of clinical sites for nurse training.

5.4.2 Recommendation for Nursing Education

i. Future curriculum development in nursing can endeavor to embed integrated teaching model and CJ competency evaluation for the purpose of improving patient care outcomes through evidence based training and learning.

ii. There is need to encourage flexibility on the part of both the teaching departments in nursing schools and nursing students. This would create a conducive environment that will allow growth of trust and mutuality which will enhance CJ and learning experience.

iii. Integrated clinical teaching tools can be embraced and embedded in the national undergraduate nursing curricula by the NCK and tertiary institutions.

iv. Learning institutions need to embrace evidence based clinical teaching and learning if the product of their instruction will survive the demands of the ever changing practice world. The need for consensus on what teaching model works in terms of growing CJ cannot be overemphasized.

5.4.3 Recommendation for Nursing Practice

Comparable to nursing practice, the following are suggestions can improve the student advancement of CJ:

5.4.3.1. Clinical Teachers

All stakeholders engaged with the educating of nursing students ought to work together to discover answers for commonly experienced issues as follows:

i. There is need for clinical teachers to be be clinically experienced to guide nursing students and provide feedback that impact CJ competencies. This study recommends standardization of preparation for clinical teachers geared towards improving instruction and evidence based teaching.

ii. The CJ measure can be included as a focal angle in clinical learning and instruction.

iii. More dynamism needs to be included in the recruitment and preparation of the nursing educators while CJ should be enhanced and insisted.

iv. Clinical preceptorship has direct benefit in helping students reflect on their practice and learn from clinical encounters. There is need for a dedicated personnel to create opportunities for deep learning is imperative in nursing education.

5.4.3.2 Nursing Student Placement

Student clinical training need to adhere to standards of patient care. Such guidelines need to incorporate student support both for learning enhancement and emotional support. These would assist in the following perspectives that need keen consideration:

i. The NCP can be a baseline tool for CJ competency development as students enter their first clinical learning experience then the integrated model can be introduced as the students gains more knowledge as they move up the ladder in training.

ii. Input from students needs to be taken care of.

iii. Clinical sites need to develop strategies to respond to the gaps identified in the clinical environment to enhance student learning.

iv. Evaluation of faculty perception and training on the use of the various tools may encourage uptake of integrated clinical teaching methodologies to ensure competency based learning outcomes.

5.5 Areas for Further Study

i. A comparative study can be conducted to determine whether these issues are generalizable to other nursing students, various clinical sites in the private sector and county hospitals. Thus further, similar research can be carried out in multiple clinical sites to enhance the strength of the evidence is obligatory.

ii. The learning experiences of student nurses can be explored further using different strategies for in depth understanding of this phenomena.

iii. Evalaution of faculty and clinical teacher preparedness for CJ assessment is necessary to identify gaps in the implementers of an integrated model for capacity building and continuous professional development.

iv. As CJ and experience shows an unpredictable cycle requiring exceptional input by clinical teachers. Therefore, there is need for further studies to compare findings of what works in various clinical environments. Our discoveries demonstrate the significance of making a difference on nursing student learning opportunities which create better professional practitioners who are able to make sound clinical decisions.

v. Further research can address the issues in the clinical environment and how students can navigate their learning in a resource constrained clinical environment. Moreover, nursing instructors could be welcomed into discussions and interviews about encouraging ideal learning encounters.

vi. The issue of disparities in reflections across gender also needs to be discussed in the light of how we grade reflection abilities so that recommendation for practice can be refined. These are grey areas that can be investigated in future studies.

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APPENDICES

Appendix I: A: Pre-test Tool

CASE SCENARIO BASED PRE-CLINICAL PLACEMENT ASSESSMENT

TOTAL MARKS: 50

STUDENT NUMBER: _____

Instructions

1. Use the case scenario to answer the questions below
2. Time allowed **40minutes**

You are handed over Mrs. X 56yrs old admitted in your ward two hours ago with a diagnosis of possible lobar pneumonia. She is complaining of difficulty in breathing, chest pain and feeling tired. She has never been admitted before except for child birth. Her mother has diabetes. She does not smoke or drink alcohol. On assessment, her vital signs are as follows: Temperature: 39.2, Pulse 118/min, RR-28/min, BP 110/70mmHg, SPO2- 84% on room air

Laboratory tests done earlier reveal the following: HB 8.4g/dl; WBC- 19.1, Random blood sugar 12.4mmol/L, Potassium 3.7mmol/L

1. Identify significant history and assessment data (8 marks)

_____

_____

_____

_____

_____

_____

_____

_____

2. Interpret the vital signs and laboratory findings (9 marks)

Parameter	**Interpret (normal or high or low)**	**Meaning/draw conclusion**
Temperature		
Pulse		
Respiratory rate		
BP		
SPO2		
Haemoglobin (HB)		
WBC		
Random Blood Sugar		
Potassium		

3. State your independent nursing action in order of priority with rationale (16 marks)

Nursing action	**Rationale**

4. What orders do you anticipate from the physician give rationale (labs, meds, activity, diet, radiological test (14 marks)

Anticipated physician orders	**Rationale**

5. What will you evaluate after the planned intervention (3 marks)

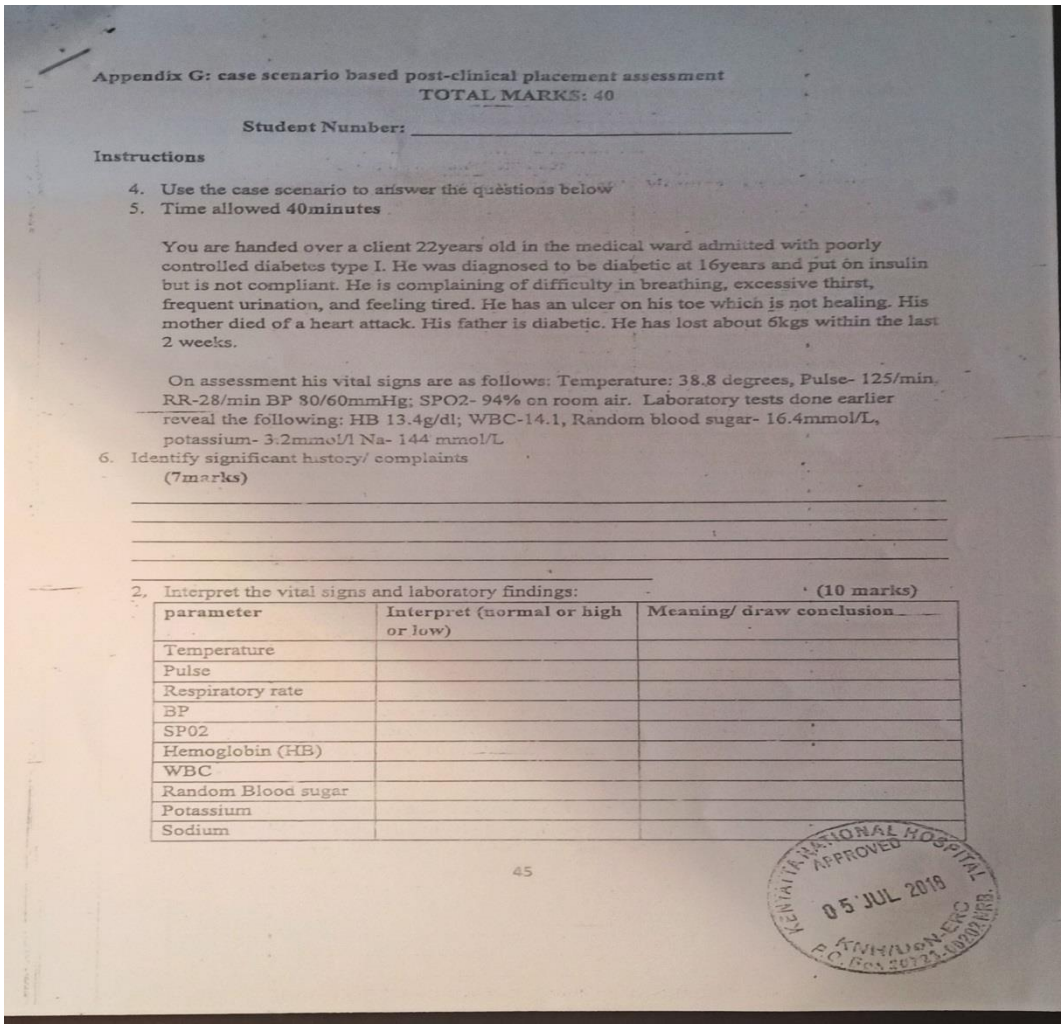
_____

_____

_____

_____

Appendix II: Post –test Tool



Appendix G: case scenario based post-clinical placement assessment
TOTAL MARKS: 40

Student Number: _____

Instructions

4. Use the case scenario to answer the questions below
5. Time allowed 40minutes

You are handed over a client 22years old in the medical ward admitted with poorly controlled diabetes type I. He was diagnosed to be diabetic at 16years and put on insulin but is not compliant. He is complaining of difficulty in breathing, excessive thirst, frequent urination, and feeling tired. He has an ulcer on his toe which is not healing. His mother died of a heart attack. His father is diabetic. He has lost about 6kgs within the last 2 weeks.

On assessment his vital signs are as follows: Temperature: 38.8 degrees, Pulse- 125/min, RR-28/min BP 80/60mmHg; SPO2- 94% on room air. Laboratory tests done earlier reveal the following: HB 13.4g/dl; WBC-14.1, Random blood sugar- 16.4mmol/L, potassium- 3.2mmol/l Na- 144 mmol/L

6. Identify significant history/ complaints **(7marks)**

_____
_____
_____
_____
_____

2. Interpret the vital signs and laboratory findings: **(10 marks)**

parameter	Interpret (normal or high or low)	Meaning/ draw conclusion
Temperature		
Pulse		
Respiratory rate		
BP		
SP02		
Hemoglobin (HB)		
WBC		
Random Blood sugar		
Potassium		
Sodium		

45

KENYATTA NATIONAL HOSPITAL APPROVED 05 JUL 2018 KNH/UON-ERC P.O. Box 20723-00202 NBI

3. State five (5) independent nursing action in order of priority with rationale **(10 marks)**

Nursing action	Rationale

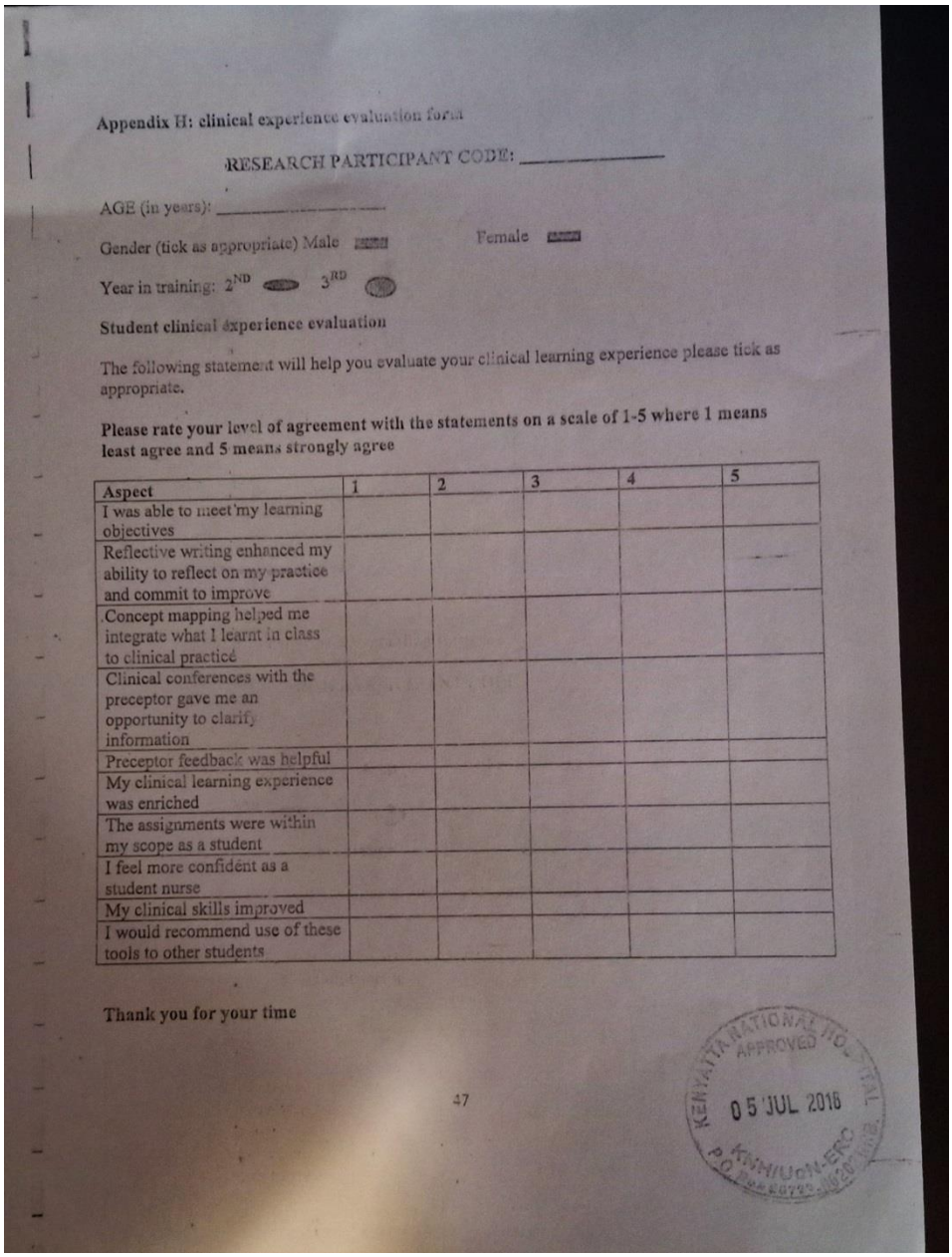
4. What five (5) orders do you anticipate from the physician; give rationale (labs, medications, activity, diet, fluids, radiological tests)
(10 marks)

Anticipated physician orders	Rationale

5. What will you evaluate/ assess after the planned intervention
(3 marks)

_____
_____
_____
_____
_____

Appendix III: Clinical Experience Evaluation Form



Appendix H: clinical experience evaluation form

RESEARCH PARTICIPANT CODE: _____

AGE (in years): _____

Gender (tick as appropriate) Male [redacted] Female [redacted]

Year in training: 2ND [redacted] 3RD [redacted]

Student clinical experience evaluation

The following statement will help you evaluate your clinical learning experience please tick as appropriate.

Please rate your level of agreement with the statements on a scale of 1-5 where 1 means least agree and 5 means strongly agree

Aspect	1	2	3	4	5
I was able to meet my learning objectives					
Reflective writing enhanced my ability to reflect on my practice and commit to improve					
Concept mapping helped me integrate what I learnt in class to clinical practice					
Clinical conferences with the preceptor gave me an opportunity to clarify information					
Preceptor feedback was helpful					
My clinical learning experience was enriched					
The assignments were within my scope as a student					
I feel more confident as a student nurse					
My clinical skills improved					
I would recommend use of these tools to other students					

Thank you for your time

47

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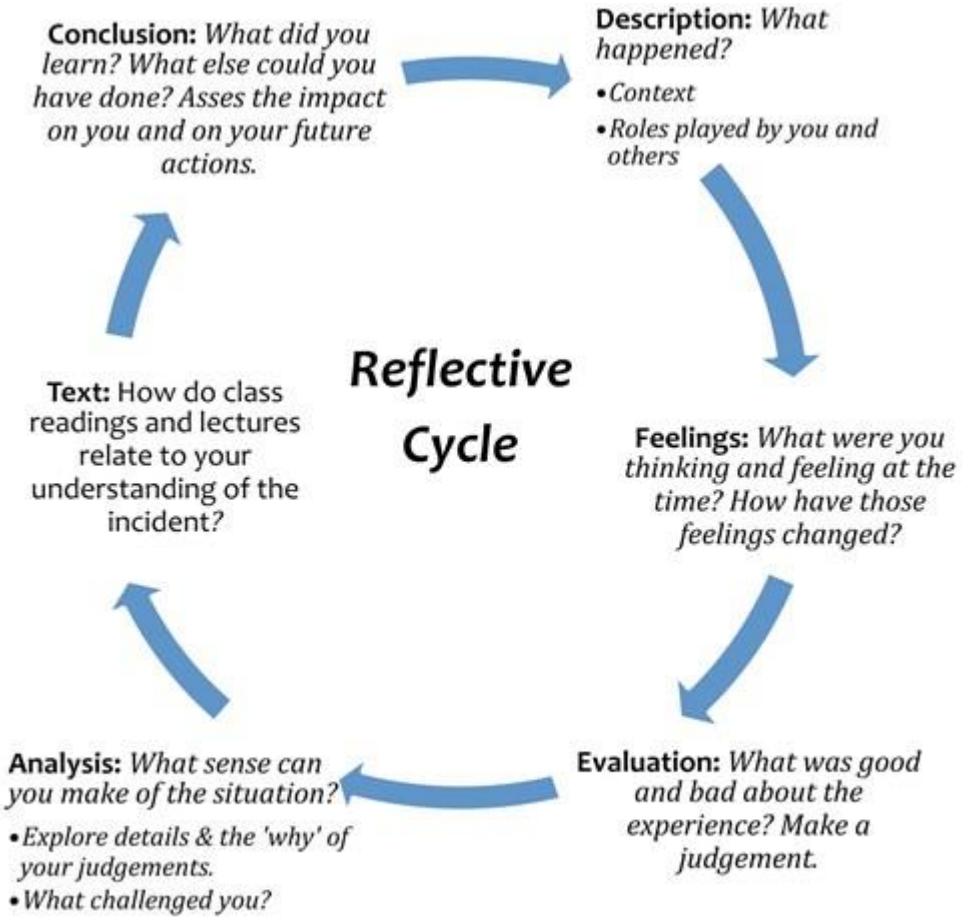
Appendix IV: Reflective Journaling Guide

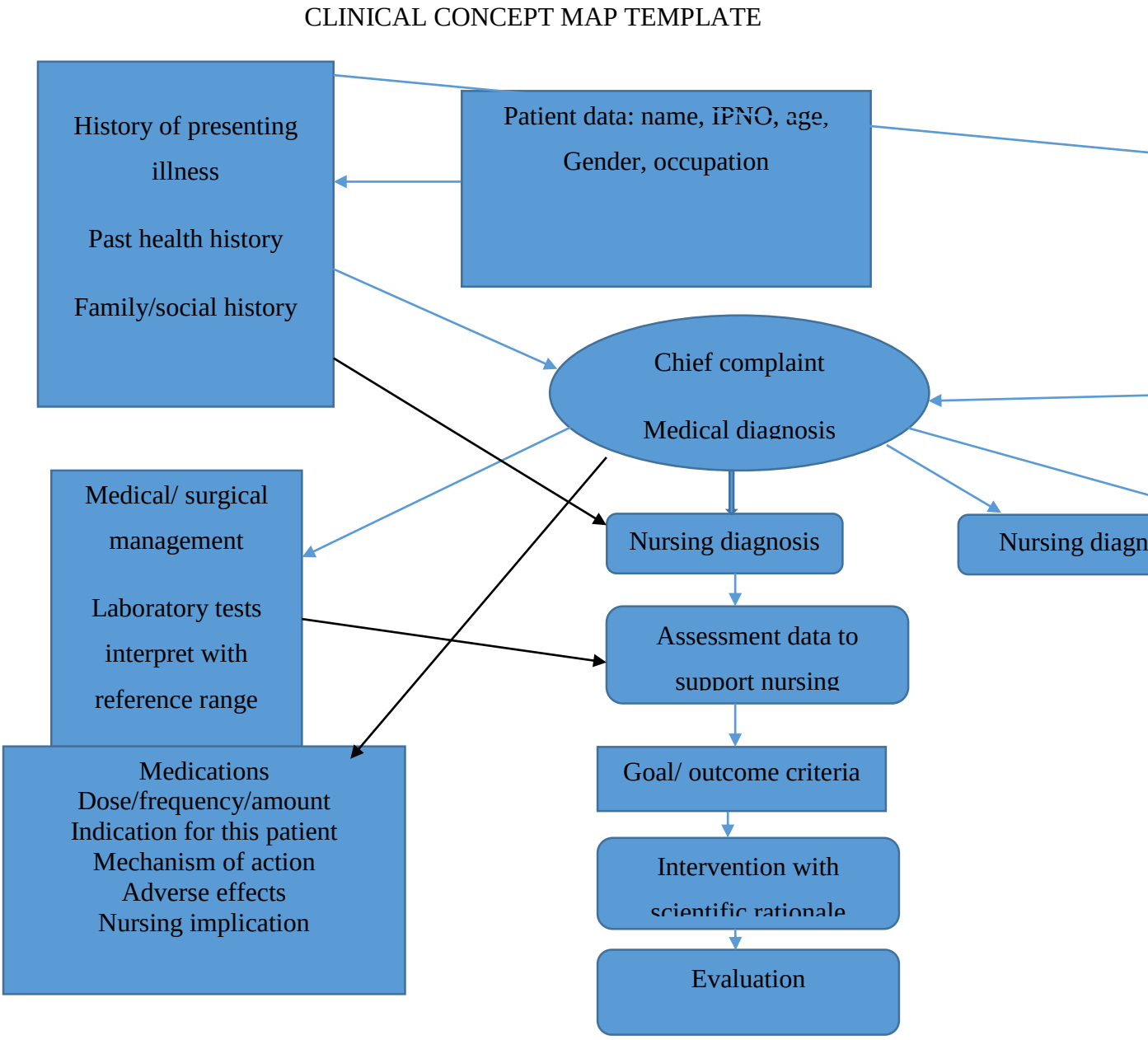
Gibbs reflective cycle

Gibbs' reflective cycle will be used as a guide to reflective journal writing. This is because the thematic areas in this cycle are closely related to the aspects of clinical judgment. This will aid in capturing learning experiences that align with the area under study; clinical judgment skills development.



Retrieved from http://slavonic.group.shef.ac.uk/wp-content/uploads/Gibbs_reflective_cycle.jpg on 24th March 2016

Appendix V: Concept Map Template



Appendix VI: Lasater Clinical Judgment Aspects as used to Analyze Student Reflections

Clinical judgment aspect
Noticing
Focused Observation:
Recognizing Deviations from Expected Patterns
Information Seeking
Interpreting
Prioritizing Data
Making Sense of Data
Responding
Clear Communication
Well-Planned Intervention
Reflecting
Self- analysis
Commitment to improvement

Lasater Clinical Judgment scoring rubrics retrieved with permission from http://sites.uci.edu/medsim/files/2015/03/Bussard-Lasater-Clinical-Judgment-Rubric-Scoring-Sheet.pdf on 13th July, 2016

Copy permission obtained from Lasater via email

Appendix VII: LCJR Clinical judgment assessment model use approval

Hello Serah,

Thank you for your interest in the Lasater Clinical Judgment Rubric (LCJR). You have my permission to use the tool for your project. I ask that you (1) cite it correctly, and (2) send me a paragraph or two to let me know a bit about your project when you've completed it, including how you used the LCJR. In this way, I can help guide others who may wish to use it. Please let me know if it would be helpful to have an electronic copy.

You should also be aware that the LCJR describes four aspects of the Tanner Model of Clinical Judgment—Noticing, Interpreting, Responding, and Reflecting—and as such, does not measure clinical judgment because clinical judgment involves much of what the individual student/nurse brings to the unique patient situation (see Tanner, 2006 article). We know there are many other factors that impact clinical judgment in the moment, many of which are impacted by the context of care and the needs of the particular patient.

The LCJR was designed as an instrument to describe the trajectory of students' clinical judgment development over the length of their program. The purposes were to offer a common language between students, faculty, and preceptors in order to talk about students' thinking and to serve as a help for offering formative guidance and feedback (See Lasater, 2007; Lasater, 2011). For measurement purposes, the rubric appears to be most useful with multiple opportunities for clinical judgment vs. one point/patient in time.

Please let me know if I can be of further help—best wishes with your project,

Kathie

Kathie Lasater, EdD, RN, ANEF, FAAN
Professor
OHSU School of Nursing
3455 SW Veterans' Hospital Rd., 4-S
Portland, OR 97239

From: Serah Wachira [mailto:swachira@daystar.ac.ke]

Sent: Sunday, June 26, 2016 1:57 AM

To: Kathie Lasater <lasaterk@ohsu.edu>

Subject: Request to use your Clinical judgment assessment model

Appendix VIII: KNH-UON Ethics and Research Committee Approval Letter

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
Tel:(254-020) 2726300 Ext 44355

KENYATTA NATIONAL HOSPITAL APPROVED 31 JUL 2017 KNH/UoN-ERC P.O. Box 20723-00202 NRB.

KNH-UON ERC
Email: uonknh_erc@uonbi.ac.ke
Website: http://www.erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/231

31st July, 2017

Serah Wanjiru Wachira
Principal Investigator
School of Nursing Sciences
College of Health Sciences
University of Nairobi

Dear Serah

REVISED RESEARCH PROPOSAL - AN EVALUATION OF THE EFFECT OF AN INTEGRATED CLINICAL TEACHING MODEL ON CLINICAL JUDGMENT SKILLS AND LEARNING EXPERIENCES OF UNDERGRADUATE NURSING STUDENTS IN KENYA; A CASE OF UNIVERSITY OF NAIROBI (P58/02/2017)

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above proposal. The approval period is from 31st July, 2017 – 30th July 2018.

This approval is subject to compliance with the following requirements:

a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH-UoN ERC before implementation.
c) Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
f) Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

For more details consult the KNH- UoN ERC website **http://www.erc.uonbi.ac.ke**

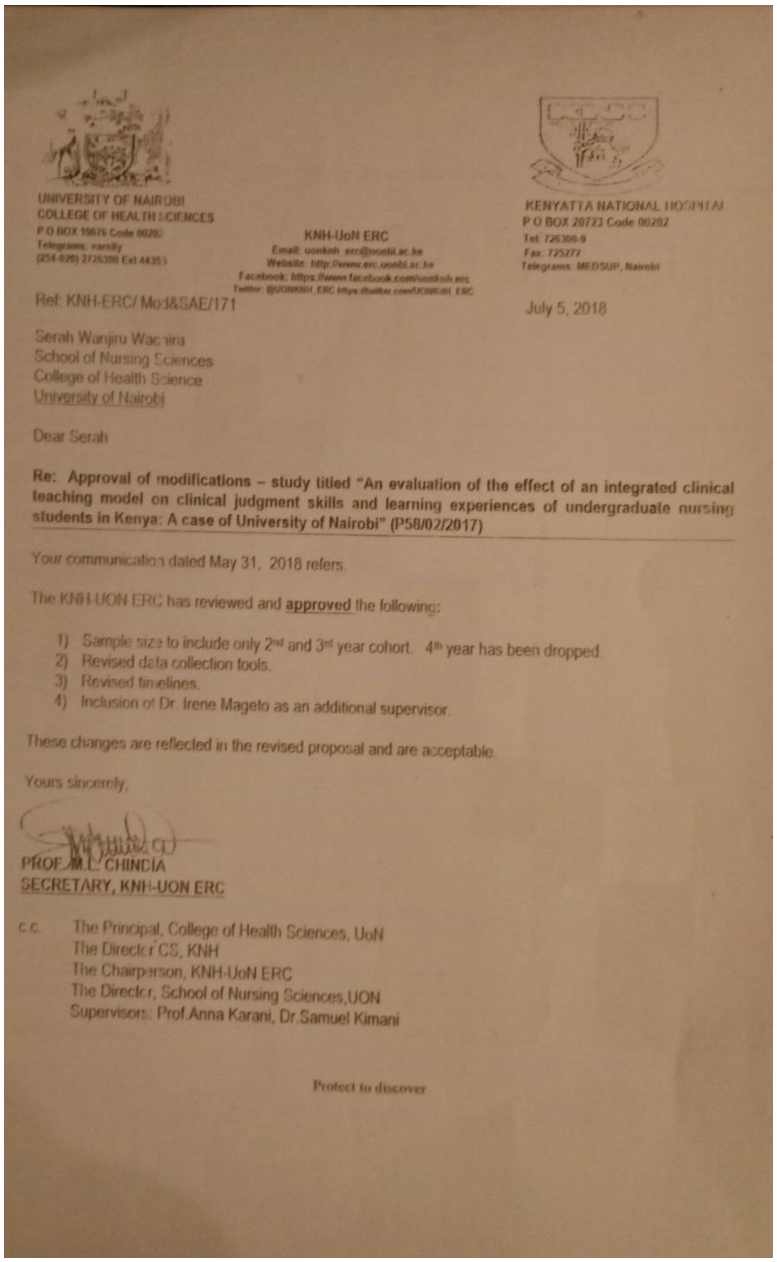
Protect to discover

Yours sincerely,

PROF M.L. CHINDIA
SECRETARY, KNH-UoN ERC

c.c. The Principal, College of Health Sciences, UoN
The Director, CS, KNH
The Chair, KNH- UoN ERC
The Assistant Director, Health Information, KNH
The Director, School of Nursing Sciences, UoN
Supervisors: Prof. Anna Karani, Dr. Samuel Kimani

Appendix IX: Approval of Tool Modification



UNIVERSITY OF NAIROBI
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KNH-UoN ERC
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Website: http://www.erc.uonbi.ac.ke
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Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
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Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/ Mo1&SAE/171

July 5, 2018

Serah Wanjiru Wachira
School of Nursing Sciences
College of Health Science
University of Nairobi

Dear Serah

Re: Approval of modifications – study titled "An evaluation of the effect of an integrated clinical teaching model on clinical judgment skills and learning experiences of undergraduate nursing students in Kenya: A case of University of Nairobi" (P58/02/2017)

Your communication dated May 31, 2018 refers.

The KNH-UON ERC has reviewed and approved the following:

1) Sample size to include only 2nd and 3rd year cohort. 4th year has been dropped.
2) Revised data collection tools.
3) Revised timelines.
4) Inclusion of Dr. Irene Mageto as an additional supervisor.

These changes are reflected in the revised proposal and are acceptable.

Yours sincerely,

PROF. M. L. CHINCIA
SECRETARY, KNH-UON ERC

c.c. The Principal, College of Health Sciences, UoN
The Director CS, KNH
The Chairperson, KNH-UoN ERC
The Director, School of Nursing Sciences,UON
Supervisors: Prof.Anna Karani, Dr.Samuel Kimani

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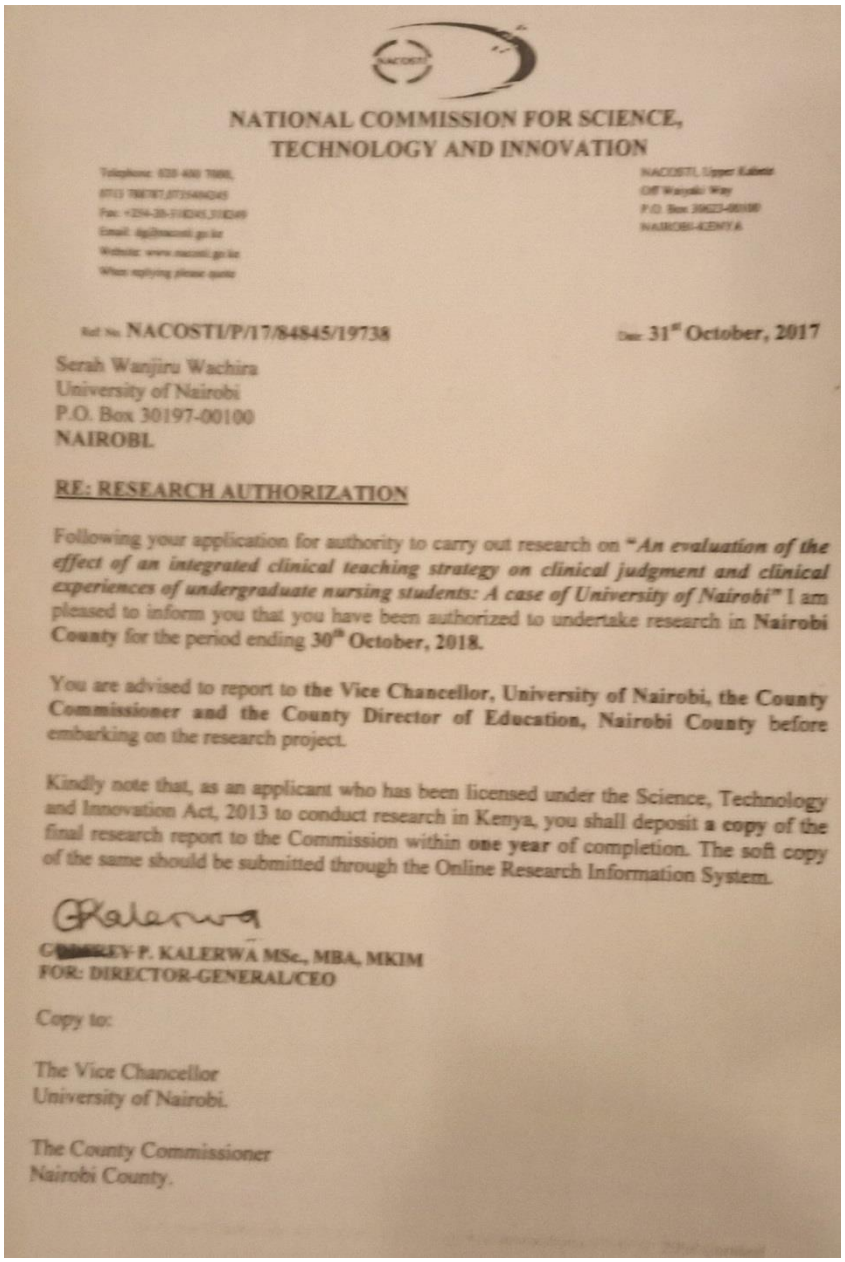
Appendix X: NACOSTI Permit



NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION

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0713 788787,0735 404245
Fax: +254-20-2213471,2241349
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref No. NACOSTI/P/17/84845/19738

Date: 31st October, 2017

Serah Wanjiru Wachira
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"An evaluation of the effect of an integrated clinical teaching strategy on clinical judgment and clinical experiences of undergraduate nursing students: A case of University of Nairobi"*** I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **30th October, 2018.**

You are advised to report to **the Vice Chancellor, University of Nairobi, the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

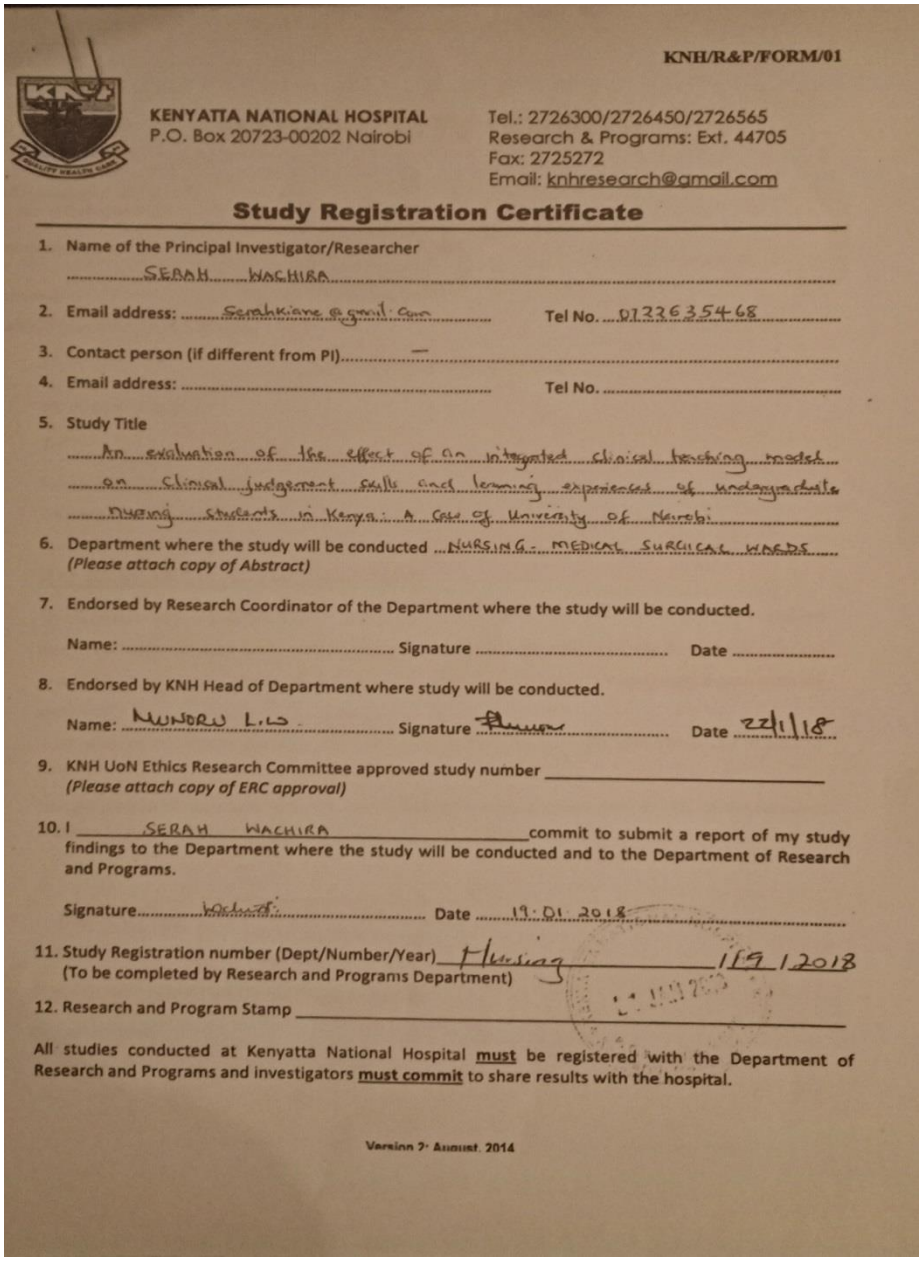
GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The Vice Chancellor
University of Nairobi.

The County Commissioner
Nairobi County.

Appendix XI: Study Registration Certificate KNH



KNH/R&P/FORM/01

KENYATTA NATIONAL HOSPITAL
P.O. Box 20723-00202 Nairobi

Tel.: 2726300/2726450/2726565
Research & Programs: Ext. 44705
Fax: 2725272
Email: knhresearch@gmail.com

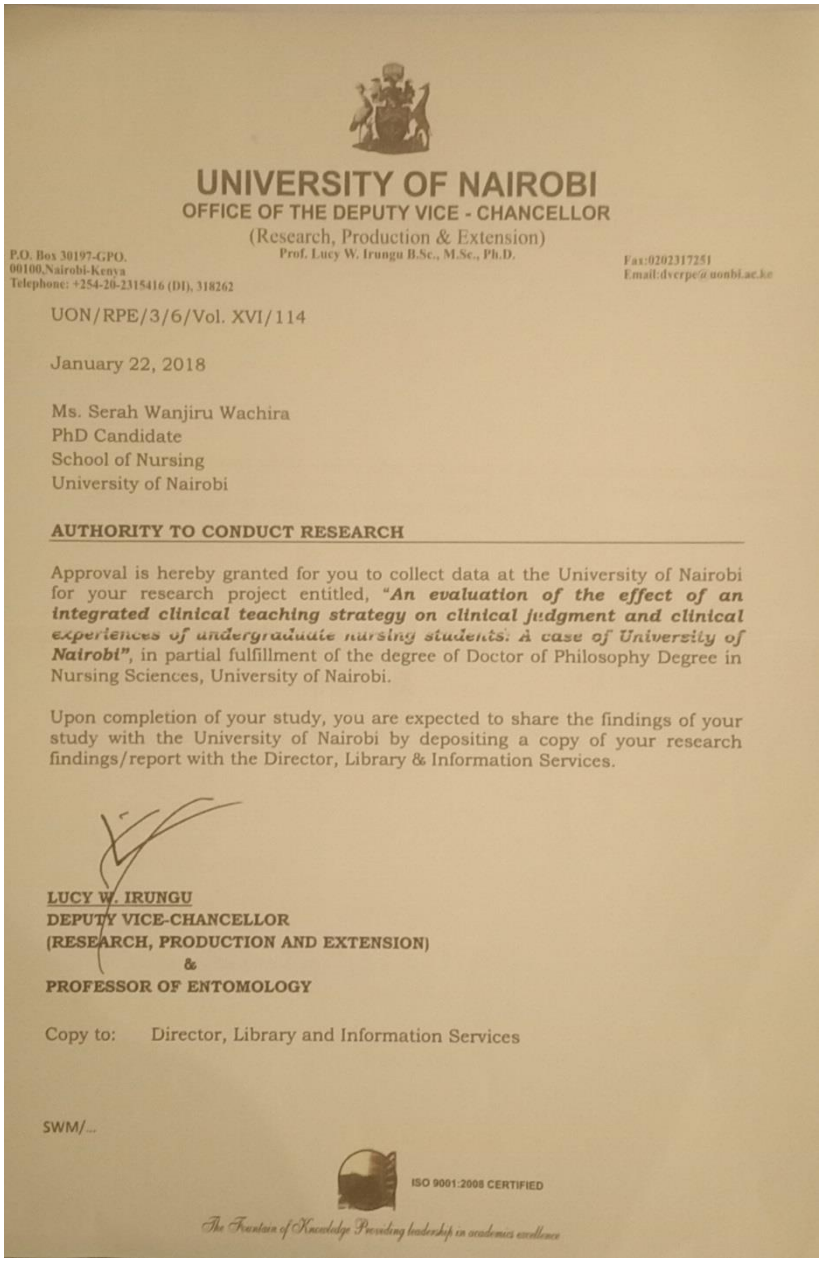
Study Registration Certificate

1. Name of the Principal Investigator/Researcher
   SERAH WACHIRA
2. Email address: Serahkiare@gmail.com Tel No. 0123635468
3. Contact person (if different from PI) —
4. Email address: Tel No.
5. Study Title
   An evaluation of the effect of an integrated clinical teaching model on clinical judgement skills and learning experiences of undergraduate nursing students in Kenya: A case of University of Nairobi
6. Department where the study will be conducted NURSING - MEDICAL SURGICAL WARDS
   (Please attach copy of Abstract)
7. Endorsed by Research Coordinator of the Department where the study will be conducted.
   Name: ..... Signature ..... Date .....
8. Endorsed by KNH Head of Department where study will be conducted.
   Name: NUNDU L.L.O Signature [signature] Date 22/1/18
9. KNH UoN Ethics Research Committee approved study number _____
   (Please attach copy of ERC approval)
10. I SERAH WACHIRA commit to submit a report of my study findings to the Department where the study will be conducted and to the Department of Research and Programs.
    Signature [signature] Date 19.01.2018
11. Study Registration number (Dept/Number/Year) Nursing 159/2018
    (To be completed by Research and Programs Department)
12. Research and Program Stamp _____

All studies conducted at Kenyatta National Hospital **must** be registered with the Department of Research and Programs and investigators **must commit** to share results with the hospital.

Version 2: August, 2014

Appendix XII: Authority to Carry Out Research at the UoN



UNIVERSITY OF NAIROBI
OFFICE OF THE DEPUTY VICE - CHANCELLOR
(Research, Production & Extension)
Prof. Lucy W. Irungu B.Sc., M.Sc., Ph.D.

P.O. Box 30197-GPO.
00100,Nairobi-Kenya
Telephone: +254-20-2315416 (DI), 318262

Fax:0202317251
E.mail:dvcrpe@uonbi.ac.ke

UON/RPE/3/6/Vol. XVI/114

January 22, 2018

Ms. Serah Wanjiru Wachira
PhD Candidate
School of Nursing
University of Nairobi

AUTHORITY TO CONDUCT RESEARCH

Approval is hereby granted for you to collect data at the University of Nairobi for your research project entitled, ***"An evaluation of the effect of an integrated clinical teaching strategy on clinical judgment and clinical experiences of undergraduate nursing students: A case of University of Nairobi"***, in partial fulfillment of the degree of Doctor of Philosophy Degree in Nursing Sciences, University of Nairobi.

Upon completion of your study, you are expected to share the findings of your study with the University of Nairobi by depositing a copy of your research findings/report with the Director, Library & Information Services.

LUCY W. IRUNGU
DEPUTY VICE-CHANCELLOR
(RESEARCH, PRODUCTION AND EXTENSION)
&
PROFESSOR OF ENTOMOLOGY

Copy to: Director, Library and Information Services

SWM/...

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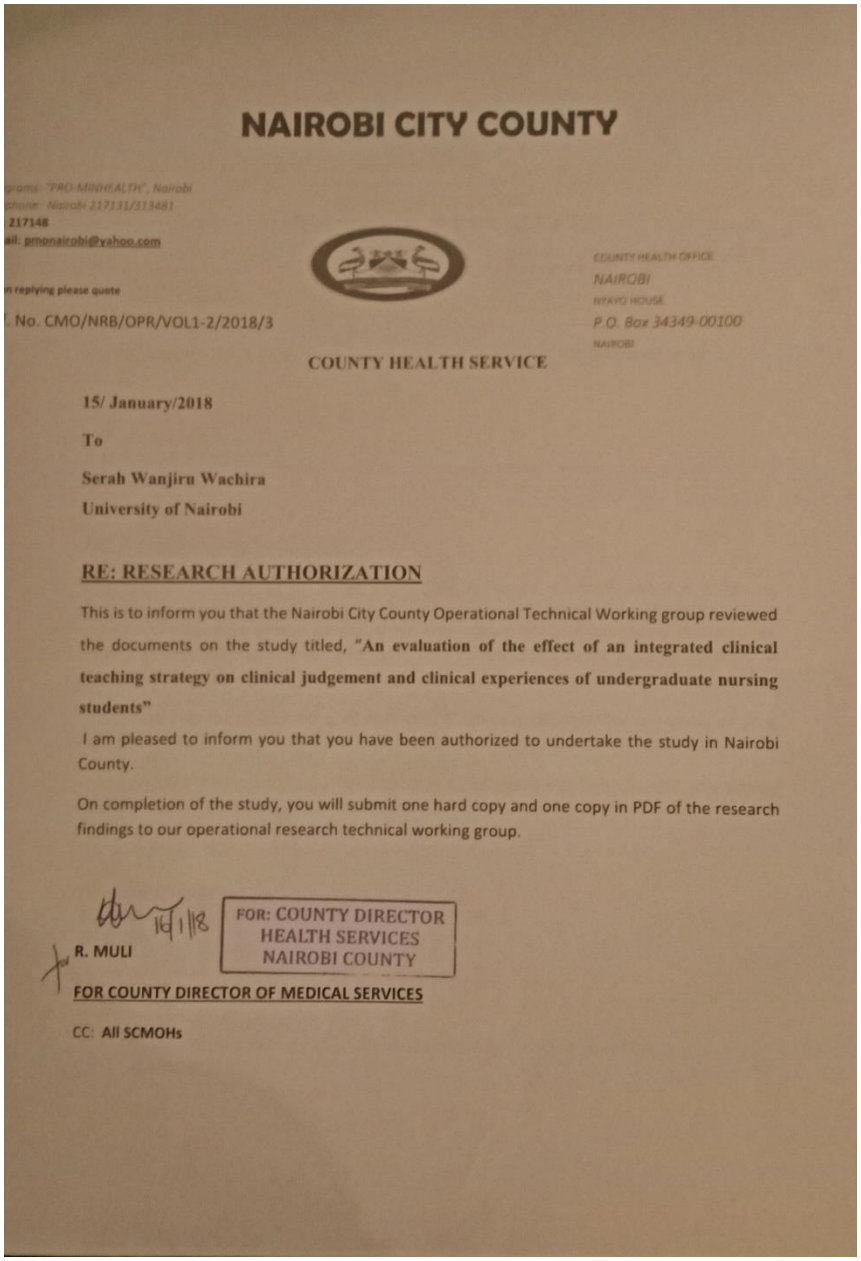
Appendix XIII: Research Authorization Nairobi County Health Service



NAIROBI CITY COUNTY

grams: "PRO-MINHEALTH", Nairobi
Phone: Nairobi 217131/313481
217148
ail: pmonairobi@yahoo.com

n replying please quote
No. CMO/NRB/OPR/VOL1-2/2018/3

COUNTY HEALTH OFFICE
NAIROBI
NYAYO HOUSE
P.O. Box 34349-00100
NAIROBI

COUNTY HEALTH SERVICE

15/ January/2018

To

Serah Wanjiru Wachira
University of Nairobi

RE: RESEARCH AUTHORIZATION

This is to inform you that the Nairobi City County Operational Technical Working group reviewed the documents on the study titled, **"An evaluation of the effect of an integrated clinical teaching strategy on clinical judgement and clinical experiences of undergraduate nursing students"**

I am pleased to inform you that you have been authorized to undertake the study in Nairobi County.

On completion of the study, you will submit one hard copy and one copy in PDF of the research findings to our operational research technical working group.

16/1/18

FOR: COUNTY DIRECTOR
HEALTH SERVICES
NAIROBI COUNTY

R. MULI

FOR COUNTY DIRECTOR OF MEDICAL SERVICES

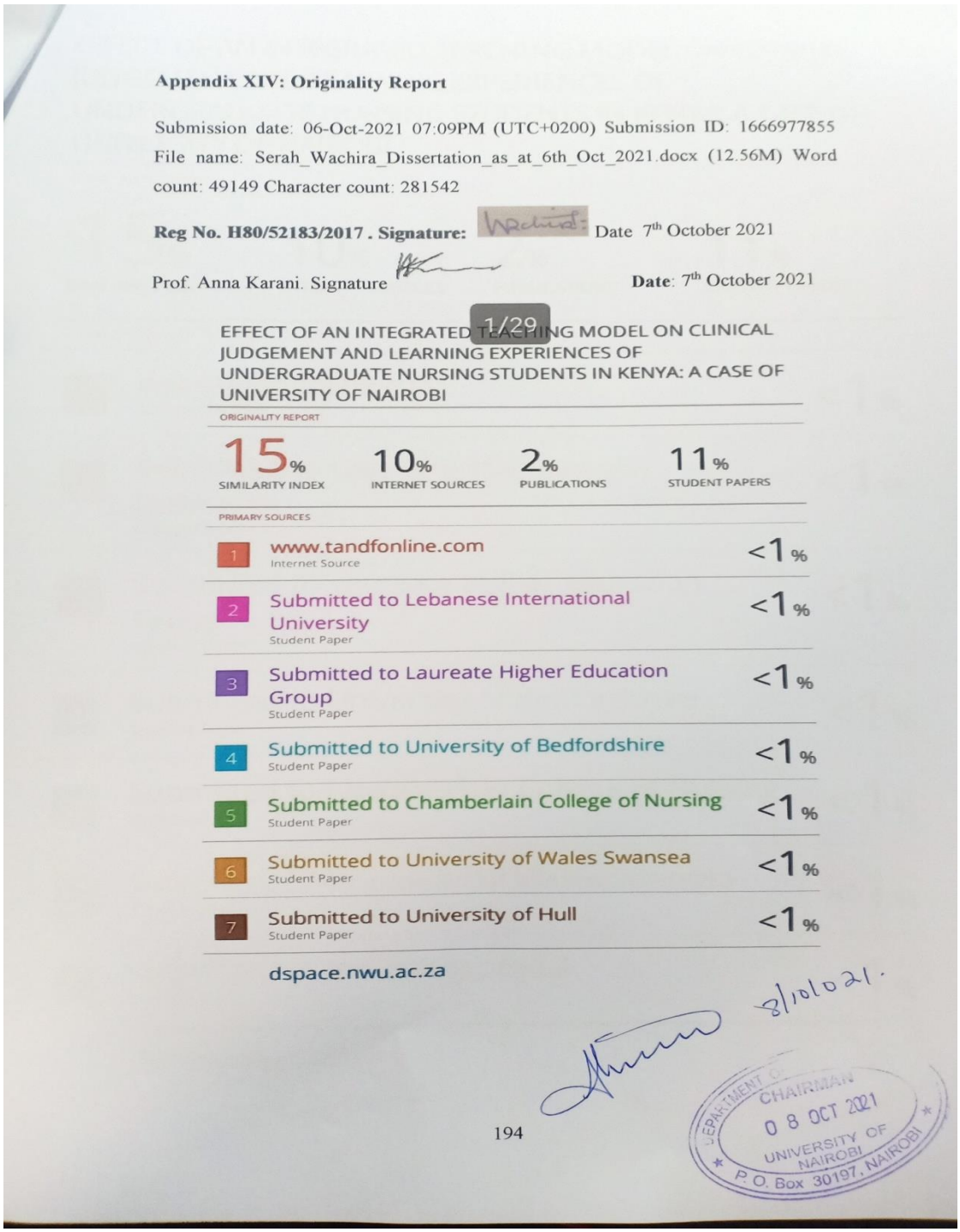
CC: All SCMOHs

Appendix XIV: Originality Report

Submission date: 06-Oct-2021 07:09PM (UTC+0200) Submission ID: 1666977855 File name: Serah_Wachira_Dissertation_as_at_6th_Oct_2021.docx (12.56M) Word count: 49149 Character count: 281542

Reg No. H80/52183/2017 . Signature: Date 7th October 2021

Prof. Anna Karani. Signature **Date**: 8th October 2021



Appendix XIV: Originality Report

Submission date: 06-Oct-2021 07:09PM (UTC+0200) Submission ID: 1666977855 File name: Serah_Wachira_Dissertation_as_at_6th_Oct_2021.docx (12.56M) Word count: 49149 Character count: 281542

Reg No. H80/52183/2017 . Signature: Date 7th October 2021

Prof. Anna Karani. Signature Date: 7th October 2021

1/29

EFFECT OF AN INTEGRATED TEACHING MODEL ON CLINICAL JUDGEMENT AND LEARNING EXPERIENCES OF UNDERGRADUATE NURSING STUDENTS IN KENYA: A CASE OF UNIVERSITY OF NAIROBI

ORIGINALITY REPORT

15%	10%	2%	11%
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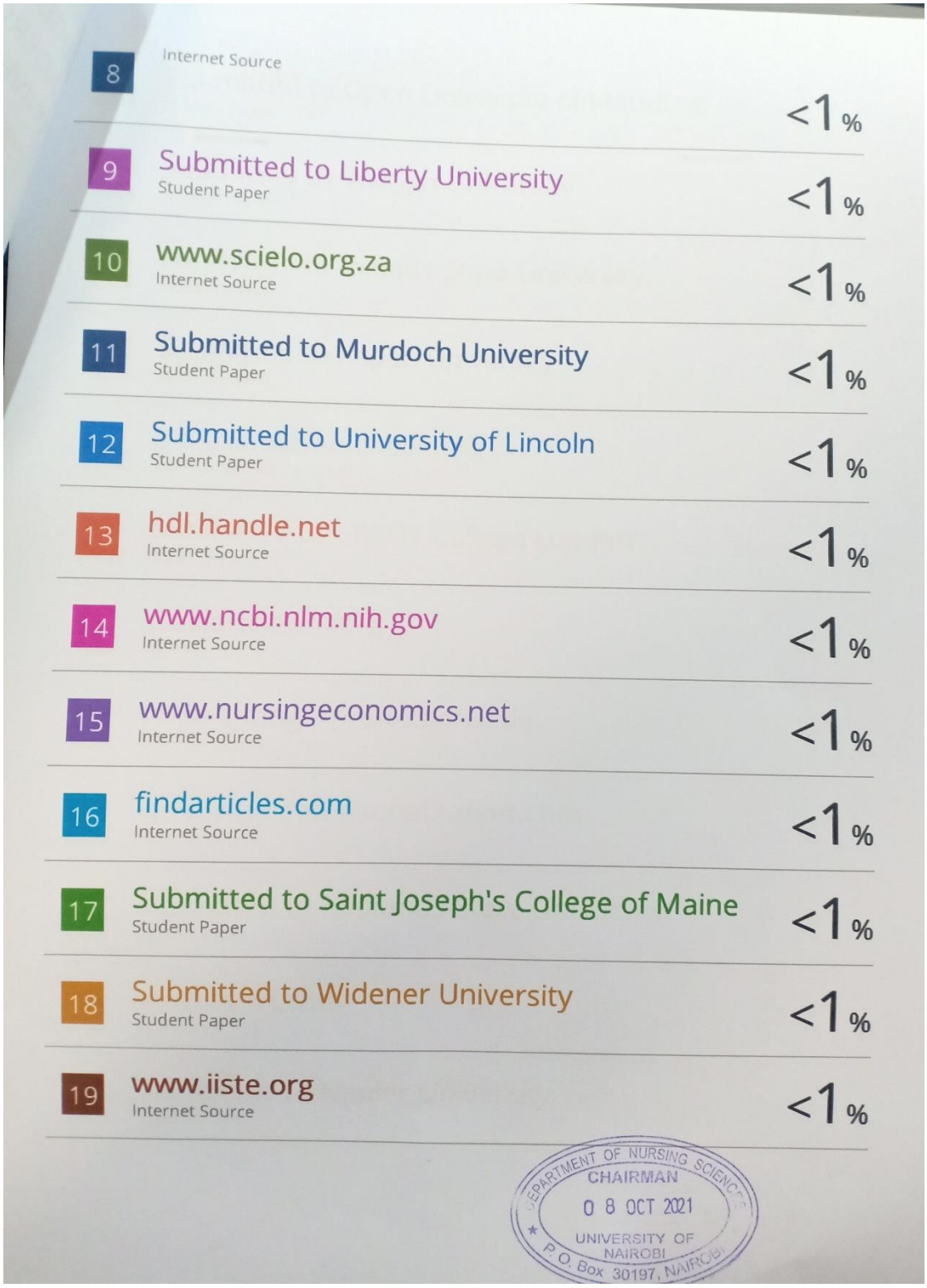
194

EFFECT OF AN INTEGRATED TEACHING MODEL ON CLINICAL JUDGEMENT AND LEARNING EXPERIENCES OF UNDERGRADUATE NURSING STUDENTS IN KENYA: A CASE OF UNIVERSITY OF NAIROBI

by Serah ...



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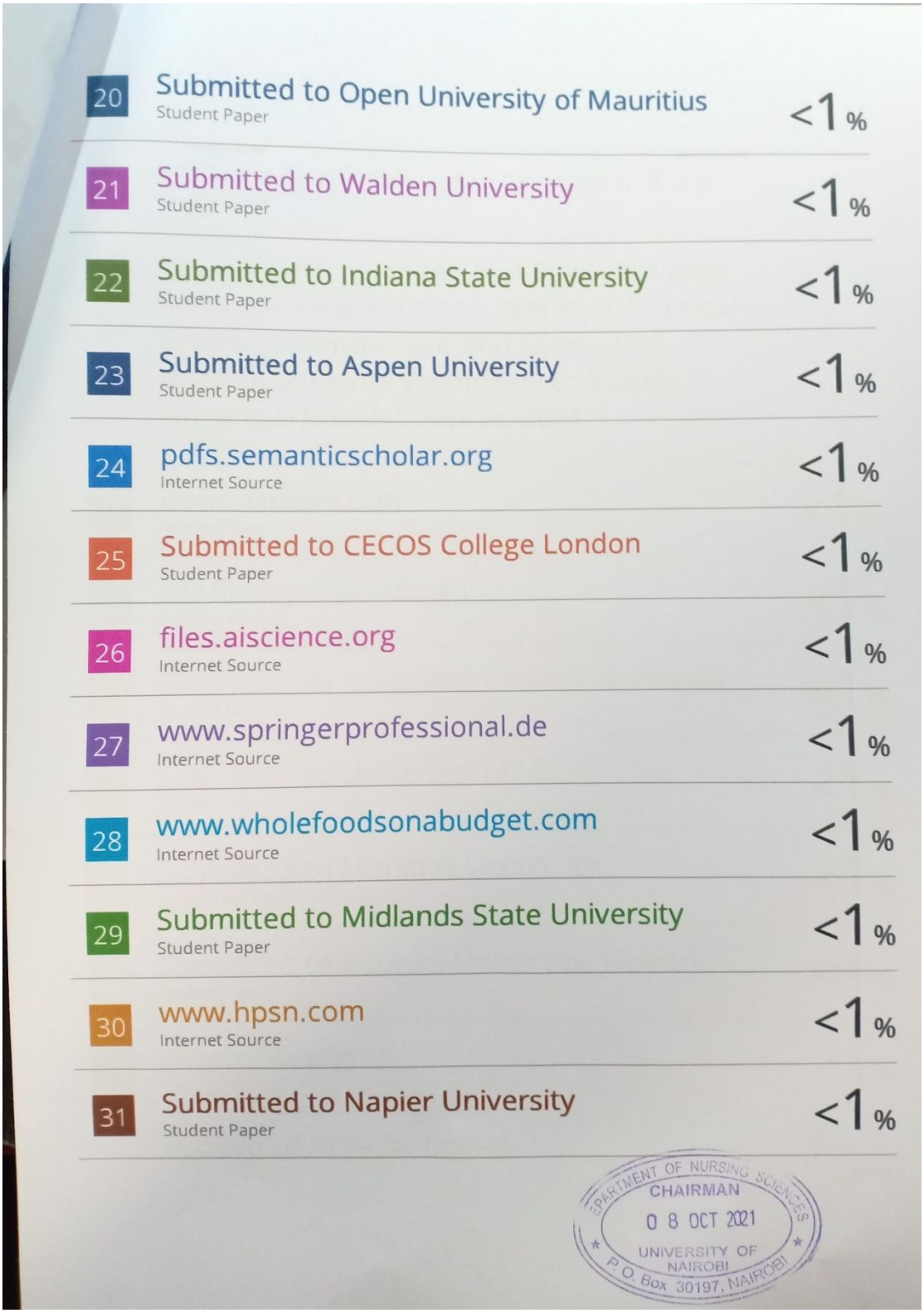

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Publication

255 Montserrat Solà-Pola, Victòria Morin-Fraile, Núria Fabrellas-Padrés, Marta Raurell-Torreda et al. "The usefulness and acceptance of the OSCE in nursing schools", Nurse Education in Practice, 2020 <1%
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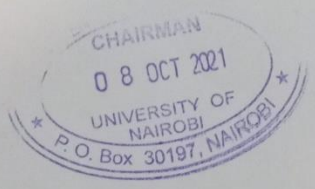
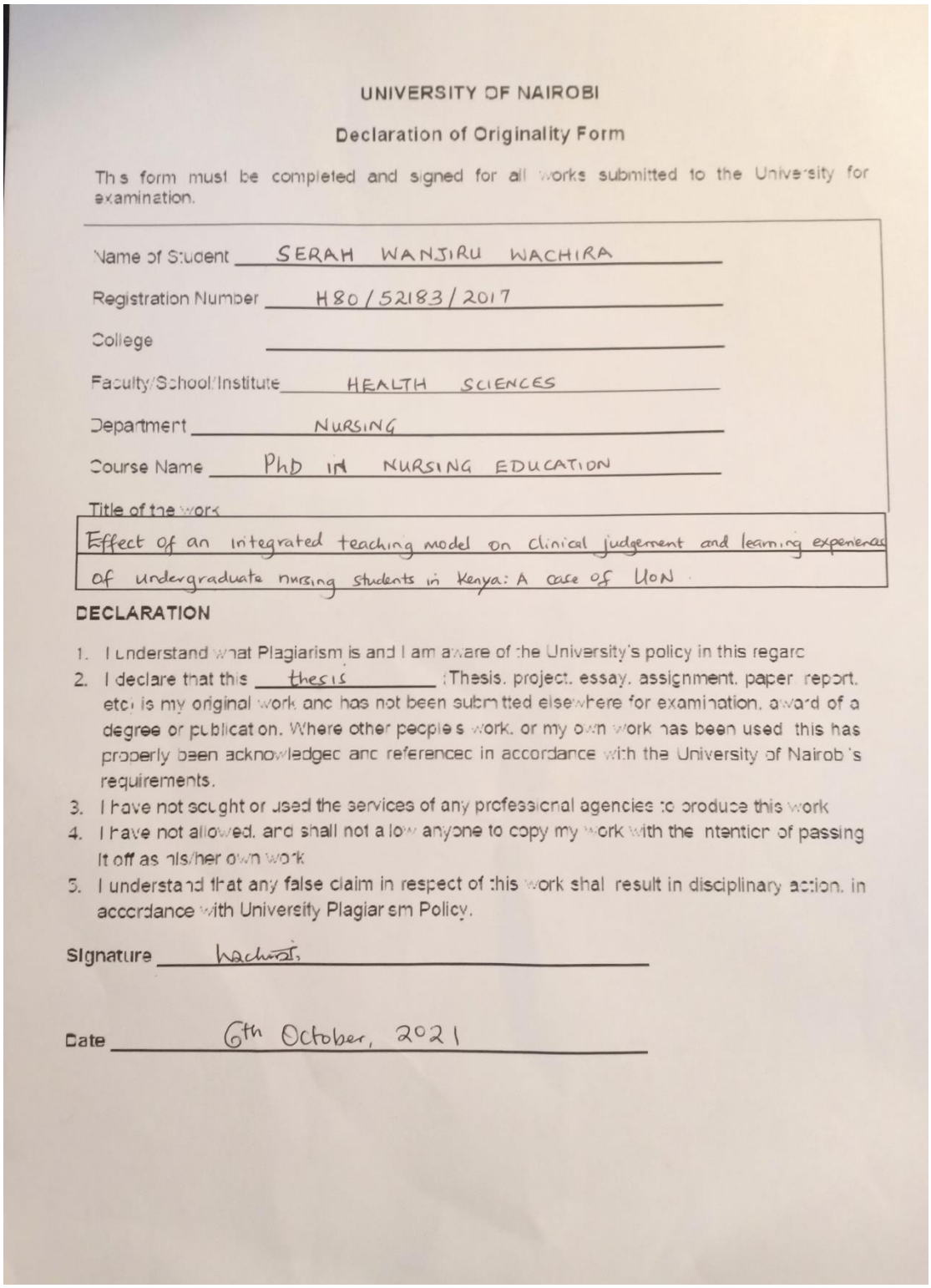


Appendix XV: Declaration of Originality Form



UNIVERSITY OF NAIROBI

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Faculty/School/Institute: HEALTH SCIENCES

Department: NURSING

Course Name: PhD IN NURSING EDUCATION

Title of the work:

Effect of an integrated teaching model on clinical judgement and learning experiences of undergraduate nursing students in Kenya: A case of UoN

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ISSN 2664-8059 (Print) & ISSN 2706-767X (Online)
South Asian Research Journal of Nursing and Healthcare
Abbreviated Key Title: South Asian Res J Nurs Health Care

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Original Research Article

Effect of Combining Clinical Teaching Tools on Clinical Judgment Skills of Undergraduate Nursing Students in Kenya

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Abstract: The need to improve clinical judgment competencies during training has been necessitated by the demand for the preparation of new nurse graduates to face an arena characterized by nurse shortage and acutely ill yet more informed clients. In Kenya, the nursing process has been the primary tool to help student nurses develop clinical judgment skills. However, local studies show glaring clinical judgment gaps among new nurse graduates that threaten safe patient care. There is, therefore, a need to examine how a combination of more evidence-based tools can enhance clinical judgment development to improve training outcomes. A quasi-experiment was used to conduct the study. This involved a case study based on pre-test and post-test used to evaluate clinical judgment development in both groups. Furthermore, the groups were used to evaluate the effect of combining two clinical teaching tools on clinical judgment competency scores. The study involved 82 undergraduate nursing students. The respondents had a mean age of 21.50±1.34 years for the Intervention group and 21.59±1.43 years for the control group. 34.15% of the respondents were male, while 65.85% were female. The outcomes of the pre-test and post-test scores across the year of study depict a significant improvement with below expectation <49% reducing from 39.02% to 28.99% among second-year student and 28.05% to 7.25% among the third-year students. Scores of relationships between improvement of CJ Skills Scores across Gender, Cluster, and Cohort proved to be insignificant with cohort only significant ($P<0.035$). There was a significant difference in the scores for Control Post-Test-Control Pre-test and (M=2.947, SD=15.174) and Intervention post-test-Intervention Pre-test (M=14.100, SD=14.398) conditions; t (38) =-6.116, p = 0.0001." The findings showed a significant effect in combining clinical teaching tools on clinical judgment competency scores compared to the nursing process alone (p= 0.0000). The study findings imply the need to review clinical nurse training to incorporate more evidence-based strategies. However, the study recommends similar research to be carried out in multiple clinical sites to enhance the evidence's strength and the generalizability of the results and outcomes.

Keywords: Nursing, competencies, nursing students, clinical judgment, Kenya.

INTRODUCTION

As Simmons [1] described, clinical reasoning manifests when critical thinking is applied in identifying the appropriate interventions in a given client situation, which is referred to as clinical judgment. Clinical reasoning is a cognitive process that utilizes thinking tactics to interpret client assessment data (clinical judgment). The focus is to formulate a plan of care to meet the identified needs collaboratively. Provision of safe patient care requires sound clinical decision making. Multiple studies have described the concept of clinical reasoning. Victor-Chmil [2], for instance, described the clinical judgment as a clinical situation analysis guided by critical thinking. The nurse analyses the client's status and utilizes her necessary thinking skills to determine the way forward in addressing the identified needs.

Benner, Leonard, Day, and Sutphen [3], on the other hand, states that the manifestation of a nurse thinker is in their clinical reasoning abilities. Nurse thinkers express their capabilities to pick cues from client assessment data and institute timely responses to those findings [3]. The nurse's responsibility is to detect the often-instant changes in client assessment data, implement nursing and collaborative actions, and evaluate therapy response.

Therefore, clinical education should have its core objective to develop nurse professionals who are critical thinkers in every patient situation [4]. There is a need for evidence-based novelty in clinical teaching for nursing students to develop clinical judgment skills and integrate theory into clinical practice. Whatever method is chosen for clinical education, the focus should be whether that strategy will help the student nurse integrates what they learned in the classroom to what they encounter in the clinical setting, as well as prepares them sufficiently to practice as professionals [5, 6]. According to Walker *et al.* [4], clinical nursing skills do not only involve performing tasks; it can identify patient needs, prioritize those needs, develop a plan to meet those needs, and evaluate the outcome of the intervention. These elements are characteristic of sound clinical judgment.

The current demand for inclusion of emerging issues like changing disease patterns, technology, and knowledge explosion into the curriculum has expanded the amount of content to be covered for the undergraduate nursing program to prepare the students to function in the ever-dynamic health care arena. These changes have affected the duration of time the student nurses spend in the clinical environment so that there is no enough time to learn required clinical skills [7]. Practical strategies for student learning and teaching need to be explored to improve student learning. Nursing students in training need exposure to real-life experience to assimilate theoretical knowledge acquired in the classroom with that which occurs in the clinical environment. The need for nursing students to become clinically competent while in their training has been supported by many studies that have linked poor quality health care to nurses' knowledge and skills, including clinical judgment [8, 9]. Despite this recognition by the Nursing Council of Kenya, evidence locally is highly suggestive in reporting that new graduates are still not capable of sound clinical judgments [10].

A cascade of gaps has been cited between nursing policy, training, competency, and practice in Kenya, with studies showing that of the graduates, not all possess good clinical judgment skills. Findings indicated a need to examine each step along the nurse capacity-building cascade, from policy to training, training to competency, and competency to practice, to identify barriers and opportunities to bridge the gaps in health delivery [10-12].

In the light of the gaps in clinical judgment skills exhibited among graduates, a shift to integrated clinical teaching methods has been proposed by several studies [13-16]. Therefore, it has become necessary to develop appropriate teaching-learning strategies to enhance the undergraduate nursing student's higher-order thinking skills to execute sound clinical judgment. Therefore, this study evaluated the effect of combining clinical teaching tools on undergraduate nursing students' clinical judgment skills on clinical placement in Kenya to enhance clinical judgment skill development.

RESEARCH METHODOLOGY

Research design and setting

A quasi-experimental study design was adopted to identify the effect of combining clinical teaching tools: concept mapping and reflective journaling on undergraduate nursing students' clinical judgment competency scores. The study was carried out in Kenya between February to August 2018 in a National Teaching and Referral Hospital.

Target population

The participants were second-year and third-year undergraduate nursing students from a public university on medical surgical nursing clinical practicum at a National Referral Hospital. Those reporting for their medical-surgical clinical experience at the time of data gathering were approached to participate in the study. Those who consented to participate in the study were 82 (79%) of the targeted 104 participants. The consenting participants were grouped into their clusters based on the year of study. The groupings and ward allocation were conveniently done based on competencies required. The second years were in 8 groups of 8-9 students, while the third years were in 4groups of 8-9 students. Simple random cluster sampling was used to allocate each group into either an intervention or comparison group.

Research Instrument

Data on the clinical judgment competencies were collected using pre-test and post-test assessment tools. The tools had five domains examined: the ability to identify patient care needs, interpret findings, prioritizing, anticipating physician's orders, and evaluating the outcome of the intervention. The nursing process informed the domains and the five rights of the clinical reasoning cycle by Levett- Jones [17].

Reliability and validity of the research instrument

The scoring tool's internal consistency was ascertained by sharing the device with three experts from different universities teaching undergraduate nursing to evaluate the tool for both construct and face validity. Once the tool was adjusted to the two experts' suggestions, it was pilot tested with students on clinical placement at a Middle-level Hospital to ensure the case study was precise. The tool was again subjected to reliability evaluation by rating randomly selected student response sheets by three different faculty members from various universities at the pilot testing time. Simple

interrater reliability was calculated to ascertain the appropriateness of the marking key and clarity of questions. The result revealed the interrater reliability of 0.73

Ethical consideration

The KNH-UoN Ethics and Research Committee granted ethical approval to conduct this study. The National Commission gave further permission for Science Technology and Innovation (NACOSTI). Each of the participants signed a consent form.

Procedure for data collection

The pre-test was administered in a classroom setting at the University before the clinical practicum commenced to the 82 consenting participants. The students were conveniently allocated to the wards in groups of 8-9, a total of 12 groups. The groups assigned to the control and intervention group were based on simple random sampling in clusters of 3rd year and 2nd year. The students in the intervention group developed one concept map per week. They did one reflective journal entry based on Gibb's reflective model, which was marked by a trained clinical preceptor and feedback given at the end of each week for 4-8 weeks. The students in the control group developed one nursing care-plan per week with weekly preceptor feedback.

METHODS OF DATA ANALYSIS

SPSS version 26 was used to analyse data. The pre-test and post-test scores were compared to identify clinical judgment skills development. For the primary outcome (change in the average clinical judgment skills mean score), a test for a difference in means for the intervention and control arms using a two-sided student t-test was undertaken. A secondary analysis was undertaken to explore which domains: identifying patient assessment data, interpreting the findings, coming up with an independent nursing intervention, anticipating physician orders, and evaluating the outcome of the intervention, followed the integrated clinical teaching approach.

RESULTS

Table 1 represents the demographic characteristics of the participants. The majority of the respondents who participated in this study were female (65. 9%). The mean age was 21years, with a standard deviation of 1.34 to 1.43. Percentage of the 2nd year versus 3rd years was in the ratio of 1:1.2 as shown in table 1 below

Table-1: Participant Baseline Characteristics

	Intervention group 41(%)	**Control group 41(%)**
Age (yrs.) (mean, SD)	**(21.50, 1.34)**	**(21.59, 1.43)**
Gender		
male	14(34.15)	14(34.15)
Female	27(65.85)	27(65.85)
Year of study		
2nd Yr.	19(46.34)	25(60.98)
3rd Yr.	22(53.66)	16(39.02)

Source: Research Data (2020)

Pre-test and post-test scores across cohort

To evaluate the clinical judgment skills scores, the respondents were subjected to an individualized supervised pre-clinical and post-clinical placement assessment in a classroom setting. The examination was based on a clinical case study analysis examining five domains to identify important assessment data, interpret the data, design a prioritized care plan, anticipate physician's orders, and design an evaluation strategy. The scores were grouped as per the Nursing Council pass mark for nursing students. Findings showed that most of the respondents (67.1%) scored less than 50% all domains inclusive at pre-test for both cohorts, but at post-test, there was improvement in the overall scores, with 63.8% scoring at expectation. Further analysis shows that the improvement in post-test scores was more apparent in the intervention cohort with some of the respondents 4.3 % attaining an above expectation mark, which was not the case in the control group as shown in table 2

Table-2: Pre-test and post-test scores across cohort

	Pre-test			**Posttest**		
	Cohort		Total	Cohort		Total
	Control	Intervention		Control	Intervention	
below expectation <49%	25(30.49%)	30(36.59%)	55(67.07%)	13(18.84%)	12(17.39%)	25(36.23%)
at expectation 50-79%	16(19.51%)	11(13.41%)	27(32.93%)	17(24.64%)	24(34.78%)	41(59.42%)
above expectation 80-100%	0	0	0	0	3(4.35%)	3(4.35%)
Total	41(50%)	41(50%)	82(100%)	30(43.48%)	39(56.52%)	69(100%)

Source: Research Data (2020)

Further analysis showed that most of those who scored below expectations at pre-test was second-year respondents compared to their third-year counterparts. Posttest results show that improvement in CJ scores was evident regardless of the year of study after the clinical teaching intervention (Table 3). However, being a third-year increase the odds of scoring higher after the clinical intervention.

Table-3: Pretest/post-test Scores across the year of study

	Pre-test			**Posttest**		
	YEAR		Total	YEAR		Total
	2nd Year Students	3rd Year Students		2nd Year Students	3rd Year Students	
below expectation <49%	32(39.02%)	23(28.05%)	55(67.07%)	20(28.99%)	5(7.25%)	25(36.23%)
at expectation 50-79%	12(14.63%)	15(18.29%)	27(32.93%)	16(23.19%)	25(36.23%)	41(59.42%)
above expectation 80-100%	0	0	0	2(2.90%)	1(1.45%)	3(4.35%)
	44(53.66%)	38(46.34%)	82(100%)	38(55.07%)	31(44.93%)	69(100%)

Source: Research Data (2020)

Performance by Domain at Pre-Test across Cohort

The participants did a case study based pre-clinical test to evaluate their level of clinical judgment skills before exposure to the intervention. The domains assessed included the respondents' ability to identify significant patient data, interpret the findings, come up with prioritized nursing interventions, anticipate the possible physician orders based on the information provided, and evaluate response to therapy. The mean score ranged between 30-57% for all five domains regardless of the cohort that the respondents were in.

Table-4: Performance by Domain across Cohort at Pre-Test

Cohort		**Identification of patient care needs**	**Interpreting findings**	**Prioritizing**	**Anticipating orders**	**Evaluating outcomes of intervention**
Control	Mean	51.839	57.056	35.771	30.317	54.478
	N	41	41	41	41	41
	Std. Deviation	32.2408	18.3030	14.6670	22.2842	29.5936
Intervention	Mean	41.929	55.151	33.256	29.527	44.310
	N	41	41	41	41	41
	Std. Deviation	28.6181	17.0566	19.7345	20.4280	30.1930
Total	Overall Mean	46.884	56.104	34.513	29.922	49.394
	N	82	82	82	82	82
	Std. Deviation	30.7020	17.6073	17.3250	21.2476	30.1469

Source: Research Data (2020)

Performance by Domain across Cohort at Post-Test

There was an evident improvement in the mean score for both the intervention and control groups at the post-test. The integrated model group means score improved more in three domains: prioritizing, anticipating orders, and evaluating higher-order clinical judgment domains while the traditional model means score for the domain of assessment and interpreting findings was higher comparatively. The finding shows that the integrated model is more likely to

improve the higher-order clinical judgment scores than the traditional model. However, the use of NCP still has a role in helping students develop the skill of making sense of the data obtained through patient assessment (Table 4.6)

Table-5: Performance by Domain across Cohort at Post-Test

Cohort		**Identification of patient care needs**	**Interpreting findings**	**Prioritizing**	**Anticipating orders**	**Evaluating the outcomes of the intervention**
Control	Mean	66.437	65.000	40.500	37.333	45.557
	N	30	30	30	30	30
	Std. Deviation	23.1443	13.2613	23.9378	18.9251	21.4333
Intervention	Mean	63.369	61.667	50.256	46.923	53.423
	N	39	39	39	39	39
	Std. Deviation	25.5522	13.7330	19.2610	20.0531	23.9412
Total	Overall Mean	64.703	63.116	46.014	42.754	50.003
	N	69	69	69	69	69
	Std. Deviation	24.4060	13.5338	21.8043	20.0099	23.0576

Source: Research Data (2020)

Relationship between change in scores across Gender, Cohort, and Cluster

A Chi-square test of independence was done to evaluate whether gender, year of study, and cohort influenced the test scores. The change in score was set at least a 5% improvement and above. The finding shows that being male or female and being a second-year or a third-year is not likely to improve the CJ score. However, being in the integrated clinical teaching cohort is more likely to improve the scores regardless of gender and year of study (p= 0.035; 95%CI).

Table-6: Relationship between improvement of CJ Skills Scores across Gender, Cluster, and Cohort

General Characteristics		**Improvement in CJ scores by <5% (Post-test- Pre-test scores) N(%)**	**Improvement in CJ scores by >5% (Post-test-Pre-test scores) N(%)**	**Total N(%)**	**P**
Cohort	Intervention	16(41)	23(59)	39(56.5)	0.035*
	Control	20(66.7)	10(33.3)	30(43.5)	
	Total	36(52.2)	33(47.8)	69(100)	
Gender	Male	11(47.8)	12(52.2)	23(33.3)	0.609
	Female	25(54.3)	21(45.7)	46(66.7)	
	Total	36(52.2)	33(47.8)	69(100)	
Year	2nd Year students	20(52.6)	18(47.4)	38(55.1)	0.933
	3rd Year students	16(51.6)	15(48.4)	31(44.9)	
	Total	36(52.2)	33(47.8)	69(100)	

Source: Research Data (2020)

Relationship between pre-test and post-test score results across cohort

The mean of the pre-test and post-test scores were compared using a student t-test to identify which of the two clinical teaching models (Traditional or integrated) had a more significant effect on the CJ skills scores of the undergraduate student nurses. The findings (Table showed that the application of the integrated model in clinical teaching is more likely to result in improvement of CJ skills scores in undergraduate nurse training compared to the use of NCP alone (P<0.05; 95% CI)

Table-7: Paired T-Test for Post-test and Pre-tests

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Control Posttest - Control Pretest	2.9466	15.17402	2.77038	-2.71941	8.61274	1.064	29	.296
Pair 2	Intervention posttest - Intervention Pretest	14.100	14.39815	2.30555	9.43266	18.76734	6.116	38	.000

DISCUSSION

Most of the respondents in this study had a mean age of 21.55. This age compares well with university students' expected age in the second and third years in Kenya. The majority of students will enter university education at age 19, having completed 12years of primary and secondary education.

Combining concept mapping and reflective journaling was more likely to improve clinical judgment skills scores than the nursing process alone. This finding agrees with multiple studies that have found that students' performance level in critical thinking and clinical judgment skills is improved by the application of integrated models [16, 15, 18]. However, most of these studies were done wholly or partially in a simulation laboratory context rather than an actual clinical site. This study's findings support the use of combined clinical teaching tools that are student-led to improve clinical judgment scores even when a resource-constrained unpredictable environment characterizes the clinical site.

The finding that the students had difficulty identifying patient care needs at the pre-test aligns with the results of a study done by Lasater and Nielson [19], which revealed that students had trouble noticing salient client data. Thus this finding is not only limited to resource-constrained environments. Alfayoumi [16] also documented similar student findings having difficulty identifying the significant patient history and assessment findings. There is, therefore, a need to identify strategies to close the gap during theoretical instruction.

This study's intervention improved the students' ability to identify patient care needs and interpret their findings. These findings differ with Alfayoumi [16], who found out that combining clinical teaching tools improved all clinical judgment domains except the domain of engagement, which involves the extent to which a student identifies something as a problem in a client. However, the conclusion that students can interpret patient assessment findings better when utilizing concept maps and reflective writing in combination confirms Alfayoumi's findings; integrating multiple clinical teaching tools improves the background information of normal and abnormal results among student nurses [20].

Implications for clinical education

There is a need to embrace the evidence-based practice in clinical teaching to enhance clinical judgment development. There is overwhelming evidence that no single clinical teaching tool is adequate in enhancing CJ skills. Integrating tools will go a long way in helping student nurses become competent practitioners.

Limitations of the study

This study's main limitation is that the data collection was carried out in a resource-constrained environment where consistent student supervision may be a challenging affair. The other limit is that the data collection process was interrupted due to a national crisis necessitating University closure and sudden withdrawal of participants from the clinical site led to participant fatigue because the intervention period was extended.

RECOMMENDATIONS

The current study guides in formulating recommendations. Firstly, the study suggests combining clinical teaching tools to be embraced and embedded in the National undergraduate nursing curricula by the Nursing Council of Kenya and tertiary institutions. This will enhance content absorption and the integration of skills by undergraduate students. Secondly, similar research is carried out in multiple clinical sites to enhance the evidence's strength. Finally, Evaluation of faculty perception on the use of the various tools should be encouraged as it may encourage uptake of integrated clinical teaching methodologies

CONCLUSION

Combining concept mapping and reflective journaling improves the clinical judgment skills of undergraduate nursing students. Improvement is more pronounced in identifying patient care needs and interpreting findings that are the basis for further interventions in most client situations.

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Original Research Article

A Qualitative Analysis on the Clinical Experiences of Undergraduate Nursing Students in Kenya

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Abstract

Background/aim: There is a need to assess students' reflective work to identify learning enhancers and barriers to improve nurse training. Although reflective writing has been an ongoing clinical nurse education practice globally, analysis of journal reflections to identify student nurses' clinical experiences is scanty, especially in the local Kenyan setting. Therefore, the purpose of this study was to evaluate the lived clinical experiences of student nurses to identify learning enhancers and barriers. ***Methods:*** This research was the qualitative part of a mixed-method approach. Qualitative content analysis was utilized to scrutinize 138 reflective journal entries of 36 undergraduate nursing students in the second and third years of practice. The participants were from a Public University, School of Nursing, in Kenya. The students documented their clinical experiences during their medical-surgical clinical attachment at a National Referral Hospital in Kenya between February and August 2018. The average entries per student were four with a range of 2-6 entries per journal. Gibb's reflective model guided documentation of reflections. NVIVO version 11 was used to code, transcribe, and analyze the journal narratives. ***Results:*** Four main themes emerged from the analysis; Gaining new skills and knowledge, confidence levels, professional practice gaps, and professional support system. ***Conclusion:*** Nursing students' experience is focused on gaining new knowledge and skills and building their confidence to practice. However, positive and negative encounters develop their buoyancy and frustrate their desire to learn, respectively.

Keywords: Clinical Experiences, Reflective Journaling, Nursing, Students.

INTRODUCTION

The amalgamation of theory and clinical practice is vital in training student nurses to provide quality, safe patient care as professionals. Students quickly transfer knowledge to practical situations when interacting with real-life experiences in the clinical setting [1]. A clinical learning environment that is supportive, resourceful, and individualized ensure that student nurses fit in the health care team and are comfortable learning from their mistakes [2].

This study utilized reflective journaling as a student-directed learning strategy to help them reflect on their clinical experiences. Reflection helps students identify gaps in their learning [3]. It supports the development of profound knowledge, critical thinking skills, and confidence [4]. Reflections can act as opportunities for voicing painful experiences encountered during clinical practice [5]. Analysis of such observations helps improve the clinical learning environment for better outcome of training. Use of documented reflections can enhance student experiences to strengthen their incorporation into the profession [6].

There is a need to assess students' reflective work to identify learning enhancers and barriers that can help improve nurse training. Although reflective writing has been an ongoing clinical nurse education practice globally, analysis of journal reflections to identify student nurses' clinical experiences is scanty, especially in the local Kenyan setting. Most studies have focused on assessing the level of reflection [4, 7]; or improving thoughtful writing [8, 3]. The few studies that have analyzed student reflections found that most students were concerned about whether they acted professionally in communicating with the patient and performing nursing skills [9]. Another study identified feedback, taking responsibility, and the opportunity to practice as factors that promoted students' clinical learning. Hindering factors included inconsistent supervision and feelings of personal inadequacies [10].

Multiple studies in this area used questionnaires, interviews, and observational data collection methods rather than analysis of reflections. A study done to evaluate student nurses' clinical learning experiences through observation and interviews found that the participants had the opportunity to gain new skills, but felt intimidated by the qualified nursing staff's negative attitude towards them. This experience affected their confidence in attempting new procedures [11]. Warne *et al*. [12] studied the enhancers of clinical skills for nursing students from nine European countries. Their study concluded that the students had a pleasant experience with a supportive mentoring system. Similar studies have found a correlation between student- preceptor relationship and clinical experience. Lawal *et al*., [13], for instance, identified that when students' relationships with the preceptor were enhanced, the clinical experience was pleasant [14]. Recognized various challenges of clinical teaching in a Malawian hospital environment. Their study reported that most students identified resource constraint as a significant hindrance to their learning.

There has been minimal use of reflective journaling in Nursing Education in Kenya despite the benefits cited globally. This study aimed at identifying the clinical experiences of undergraduate nursing students through the eyes of reflective journals.

METHODOLOGY

Design

This research was the qualitative part of a mixed-method study. Qualitative content analysis was utilized to scrutinize 138 reflective journal entries of undergraduate nursing students to identify their lived experiences in the clinical environment.

Participants and setting

The participants were 36 undergraduate nursing students in the second and third years of practice from a Public University, School of Nursing, Kenya. The students documented their clinical experiences in a reflective journal during their medical-surgical clinical attachment at a National Referral Hospital in Kenya between February and August 2018.

Ethical consideration

The KNH-UoN Ethics and Research Committee granted ethical approval to conduct this study. The National Commission for Science Technology and Innovation (NACOSTI) gave further permission. Each of the participants signed a consent form to participate in this study. To ensure anonymity and confidentiality, the reflection journals were given a code so that no entry could be traced back to a specific undergraduate student.

Instrument

Data collection was done using a documented account of the student's clinical experiences. Gibb's reflective model [15] guided documentation of reflections. This model consists of six steps description, feelings, evaluation, analysis, conclusion, and action plan. The model was used to enhance the reflections' structuring, thus creating uniformity in how the students documented their clinical experiences [16]. Gibb's reflective model has been established as an effective method as it enables students to benefit from a clinical event by focusing their thoughts [17].

DATA COLLECTION

Before beginning clinical placements, the purpose and aim of self-reflection were made clear to the students. They were taught how to document their reflection and benefits. The students were issued with coded reflective journals and a sample reflection to guide them since this was a first-time experience. They were to document one write-up per week for four weeks for the second-year cohort and eight weeks for the third-year cohort. The students at the end of the clinical placement, the researcher, picked the reflective journals for analysis.

DATA ANALYSIS

The journal entries analysis was done through qualitative content analysis. This involved, reading and re-reading and then coming up with familiar words codes for entry in NVIVO version 11 to generate the emerging themes and sub-themes from the undergraduate students' reflections. An independent researcher was allowed to code and develop the ideas to ensure credibility and validity. Later, the issues that arose were compared to the researcher's and refined through consensus that led to the study themes and sub-themes. The independent author who participated in the study was skilled and educated in reflective learning as the researcher. Narratives have been used to describe the findings.

RESULTS

Participant characteristics

The participants were 36 undergraduate nursing students in their second and third year of study during a medical-surgical clinical attachment. The students' mean age was 21±1.34 years; the majority were female (61.1%). The second-year cohort formed a more significant part of the sample, 58%. The journal entries ranged between 2-7 with an average of 4 journal entries per student.

Emerging themes and sub-themes

Four main themes emerged from the content analysis of 138 journal entries concerning undergraduate nursing students' clinical experiences. The themes include; learning new skills and knowledge, confidence levels, professional practice gaps, and professional support system.

The second-year nursing students lived experiences were mostly on learning new skills and knowledge, professional practice gaps, professional support system, and confidence levels. Emotional reactions had the lowest representations of lived experiences. On the other hand, the third year had similar themes with a bias towards professional practice gaps more than new knowledge and skills. This paper presents the discussion of the four main themes and the associated themes.

Learning new skills and knowledge

Common among the second-year students was the theme of learning new skills and experience within the clinical setting. The nursing students expressed that they acquired new skills concerning clinical practice, perfect some of the skills, and master the routines of the clinical environment. One of the journal entry (P28) stated that;

'I had an opportunity to do suctioning, nasogastric tube feeding… I felt an urge for fulfilment and success in achieving what I thought before was complex; the experience and practical doing on real patients is fulfilling.'

In most situations, students gained new knowledge or learned when faced with a new challenge or lacked the expertise to handle a given situation. An accompanied feeling for most students during such circumstances was a feeling of helplessness. In some cases, an experienced nurse mentor's presence helped them overcome the lack of confidence in trying new skills.

Participant journal entry 045 reflected, 'I had an experience of dressing a massive wound… I was initially feeling a lack of confidence, but the presence of an experienced staff who was willing to support helped achieve my objective.'

The third-year cohort gained new knowledge through an encounter with situations that challenged their previous experience and skills. Also, the students gained knowledge through the challenges that they faced in their course of duty. Most notable was recognition among some of them on the need to sharpen their skill and avoid being routine-oriented. They recognized that learning is a continuous process and that classroom instruction is limited in preparing them adequately for the clinical environment

One of the entries (097) stated - '*I did not know tracheostomy interferes with communication. The experience was a challenge for me. I had to go the extra mile to learn. I realized that school does not teach you everything. It's always your interest. Learning something new was satisfying.'*

Confidence levels

All participants regarded the confidence level as a challenge in their clinical environment. Among the students' nurses, there were two categories of nursing students with low confidence levels and assertiveness. The majority of the second-year nursing students were in the former group, and in most cases, they felt helpless to address nurses who engaged in malpractices. However, most of them committed to acting on improving their confidence levels as patient advocates. The student in journal entry 004 expressed

'I observed a patient being bathed inconsiderately with cold water by a senior nurse. I could not confront the nurse. I felt inferior. I will work on my self -confidence so I can be a good patient advocate.'

The third-year students expressed their confidence level as being assertive, sometimes 'overconfidence,' and rarely 'lack of confidence' in confronting issues. When faced with a lack of maintenance of nursing care standards, the students demonstrated assertiveness in most cases. For instance, a student journal entry (098) stated;

'A qualified nurse removed from the bedside a new regimen for a patient. I confronted the nurse on the issue, but the nurse was rude. I reported the matter to my clinical mentor, who handled the issue…'

On the other hand, the students demonstrated overconfidence in attempting skills they had not mastered, which led to non-fatal errors, especially in drug administration, as evidenced in the self-reflection by student journal entry 081.

'I was to prepare ceftriaxone but prepared Cefazolin I did not confirm with the qualified nurse. Just before I went to administer, the nurse asked me what drug I had mixed. I am glad the nurse stopped me before I could commit a drug error…'

Professional practice gaps

Nearly all the participants were in agreement that they had experienced professional malpractices in one way or another. The focus of the experiences in clinical nursing practice situations was recurrent. Professional practice gaps experienced by the nursing students revolved around non-adherence to nursing standards of practices, poor communication between the nurses and students, mishandling of patients, and nurses verbally abusing each other in the wards. Respondent journal entry 003 expressed;

'Patients are denied privacy during procedures such as wound dressing, drug administration, and bed baths…has been a common situation in the past four days'

In expressing their malpractice experiences, it was evident from the reflective journals that most second-year nursing students were "helpless" to face the nurses and correct them.

Respondent entry 002 reflected, 'I noticed that she did not maintain aseptic technique during this procedure that demanded it… I was shocked because I expected a registered nurse to follow what the Nursing Council of Kenya states about aseptic technique. I felt intimidated because she was more experienced than me.'

However, some nursing students were able to face nurses whenever they felt they did something wrong through their preceptors or nurse mentors. Of interest in this was that they confronted them on all other issues except matters of non-adherence to professional standards.

Professional support system

The professional support system referred to the type of support the participants had or lacked in the clinical setting. Participants frequently used the word 'teamwork' or 'team spirit' to describe the supportive environment in the clinical setting. Among the participants, sources of support in their learning came from role models, nurse preceptors, fellow students, and lecturers themselves. Although the participants' experience with the existing support sources was mostly positive and encouraging, some students had a negative feeling about the nurses' lack of support.

There were mixed feelings concerning role models, with some of the participants expressing that they have good role models amongst the nurses while some felt that they lacked a role model. For example, one student journal entry 046 stated

'A primary nurse was nice to me…This nurse allowed me to do many procedures under her supervision and instruction…I had the best feeling ever in my life".

Encounters with 'bad' role models and sometimes lack of supervision lead to feelings of confusion on what the students ought to do in a given client situation. However, some students stated that lack of support during their placement only motivated them to be more proactive and learn critical thinking skills. For example, one journal entry 029 reported

'I was Feeling confused because of not being given an orientation in a new working environment. Was left to work unsupervised had to rely on another student to know what to do. The qualified nurse left the ward without handing over to me…'

Some of the nurses' willingness to learn from the students created unidirectional mutual support, as stated by Respondent entry 002

'As a student, I was amazed to find registered nurses who could learn from students… correct, teach the students. Wow! is all I can say for the health practitioners in this ward.'

DISCUSSION

This study's findings indicate that student nurses in Kenya face various enhancers and hurdles to their learning in the clinical environment that affects their ability to achieve their learning objectives. Enhancers of clinical experiences for student nurses include a professional support system, opportunities for learning new knowledge and skills, and self-motivation. Confidence or lack of it is a considerable determinant of self- motivation to engage in performing new skills. The level of confidence is directly related to the length of time of exposure to the clinical environment.The outcomes of the current study are mirrored by another study which eludes that confidence is a key factor in nursing students learning [18]. Educators, therefore, need to evaluate curriculum implementation strategies for undergraduate nursing program to allow adequate time in the clinical area for the development of self-confidence. Building confidence in undergraduate student nurses plays a role in helping them become effective practitioners [19].

The clinical environment offers an excellent opportunity for learning new skills, as demonstrated in this study. These findings resonate with research done by Chong [9], who found that exposing students to the clinical environment automatically led to acquiring new knowledge and skills. The majority of students' self-confidence challenged new skills or faced cases of professional malpractice committed by qualified nurses. Jamshidi *et al*. [11] identified that self-confidence was necessary for building a clinical skills portfolio. However, the lack of a supportive nurse-student relationship hampers its development. Developing countries face a significant challenge of providing adequate supervision due to increased workload for the nurse preceptors [20]. The preceptors may view the student nurses as increased workload ending up neglecting their learning needs. There is, therefore need for student-led self-directed learning strategies so that the learner drives their learning process [18].

The professional support system in the form of good role models enhanced learning in this study [13]. Found that 74% of student nurses express satisfaction with their clinical learning when they relate well with other nursing staff. Role models influence the students towards deciding on the type of practitioner they want to be or not [21]. Exposure to wrong role models discourages students from nursing work and can be a factor in professional attrition [21]. Students in this

study experienced similar feelings of discouragement and shock on encountering nurses who did not maintain nursing practice standards or a caring atmosphere [22], on the other hand, found that when student nurses interacted with wrong role models, they were able to form imagery of the type of nurse they want to be in the future. When qualified nurses do not follow standard operating procedures in the patient's care, the student nurses end up frustrated in their desire to learn and struggle to integrate into the profession.

The clinical environment's reality is such that it is unpredictable and can present challenges to novice student nurses. The findings in this study of students facing various unprecedented events like discrimination, tension, and conflicts have been attributed in other studies as factors that impair learning process [11, 14]. Student nurses require an enhancing environment to grow in their professional skills; thus, there is a need to address the identified stressors through a multidisciplinary approach that involves both the academic staff and the clinical educators.

Implications for clinical education

Student nurses need to be encouraged to document their reflections during clinical practicum to develop their clinical reasoning skills, learn from their experiences, as well as a channel for debriefing. Analysis of student reflections can help improve the clinical learning environment so that the nurse of tomorrow is more prepared to handle patient care situations confidently. The Nursing Council of Kenya, mandated by the government to maintain a high level of nurse training standards, can incorporate reflective writing as part of undergraduate curricula to improve student nurses' clinical skills. The incorporation could also be an indirect way of evaluating the suitability of clinical sites for nurse training. Clinical sites, on the other hand, can develop strategies to respond to the gaps identified in the clinical environment to enhance student learning

LIMITATIONS

This study occurred in a National Referral hospital whose clinical setting may be characterized by unique student experiences different from the private sector (resource enabled) and county hospital (resource-constrained). Therefore, generalization to these sites may not be appropriate. This study recommends a future comparative study in different clinical settings.

CONCLUSION

This study aimed to explore the lived clinical experiences of undergraduate nursing students. From the findings, it is clear that nursing students experience both positive and negative encounters that build their confidence and frustrate their desire to learn, respectively. Addressing the hindrances to student learning is imperative.

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