NURSE INTERNS' COMPETENCE IN PHYSICAL ASSESSMENT FOR ADULT PATIENTS IN HEALTH FACILITIES IN WESTERN REGION OF KENYA

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A Thesis Submitted in Partial Fulfillment for the Requirement of the Award of the Degree of Master of Science in Advanced Nursing Practice (Nursing Education) of Masinde Muliro University of Science and Technology

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DECLARATION

This thesis is my original work prepared with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award.

Signature:.....Date:12/8/2024.....

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CERTIFICATION

We, the undersigned certify that we have read and hereby recommend for acceptance of Masinde Muliro University of Science and Technology a thesis entitled "**Nurse Interns' Competence in Physical Assessment for Adult Patients in Health Facilities in Western Region of Kenya.**"

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DEDICATION

This study is dedicated to Assumption Sisters of Eldoret for their moral, spiritual and financial support they accorded to me, which contributed greatly to the success of this study.

ABSTRACT

Physical assessment is an essential part of the overall health assessment which constitutes the first phase of nursing process. Physical assessment competence of nurse interns has been observed as insufficient in evaluation and solving patients' health problems in the clinical environment. This has negatively influenced their ability to make better clinical decisions, thus contributing to poor quality of patient care. The aim of this study was to investigate nurse interns' competence in physical assessment for adult patients in Western region of Kenya. A cross-sectional research design using mixed methods of data collection was used with the target population being nurse interns in health facilities in Western region of Kenya. A sample size of 117 interns was used. A self-administered questionnaire was used to collect data on physical assessment knowledge and factors influencing physical assessment competence of nurse interns while an observation checklist was used to assess their physical assessment skills. Key informant interview was used to obtain information from nurse managers on factors influencing physical assessment competence of nurse interns. Quantitative data was analyzed using SPSS, version 26 using both descriptive and inferential data analysis techniques while qualitative data was analyzed thematically guided by the study objectives. For inferential statistics, multiple regression was applied, with a p value of ≤ 0.05considered as statistically significant. Adjusted Odds Ratio (AOR) was used to test the strength of association between independent and dependent variables. The findings of the study revealed that 62% (n=72) of nurse interns were knowledgeable on physical assessment. They had knowledge in taking vital signs (≥90%, n=106), preparation for physical assessment (≥85%, n=99), inspection (89.7%, n=105) and palpation (88%, n=103). 35% (n=41) of the interns performed very well in physical assessment skills. ≥90% (n=106) of them performed very well in measurement of vital signs, assessment of the airway and inspection of body systems. The study revealed that 35% (n=41) of the interns were competent as they scored 90% in both knowledge and physical assessment skills. Factors that were statistically associated with higher competence scores (≥ 90%) were year of completion of 2016 – 2019 (OR: 3.1; 95% CI [1.1, 8.5]; p = 0.02), internship period of 9 – 12 months (OR: 0.2; 95% CI [0.1, 0.5]; p = 0.0002),>7 months previous clinical experience prior to internship (OR: 0.4; 95% CI [0.2, 1.0]; p = 0.05), self-confidence (OR: 4.5; 95% CI [1.9, 10.5]; p = 0.003) and motivation (OR: 0.4; 95% CI [0.2, 1.0]; p = 0.042). In conclusion, nurse interns' competence in physical assessment is low, as shown by around one third of study participants achieving a score of 90% and above in both knowledge and physical assessment skill performance. Key factors that influence physical assessment competence are year of completion, a longer period of internship, previous clinical experience before internship, self confidence in performing physical assessment accurately, motivation of nurse interns to learn more and perform physical assessment and regulatory body factors. This study therefore recommends the Schools of Nursing to put more emphasis on theoretical teaching of physical assessment and provide adequate supervision for student nurses during clinical practicum to enable them develop their physical assessment skills before internship. The study also recommends hospitals to train nurse mentors to provide ongoing professional development opportunities and mentorship programmes for nurse interns. This will improve their motivation and confidence, thus enhancing their competence in physical assessment.

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LIST OF ABBREVIATIONS AND ACRONYMS

AOR	Adjusted Odds Ratio
BScN	Bachelor of Science in Nursing
CCCU	Canterbury Christ Church University
FBO	Faith Based Organizations
GOK	Government of Kenya
IOSR	International Organization of Scientific Research
MOH	Ministry of Health
NACOSTI	National Commission for Science, Technology and Innovation
NCK	Nursing Council of Kenya
OPD	Out Patient Department
PhD	Doctor of Philosophy
PSC	Public Service Commission
SPSS	Statistical Package for Social Sciences
USA	United States of America
WHO	World Health organization
YLL	Years of Life Lost

OPERATIONALIZATION OF KEY TERMS

Competence: The ability to perform an activity efficiently or successfully. According to this study, competence is the ability of nurse intern to achieve an overall score of 90% and above in both knowledge assessment and performance of physical assessment skills.

Graduate: An individual who has completed a course of training successfully, particularly one who has received an undergraduate degree. According to this study, a graduate is a nurse who has successfully completed training and obtained a BScN degree

Internship: A period offered to trainees by an organization to work in order to gain experience, develop their skills or to meet the training requirements. According to this study, internship is an established programme which provides BScN graduates with opportunities for skill acquisition to enhance development of required competencies and fulfil necessary requirements for registration by Nursing Council of Kenya

Nurse Intern: A professional nurse graduate who is enrolled in internship programme under supervision of experienced nurses. According to this study, a nurse intern is a BScN graduate who is deployed by MOH to health facilities for a period of 12 months in order to acquire relevant clinical experience and develop required competencies

Mentorship: The guidance or influence given by a more experienced individual to a junior individual with less experience in a specific field. According to this study, mentorship is a professional relationship through which a competent and experienced nurse assists, coaches and evaluates the nurse intern to enhance achievement of physical assessment competence

Physical Assessment: An objective evaluation of the body by use of inspection, palpation, percussion and auscultation. According to this study, physical assessment is a structured examination of a patient that allows a nurse intern to obtain relevant information to guide him/her in making decision on patient diagnosis and management. It includes assessment of vital signs and body systems.

Regulatory Body: A government authority which establishes standards in a specific field of activity and ensures that there is compliance. According to this study, regulatory body refers to Nursing Council of Kenya and other organizations which control the nursing profession.

Supervision: Act of directing, guiding or managing a department or a project in order to ensure things are done correctly and safely. According to this study, supervision is the role played by experienced clinical nurses in overseeing nurse interns' clinical experience and performance of physical assessment.

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter consists of background of the study, statement of the problem, research objectives, research questions, justification of the study, limitations of the study and conceptual framework.

1.1 Background of the Study

Nursing internship promotes learning, application of knowledge gained in undergraduate training and cultivation of basic competencies under the supervision of experienced nurses in the clinical environment (Hu *et al.,* 2022). This enables the nurse interns to integrate theoretical content with actual experiences in the clinical environment. The clinical placement experiences facilitate and assist them through their transition from nursing students to professional nurses (Hussien *et al.,* 2021). Internship is aimed at exposing the interns to direct clinical experience of patient care and is part of employment requirements. One of the competencies required of them during this period is physical assessment of patients with various conditions (NCK, 2019).

Globally, physical assessment is well incorporated in the curriculum of undergraduate nursing programme (Egilsdottir *et al.,* 2019). It is an essential part of the overall health assessment which constitutes the first phase of nursing process. Accurate physical assessment ensures that appropriate diagnostic evaluations and treatments are used during patient management (Mitoma& Yamauchi, 2018). Inadequate performance of physical assessment significantly contributes to the possibility of unnecessary treatment and adverse reactions. This may lead to increased morbidity as well as mortality among patients (Kariwala *et al.,* 2018).

Among the core physical assessment skills taught, cardiovascular and respiratory systems are considered to be the most essential skills in improving safety and outcome of patients (Mitoma & Yamauchi, 2018). While physical assessment competence is considered as a major aspect of nursing practice, competence of nursing interns has been observed as insufficient in evaluation and solving patients' health problems in the clinical environment (Shin *et al.,* 2017). A study done in Saudi Arabia showed that senior student nurses and nurse interns perform poorly during physical assessment for patients due to lack of confidence, inadequate preparedness and anxiety (Maniago *et al.,* 2021). Consequently, this has contributed to poor quality of care they provide to the patients (Alamri & Almazan, 2018).

Physical assessment should be performed using a systematic method which includes inspection, palpation, percussion and auscultation. Nurse interns need to have sufficient knowledge and skills on these techniques in order to identify deterioration of their patients' clinical condition (Morgan, 2021). However, according to Douglas *et al.*(2015), the techniques observed to be practiced by senior nursing students during patient assessment only involved overall patient observation and inspection. Other important techniques including palpation, percussion and auscultation were not performed (Massey *et al.,* 2017), thus contributing to lack of competence for nursing students and by extension nurse interns.

A number of studies have reported discrepancy between what is taught in theory and experiences in clinical setting. In one of such studies, nursing students who were already oriented and educated on physical assessment were often not competent in the clinical setting, which negatively influences their ability to make better clinical decisions for patients (Alamri & Almazan, 2018). Another study found out that there were significant differences between nurse interns' and faculty perceptions on actual

clinical experiences with respect to preparation for practice and their importance in developing clinical competence (Althiga *et al.,* 2017).

A study by Dogdu & Kol (2020) indicated that nurse interns had the knowledge on physical assessment skills including palpation and percussion. However, they did not know how to perform the skills since they never practiced them. The nurse interns reported that they did not have adequate opportunities to develop and apply the skills practically in the clinical environment while undergoing their undergraduate training (Douglas *et. al.*, 2015). In another study, both nurses and student nurses reported that they were not confident in performing physical assessment on their patients. They avoided using physical assessment skills despite being taught in the undergraduate nursing training (Gülnar *et al.,* 2022).

Nursing Council of Kenya (NCK) aims to improve the quality of nursing care by monitoring nursing training standards nationally and continually reviewing the curriculum to suit the needs of clients. The curriculum, therefore, combines classroom teaching and clinical placement with a view of preparing competent nurses that would provide quality patient care (NCK, 2019).Within this context, concerns have been raised over nurse interns' clinical performance not meeting nursing care expectations (Personal Communication, 2015). This study therefore sought to investigate the nurse interns' competence in physical assessment for adult patients with various conditions.

1.2 Statement of the Problem

Shortage of competent nurses and midwives is being experienced globally and the number is projected to decrease further by 2030 (Scheffler *et al.,* 2016). This has resulted in employment of new graduate nurses who have less competence on clinical skills to curb the shortage. Therefore, student nurses and interns lack adequate and

experienced role models in the clinical environment leading to a deficit in physical assessment performance and decreased quality of patient care (Hussien *et al.*, 2021). This is in spite of the fact that all nursing undergraduate programmes provide training on physical assessment skills in preparation for provision of quality nursing care (Morrell *et al.*, 2019).

In a study done by Althiga*et al.,* (2017), nurse interns reported that they were not adequately prepared with physical assessment knowledge and skills. This contributed to their inadequate performance of physical assessment in the clinical environment, leading to poor patient outcome. A study done in United States of America(USA) revealed that out of 126 physical assessment skills taught in undergraduate programme, 30 were routinely practiced by qualified nurses and nurse interns in their respective clinical environment while 79 of them were never practiced (Kohtz *et al.*, 2017). Similarly, in Italy, only one-third of the physical assessment skills taught in the basic training were practiced on daily basis (Cicolini, 2015), contributing to decreased ability of nurses and interns to identify patients whose clinical status was likely to deteriorate (Osborne *et al.*, 2015).

According to a study done in Saudi Arabia by Afifi (2017), there is a significant number of physical assessment skills that were under-practiced by the nurse interns who had recently completed their undergraduate training. The study further revealed that 57.2% (n=91) of the physical assessment skills examined were never practiced. In Ghana, nursing students and interns did not use physical assessment skills taught during their training. They only checked the vital signs while important techniques including auscultation and percussion were not practiced (Atakro *et al.*, 2019).

In Kenya, a significantly high number of years of life lost (YLL) was observed in Western region of Kenya associated with high incidence of communicable diseases (Frings *et al.,* 2018). Nurses and nurse interns could address this by early diagnosis and treatment through adequate physical assessment (MOH, 2022). Studies on nurse interns have mainly focused on clinical environment satisfaction (Githui, 2019) and perception of nurse interns in making clinical decisions in connection with training methods (Okero *et al.,* 2015). Studies on competence of nurse interns on conducting physical assessment have not been documented. Therefore, this study sought to fill this gap by investigating nurse interns' competence in physical assessment for adult patients in order to ensure early detection and management of conditions.

1.3 Main Objective

To investigate nurse interns' competence in conducting physical assessment for adult patients in health facilities in Western region of Kenya

1.4 Specific Objectives

The specific objectives for this study were to:

i. Determine the knowledge level of nurse interns on conducting physical assessment for adult patients
ii. Examine the physical assessment skills performance level of nurse interns for adult patients
iii. Assess the factors influencing nurse interns competence in physical assessment for adult patients

1.5 Research Questions

i. What is the level of knowledge of nurse interns on physical assessment for adult patients?

ii. What is the physical assessment skill performance level of nurse interns for adult patients?

iii. What are the factors influencing nurse interns competence in physical assessment for adult patients?

1.6 Justification of the Study

Physical assessment competence increases the nurses' confidence in identifying patients whose health status is likely to deteriorate and contributes to improved patients' outcome (Krom, 2020). Nurses who have attained adequate experience in conducting physical assessment are able to monitor their patients' progress, predict changes in the patients' conditions and make proper judgments between acute and less acute conditions (Egilsdottir *et al.,* 2019). They are likely to interpret the patient situation accurately, identify the problems and probable differential diagnoses which enable them to introduce or recommend appropriate diagnostic tests and treatment of patients. This helps them to recognize deterioration of patient's condition, avoid making medical errors and contribute to the best patient outcome (Whebell *et al.,* 2021).

Evaluation of the nurse interns' competence in conducting physical assessment therefore provides valuable information for nursing services managers and nurse mentors. This information can be useful in development of appropriate strategies that enhance physical assessment competencies of nurse interns and ensure adequate support as they go through the transition period (Aboshaiqah *et al.,* 2018). The strategies include good collaboration between training institutions and hospitals, supervision, simulations and active participation in clinical educational programmes (Albougami, 2020). It also promotes patient assessment approach that is safe and based on evidence (Fontenot *et al.,* 2022).This ensures competence and confidence of nurse

interns, thus decreasing chances of medical errors and their possible consequences to patients; hence the need to investigate nurse interns' competence in physical assessment(Verghese *et al.,* 2015).

1.7 Limitations of the Study

This study used a cross-sectional design which involved carrying out the study on competence of nurse interns at one particular point in time. The experiences of the study population could be unique and different from another group doing internship at a different time. Therefore, it was difficult to generalize the study findings to the entire population of nurse interns. The study also had a smaller sample size due to less number of nurse interns in the hospitals. Thus this made it difficult for the researcher to generalize the results to a larger population. These limitations were addressed by use of key informant interviews for nurse managers who acted as mentors for nurse interns to obtain further information regarding factors influencing physical assessment competence.

1.8 Conceptual Framework of the Study

The framework was adopted from Social Cognitive Learning Theory by Albert Bandura (2012) which considers personal factors, behaviour and social environment of an individual. According to the theory, individual learning, knowledge acquisition and competence occurs in the social environment. Bandura (1997), states that individuals are functional and competent beings whose knowledge and behaviour can be influenced by their actions. Individuals can learn as they observe others in their environment and their response depends on their values, beliefs, self-efficacy, previous experiences and anticipations. The key concepts in Bandura's theory include reciprocal determinism, observational learning and self-efficacy.

In reciprocal determinism, Bandura (2007) suggests that personal, behavioral and environmental factors are reciprocal and they have an influence on each other. Bandura (2006) further indicates that personal factors including gender, age, prior experiences produce various responses in one's environment. A study by Bembenutty (2013) reveals that environmental factors have an influence on one's knowledge, achievement of skills and competence. People are able to learn by observing others perform an activity (Bandura, 2012).

Self-efficacy is an individual's conviction concerning his or her ability to achieve a specific goal. It is related to the efforts put and persistence in the practice until he or she succeeds (Bandura, 1997). It directly influences behaviour outcomes and determines the ability and confidence of a person to achieve a desired behaviour effectively (Bandura, 2012).In the context of this study, the dependent variable is physical assessment competence which comprises of the knowledge and physical assessment skills of nurse interns. This is influenced by the personal and environmental factors, which form the independent variables.

Personal factors include age, gender, self-confidence, previous clinical experience, institution of BScN training and motivation. Environmental factors include role modeling, supervision, type of health facility, staffing, ward culture and available resources. The intervening variables include regulatory body factors and mentorship, which directly influence physical assessment knowledge and skills of nurse interns. Nurse interns learn as they observe experienced nurses perform physical assessment. As they practice the skill successfully, interns develop self-confidence, motivation and encouragement to perform it (Bandura, 2007).

Conceptual Framework of the Study

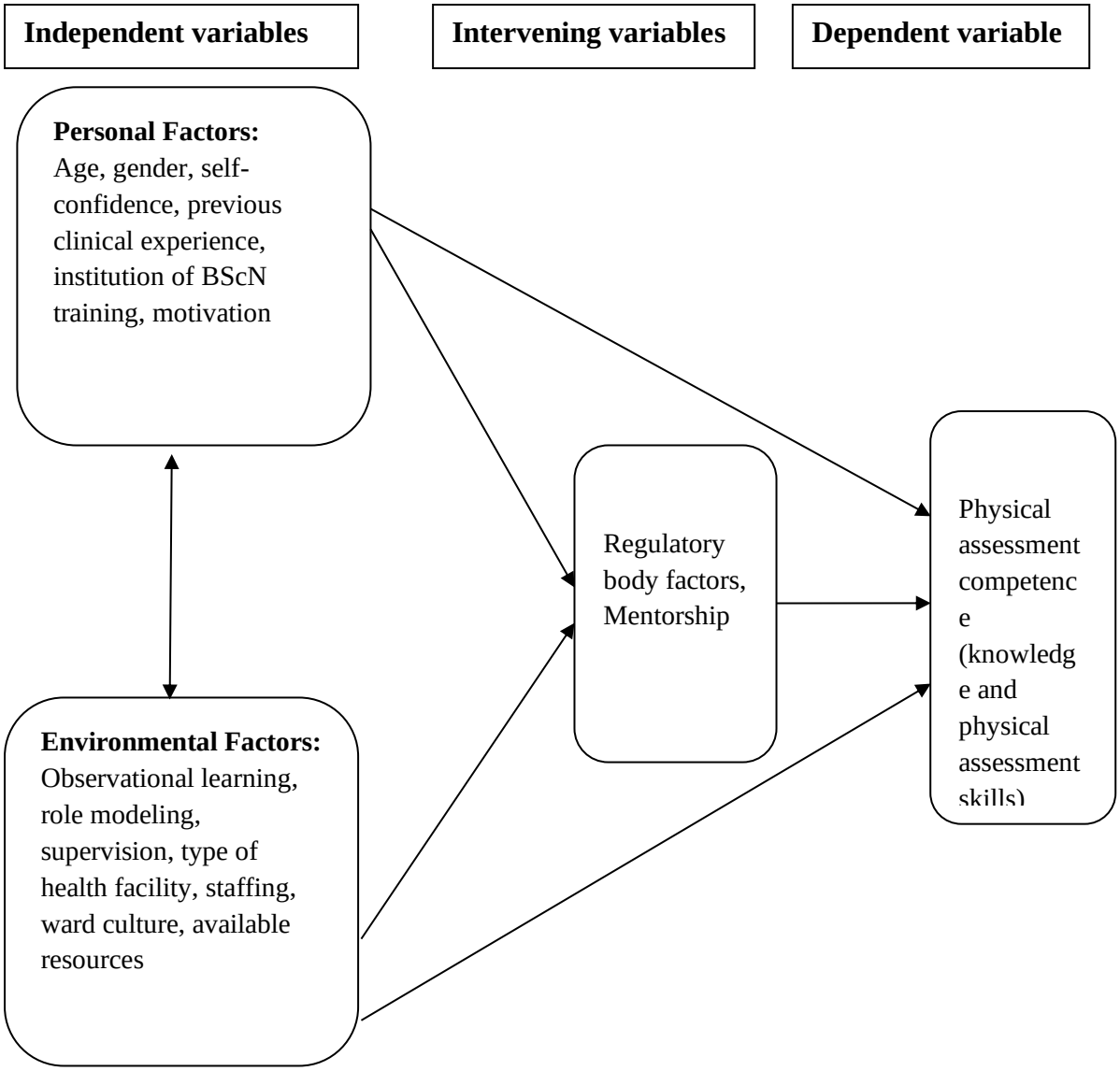

Figure 1.1: Conceptual Framework

Source: Social Cognitive learning theory adopted with modifications from Albert Bandura (2012).

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter discusses on literature review in nursing education, nursing internship, health assessment, physical assessment and factors influencing the development of physical assessment competence among nurse interns.

2.1Nursing Education

The essential function of nursing education is to produce efficient nurses with appropriate competencies, leading to enhanced quality of health care provision (Bvumbwe & Mtshali, 2018). Globally, there are existing standards regarding duration of nursing education. However, there is a variation in the levels of education and its quality among different countries (WHO, 2020). In USA, nursing education is organized in interconnected and progressive levels beginning with diploma, associate degree, BScN, Master of Science and Doctoral programmes (Morris, 2019). In Lebanon, two levels of nursing education are accredited which include BScN degree and technical track which lead to Technique Superior (TS) or Baccalaureate Technique (BT). BScN and TS Nurse graduates are referred as Professional Registered Nurses while BT graduates are Practitioner Nurses (Fawaz *et al.*, 2018).

Many African countries had been training nurses at the certificate level including Kenya, Malawi, Zimbabwe and Zambia. However, there have been significant developments in nursing training during the last two decades including Diploma and Degree levels (Bvumbwe & Mtshali, 2018). Due to the existing variation in nursing education levels globally, there is need for investment in the training in order to meet the current health needs and national standards (Baker *et al.*, 2020). The World's Nursing 2020 report indicates the need to come up with a global modern nursing

educational approach, which is harmonized to ensure maximum nursing outcomes in all the countries offering nursing education (WHO, 2020).

In Kenya, nursing education is offered in six levels: certificate level (two years), diploma level (3 years), higher diploma level (1 year), degree level (4 years), master's level (2 years) and PhD level (3 years). Nursing education is regulated by the Nursing Council of Kenya, which accredits all training institutions including private, public or faith based (Ministry of Health, 2015).

2.1.1 Bachelor of Science in Nursing Programme

Globally, BScN programme is offered in universities to prepare nurses at the undergraduate and graduate levels to offer competent nursing care that is culturally acceptable and promotes patient's safety (Kurth *et al.,* 2016). In Pakistan, the minimum entry level for nurses was set to be BScN by 2020 to promote quality in nursing training. Thus, this is a direct entry mode which takes four years for candidates without prior training in nursing (Huda & Alisbinati, 2015). BScN training in Iran is a direct entry mode which takes a period four years. It acts as the basic training for nurses, in which they integrate both theoretical learning and clinical nursing education in the patient environment (Mohammadi *et al.*, 2017).

In Kenya, the BScN programme was started in June 1988 and is currently being offered in the universities accredited by NCK. Upgrading mode takes a period of two and half years while the direct entry mode takes a period of four years. BScN programme entails training in general nursing, midwifery, community health nursing and psychiatry nursing. The BScN graduates are well prepared with rich scientific knowledge and skills which enhance provision of evidence-based nursing care (NCK, 2019). After completing the training, all BScN graduates who went through direct

entry mode are required to undergo clinical internship for a period a one year (Githui, 2019). An exception for internship programme is given to those graduates who went through upgrading mode based on the clinical experience they go through prior to and during the training (Ministry of Health, 2015).

In preparation of nurse graduates, all nursing training institutions develop a curriculum that is aligned with competencies determined by the regulatory bodies. This enables the graduates to be competent in providing comprehensive care to patients in various settings (Morrel *et al.,* 2019).Nursing curriculum ought to improve the knowledge, skills, attitudes and communication of student nurses in order to have a positive impact in promoting the social health of the society (Akram *et al.,* 2018). Thus it is expected to incorporate key skills including physical assessment in order to enable the graduates to be competent and confident in clinical practice (Spector *et al.,* 2018). Competence based curriculum is embraced in nursing education as it engages students actively in their learning and emphasizes in development of core competencies (Huston *et al.,* 2018).

2.2 Nursing Internship

Globally, nursing practice is experiencing acute shortage of nurses which has led to a negative impact on the quality of health care system. Major contributions to this shortage include challenging transition experiences, lack of effective planning, inadequate recruitment of new graduate nurses and poor employment conditions (Marć *et al.,* 2019). Internship therefore is a transitional period for nurse interns through which they learn and prepare themselves for the challenging professional career (Gaundan & Mohammadnezhad, 2018). Internship improves their nursing knowledge and skills, thus enhancing professional competencies such as physical assessment, critical thinking, problem solving and clinical decision making (Esteves *et al.,* 2018).

Other benefits include increased independence of the interns in provision of direct nursing care to patients, gaining of hands-on clinical experience, better interaction with patients and enhancement of physical assessment skills (Alnajjar *et al.,* 2019).

Throughout this period, nurse managers, educators and clinical instructors take the responsibility for providing clinical supervision and support for nurse interns (Ghazy, 2021). Studies have shown that new nurse graduates who enter clinical practice without undergoing internship programmes do not have the competence and confidence to provide patient care and lack the capacity to perform effectively in the clinical environment. This contributes to several medical errors, poor organization and accomplishment of tasks and decreased quality of patient care (Uche *et al.,* 2017). On the other hand, those who go through internship programme are more confident, competent and experience a higher level of job satisfaction. They are able to adjust well to the clinical settings, develop critical thinking and problem-solving skills; experience less anxiety and stress during the transition period (Edwards *et al.,* 2015).

In Kenya, nursing internship opportunities are created by the Public Service Commission (PSC), guided by internship policy to ensure effective engagement and management of internship programmes. The commission in collaboration with the Ministry of Health (MOH) declares information on nursing internship opportunities through the media and its website, which can be accessed by the public. BScN graduates who have successfully completed the four-year undergraduate nursing training are eligible to apply. Selection of interns is done by PSC basing on the numbers required. Those selected are placed in various hospitals within the country by Human Resource Advisory Committees. Nurse interns are required to observe the rules and regulations of the hospital, code of ethics and nurses' professional conduct.

They are paid a monthly stipend by the Ministry of Health at a rate determined by PSC for degree holders (PSC, 2019).

Nursing internship programme has been in existence in Kenya since 1998 and it takes a period of one year as a requirement for registration of nurse graduates by NCK. Nurse interns are allowed to practice using a Provisional Nursing Practice License, under the supervision of qualified and experienced nurse mentors who support, instruct, guide and evaluate them at the end of each placement. The main purpose is to incorporate the knowledge acquired with the skills and attitudes on the different areas of clinical practice. During internship period, NCK requires that nurse interns attain specific competencies; one of them being physical assessment of patients with various conditions. Interns rotate through different clinical settings which include general nursing, community health nursing, obstetric nursing/midwifery, psychiatric/mental health nursing and nursing curriculum/instruction (NCK, 2019). They are provided with a logbook which indicates the specific objectives and competencies to be attained in each placement. This validates the procedures done, allows the interns to record their learning experiences and provides essential feedback for evaluation and improvement of the skills (Gustafsson *et al.,* 2015).

2.3 Health Assessment

Health assessment is an essential course in nursing education that gives a good foundation for quality nursing interventions. It is the first phase of nursing process which enables nurses to develop confidence in providing holistic nursing care to patients (Cruz *et al.,* 2014). Initial health assessment is performed for all patients during admission to inform appropriate interventions in the individual nursing care plan (Munroe *et al.,* 2016). Ongoing health assessment is done as patients continue with treatment in order to factor in new data that may be obtained after admission and

allow nursing care plan to be adjusted to meet individual patient needs. This data enables nurse interns and other health care team members to identify patients with specific risks. Health assessment can also be done during discharge to evaluate the quality of nursing care given to patients (Gray *et al.,* 2018).

According to Adib-Hajbaghery& Safa (2013), nurses and nurse interns have a lower proficiency level in the overall application of health assessment skills. The study showed that they performed well in history taking but scored poorly in physical assessment. Poor performance was attributed to inadequate undergraduate training, poor supervision and low level of mentorship in the clinical environment. Khoran *et al.* (2018) also indicated that nurse interns and qualified nurses have inadequate knowledge, skills and capacity on health assessment. These are the major obstacles which prevent interns from providing holistic care and contribute to inadequate mentorship by qualified nurses. The study further showed that some patients resist history taking while others are uncooperative during physical assessment thus hindering the quality of health assessment process.

2.3.1 Physical Assessment

Globally, all nursing programmes offered in universities provide training on physical assessment skills in order to prepare graduate nurses to provide quality nursing care (Morrell *et al.,* 2019). Physical assessment skill is a key element of the overall health assessment. It equips student nurses with critical knowledge and skills to perform comprehensive health assessment (Afifi, 2017). It is used together with history taking to guide the nurse in developing accurate nursing diagnoses, planning and implementation of appropriate nursing interventions for patients with various conditions. It can be done as part of the health assessment during the time of admission,

whenever a health problem arises, during deterioration of the patients' condition or during focused health assessment for a specific body system (Jarvis *et al.*, 2016).

Physical assessment entails examination of various body systems (Alamri & Almazan, 2018) in order to obtain information about health condition of patients and outcomes on the previous interventions done. It is also an essential skill which helps nurses to detect unusual cases at the course of the assessment (Khoran *et al.,* 2016). Physical assessment enables nurses to maintain their role in ensuring patient's safety and prevention of medical errors (Zambas *et al.,* 2016). It is essential in the clinical encounter with patients and it plays an important role in formation of a strong therapeutic relationship between nurses and patients (Lida & Nishigori, 2016).

Techniques for physical assessment include inspection, palpation, auscultation and percussion involving various body systems. They form part of ongoing assessment when obtaining patients' data to ascertain their health status (Morrell *et al.*, 2019). Nurses are required to perform physical assessment skills in a systematic manner apart from the vital signs in order to recognize patients who are at risk of deterioration (Osborne *et al.,* 2015). According to Ngina *et al* (2015), nursing students had difficulties in performing various physical assessment techniques especially palpation. When performing respiratory and cardiovascular assessments, nurses have been observed to use general patient observations and inspection mainly, while other important techniques including palpation, percusion and auscultation are not included (Douglas *et al.,* 2015).

2.4 Physical Assessment Competence

Achievement of physical assessment competence during internship period is determined by interns' level of knowledge and physical assessment skill performance.

2.4.1 Knowledge Level of Nurse Interns on Physical Assessment

The nurses' level of knowledge determines the effectiveness of physical assessment skills performed. In order to achieve effective clinical practice, nurse interns require appropriate knowledge, skills and a positive attitude towards the significance of physical assessment. A study done by Cruz *et al.* (2014) showed that the ability to perform the skills is directly related to the knowledge level. Student nurses with a higher level of knowledge were rated as skillful while those with a lower level of knowledge were less confident in performing the skills.

According to Keshk *et al.* (2018), knowledge of nurse interns on patient safety, nursing management and physical examination skills is highly satisfactory at the end of internship programme compared to the time they begin. However, a study done by Khoran *et al.* (2016) showed that half of the nurses interviewed did not have knowledge on how to perform auscultation of the respiratory and cardiovascular system. Thabet *et al.* (2017) indicates that most nurse interns lack knowledge and skills including physical assessment, critical thinking and decision making. Thus, he recommended that training institutions should ensure graduates attain the required knowledge and skills for entry into the nursing profession. A study done by Lee & Sim (2019) showed that undergraduate curriculum does not provide effective theoretical learning on physical assessment of various body systems, thus most new graduates have low knowledge level as they proceed for internship programme. This leads to stress in the clinical environment and many of them think of quitting the nursing profession.

2.4.2 Physical Assessment Skills of Nurse Interns

While physical assessment competence is considered as a major aspect of nursing practice, competence of nursing students has been observed as insufficient in

evaluation and solving patients' health problems in the clinical environment (Shin *et al.,* 2017). Studies done reveal that a small fraction of the physical assessment skills taught in the undergraduate training are practiced routinely by the nurses (Cicolini, 2015). This leads to decreased ability of the nurses to identify patients whose clinical status is likely to deteriorate (Osborne *et al.,* 2015). A study done by Kohtz *et al.* (2017) in United States showed that out of 126 physical assessment skills, 30 were routinely practiced while 79 of them were never practiced by nursing students in the clinical environment. A similar study had been done in 2007 in the same country and the situation has not changed, indicating an increased gap between theory and clinical practice.

Student nurses therefore should acquire skills in physical assessment apart from vital signs in order to be able to identify changes in the patients' health status early enough for prompt intervention (Considine& Currey, 2015). Poor understandingand performace of physical assessment skills among nurses exposes patients to unnecessary diagnostic evaluations and treatments, additional costs for diagnosis and complications arising from the treatment administered (Vergheset *al.*,2015). According to Lee and Sim (2019), clinical practice during undergraduate training is inadequate for nursing students to be able to perform physical assessment of various body systems repetitively. This makes nurse interns experience difficulty in applying the knowledge gained in managing different clinical cases they encounter. Huston *et al*. (2018) suggests that this gap between theory and practice can be reduced through use of innovative methods of teaching that incorporate simulation of various nursing procedures including physical assessment.

2.5 Personal Factors Influencing Physical Assessment Competence among Nurse Interns

Personal factors that are related to attainment of physical assessment competencies by nurse interns include age, gender, self-confidence, previous clinical experiences, institution of BScN training and motivation.

2.5.1Age

Age combined with extra trainings and previous clinical experiences enhances the development of nursing interns' competencies and confidence (Aboshaiqah *et al.,* 2018). As age increases, the readiness for self-motivation to learn new skills also increases (Alkorashy& Assi, 2017). This exposes nurse interns to increased number of working hours and clinical learning experiences, resulting in better competencies in performing nursing procedures including physical examination (Rizany *et al.,* 2018).Recent study results show that a number of nurse interns below the age of 20 years with less clinical experience have inadequate psychological preparation and a feeling of attachment to faculty, thus they find preceptors' roles and support most significant to them. Whereas a high number of nurse interns between the age of 20 to 30 years are contented with preceptors' roles due to their adequate exposure to patient' needs and problem-solving experiences (Makhlof& El-Saman, 2017).

2.5.2 Gender

According to Cruz *et al.,* (2014), female nursing students perform physical assessment skills better and more accurately than male students. However, anxiety was a major factor that affected clinical performance of many female nursing students as compared to male students, which was attributed to fear of making mistakes and inadequate experiences in the clinical environment (Gemuhay *et al.,* 2019). In a study done by Rizany *et al.* (2018), the competence level of new graduate male nurses was higher

compared to female nurses. The male nurses were observed to provide higher quality health care while the female nurses provided higher quantity health care.

A study done in Saudi Arabia showed that male nursing interns experienced a negative attitude from their family members as the society valued nursing care provided by the female gender more than the male. They also experienced inadequate support from the hospital administration (Al-Momani, 2017). Similarly, according to Buthelezi (2015), male nurse interns developed a low self-esteem resulting from rejection by their female patients and increased female domination in the nursing profession. This led to decreased motivation to learn and acquire physical assessment skills.

2.5.3 Self Confidence

A study done by Alnajjar *et al.,* (2019) showed that nurse interns had a very good perception of their level of competence, which was related to self confidence in skill performance. They were therefore likely to perform the skills successfully compared to those students who doubted their competence. However, according to Alamri & Almazan (2018), despite the fact that physical assessment is taught in the undergraduate level, student nurses express fears and low confidence levels in emergency assessment of the patients' conditions. They doubt their capacity in performing the skills on patients and fear making mistakes. This brings about anxiety and interrupts their performance in patient assessment, contributing to insufficient physical assessment and higher chances of making errors in diagnosis of the patient's condition.

Inadequate self confidence in performing patient physical assessment often occurs as a result of inability to perform the appropriate examinations and thus decreases the efficiency in management of critically ill patient. Lack of confidence can however be

overcome by regular practice of physical assessment skills (Verghese *et al.,* 2015).According to Rizany *et al.* (2018), the new graduate nurses with anxiety and poor self-esteem were observed to be unprepared and less competent in carrying out nursing procedures including patient physical examinations. Ngina *et al.* (2015) indicated that nursing students experienced difficulties in performing palpation on patients. This was attributed to an emotional barrier for contact with the skin related to difficulties in the touch patterns experienced in infancy stage.

2.5.4 Previous Clinical Experience

Nurses who have a previous working experience in the clinical environment for more than 5 years have a higher level of physical assessment competence compared with those with less years of experience (Tsutsumi & Sekido, 2015). Douglas *et al.* (2014) indicated that having a clinical experience of more than ten years was associated with less reports of lack of time, interruptions and confidence since the nurses have learned to adjust to the increased workload. An experience of less than five years was associated with reports of inadequate role models in the clinical area compared with more years of experience since these student nurses still require modeling and supervision. However, according to Oranye *et al.* (2012), the level of physical assessment competence among nursing students and interns is not directly related to the years of previous clinical experience. The study further showed that most of the nursing students with more than ten years of previous experience demonstrated a lower level of competence compared with those with less years of experience.

2.5.5 Institution of Bachelor of Science in Nursing Training

Competence assessment of nurse interns is important in order to determine the extent to which the nursing training institutions have prepared them in readiness for clinical practice (Al-Neami *et al.,* 2014). According to Bifftu *et al.* (2016), nursing students

from one university were more competent compared to their counterparts from a different university. This was attributed to the number of students taught per class during undergraduate training. A small number promotes active student participation, supportive feedback from the lecturers, and few students allocated to each mentor. This enhances higher level of confidence among student nurses during training and nurse graduates as they proceed for their internship period. A study done by Ahmadi *et al.* (2020) showed that nurse interns from one university expressed their dissatisfaction with the preparation they received during undergraduate training. They indicated that most of the attention was on theoretical content, which was associated to the large number of students per class. Thus, students had less time for practical sessions, leading to challenges in integration of theoretical content with clinical practice during their internship period.

2.5.6 Motivation

Preceptors can encourage effective student performance in the clinical area through a positive attitude and enhancing a conducive environment for learning (Pinehas *et al.,* 2017). Lack of acceptance and support, negative attitude and negative criticisms from preceptors and qualified nurses hinder the student nurses from learning and acquiring physical assessment skills (Egilsdottir *et al.,* 2019). Qualified nurses develop negative attitudes towards the student nurses due to previous negative experiences with specific groups of students, thus labeling them as irresponsible and sluggish. This attitude was also attributed to the feeling that the student nurses would be more qualified compared to some of the nurses at the end of their training. The student nurses were therefore not motivated to learn more skills (Malwela, 2016).

A study done by Najjar &Rawas(2018) showed that nurse interns were treated unfairly, felt ignored, unrecognized and embarrassed by qualified nurses in the clinical

environment. This contributed to development of suppressed anger as they lacked opportunities to express their feelings. It also had negative impact on the interns' self-esteem. According to Jamshidi *et al.*(2016), nurse interns who felt discriminated experienced disturbance in their learning, anxiety and a sense of inferiority, which ultimately discouraged them from learning. However, nurse interns who received consistent support and assistance from the hospital staff during their internship period portrayed a significant improvement of their physical assessment competencies at the end of the training (Al-Neami *et al.,* 2014).

2.6 Environmental Factors Influencing Physical Assessment Competence among Nurse Interns

The following environmental factors have been identified as significantly associated with nurse interns' achievement of physical assessment competence. These include observational learning, role modeling, supervision, type of health facility, staffing, ward culture, available resources and allowances.

2.6.1 Observational Learning

Individuals are able to learn and acquire new skills by observing others as they perform a particular activity (Bembenutty, 2013). It is an influential tool that can be used by preceptors to demonstrate what students need to know and how to perform skills successfully. The students are helped to gain new understanding of skills and can practice the actions observed from their role models (Horsburgh & Ippolito, 2018). Bandura (2012) supports observational learning as he indicates that knowledge and skills can be passed to many students by one person who models a certain skill. Thus, several nurse interns can learn how to perform physical assessment by observing experienced nurses and preceptors perform them on patients. According to Dinc (2014), the quality of preceptors and mentors in the clinical environment determines

the effectiveness of observational learning by nurse interns. Therefore, they should be prepared adequately in order to enable them demonstrate proper knowledge/skills and support nurse interns as they learn from them.

2.6.2 Role Modeling

Preceptors and experienced nurses are role models for nurse interns in the clinical environment as this enhances their identity in the nursing profession. The interns observe the attitude, skills and behaviour of qualified nurses, which is reflected in their own clinical practice (Hunter& Cook, 2018). The nurses prepare them to be confident in provision of nursing care to patients and support them during their transition period as they portray a positive attitude of the nursing profession (Alnajjar *et al.,* 2019).According to Hussien *et al.,* (2021), experienced nurses who acted as role models had a positive impact for nurse interns in the clinical environment as it improved their performance in patient management. It also contributed to their learning and enhanced their readiness to take up their professional role as nurses. However, a study done by (Alamri & Almazan, 2018) showed that some of the preceptors and qualified nurses teach a few skills on physical assessment because they may not have adequate skills, thus fail to be role models, limiting the student learning and their capacity in conducting a comprehensive health assessment.

2.6.3 Supervision

Supervision in clinical practice increases the nurse interns' knowledge, skills and attitudes as professional nurses. It helps them manage their anxiety and enhances patients' safety when performing procedures including physical examination (Rizany *et al.,* 2018). Aldeeb *et al.,* (2016) indicated that interns ought to be adequately prepared about their role transition and given proper orientation of the workplace at the beginning of internship. His study revealed that there was inadequate preparation

of nurse interns to promote proper adjustment to workplace, management of high number of patients and use of emerging technology. A study done in Botswana showed that inadequate supervision of student nurses and nurse interns in the clinical area leads to poor performance of clinical procedures (Rajeswaran, 2017). Qualified nurses viewed them as colleagues who were able to manage patients on their own. This had a negative impact on the students' confidence and competence levels since they still need constant supervision and guidance from experienced nurses as their role models (Malwela, 2016).

According to Alharbi & Alhosis (2019), there is inadequate follow up, supervision and support for nurse interns by faculty from their training institutions. The clinical preceptors are also not willing to teach and support them, leading to decreased level of confidence in provision of nursing care independently. A study done in Egypt by Safan *et al.* (2018) revealed that a high number of nurse interns lacked clear information on supervisor's roles, adequate orientation of the hospital environment, adequate support and guidance from their supervisor. The study showed that supervision was further compromised as the supervisors did not answer questions asked by the interns adequately, ignored stipulated patient selection criteria and were not consistent in following the scheduled programme of supervision.

Nurse interns were not satisfied with their preceptors' roles since they did not give them regular feedback concerning their strengths and weak areas that needed further improvements (Makhlof& El-Saman, 2017). A study done by Abd-Elmoghith& El-malah (2018) showed that most nurse interns were dissatisfied with supervision offered in the clinical environment. This was attributed to the less qualified or newly graduated nurse managers who were not competent enough to give them adequate supervision. Therefore, there is need for appointments of qualified, experienced and

competent nurse preceptors who would be consistent in improving nurse interns' clinical experience and ensure stipulated learning outcomes are achieved (Gustafsson *et al.,* 2015).

2.6.4 Type of Health Facility

Nursing interns require a health facility that is supportive with proper organizational structures, promotes innovation and makes them feel an important part of the nursing team. This promotes a sense of belonging and enhances learning during internship period (Papathanasiou *et al.,* 2014). A study done by Alharbi (2019) showed that some hospitals had no proper arrangements for training of nurse interns leading to poor communications between hospital administrators, qualified nurses and nurse interns. The study further showed that roles of nurse managers and clinical preceptors regarding supervision of nurse interns were not clearly stated, thus issues affecting them were not handled appropriately and they felt lost in the hospital environment. Nurse Managers are responsible for proper allocation of nurse interns' clinical placements in the hospital and making sure that their needs and issues while on clinical internship are handled appropriately (Bisholt *et al.,* 2014).

Some hospitals equip their nurse mentors with updated information and training materials to enable them teach the students and interns effectively. However, some of the institutions have inadequate resources for clinical preceptors, limiting them from effective teaching (Appiagyei, 2014). According to Safan *et al.* (2018), the general performance of nurse interns was satisfactory in private hospitals compared to public hospitals. This was attributed to adequate orientation of nursing interns to the clinical environment, proper communication skills, good leadership skills and adequate patient education in private hospitals. Jamshidi *et al*. (2016) advocates for proper hospital

orientation of nurse interns at the beginning of their internship so as to decrease the stress level and enhance their self-esteem.

2.6.5 Staffing Levels at the Health Facility

In order to enhance the quantity and quality of nursing practice, there is need to increase the number of nurses and clinical educators with expertise in nursing care (Bvumbwe & Mtshali, 2018). Nursing staff shortage in hospitals has a negative impact on nursing students and interns' learning. This is due to increased workload for the few nurses, thus less time remaining for adequate supervision and mentorship (Gemuhay *et al.,* 2019). Due to inadequacy of nursing staff, student nurses and interns would be left to provide nursing care to patients unsupervised, thus decreasing quality of nursing care and affects their skill acquisition (Bvumbwe & Mtshali, 2018).

A study by Alamri & Almazan (2018) showed that most student nurses and interns have inadequate time to use physical assessment skills due to increased number of patients. For those who get the opportunity to assess their patients, they are not able to perform a comprehensive physical assessment. The study further revealed that nursing responsibilities including documentation, filling of various checklists decrease the time available for physical assessment. According to Colligan (2012), there are many interruptions that occur as nurse interns perform physical assessment on their patients since there are few nurses available to carry out all the required activities in the ward. Interruption leads to delay in completion of physical assessment and therefore delay in identification of patients' diagnosis and management. It also decreases the nurse interns' concentration, critical thinking ability and provision of nursing care, thus may lead to diagnostic and management errors.

2.6.6 Ward Culture

The culture practiced in the wards has a significant impact on performance of physical assessment by nurse interns as they are deployed to work under the qualified nurses. In a study done by Alamri & Almazan (2018), nursing students reported that physical assessment in the ward is performed in a simplified way that does not allow comprehensive patient assessment, thus decreasing the quality of nursing diagnosis and management. They also reported that the ward culture does not empower nurses to do physical assessment since it is usually regarded as doctors' work. Nurse interns also follow the same culture as they are deployed to the ward, which decreases their ability and frequency of performing physical assessment on their patients. Douglas *et al.*(2016) recommends that student nurses should be trained adequately on physical assessment skills while undergoing their undergraduate training in order to have a foundation on the skills expected of them in the clinical environment. This would promote a positive ward culture that would enable students, interns and qualified nurses at different levels to perform comprehensive physical assessment on their patients.

2.6.7 Available Resources in the Clinical Environment

Majority of nurse interns reported that access to adequate resources in the clinical environment was an important source of empowerment which led to greater job satisfaction and skill acquisition (Abd-Elmoghith& El-malah, 2018).Comprehensive physical assessment cannot be carried out without availability and access to the right equipments in the facility (Bauer *et al.*, 2018). A study done by Gemuhay *et al.*(2019) showed that training hospitals have inadequate equipments, learning resources and furnished skill laboratories needed for clinical practice. This inhibits student nurses and interns from putting into practice the skills taught during their training, leading to

ineffective learning. According to Mwale & Kalawa (2016), lack of adequate resources in the clinical environment makes nurses to improvise what is available in order to continue providing care to patients. It prevents student nurses and interns from acquiring essential nursing skills since some of the ideal steps for procedures are missed out, leading to incompetence and a threat to patients' safety.

2.7 Regulatory Body Factors Influencing Physical Assessment Competence among Nurse Interns

The roles of regulatory bodies pertaining nursing internship include determination of programme duration, development of learning objectives, accreditation of internship centres, development of rules and standards, determination of evaluation system, dissemination of nursing code of conduct, registration and licensing of nurses after successful conclusion of internship period (Public Service Commission, 2019). The Nursing Council of Kenya regulates nursing practice in Kenya including internship programme. All nurse graduates are required to complete a clinical internship period of one year. They should also pass the NCK examination before they can be registered as practicing nurses in Kenya (Appiagyei, 2014).

2.7.1 Evaluation Criteria

At the end of each placement, the clinical nurse mentor evaluates the nurse intern by completing an appraisal form which should be handed over to the NCK by the designated persons in the internship centres. If the performance is unsatisfactory, the nurse intern may be required to repeat the specific placement to gain further clinical experience (NCK, 2019). In a study done by Roohi& Salehi (2016), self-evaluation was identified as a key method of evaluation of internship programme. Nurse interns are expected to take an active role in their own evaluation in order to determine their level of knowledge, skills, strengths, weaknesses and responsibilities. The study

further revealed that evaluation methods provided by the regulatory bodies lacked accuracy, equality and fairness as the scores awarded were not proportional to the performance for the individual nurse interns.

2.7.2 Allowances

The interns in government institutions are entitled to a monthly stipend for the entire internship period. This is aimed at enabling them to meet their basic needs since they offer essential services within the public health sector and provide significant contribution in health care (Ministry of Health, 2020). The Government of Kenya (GOK) started to employ BScN interns in 2009, beginning with 200 interns per year who were fully paid as other government employees. This aimed at increasing the population of BScN nurses that complete internship period successfully and are registered by NCK (Ministry of Health, 2012). A study done by Abd-Elmoghith & El-malah (2018) showed that salary payment during internship period was directly proportional to achievement of competencies by nurse interns. The study revealed that salary provided a good support system and empowered the nurse interns to provide quality nursing care, thus achieving positive patient outcomes.

2.8 Mentorship

During internship period, each intern is allocated a mentor who should ensure the programme is carried out as stipulated by the regulatory body. Mentors are qualified and experienced nurses who are able to impart knowledge and skills to nurse interns through observational learning. They work together with nurse interns to ensure specified competencies including physical assessment are achieved. They provide a supportive environment to facilitate adequate learning of nurse interns (PSC, 2019). Mentors are expected to coach, supervise and evaluate the clinical experience of nurse interns in each placement. They perform ongoing assessment and monitoring of nurse

interns and provide feedback regularly regarding their performance. A clinical log book is provided by the NCK to guide both the nurse intern and their mentors in order to ensure that stipulated objectives are achieved during internship period (NCK, 2019).

2.9 Summary of Literature Review and Identified Gap

Physical assessment is an essential competence which enables nurses to monitor patients' progress in order to make proper judgments on their management. Through internship programme, nurse interns are able to improve on this competence as they interact with and manage patients under the supervision of experienced nurse mentors. However, various studies done indifferent countries have shown that most nurse interns lack the knowledge and skills on how to perform physical assessment despite the fact that they are taught in undergraduate programme. The studies have shown that several factors influence achievement of physical assessment competence among nurse interns. These could arise from interns themselves or from their environment including health facilities or regulatory body. Therefore, it was necessary to carry out this study in order to investigate nurse interns' physical assessment competence and the specific factors that promote or prevent achievement of this competence.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Overview

This chapter describes the methodology that guided the conduct of this study and consists of the research design, study area, target population, inclusion and exclusion criteria, sample size calculation and sampling procedure, development, validity and reliability of research instruments. It also includes pre-test, data collection procedure, data management, data analysis and ethical considerations.

3.1 Research Design

This study used cross-sectional research design, which seeks to obtain data from research subjects at one point in time only using questionnaires or surveys (Schmidt& Brown, 2019). It used mixed methods of data collection, both quantitative and qualitative methods in order to obtain more information regarding factors influencing physical assessment competence of nurse interns.

3.2 Study Area

The study was conducted in selected referral and private hospitals located in Western region of Kenya, which covers the former Western, Nyanza and Rift-valley provinces. These hospitals fall between level 5 and 6 of health care delivery as follows: Level 5 comprises of Kericho, Nakuru, Kitale, Kakamega, Bungoma, Kisii county referral hospitals and Jaramogi Oginga Odinga Teaching and Referral Hospital. Level 6 facility comprises of Moi Teaching and Referral Hospital. They were selected since they are internship training facilities in the region in which nurse interns are deployed MOH in liaison with the NCK after the successful completion of BScN training. The hospitals are equipped with the necessary departments which nurse interns are expected to rotate including general nursing (medical, surgical and paediatric wards,

casualty/ out-patient department, theatre and critical care unit), community health nursing (prenatal and postnatal care, child care, family planning, curative services and comprehensive care clinic), obstetric nursing/midwifery (prenatal, gender and youth friendly services, labour ward, special care baby unit, puerperium, labour ward theatre and gynecology wards) and psychiatric/mental health ward.

3.3 Target Population

The target population comprised of nurse interns undertaking their internship programmes in health facilities in Western region of Kenya. The total number of nurse interns enrolled was146 (NCK, 2020).

3.4 Inclusion and Exclusion Criteria

3.4.1 Inclusion Criteria

- Nurse interns enrolled in the internship programme in level 5&6 hospitals in Western region of Kenya who consented to participate in the study.
- Nurse interns who had completed a period of six months of their internship.
- Nurse interns who had completed or were rotating in the adult medical-surgical unit.

3.4.2 Exclusion Criteria

- Nurse interns who did not consent to participate in the study.
- Nurse interns who met the inclusion criteria but were away during the period. of the study, for example, on sick leav

3.5 Sample Size Calculation

Sample size was calculated using Cochran's formula in order (Cochran, 1977):

$$n = Z^2PQ / e^2$$

Where n is the desired sample size; Z is the Z-score; P is the standard deviation; Q is 1-P; e is the margin error

Assuming the CI is 95%, P is 0.5 and the e is 0.05;

$n= (1.96^2 x 0.5 x 0.5)/ 0.05^2 = 384$

Since the population is less than 10,000, sample size was modified as follows;

$n= 384/ [1+ \{(384-1)/146\}] = 106$

The sample size was added by 10% as follows:

$n = 106 + \{10/100 \times 106\} = 106 + 10.6$ (approximately 11)

$n = 117$

3.6 Sampling Procedure

The study sample was selected by use of stratified random sampling method. This is because the nurse interns were already allocated in various hospitals in Western region of Kenya. Thus, each hospital represented a homogenous group (stratum), with nurse interns sharing the similar characteristics (Elfil & Negida, 2017). The sample size for the study was first determined, followed by the calculation of the sample size for each stratum based on the total number of interns enrolled, as shown in Table 3.1 below. Simple random sampling was then used to select the number of research participants within each stratum. This procedure involved random selection of research participants whereby each nurse intern had an equal chance to participate in the study. The list of all the interns in each stratum was obtained from the nursing officer in charge and each intern was assigned a number. Using the table of random numbers, a starting number was randomly selected followed by selection of the participants basing on the specific sample size in each stratum.

Table 3.1: Nurse Interns per Health Facility

Hospital	No. of Interns
Kericho County Referral hospitals	16
Nakuru County Referral hospitals	27
Kitale County Referral hospitals	13
Kakamega County Referral hospitals	14
Bungoma County Referral hospitals	13
Kisii Teaching and Referral hospitals	23
Jaramogi Oginga Odinga Teaching and Referral Hospital	19
Moi Teaching and Referral Hospital	21
TOTAL	**146**

3.7 Development of Research Instruments

The tools used in this research included a self-administered questionnaire, an observation checklist and a key informant interview. The self-administered questionnaire was used to obtain data from nurse interns. It was adopted and modified from Douglas *et al.,* (2014) to suit the current research settings to assess the knowledge and factors influencing the physical assessment competence of nurse interns. It aimed to obtain demographic information on nurse interns, knowledge on physical assessment and factors influencing their competence in physical assessment.

The questionnaire had three parts: The first part consisted of demographic information of nurse interns including the age, gender, marital status, year of completion of BScN programme, institution of BScN training, period of internship completed, current placement and duration of previous clinical experiences. The second part consisted of questions to assess knowledge about physical assessment which was scored using a 3-point scale; 1 = least knowledgeable, 2= moderate knowledge and 3= highly knowledgeable. The third part consisted of factors which influence physical assessment competence of nurse interns. This part used a four – point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree (see Appendix II).

The overall score was converted to a percentage and the level of knowledge was classified as not knowledgeable if the score was <90% and knowledgeable if the score was ≥90%. This was based on Competency Based Education model which sets the competence level needed to achieve proficiency and requires students to attain a mastery level of ≥90%. It minimizes inconsistencies and enables the nurse interns to demonstrate mastery of knowledge and skills in physical assessment. This differs with the traditional educational model which requires a pass mark of 70%, and may not provide an assurance that the nurse intern meets the expected knowledge and skills of the nursing profession (Lipsky *et al.*, 2019).

The observation checklist was used to assess the nurse interns as they performed physical assessment on their patients. It was adopted and modified from Giddens' (2007) study to assess nurse interns' competence in physical assessment. The aim was to assess core physical assessment skills that nurses use for early identification of any change in the health status of their patients. The checklist comprised two categories: vital signs and body systems (neurological, cardiovascular, respiratory, gastrointestinal, renal, skin, and musculoskeletal systems). The physical assessment skills performed were scored using a three – point scale: 0 = cannot perform technique, 1 = can perform the skill but needs to improve on it further, 2 = can perform the skill well (see Appendix III). The overall score was calculated for each nurse intern, which was then converted into a percentage. The performance level was categorized as poorly performed if the score was <90%andvery well performed if the score was ≥90%.

The key informant interview was administered to nurse managers and educators in various hospital departments who mentored and supervised nurse interns. It was adopted and modified from Kvale& Brinkmann's (2009) study to assess factors influencing performance physical assessment among nurse interns. The interview

focused on key areas that affect performance of physical assessment. These included self-confidence, observational learning and role modeling, motivation, supervision, type of heath facility, resources, staffing, ward culture and regulatory body (see Appendix V).

3.8 Validity of Research Instruments

The tools were given to a team of professionals in nursing education and research experts from Masinde Muliro University to ascertain the content and face validity. The experts' opinions for each item were documented as either relevant or not relevant. All the opinions given by the team of experts were considered and modifications were made as necessary.

3.9 Reliability of Research Instruments

The tools' reliability was verified through assessing the internal consistency by use of Cronbach's alpha coefficient method. A coefficient value of≥0.70 was considered as an acceptable measure of instrument reliability (Taber, 2018). This denotes a high degree of reliability for the research tools. The Cronbach's alpha coefficient for knowledge items, physical assessment skills items and factors influencing competence in physical assessment was 0.85, 0.78and 0.87 respectively, suggesting high reliability of the instrument.

3.10 Pre-Test

A pre-test was conducted to ascertain the validity of the instruments and whether the questions answered what they were intended to measure. It was done at Nyeri County Referral Hospital, which was a different internship centre, with nurse interns having similar characteristics with those at the study sites. This enabled the researcher to further refine the tools to enhance their reliability before carrying out data collection.

The tools used during the pretest were the self-administered questionnaires, observation checklists and key informant interviews. A default sample size of 30 nurse interns was used during the pre-test (Perneger *et al.,* 2015). The gaps were identified in section C as follows:

- Some of the questions were similar
- Some of the statements were long, thus leading to fatigue among the research participants

Basing on the above findings from the pretest, the questionnaires were adjusted as follows:

- The questions that were similar were merged together to form one relevant question
- The statements that were long were adjusted to form brief and clear statements.

3.11 Data Collection Procedure

Two research assistants were recruited among nurses working indifferent health facilities outside the hospitals used as study sites. The researcher then trained them on the research purpose and how it would be conducted. This included obtaining of informed consent from research participants, assessment of nurse interns as they perform physical assessment and interview of the key informants. They were also trained on how to ensure privacy of the participants during the study. Their main purpose was to collect data accurately using the questionnaires and following the instructions given by the researcher.

3.11.1 Quantitative Data Collection

The research assistants explained the aim of the research to the nurse interns who were identified using unique codes to ensure anonymity and confidentiality. They were also informed of their role in the research and the procedures involved. The consent form was issued to each one of them and they were expected to read carefully and thereafter sign the forms (see Appendix I). Self-administered questionnaires which contained three sections were then issued to them to fill. In section A, they were expected to complete their demographic data; in section B, they were expected to rate their knowledge on physical assessment using a 3 – point scale, with 3 = highly knowledgeable to 1 = least knowledgeable; in section C, they used Likert scale to fill the responses on factors influencing their physical assessment competence with a rating of 4 = Strongly Agree to 1= Strongly Disagree. After the completing all the questions, the questionnaire was returned back to the research assistants.

Research participants were then assessed on performance of physical assessment techniques using the observation checklist. The patients to be examined were identified by the research assistants in liaison with the nursing officer in charge of the respective units. The aim of the research and procedures involved were explained to the patients and thereafter, verbal consent was obtained from them. The nurse interns were assessed by the two research assistants as they performed the physical assessment and their performance was scored using a 3 – point scale, with 0 = cannot perform technique to 2 = can perform the skill well. Data collection was done on daily basis for the participants on day shifts while those on night duty participated in the morning hours before completion of their shift. It was conducted at the medical and surgical wards, thus nurse interns placed in other departments made arrangements to avail themselves in these wards for convenience and uniformity of the assessments. One

nurse intern from each clinical unit was engaged at a time to avoid interruption of patient care.

3.11.2 Qualitative Data Collection

Nurse Managers and clinical nurse educators were identified as key informants since they were directly involved in supervision, mentorship and evaluation of nurse interns in the specific departments. A total of 16 key informants were identified, 2 from each hospital. They were interviewed, one at a time, by research assistants using key informant interview guide. They were informed of the purpose of the research and procedures involved during the interview. They were assured of confidentiality of their responses and were expected to read and sign the consent form (see Appendix IV). The interview was done by two people; one was asking questions while the other one documented the responses, both in written and by use of audio recorder. The responses were written clearly and not summarized so that they would be understood well.

3.12 Data Management

The collected questionnaires were checked by the researcher and research assistants to verify their completeness and accuracy. For any error identified, the researcher checked all the questionnaires to identify the possible source of the problem. Data collected was recorded, organized and stored both in electronic and paper forms to ensure its security and back up.

3.13 Data Analysis

Data cleaning was done whereby questionnaires that were incomplete, inaccurate or irrelevant were eliminated. The data was assigned specific codes for identification. Data entry was done after cleaning and coding, and statistical analysis performed using computer software, statistical package for social sciences (SPSS), version 26.

Quantitative data was analyzed using appropriate descriptive and inferential statistical techniques. Descriptive statistics used included frequency distribution, mean, range and standard deviation while inferential statistics included logistic regression and Adjusted Odds Ratio (AOR). During analysis, overall knowledge level was calculated by summing up all the items under vital signs, preparation for physical assessment and techniques of physical assessment – with a total of 25 items and overall maximum score of 75. These were then converted into percentage scores with a score of ≥ 90% indicating 'knowledgeable'.

Likert scale with a rating of 4 = Strongly Agree to 1= Strongly Disagree was used for the responses on factors influencing physical assessment competence of nurse interns. All the negative statements were recoded to positive statements so that higher scores indicated higher rating.

For purposes of inferential statistics analysis, the scores under each sub-domain were summed up giving a total of 34 items. The scores were summed up and converted to percentage points with higher scores suggesting higher level of respondent's agreement with the statement.

For inferential statistics, bivariate logistic regression was applied for personal factors influencing nurse intern competence in conducting physical assessment. Multiple logistic regression was applied for environmental and regulatory body factors as there were more than one sub-scale in the equation and the outcome being categorical (≥ 90% for competence and < 90% for lack of competence). The fitting of the model was tested using F value with a p value of ≤ 0.05 indicating statistical significance of the model.

All the independent variables that were statistically significantly associated with the outcome were included in multiple logistic regression as the independent variables included both interval and categorical predictors. AOR was used to test the strength of association between independent and dependent variables controlling for confounders. A $p \leq 0.05$ was used to reject the null hypothesis of no relationship.

Qualitative data collected using key informant interview schedules were analyzed thematically guided by the key variables in the objectives. Key informant interview data was checked and each informant's responses were categorized per the specific themes. This helped to determine the recurring responses for a particular theme. A summary was prepared to include key informant's position, main points made and any insights from the interview. The data from both quantitative and qualitative methods were triangulated to enhance validity and credibility of the study findings.

3.14 Ethical Considerations

Approval was sought from Masinde Muliro University School of graduate studies while ethical clearance was sought from the Masinde Muliro University Research Ethics Committee (see Appendices VI & VII). Research permit to conduct the study was sought from National Commission for Science, Technology and Innovation (NACOSTI) (see Appendix VIII). Written permission was sought from health facilities that were used to carry out the research (see Appendix IX - XVI). In order to protect the dignity and integrity of research participants, the researcher applied key ethical principles including confidentiality, informed consent, justice, beneficence and respect for human dignity.

3.14.1 Confidentiality

Research participants were assured of confidentiality of their responses. The researcher ensured that information obtained from the participants was protected from access and dissemination to unauthorized people (CCCU, 2014). Confidentiality was enhanced through use of unique anonymous codes on each questionnaire to identify the participants instead of their real names. The patients who were examined were assured of confidentiality of their results.

3.14.2 Informed Consent

Research participants were given information about the purpose, procedures involved, potential benefits and risks of the study. The researcher then obtained a written informed consent from the participants after ensuring that they understood the given information and accepted willingly to participate in the study. The patients involved in the examination were informed of the purpose of the assessment and a verbal consent was obtained from them.

3.14.3 Justice

Justice implies that all participants are treated with fairness and equity during the research. The researcher ensured fairness by recruiting research participants without any form of discrimination through use of simple random sampling. During the study, research participants were given equal opportunities in the distribution of benefits and risks involved.

3.14.4 Beneficence

Beneficence is a research principal that ensures maximum benefits are produced through the research. The researcher ensured that the aim for the research was of benefit to nurse interns, patients, health care workers, hospitals, training institutions

and the entire society. The research participants were informed about this benefit at the beginning of the research.

3.14.5 Respect for Human Dignity

Respect for human dignity is considered during research in order to protect the integrity of those individuals involved (CCCU, 2014). Participants were recognized as people with the ability and the right to make independent decisions. They were provided with all the necessary information in order make informed decisions. The nurse interns and patients were informed that their participation was voluntary, without any form of coercion as well as the freedom to withdraw from the study at any given time.

CHAPTER FOUR

RESULTS

4.0 Overview

This chapter presents the findings of this study. It consists of the response rate, socio-demographic characteristics of study participants, knowledge on physical assessment, physical assessment skills of nurse intern, competence of nurse interns in physical assessment and factors influencing competence in conducting physical assessment.

4.1 Response Rate

Self-administered questionnaires were given to a total of 117 nurse interns as per the sample size of the study. All the nurse interns responded to questionnaires, with a response rate of 100%.

4.2 Socio-Demographic Characteristics of Study Participants

As shown in Table 4.1, most of the respondents were in the age group of 25 – 29 (57.3%, n=67) with the overall mean age of 25.1 ± 1.5 and age range of 22.0 – 30.0 years. More than half (53.8%, n=63) were males, majority being single (80.3%, n= 94).Most of the respondents (51.3%, n= 60) completed training in 2020; with a higher proportion (57.3%, n= 67) having been trained in public universities compared to 42.7% (n= 50) who trained in private or FBO higher learning institutions. Less than two-thirds (61.5%, n= 72) had spent between 6 – 8 months during internship with top three placement areas being casualty/OPD (17.9%, n= 21), medical (17.1%, n= 20) and Obstetrics/Gynaecology (14.5%, n= 17) departments. Over three-quarters (78.6%, n= 92) had less than 7 months clinical experience prior to internship.

Table 4.1: Socio-Demographic Characteristics of Study Participants

Characteristics	Categories	Number of respondents	Percentage (%)
Age group in years	20 – 24	49	41.9
	25 – 29	67	57.3
	≥ 30	1	0.8
Gender	Male	63	53.8
	Female	54	46.2
Marital status	Single	94	80.3
	Married	23	19.7
Year of completion	2016 – 2018	4	3.4
	2019	15	12.8
	2020	60	51.3
	2021	38	32.5
Type of university	Public	67	57.3
	Private/FBO	50	42.7
Period of internship in months	6 – 8	72	61.5
	9 – 12	45	38.5
Current placement	Medical	20	17.1
	Paediatrics	15	12.8
	Theatre	10	8.6
	Obstetrics/Gynecology	17	14.5
	Surgical	12	10.3
	Casualty/OPD	21	17.9
	Critical care	6	5.1
	Community Health Nursing	16	13.7
Duration of previous clinical experience in months	≤6	92	78.6
	7 – 8	2	1.7
	≥9	23	19.7

4.3 Knowledge on Physical Assessment

The study findings on nurse intern knowledge on physical assessment are presented in Table 4.2. Knowledge level was rated between 2 and 1 with higher rating suggesting 'knowledgeable' and 1 being 'not knowledgeable'. Under vital signs measurement, more than 90% (n=105) of the respondents rated themselves as knowledgeable with respect to taking temperature, respiratory rate, pulse rate and blood pressure. The same was true for oxygen saturation (91.4%, n=107). A relatively smaller proportion (70.9%, n=83) reported having knowledge on pain assessment.

Table 4.2: Knowledge on Physical Assessment

Categories	Knowledgeable	Not knowledgeable
	n (%)	n (%)
Vital Signs Measurement		
Temperature	115 (98.2)	2 (1.8)
Respiratory Rate	111 (94.9)	6 (5.1)
Pulse Rate	112 (95.7)	5 (4.3)
Blood Pressure	113 (96.6)	4 (3.5)
Oxygen Saturation	107 (91.4)	10 (8.6)
Pain Assessment	83 (70.9)	34 (29.1)
Preparation for Physical Assessment		
Aims of Physical Assessment	84 (71.8)	33 (28.2)
Self-preparation	109 (93.2)	8 (6.8)
Patient preparation	105 (89.7)	12 (10.3)
Equipment needed to perform physical examination	99 (84.6)	18 (15.4)
Procedure of performing comprehensive physical assessment	75 (64.1)	42 (35.9)
Techniques of physical assessment		
Inspection	105 (89.7)	12 (10.3)
Palpation	103 (88.0)	14 (12.0)
Auscultation	68 (58.1)	49 (41.9)
Percussion	59 (50.4)	58 (49.6)
Assessment of body systems		
Assessment of level of consciousness using Glasgow Coma Scale	68 (58.1)	49 (41.9)
Types of normal breathing sounds	57 (48.7)	60 (51.3)
Types and causes of abnormal breathing sounds	45 (38.5)	72 (61.6)
Types of heart sounds heard during auscultation	59 (50.4)	58 (49.6)
Sequence of physical assessment followed during abdominal assessment	92 (78.6)	25 (21.4)
Elements to be included during nutritional assessment	69 (58.9)	48 (41.1)
Elements to be included during assessment of genito-urinary system	47 (40.2)	60 (59.9)
Elements to look for during skin examination	92 (78.6)	25 (21.4)
What to look for during inspection of musculoskeletal system	66 (56.4)	51 (43.6)

Further reports on knowledge on preparation for physical assessment indicated higher rating in knowledge on self-preparation (93.2%, n=109) and patient preparation (89.7%, n=105) but lower proportion of respondents rating themselves in the same category for knowledge on procedure of performing comprehensive physical assessment (64.1%, n= 75). Top four areas that were rated as 'knowledgeable' included inspection (89.7%, n= 105), palpation (88.0%, n= 103), sequence of physical assessment followed during abdominal assessment (78.6%, n= 92) and elements to look for during skin examination (78.6%, n= 92). More than half rated themselves as 'not knowledgeable' on physical assessment types and causes of abnormal breathing sounds (61.6%, n= 72) and elements to be included during assessment of genito-urinary system (59.9%, n= 60).

To determine the overall knowledge level of nurse interns, scores on each item on the sub-domain areas were added up then the totals converted to percentage score. Overall knowledge score of 90% and above was considered as knowledgeable while score of less than 90% were not knowledgeable. The study showed that 62% (n=72) of the interns were knowledgeable compared to 38% (n = 45) who were not knowledgeable in vital signs measurement, preparation for physical examination, techniques of physical assessment and assessment of body systems as shown in Figure 4.1.

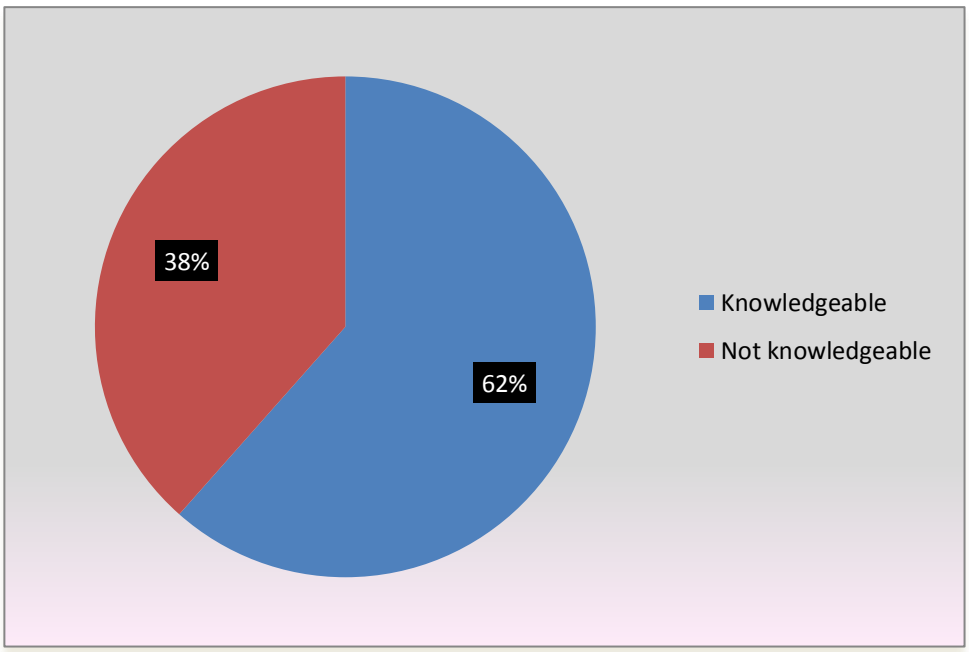

Figure 4.1: Overall knowledge level

4.4 Physical Assessment Skills of Nurse Interns

The nurse interns were observed while conducting physical assessment and the findings are as shown in Table 4.4 below. More than three quarters measured body temperature (99.1%, n= 116), pulse rate, assessed rhythm and respiratory rate (96.5%, n= 113), blood pressure (98.3%, n= 115) and oxygen saturation (87.1%, n= 102) very well. However, pain assessment was poorly performed (59.8%, n= 70). Four areas with the highest proportion of respondent and in which they performed very well were assessing airway patency (91.4%, n= 107), inspection of the abdomen (94.9%, n= 111), measuring body weight (94.0%, n= 110) and inspection of skin integrity (90.6%, n=106). A relatively smaller proportion assessed the shape of the chest (35.0%, n= 41), percussed the thorax (34.2%, n= 40) or palpated the bladder and kidneys (37.6%, n= 44).

Table 4.3: Physical Assessment Skills of Nurse Interns

Categories	Rating of skill performance		
	Very Well	Needs to Improve	Cannot Perform
	n (%)	n (%)	n (%)
Assessment of general appearance	91 (77.8)	19 (16.2)	7 (6.0)
Vital signs			
Body temperature	116 (99.1)	0 (0.0)	1 (0.9)
Pulse rate and rhythm	113 (96.5)	3 (2.6)	1 (0.9)
Respiratory rate	113 (96.5)	3 (2.6)	1 (0.9)
Blood pressure	115 (98.3)	2 (1.7)	0 (0.0)
Oxygen saturation	102 (87.1)	14 (11.0)	1 (0.9)
Pain assessment	70 (59.8)	44 (37.6)	3 (2.6)
Neurological system			
Assesses the level of consciousness	80 (68.4)	35 (29.9)	2 (1.7)
Evaluates speech	85 (72.6)	32 (27.4)	0 (0.0)
Checks pupillary reaction to light	71 (60.7)	43 (36.7)	3 (2.6)
Assesses muscle strength	53 (45.3)	55 (47.0)	9 (7.7)
Cardiovascular system			
Inspects and observes skin	101 (86.3)	13 (11.1)	3 (2.6)
Assesses the skin turgor	96 (82.0)	18 (15.4)	3 (2.6)
Assesses capillary refill	105 (89.7)	10 (8.6)	2 (1.7)
Assesses the shape of the chest	41 (35.0)	70 (59.8)	6 (5.1)
Palpates the neck lymph nodes	70 (59.8)	42 (35.9)	5 (4.3)
Palpates extremities	90 (76.9)	25 (21.4)	2 (1.7)
Palpates calves for tenderness	57 (49.1)	46 (39.7)	13 (11.2)
Auscultates the heart sounds and apical pulses	58 (49.6)	56 (47.9)	3 (2.6)
Respiratory system			
Assesses airway patency	107 (91.4)	8 (6.8)	2 (1.7)
Assesses the ability to cough	85 (72.6)	30 (25.6)	2 (1.7)
Assesses the breathing pattern	98 (83.8)	19 (16.2)	0 (0.0)
Percusses the thorax	40 (34.2)	71 (60.7)	6 (5.1)
Auscultates the lungs for breathing sounds	50(42.7)	65 (55.6)	2 (1.7)
Gastrointestinal system			
Inspects the abdomen	111 (94.9)	6 (5.1)	0 (0.0)
Auscultates for bowel sounds	83 (70.9)	33 (28.2)	1 (0.9)
Palpates the abdomen	82 (70.1)	34 (29.1)	1 (0.9)
Percusses the abdomen	60 (51.3)	53 (45.3)	4 (3.4)
Nutritional assessment			
Inspects oral cavity	95 (81.2)	19 (16.2)	3 (2.6)
Assesses the ability to swallow	89 (76.1)	26 (22.2)	2 (1.7)
Measures body weight	110 (94.0)	6 (5.1)	1 (0.9)
Calculates the Body Mass Index (BMI)	73 (62.4)	39 (33.3)	5 (4.3)
Renal system			
Assesses urine output: amount and colour	104 (88.9)	13 (11.1)	0 (0.0)
Palpates the bladder and kidneys	44 (37.6)	65 (55.6)	8 (6.8)
Skin			
Inspects integrity of the skin	106 (90.6)	10 (8.6)	1 (0.9)
Inspects and palpates skin for pressure injury	96 (82.1)	19 (16.2)	2 (1.7)
Inspects for any lumps, etc	91 (77.8)	22 (18.8)	4 (3.4)
Musculoskeletal system			
Observes the ability for mobility	101 (86.3)	13 (11.1)	3 (2.6)
Observes gait	82 (70.1)	25 (21.4)	10 (8.6)
Inspects the range of motion for joints	81 (69.2)	30 (25.6)	6 (5.1)

To evaluate the overall performance of nurse interns in physical assessment, scores on each item performed on the physical assessment sub-domains were added up and the totals converted to percentage score. Overall performance score of 90% and above was considered as very well performed while score of less than 90% was poorly performed. The study showed that 35% (n=41) of nurse interns performed very well compared to 65% (n=76) who performed poorly in physical assessment as shown in Figure 4.2.

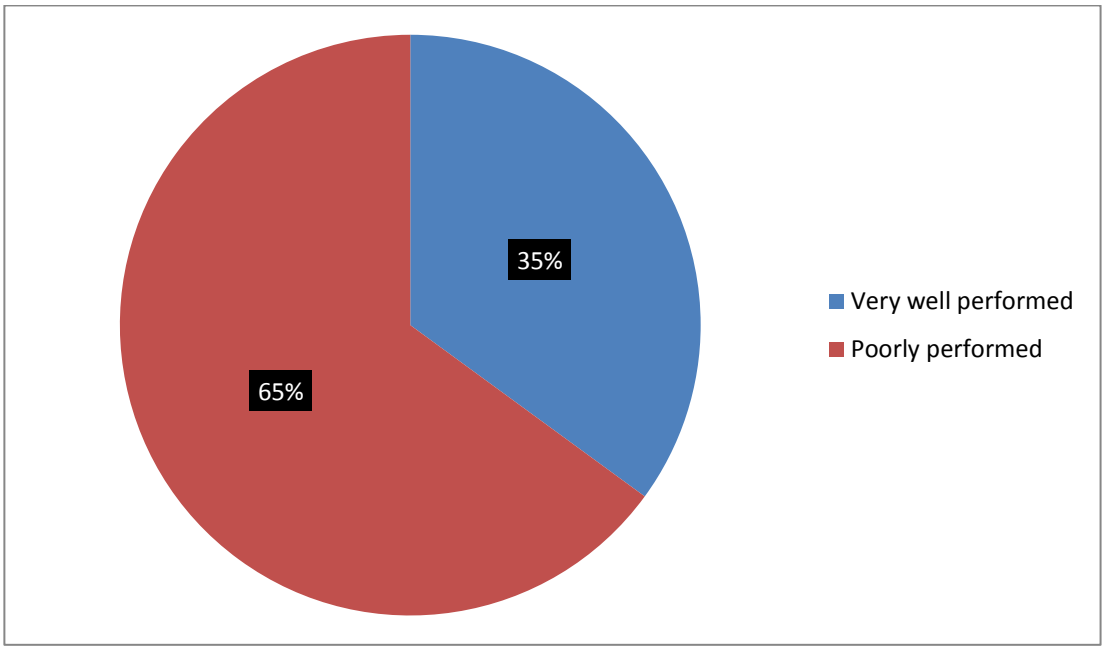

Figure 4.2: Overall Performance in Physical Assessment

4.5 Competence of Nurse Interns in Physical Assessment

The overall competence of nurse interns was determined by obtaining the percentage of respondents with a score of 90% and above in both knowledge assessment and performance of physical examination skills. Based on this assessment, 35% (n=41) of the respondents were competent as they scored 90% and above in both knowledge and physical assessment skills while 65% (n=76) were not competent in physical assessment as shown in Figure 4.3.

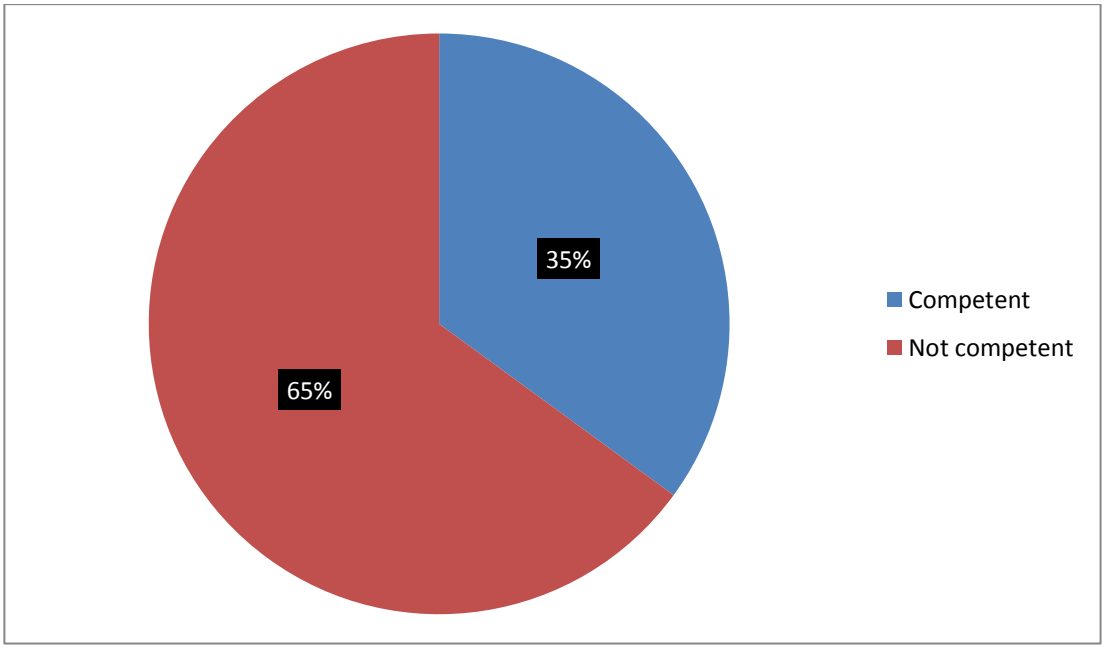

Figure 4.3: Nurse Intern Competence in Physical Assessment

4.6 Factors Influencing Nurse Interns Competence in Conducting Physical Assessment

4.6.1 Nurse Intern Personal Factors Influencing Competence in Conducting Physical Assessment

Bivariate logistic regression results shown in Table 4.5 indicate the personal factors influencing nurse intern competence in conducting physical assessment. Five independent variables that were statistically associated with higher competence scores (≥ 90%) were year of completion of between 2016 – 2019 (OR: 3.1; 95% CI [1.1, 8.5]; p = 0.02), having been in internship for a longer period of between 9 – 12 months (OR: 0.2; 95% CI [0.1, 0.5]; p = 0.0002), having had more than 7 months previous clinical experience prior to internship (OR: 0.4; 95% CI: [0.2, 1.0]; p = 0.05), confidence in physical assessment accurately (OR: 4.5; 95% CI [1.9, 10.5]; p = 0.003) and motivation to learn more and perform physical assessment (OR: 0.4; 95% CI [0.2, 1.0]; p = 0.042).

Table 4.4: Personal Factors Influencing Nurse Intern Competence in Physical Assessment

Independent variables	Categories	N	Competence score		OR	95% CI	P value
			< 90	**≥ 90**			
Age group in years	20 – 24	49	67.4	32.6	0.8	0.4 – 1.8	0.64
	≥ 25	68	63.2	36.8			
Gender	Male	54	63.0	37.0	1.2	0.5 – 2.5	0.67
	Female	63	66.7	33.3			
Marital status	Single	94	68.1	31.9	0.5	0.2 – 1.3	0.15
	Married	23	52.2	47.8			
Year of completion	2016 – 2019	19	42.1	57.9	3.1	1.1 – 8.5	**0.02**
	2020 – 2021	98	69.4	30.6			
Type of University	Public	67	62.7	37.3	1.3	0.6 – 2.7	0.55
	Private / FBO	50	68.0	32.0			
Period of Internship in months	6 – 8	72	77.8	22.2	0.2	0.1 – 0.5	**0.0002**
	9 – 12	45	44.4	55.6			
Current placement	Medical, Paediatric, Surgical	47	68.1	31.9	0.8	0.4 – 1.7	0.56
	Others	70	62.9	37.1			
Duration of previous clinical experience prior to internship	≤ 6	94	69.2	30.8	0.4	0.2 – 1.0	**0.05**
	> 7	23	47.8	52.0			
Self-confidence							
Confident in performing physical assessment accurately	Agree	62	50.0	50.0	4.5	1.9 – 10.5	**0.0003**
	Disagree	55	81.8	18.2			
Not anxious about my ability to use physical assessment skills correctly	Agree	33	51.5	48.5	2.2	1.0 – 5.1	0.056
	Disagree	84	70.2	29.8			
Confidence to decide which physical assessment skills to use	Agree	67	61.2	38.8	1.5	0.7 – 3.2	0.325
	Disagree	50	70.0	30.0			
Motivation							
Adequate encouragement and support from my supervisors	Agree	59	62.7	37.3	1.2	0.6 – 2.6	0.608
	Disagree	58	67.2	32.8			
Not motivated to learn more and perform physical assessment	Agree	43	76.7	23.3	0.4	0.2 – 1.0	**0.042**
	Disagree	74	58.1	41.9			

Those who completed between 2016 and 2019 were thrice more likely to have higher scores than those who completed between 2020 and 2021. On the other hand, those who had spent a shorter time (6 – 8 months) were 80% less likely to have posted better performance compared to those who had spent 9 – 12 months. Again, those who had had prior clinical experience for a shorter time of upto 6 months were 60% less likely to have posted higher competence score.

Those respondents (53%, n= 62) who agreed that they had confidence in performing physical assessment accurately were four times more likely to have higher competence scores than those who disagreed. This is in agreement with the evidence obtained from KII # 4 who commented:

‘‘*The confidence of nurse interns in performing physical assessment is good; this is contributed by the various respective areas they have rotated to. As students, the clinical rotations while in school are very key before they qualify to be interns. When they are in the clinical area, they are well mentored.’’ (*KII # 4)

In order to improve the nurse interns’ confidence in performing physical assessment, KII # 14 explained:

‘‘The training institutions should enhance the practical sessions; let the students be involved in many practical sessions to gain confidence before internship. Training institutions should have adequate clinical instruction of students in order to improve the confidence of nurses as they graduate. This makes them to have courage and confidence.’’ (KII # 14)

On the other hand, those respondents (37%, n= 43) who agreed that they did not feel motivated to learn more and perform physical assessment in their wards were 60% less likely to post better performance compared to those who disagreed. This showed

that 63% (n=74) of nurse interns were motivated in physical assessment. This was in agreement with the comments from KII# 2:

*''A higher percentage of the nurse interns are motivated to do physical assessment due to the interest they have in the profession and the need to complete their rotation in order to meet employment requirements.'' (*KII # 2)

KII# 6 also agreed that nurse interns were motivated in performing physical assessment:

*''Nurse Interns are motivated in performing physical assessment. This is contributed by more guidance from the qualified staff and also through the training they obtain in practical areas.'' (*KII # 6)

4.6.2 Environmental Factors Influencing Competence in Conducting Physical Assessment

Seven sub-domains that were examined on environmental factors influencing competence in conducting physical assessment were observational learning, role modeling, supervision, physical assessment practice in hospital, staffing, ward culture and availability of resources (Table 4.6). Slightly more than half (50.4%, n=59) strongly agreed that there was supervision since their findings were used in development of nursing care plan. This was in agreement with KII #6 who commented: *''There is adequate supervision of nurse interns. Through supervision, the nurse interns are able to gain more experience on physical assessment.'' (*KII #6).

Table 4.5: Environmental Factors Influencing Competence in Conducting Physical Assessment

Categories	Strongly Agree	Agree	Disagree	Strongly Disagree
	n (%)	n (%)	n (%)	n (%)
Observational learning				
Qualified nurses are well experienced in performing physical assessment	58 (49.6)	40 (34.2)	12 (10.3)	7 (6.0)
I learnt how to perform physical assessment by observing experienced nurses perform it	46 (39.3)	55 (47.0)	12 (10.3)	4 (3.4)
Role modeling				
Experienced nurses in the ward model physical assessment skills	43 (36.7)	51 (43.6)	19 (16.2)	4 (3.4)
There are adequate experienced nurses to model physical assessment skills in the clinical environment	25 (21.4)	46 (39.3)	32 (27.3)	14 (12.0)
Use of physical assessment skills is well promoted by nurse leaders	49 (41.9)	42 (35.9)	21 (18.0)	5 (4.3)
Supervision				
I got adequate orientation	72 (61.5)	26 (22.2)	12 (10.3)	7 (6.0)
I feel supported by my supervisors	50 (42.7)	53 (45.3)	11 (9.4)	3 (2.6)
Physical assessment I perform is valued by my supervisors	46 (39.3)	47 (40.2)	10 (8.6)	14 (12.0)
My physical assessment findings are used in development of nursing care plan	59 (50.4)	44 (37.6)	7 (6.0)	7 (6.0)
The role regarding supervision of nurse interns is clearly stated	46 (39.3)	48 (41.0)	19 (16.2)	4 (3.4)
Physical assessment practice in the hospital				
Physical assessment the responsibility of nurses, doctors and clinical officers	58 (49.6)	37 (31.6)	9 (7.7)	13 (11.1)
There is continuous CME on physical assessment in our hospital	32 (27.3)	57 (48.7)	17 (14.5)	11 (9.4)
The hospital promotes proper communication and leadership skills	56 (47.9)	51 (43.6)	8 (6.8)	2 (1.7)
Staffing				
There is nursing staff shortage in the hospital	70 (59.8)	30 (25.6)	14 (12.0)	3 (2.6)
I do perform physical assessment despite lack of adequate time and increased workload	16 (13.7)	31 (26.5)	44 (37.6)	26 (22.2)
I do not get many interruptions during my work	10 (8.6)	35 (29.9)	42 (35.9)	30 (25.6)
I do get supervision and mentorship	15 (12.8)	49 (41.9)	42 (35.9)	11 (9.4)
Ward culture				
The ward culture is not a hindrance	30 (25.6)	50 (42.7)	24 (20.5)	13 (11.1)
The culture in my ward encourages nurse interns to perform physical assessment	42 (35.9)	45 (38.5)	18 (15.4)	12 (10.3)
Assessment is done in a detailed way	16 (13.7)	34 (29.1)	48 (41.0)	19 (16.2)
Availability of resources/ equipment in the ward				
There is adequate necessary equipment	15 (12.8)	39 (33.3)	38 (32.5)	25 (21.4)
I use physical assessment skills even if when I cannot access the necessary equipment.	11 (9.4)	32 (27.3)	45 (38.5)	29 (24.8)
Resources are readily available	21 (18.0)	54 (46.1)	25 (21.4)	17 (14.5)

The other environmental factors that respondents strongly agreed that contribute to competence in conducting physical assessment was having adequate orientation (61.5%, n= 72). Orientation was supported by KII # 1 who commented that:

''The hospital provides adequate orientation for nurse interns at the beginning of internship programme; through this, they are able to know their working space, thus perform physical assessment with ease, increasing their competence.''(KII#1)

Lowest proportions with respect to strongly agreed response were reported under role modeling sub-domain where only 21.4% (n=25) and 36.7% (n= 43) stated that there are adequate experienced nurses to model physical assessment skills in the clinical environment and experienced nurses in the ward model physical assessment skills, respectively. The KII however reported that there was adequate role modeling as commented by KII#11:

*''A good percentage of qualified staff is experienced in performing physical assessment. Since they work hand in hand with the interns in the ward, they are able to mentor them; the interns are able to observe them as they are performing, therefore taking them as role models and they ask questions where they are not comfortable.'' (*KII#11)

Staffing shortage was sighted to be a major factor affecting performance of physical assessment in most facilities. 59.8% (n= 70) of nurse interns reported that there is nursing staff shortage. This was supported by KII # 10 who commented that:

*''Nursing staff shortage leads to heavy workload, thus there is less supervision of nurse interns. Physical assessment is not prioritized due to workload.'' (*KII#10)

According to KII #8, competence of interns is compromised due to staff shortage: *"Supervision is inadequate due to shortage of staff, thus decreases the competence of interns.'' (*KII#8)

Least contributing factors included not getting many interruptions during my work (8.6%, n= 10) and using physical assessment skills even when I cannot access the necessary equipment (9.4%, n= 11) as reported by those who strongly agreed with the statements. A small number of nurse interns strongly agreed that there is adequate necessary equipment (12.8%, n= 15) and that resources are readily available (18%, n=21). Most of the KII also agreed that there is inadequate equipment necessary for performance of physical assessment as commented by KII # 7:

*''Lack of adequate equipments leads to inability to carry out full examination for the patients e.g. lack of stethoscope to perform auscultation in patients with respiratory condition'' (*KII#7)

This leads to inadequate assessment of patients as commented by KII#9:

''Patients are not observed on time, thus decreases quality of assessment. Some patients may not be assessed at all and thus demoralizes the interns.''(KII#9)

4.6.3 Relationship between Environmental Factors and Nurse Intern Competence in Physical Assessment

The study findings on the relationship between environmental factors and nurse intern competence in physical assessment are shown in Table 4.7. The predictors for environmental factors were examined by performing multiple regression. Seven possible predictors for environmental factors were examined and the results show that the overall model was not statistically significant ($F = 0.89$, $p = 0.519$).

Table 4.6: Multiple Regression on Relationship between Environmental Factors and Nurse Intern Competence in Physical Assessment

Predictor variable	Parameter Estimate	t value	95%CI	P value
Observational learning	0.06266	1.24	-0.04 – 0.16	0.218
Role modeling	-0.03281	-0.54	-0.15 – 0.09	0.591
Supervision	0.03734	0.54	-0.10 – 0.17	0.593
Physical assessment practice in hospital	-0.11865	-1.69	-0.26 – 0.02	0.094
Staffing	0.06607	0.88	-0.08 – 0.21	0.381
Ward culture	0.02198	0.42	-0.08 – 0.12	0.672
Availability of resources in the ward	-0.00892	-0.17	-0.11 – 0.10	0.867

F Value = 0.89; p = 0.519

4.6.4 Regulatory Body Factors Influencing Competence in Conducting Physical Assessment

The findings on regulatory body factors influencing competence in conducting physical assessment are presented in table 4.8. On top of the list among respondents who strongly agreed were duration of internship being adequate to enable nurse intern to achieve physical assessment competence (59.8%, n= 70) and the monthly salary received during internship increases job satisfaction and motivation to work (56.4%, n= 66) both being under regulatory factors. Under mentorship policy factors sub-domain, the leading statement that attracted highest proportion among those who strongly agreed was having been attached to a nurse mentor in each clinical rotation (42.7%, n= 50).This was reflected in the comment given by KII #4:

*''When you have the intern in this department, you will not allocate him alone; you have to attach him to a competent, qualified person so that they will work hand in hand so that as they continue, the intern gets the confidence and the skills he ought to carry out. '' (*KII#4)

Table 4.7: Regulatory Body Factors Influencing Competence in Conducting Physical Assessment

Categories	Strongly Agree	Agree	Disagree	Strongly Disagree
	n (%)	n (%)	n (%)	n (%)
Regulatory Body Factors				
Evaluation method used at the end of internship placements promotes accuracy, equality and fairness	52 (44.4)	47 (40.2)	11 (9.4)	7 (6.0)
The monthly salary I receive during internship increases my job satisfaction and motivation to work	66 (56.4)	39 (33.3)	8 (6.8)	4 (3.4)
The duration of internship is adequate to enable me achieve physical assessment competence	70 (59.8)	36 (30.8)	6 (5.1)	5 (4.3)
Mentorship policy				
I was attached to a nurse mentor in each clinical rotation	50 (42.7)	43 (36.8)	13 (11.1)	11 (9.4)
My nurse mentor provided a supportive clinical environment to facilitate learning and achievement of physical assessment competence	42 (35.9)	56 (47.9)	12 (10.3)	7 (6.0)
My mentor provided adequate coaching, supervision and evaluation during the internship period	41 (35.0)	52 (44.4)	21 (18.0)	3 (2.6)

4.6.5 Relationship between Regulatory Factors and Nurse Intern Competence in Physical Assessment

The findings on the relationship between regulatory body factors and nurse intern competence in physical assessment are presented in table 4.9. Two predictors for regulatory body factors were examined by performing multiple regression and the results show that the overall model was statistically significant ($F = 4.76$, $p = 0.0104$). The effect of regulatory body was significant with a positive coefficient ($b = 0.163$, $p = 0.003$) indicating that higher rating on regulatory body is related to higher scores in competence in conducting physical assessment.

Table 4.8: Multiple Regression on Relationship between Regulatory Factors and Nurse Intern Competence in Physical Assessment

Predictor variable	Parameter Estimate	t value	95%CI	P value
Regulatory body	0.16272	2.99	0.05 - 0.27	**0.003**
Mentorship policy	0.00668	0.18	-0.07 - 0.08	0.858

F Value = 4.76; p = 0.0104

CHAPTER FIVE

DISCUSSION

5.0 Overview

This chapter consists of discussions of the findings from the study, which were compared with those from other research studies. It includes discussion on socio-demographic characteristics, nurse intern knowledge on physical assessment, physical assessment skills and competence of nurse interns in physical assessment. It also includes a discussion on factors influencing nurse intern competence in conducting physical assessment.

5.1 Socio-Demographic Characteristics of Study Participants

The study findings show that most of the respondents were aged between 25 and 29 years. This could be attributed to the duration of undergraduate training which takes a minimum of 4 years after completion of secondary education. From the findings, age was not statistically significant to competence in physical assessment. This is in agreement with a study done by Douglas *et al.* (2015) which showed that utilization of physical assessment skills was not related to age. However, Alkorashy& Assi (2017) disagrees with the findings as he indicated in his study that self-motivation to attain new competencies increases as age increases.

The study also shows that more than half of the respondents were males. From the findings, gender was not statistically significant in determining the physical assessment competence scores. This is consistent with the findings of Alamri & Almazan (2018), which showed that difference in gender has no effect on skills in physical assessment both in the classroom and clinical area. Contrary to these findings, female nurses had a higher performance in physical assessment skills compared to their male counterparts (Borji *et al.*, 2018). In another study by Aboshaiqah *et al.*

(2018), female nurse interns portrayed a higher level of confidence in meeting clinical objectives including physical assessment as compared to the male nurse interns. The current study finding also disagree with that of Rizany *et al.* (2018), who indicated that male nurse graduates portrayed a higher physical assessment competence level compared to their female counterparts. Male nurses provided better quality care compared to the female nurses who performed well in provision of quantity health care.

Majority of the interns in this study were single, which is anticipated considering the age range of the study participants. From the study findings, marital status was not statistically significant in determining the level of physical assessment competence. This disagrees with a study done by Cruz *et al.* (2014), which showed that married student nurses rated themselves higher regarding to physical assessment skills compared to those who were single. This could be attributed to higher maturity levels, enhanced responsibility and proper time management.

A higher proportion trained in public universities compared to those who trained in private or faith-based institutions. From the study findings, the type of institution was not statistically significant in determining competence in physical assessment. This disagrees with the findings of Bifftu *et al.* (2016) which showed that nurse interns who studied in one university were upto three times more competent compared to those from different university. This could be linked to a smaller number of students in one class, active participation in nursing procedures and more support from supervisors which enhance their competence. Ahmadi *et al.* (2020), in his study showed that nurse interns from a public university had a low level of competence in procedures including physical assessment. They reported that they were not satisfied with their

undergraduate training due to more emphasis on theoretical content, increased number of students per class and less time for clinical practicals.

Majority of the interns had spent a period between 6 – 8 months during their internship. Period spent in internship was statistically associated with a higher competence score. Those who had spent between 6 and 8 months of internship were less likely to have a better performance compared to those who had spent 9 – 12 months. This is in agreement with a study done by Keshk *et al.* (2018), which showed that there was an improved level of competence on nursing process among nurse interns at the end of the internship programme compared with those who had just began the programme.

Most of the respondents had less than 7 month's clinical experience prior to internship. From the study findings, longer period (> 7 months) of clinical experience prior to internship was statistically associated with higher competence scores. Similarly, year of completion was statistically associated with higher competence scores. Those who completed between 2016 and 2019 were thrice more likely to have higher scores than those who completed between 2020 and 2021. This is consistent with the findings of Zhang *et al.* (2016), which showed that interns with a longer period of previous clinical experience tend to have a higher competence level than those without any experience.

It also agrees with Byermoen *et al.* (2022) whose study findings showed that student nurses who had prior clinical experiences were able to determine which physical assessment skills to use and performed a more focused assessment on their patients. Those without previous experiences had a difficulty determining the relevant skills to use and could not perform a targeted assessment. However, it contrasts with the findings of Osborne *et al.* (2015), which indicated that as the period of clinical experience increases, the performance of physical assessment skills decreases. This

was attributed to the adjustment at the clinical area as nurses gain experience, thus they tend to concentrate more on clinical work.

5.2 Nurse Intern Knowledge on Physical Assessment

Knowledge on physical assessment that is taught in the classroom is essential for student nurses and interns to develop accurate documentation and identify patient health status in the clinical environment (Alamri & Almazan, 2018). The study findings showed that most of the interns rated themselves as having knowledge on taking vital signs, including measuring temperature, respiratory rate, pulse rate, blood pressure and oxygen saturation. This was consistent with the findings of Borji *et al.* (2018), which showed that nurses rated themselves as having high knowledge as well as physical assessment skills on vital signs, respiratory effort assessment, skin color assessment and temperature measurement. Similarly, in a study done by Khoran *et al.* (2016), more than half of nurses were rated with high level of knowledge as well as skills on assessment of respiratory effort and temperature measurement.

Majority of the respondents rated themselves to have knowledge on two physical assessment techniques including inspection and palpation while a lower proportion were not knowledgeable on auscultation and percussion. This could be associated with the fact that the doctors and clinical officers were expected to perform these examinations and not regarded as nurses' responsibility. This is consistent with the findings of Borji *et al.* (2018), which showed that most nurses reported of low levels of knowledge as well as skill competence concerning auscultation of lung sounds, breast and spinal examinations. Egilsdottir *et al.* (2019) in his study also pointed out that student nurses performed poorly in all physical assessment skills that involved percussion and auscultation. This was attributed to lack of adequate knowledge on

fundamental skills and subsequent integration with physical assessment skills in the clinical environment.

The study showed that the overall knowledge level of nurse interns on physical assessment was good as shown by a higher percentage (62%, n= 72) of them having an overall knowledge score of 90% and above. This was in disagreement with Lee and Sim (2019) whose study showed that most new graduates have low knowledge level as they proceed for internship programme. This was attributed to the undergraduate curriculum which does not provide effective theoretical learning on physical assessment of body systems.

5.3 Physical Assessment Skills of Nurse Interns

From the research findings, a large proportion of interns were able to measure vital signs including temperature, pulse rate and rhythm, respiratory rate, blood pressure and oxygen saturation very well. However, assessment of pain was poorly performed, as shown by fewer respondents who were able to perform the skill very well. This is consistent with a study by Dogdu & Kol (2020), which showed that most of the skills performed by nurses on daily basis included control of vital signs, mental status assessment as well as checking of temperature.

The findings also agree with a study done by Osborne *et al.* (2015), which indicated that the core skills of physical assessment for most nurses majorly included vital signs assessment. The nurses assessed their patients' vital signs including temperature, blood pressure and oxygen saturation very well during each shift. The finding is in line with a study done by Borji *et al.* (2018) who showed that nurses performed well in assessment of vital signs, respiratory effort, skin colour observation and checking of temperature by touching the patient's extremities. According to Khoran *et al*., (2016),

most nurses and interns in every shift adopted and frequently assessed respiration and examined the body temperature.

Under body system assessment, a high proportion of nurse interns were able to assess airway patency, inspection of abdomen and skin integrity. However, a smaller number were able to assess muscle strength and shape of the chest, percussion of the thorax and abdomen, auscultation of the lungs and heart, palpation of the bladder, kidneys and calves for tenderness. The finding is supported by Khoran *et al.* (2016) whose study showed that nurses and interns frequently performed specific skills including assessment of skin colour and lesions, respiratory effort assessment, mental status assessment and oral cavity observation. However, they had lower level of skill performance in auscultation of lung and abdominal sounds, muscle strength assessment and examination for tenderness on the extremities.

Douglas *et al.* (2015) is in agreement with these findings as he stated that student nurses commonly performed general observation or inspection of patients while they rarely performed other techniques including palpation, percussion and auscultation. According to Cicolini (2015), almost all nurses performed examination of the skin integrity and general inspection. Palpation of extremities for tenderness and assessment of muscle strength were rarely performed. Auscultation of the heart and lung sounds was not performed by most nurses as they were not considered as part of the routine procedures for nursing practice. They were probably regarded as complex skills usually performed by doctors and clinical officers. Borji *et al.*, (2018) also indicated that nurse had a lower level of skill regarding assessment of the spine and auscultation of lung sounds.

The study findings showed that the overall performance of nurse interns in physical assessment skills was low as shown by a smaller percentage (35%, n= 41) with a score of 90% and above. This was attributed to inadequate preparedness and anxiety. This is supported by Maniago *et al.* (2021) whose study showed that senior student nurses and nurse interns perform poorly during physical assessment for patients.

5.4 Competence of Nurse Interns in Physical Assessment

The study findings showed that 35% (n= 41) of the nurse interns were competent in physical assessment as they scored 90% and above in both knowledge assessment and physical assessment skills. This could be attributed to lack of work experience, inadequate mentorship and supervision. This is supported by Getie *et al.* (2021) whose study revealed that only one-third of graduating student nurses were clinically competent. Althiga *et al.* (2017) also agrees with these findings as nurse interns in his study reported that they were not adequately prepared with physical assessment knowledge and skills.

5.5 Factors Influencing Competence in Conducting Physical Assessment

The following factors were identified to influence nurse interns' competence in conducting physical assessment. These include nurse intern personal factors, environmental factors and regulatory body factors.

5.5.1 Nurse Intern Personal Factors and Physical Assessment Competence

From the research findings, confidence in performing physical assessment accurately was statistically associated with higher competence scores. A higher percentage of interns strongly agreed that they had confidence in performing physical assessment accurately and they were four times more likely to have higher competence scores than those who disagreed. This disagrees with the findings of Alamri & Almazan (2018)

who reported that student nurses had low level of confidence in performing physical assessment, which was attributed to fears and anxiety, particularly when handling emergency situations. The study further showed that lack of confidence was a perceived barrier to achievement of physical assessment competence among nursing students. Thus, students and interns could improve their self confidence, which is often caused by failure to practice and conduct appropriate physical examination with adequate support from the preceptors (Verghese *et al.*, 2015).

Motivation to learn more and perform physical assessment was statistically associated with higher performance in physical assessment. This study shows that most nurse interns agreed that they were motivated to perform physical assessment and they had a higher competence score. This could be associated with adequate orientation and support from qualified nurses in the clinical environment. This finding agrees with Egilsdottir *et al.* (2019) who observed that student nurses who got adequate support and guidance from qualified nurses felt motivated and showed improvement in physical assessment competence. Pinehas *et al.* (2017) further clarifies that the preceptors need to assist student nurses to develop positive attitude, motivation and interest by providing adequate support and encouraging active participation in learning activities. However, the findings disagree with Najjar and Rawas (2018) whose study indicated that there was unfair handling of nurse interns by nurse managers, preceptors, and physicians, thus decreasing their motivation to perform well and achieve physical assessment competencies.

5.5.2 Environmental Factors and Physical Assessment Competence

Environmental factors were not significant as higher rating was not associated with higher competence scores in physical assessment. However, a higher proportion of interns strongly agreed that qualified nurses are well experienced in performing

physical assessment while almost a similar proportion agreed that they perform physical assessment by observing experienced nurses perform it. From the research findings, observational learning had a positive association with higher performance in physical assessment. Higher rating of observational learning was related to higher competence scores in conducting physical assessment. This finding is supported by Byermoen *et al.* (2022) whose study showed that simulations by the qualified nurses and physicians in the clinical environment enabled nursing students to adequately perform physical assessment skills on their patients. This led to increased confidence in physical assessment.

Low proportions of respondents strongly agreed that there are adequate experienced nurses who are role models regarding physical assessment skills in the clinical environment. A small proportion also strongly agreed that nurse leaders promote use of physical assessment skills. This was consistent with a study done by Douglas *et al.* (2015), in which nursing students rated lack of nursing role models as a major barrier to physical assessment, associated with decreased skill utilization. However, this disagrees with the study findings of Althiga *et al.* (2017), in which qualified nurses were role models in the clinical environment and this enabled nurse interns to develop physical assessment competence and enhanced their learning. Clinical instructors who acted as their role models enhanced their independence and confidence in performing clinical skills. The interns considered the supervisors as role models as they were always ready to help and explain the procedures before and during demonstrations (Ghazy, 2021).

The study findings showed that more than half of the respondents strongly agreed that they received adequate orientation from their supervisors during the beginning of their internship and that their physical assessment findings are used in development of

nursing care plan. This is consistent with the findings of Althaqafi *et al.* (2019) which showed that all the nurse interns reported of attending orientation programme at the hospital at the beginning of the internship, which helped them to better comprehend the departmental policies, routine procedures and other existing protocols. The study further showed that orientation gave nurse interns the confidence to provide nursing care with the support of their preceptors and enhance achievement of competencies including physical assessment.

However, smaller number strongly agreed that they felt supported by their supervisors and that the role of supervisors regarding supervision was clearly stated. Few others strongly agreed that their physical assessment findings were valued by their supervisors. This is in agreement with the study findings of Abd-Elmoghith& El-malah (2018), which showed that majority of the nurse interns were not satisfied with supervision in the hospital. This was attributed to the fact that most of the nurse managers had attained a diploma level while others could be newly graduated nurses, which led to poor communication, inadequate supervision of the interns and consequently decreased skill acquisition. This is supported by Douglas *et al.* (2015) who reported that the physical assessment findings from nurse interns were not valued as the physician would re-do the assessment on the same patients. This led to low motivation to perform physical assessment on patients, thus decreased level of competence.

Makhlof& El-Saman (2017) also agrees with the above findings as he observed that most nurse interns felt that their supervisors did not give them feedback on their skill performance, strengths and weak areas on a regular basis, which was a major hindrance towards achievement of competencies. However, in contrast to the study findings, Githui (2019) observed that majority of the nurse interns agreed that they received

adequate feedback and support from the staff in the hospital. This showed that there was a positive relationship between the qualified staff and the nurse interns, which further enhanced their achievement of competencies.

A small proportion of interns strongly agreed that there is continuous CME on physical assessment in the hospital. This disagrees with a study done by Althaqafi *et al.* (2019) in which nurse interns reported that hospitals provided a variety of medical educational programes whereby they were required to attend together with the qualified staff. The study further showed that each group from different universities was expected to present case studies on completion of internship programme. This enabled them to acquire relevant knowledge and physical assessment skills expected of them during internship. This is also supported by Logina& Traynor (2019) who reported that medical education and clinical training are key aspects which enhance competencies in clinical practice.

Most the respondents strongly agreed there is nursing staff shortage in the hospitals, indicating that adequate staffing is needed to enhance achievement of physical assessment competence. A small proportion further strongly agreed that they get supervision from staff, perform physical assessment and do not get interruptions during their work. This could be attributed to increased workload due to staff shortage, thus lack of time for adequate supervision and performance of physical assessment. This is consistent with the results of a study done by Alamri & Almazan (2018), in which nurses reported lack of enough time to carry out comprehensive physical assessment of the patients under their care due to increased workload attributed to inadequate staffing. The study further showed that several interruptions which occur during the work shifts prevent the nurses from performing physical assessment on the patients, thus there could be delayed identification of patient's condition.

From the study findings, a small number of nurse interns strongly agreed that ward culture is not a hindrance to perform physical assessment. Few others reported that the ward culture encourages nurses to perform physical assessment and the assessment is done in a detailed way. This agrees with a study done by Douglas *et al.* (2015), in which student nurses reported ward culture as one of the major barriers to performance of physical assessment, attributed to absence of role models in the wards. They also reported that their physical assessment findings were not valued as the physician would re-do the assessment on the same patients. Physical assessment was regarded as physicians' and not a nursing responsibility

Resources are a key factor that enhances performance of physical assessment skills. The study showed that a small percentage of interns strongly agree that there are adequate equipments that are readily available for utilization in the clinical environment. Few others strongly agreed that they perform physical assessment even without access to necessary equipments. The findings are supported by Gemuhay *et al.* (2019) whose study showed that hospitals lack adequate equipments and learning resources which are essential for achievement of competencies in clinical practice. This prevents the nurse interns and students from integrating theoretical knowledge gained in the classroom and clinical practice.

The findings are also consistent with Mwale & Kalawa (2016) who indicated that lack of adequate resources in the hospitals led to improvisation of the few available resources in order to provide necessary management to the patients. This decreased the achievement of competencies among nursing students and decreased quality of patient care provided as some of the necessary steps for clinical procedures including physical assessment were skipped. Contrary to these findings, a study by Abd-Elmoghith& El-malah (2018) showed that most nurse interns reported that access to

adequate resources in the hospital was a source of empowerment for them in the clinical area. This enhanced their job satisfaction and gave them an opportunity to learn and enhance physical assessment skills and other competencies.

5.5.3 Regulatory Body Factors and Physical Assessment Competence

From the study findings, regulatory factors had a positive association with higher scores in physical assessment competence. Higher rating on regulatory factors was significantly associated with higher competence scores in physical assessment. Slightly more than half of the respondents reported that the evaluation method used at the end of internship placements promote accuracy, equality and fairness. This disagrees with Ahmadi *et al.* (2020) whose study showed that nurse interns expressed dissatisfaction with the evaluation process used during internship. They reported that there was unfairness in awarding of grades by nurse managers and requested for assessments that included contributions of the nursing staff in the departments.

A high percentage of respondents strongly agreed that duration of internship was adequate to achieve physical assessment competence. This is supported by Ghazy (2021) who reported that the one year internship period was effective as the nurse interns were observed to have improved clinical performance and professional roles after completion of the programme. Kannappan (2020) also supports the findings as she states that the duration of internship programme had a significant impact on enhancing the clinical competence of nursing students who attended the programme as compared with students who worked without going for internship.

Majority of the respondents strongly agreed that the monthly salary they receive increases their job satisfaction and motivation. This is consistent with a study done by Abd-Elmoghith & El-malah (2018), which showed that there was a statistically

significant relationship between salary and competence achievement during internship. The interns in this study reported of increased job satisfaction and empowerment to provide quality care to their patients. This is consistent with the findings of Liu (2021) whose study revealed that those interns with higher salary tend to be highly motivated to acquire necessary competencies as compared with those with a low salary. This also agrees with Bahari *et al*. (2022), who stated that barriers to a successful nursing internship included lack of incentives for the nurse interns, which did not motivate them to develop clinical competencies.

Slightly less than half of the respondents strongly agreed that they were attached to a nurse mentor during clinical rotations; a smaller proportion strongly agreed the mentors provided a supportive environment, adequate coaching, supervision and evaluation. This disagrees with the findings from Althaqafi *et al.* (2019) who reported that nurse interns had a structured mentorship programme which supported them with various challenges they encountered during the internship period. He further indicated that mentorship programme enabled the interns to develop their competence and confidence to practice in the clinical environment safely.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.0 Overview

This chapter presents the conclusion on knowledge of nurse interns on physical assessment, their physical assessment skills and factors influencing their physical assessment competence. It also includes the recommendations made basing on the specific findings from the study.

6.1 Conclusion

1. The study findings showed that more than half of the nurse interns were knowledgeable in physical examination. They were knowledgeable in taking of vital signs, preparation for physical assessment and physical assessment techniques including inspection and palpation. However, they were not knowledgeable in the procedure of performing comprehensive physical assessment, body system assessment and other techniques such as auscultation and percussion.
2. Based on the overall assessment of performance of physical assessment skills, more than one-third of nurse interns were competent in performing physical assessment skills. They performed very well in measurement of vital signs, assessment of the airway patency, inspection and palpation. However, there was a poor performance in other physical assessment techniques including percussion and auscultation of body systems.
3. Key factors that influence physical assessment competence included year of training completion, period spent in internship, previous clinical experience prior to internship, confidence in performing physical assessment accurately, motivation to learn more and perform physical assessment and regulatory body

factors including evaluation method used at the end of internship, duration of internship and monthly salary.

6.2 Recommendations

In order to address the findings, this study makes the following recommendations for the nurse training institutions and hospitals that are training nurse interns:

1. The Schools of Nursing at the universities to put more emphasis on theoretical teaching of physical assessment procedure, body system assessment and physical assessment techniques particularly percussion and auscultation to enhance knowledge of student nurses on physical assessment prior to internship.
2. The Faculty and Clinical Instructors at the Schools of Nursing to provide adequate supervision and mentorship for student nurses during clinical practicum in order to enable them develop their physical assessment skills prior to internship. The nurse educators at the hospitals to provide ongoing professional development opportunities and mentorship programmes for nurse interns in the clinical environment, which could lead to continued improvement of their physical assessment skills.
3. The hospitals to train nurse mentors and attach them to nurse interns in each department in order provide close supervision and mentorship. They should also provide the nurse interns with opportunities to practice physical assessment skills in the clinical management of patients. This will improve the motivation and confidence of nurse interns in conducting physical assessment, thus enhancing their competence.

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APPENDICES

APPENDIX I: CONSENT FORM FOR RESEARCH PARTICIPANTS

CONSENT FORM FOR RESEARCH PARTICIPANTS

My name is Nelly Jepchumba Kiplagat. I am carrying out a research study on nursing interns' competence in physical assessment in Western Kenya. This study is done as a partial fulfillment of the requirements for the degree of Master of Science in Advanced Nursing Practice (Nursing Education) of Masinde Muliro University of Science and Technology. The information you will provide will be useful in enhancing better understanding of the research topic. The interview is expected to take approximately 60 minutes. In the first part, you will be required to answer questions as directed in the questionnaire. In the second part, you will be examined as you perform physical assessment skills on a particular patient.

All the information obtained will be used only for the purposes of research and will be treated as confidential. Your participation in the study will be voluntary without any form of coercion. You have the freedom to withdraw from the study at any given time. This study poses minimal risks to research participants. If you have any questions or concerns during the study, feel free to contact me or the university. My mobile phone number is 0721709228.By signing this form, you accept that you have fully understood the contents of the document and you willingly consent to participate in this study. Thank you for your support.

Signature of participant:…….....Date:…….

Name of the researcher:……...……..

Signature:……..…Date:……..

APPENDIX II: SELF ADMINISTERED QUESTIONNAIRE

Instructions: Please tick (√) the correct response using a black or blue ink pen.

Section A: Demographic data

1. Indicate your age in years……
2. Gender:
    1. Male □
    2. Female □
3. Marital status:
    1. Single □
    2. Married □
    3. Divorced/separated □
    4. Widowed □
    5. Others (specify)……..…….
4. Year of completion of BScN program (specify)……
5. Institution of BScN training (Specify)……...…
6. Period of internship that has been completed so far
    1. 6 – 8 months □
    2. 9 – 12 months □
7. Current placement

1. Medical	□	5. Surgical	□
2. Paediatrics	□	6. Casualty/OPD	□
3. Theatre	□	7. Critical care unit	□
4. Obstetrics/gynecology	□	8. Community health nursing	□

8. Duration of previous clinical experiences prior to internship (specify) …….

Section B: Knowledge of nurse interns on physical assessment

Instruction: Carry out a self-assessment of your knowledge on the following aspects of physical assessment and tick (√) the most appropriate response using a black or blue ink pen.

Key: 3 = highly knowledgeable; 2 = moderate knowledge; 1= least knowledgeable

No.	**Physical assessment**	**Ratings**		
		3	2	1
1.	*Vital signs:*			
	Measurement of temperature			
	Measurement of respiratory rate			
	Measurement of pulse rate			
	Measurement of blood pressure			
	Measurement of oxygen saturation			
	Assessment of pain			
2.	Aims of physical assessment			
3.	*Preparation for physical assessment:*			
	Self preparation			
	Patient preparation			
	Equipment needed to perform physical examination			
4.	Procedure of performing comprehensive physical assessment			
5.	*Techniques of physical assessment:*			
	Inspection			
	Palpation			
	Auscultation			
	Percussion			
6.	Assessment of level of consciousness using Glasgow Coma Scale			
7.	Types of normal breathing sounds			

8.	Types and causes of abnormal breathing sounds			
9.	Types of heart sounds heard during auscultation			
10.	Sequence of physical assessment followed during abdominal assessment			
11.	Elements to be included during nutritional assessment			
12.	Elements to be included during assessment of genito-urinary system			
13.	Elements to look for during skin examination			
14.	What to look for during inspection of musculoskeletal system			

Section C: Factors influencing physical assessment competence of nurse interns

Instruction: Please tick (√) the most appropriate rating in the table below.

Key: 4 = strongly agree; 3 = agree; 2 = disagree; 1 = strongly disagree

No.	Influencing factors	Ratings			
		4	3	2	1
1.	**Self confidence**				
	I am confident that I can perform physical assessment accurately				
	I am anxious about my ability to use physical assessment skills correctly				
	I do not have confidence to decide which physical assessment skills to use				
2.	**Motivation**				
	My supervisors give me adequate encouragement and support to perform physical assessment				
	I do not feel motivated to learn more and perform physical assessment in my ward				
3.	**Observational learning**				
	Qualified nurses are well experienced in performing physical assessment				
	I learnt how to perform physical assessment by observing experienced nurses perform it				
4.	**Role modeling**				
	Experienced nurses in the ward model physical assessment skills				
	There are inadequate experienced nurses to model physical assessment skills in the clinical environment				
	Use of physical assessment skills is well promoted by nurse leaders				

4.	**Supervision**				
	I got adequate orientation from my supervisors during the beginning of internship				
	I feel supported by my supervisors in performing physical assessment skills				
	Physical assessment I perform is not valued by my supervisors				
	My physical assessment findings are used in development of nursing care plan for my patients				
	The role of nurse managers and clinical preceptors regarding supervision of nurse interns is clearly stated				
5.	**Physical assessment practice in the hospital**				
	Physical assessment in our hospital is the responsibility of clinical officers and medical doctors only				
	There is continuous medical education on physical assessment in our hospital				
	The hospital promotes proper communication and leadership skills among health care providers, thus enhancing adequate performance of physical assessment				
6.	**Staffing**				
	There is nursing staff shortage in the hospital				
	I do not perform physical assessment due to lack of adequate time and increased workload				
	Due to staff shortage, I get many interruptions during my work, which prevent me from				

	performing physical assessment				
	I do not get supervision and mentorship of due inadequacy of nursing staff				
7.	**Ward culture**				
	The ward culture is a hindrance in performing physical assessment				
	The culture in my ward does not encourage nurse interns to perform physical assessment				
	Assessment is done in a simplified way that limits comprehensive physical assessment				
8.	**Availability of resources /equipment in the ward**				
	Lack of necessary equipment in the ward prevents me from performing physical assessment.				
	I use physical assessment skills when I can access the necessary equipment.				
	Resources are not readily available in the ward thus I do not perform physical assessment.				
9.	**Regulatory body factors**				
	Evaluation method used at the end of internship placements promotes accuracy, equality and fairness				
	The monthly salary I receive during internship increases my job satisfaction and motivation to work				

	The duration of internship is adequate to enable me achieve physical assessment competence				
11.	**Mentorship policy**				
	I was attached to a nurse mentor in each clinical rotation				
	My nurse mentor provided a supportive clinical environment to facilitate learning and achievement of physical assessment competence				
	My mentor provided adequate coaching, supervision and evaluation during the internship period				

APPENDIX III: OBSERVATION CHECKLIST

Instructions: Please tick (√) the most appropriate level of performance of each nurse intern using a black or blue ink pen.

Key: 0 = cannot perform technique, 1 = can perform the skill but needs to improve on it further, 2 = can perform the skill well.

No.	**Physical assessment**	**Ratings**		
		2	1	0
1.	**Assessment of general appearance (**Physical characteristics, grooming, behaviour, posture, movement)			
2.	**Vital signs:**			
	Measures body temperature			
	Measures of pulse rate and assesses rhythm			
	Measurement of respiratory rate			
	Measures blood pressure			
	Measures oxygen saturation			
	Assesses for pain			
3.	**Neurological:**			
	Assesses the level of consciousness			
	Evaluates speech			
	Checks pupillary reaction to light			
	Assesses muscle strength			
4.	**Cardiovascular**			
	Inspects and observes skin for colourand temperature			
	Assesses the skin turgor			
	Assesses capillary refill			
	Assesses the shape of the chest			
	Palpates the neck lymph nodes			

	Palpates extremities for distal pulses and edema			
	Palpates calves for tenderness			
	Auscultates the heart sounds and apical pulses			
5.	**Respiratory:**			
	Assesses airway patency			
	Assesses the ability to cough			
	Assesses the breathing pattern			
	Percusses the thorax			
	Auscultates the lungs for breathing sounds			
6.	**Gastrointestinal**			
	Inspects the abdomen			
	Auscultates for bowel sounds			
	Palpates the abdomen			
	Percusses the abdomen			
7.	**Nutritional assessment**			
	Inspects oral cavity			
	Assesses the ability to swallow			
	Measures body weight			
	Calculates the Body Mass Index (BMI)			
8.	**Renal**			
	Assesses urine output: amount and colour			
	Palpates the bladder and kidneys			
9.	**Skin**			
	Inspects integrity of the skin			
	Inspects and palpates skin for pressure injury signs			
	Inspects for any lumps, growth, wounds, dressings, drains, cannulas			

10.	**Musculoskeletal system:**			
	Observes the ability for mobility			
	Observes gait			
	Inspects the range of motion for major joints			
	SUB TOTAL			
	TOTAL SCORE (X/80)			
	SCORE (%)			

Research Assistant's name: _____

Sign:_____

Date:_____

APPENDIX IV: CONSENT FORM FOR KEY INFORMANTS (NURSE MANAGERS)

My name is Nelly Jepchumba Kiplagat. I am carrying out a research study on nursing interns' competence in physical assessment in Western Kenya. This study is done as a partial fulfillment of the requirements for the degree of Master of Science in Advanced Nursing Practice (Nursing Education) of Masinde Muliro University of Science and Technology. The information you will provide will be useful in enhancing better understanding of the research topic. You are eligible to participate in this study as a key informant since you are the nurse manager and you play a key role in mentorship and supervision of nurse interns during their internship period.

The interview is expected to take approximately 30 minutes. You will be required to respond to oral questions asked by the interviewers. All the information obtained will be used only for the purposes of research and will be treated as confidential. Your participation in the study will be voluntary without any form of coercion. You have the freedom to withdraw from the study at any given time with no penalty associated with it. This study poses minimal risks to research participants. If you have any questions or concerns during concerning the study, feel free to contact me or the university. My mobile phone number is 0721709228.By signing this form, you accept that you have fully understood the contents of the document and you willingly consent to participate in this study. Thank you for your support.

Signature of participant:…….....Date:……..

Name of the researcher:……...……...…

Signature:…….Date:……..……

APPENDIX V: KEY INFORMANT INTERVIEW GUIDE

1. What is your position currently?.....
2. Which is your current department?……
3. How can you rate the confidence of nurse interns in performing physical assessment on their patients in your facility?

	1. Good
	2. Fair
	3. Poor

   a. In your opinion, what are the contributing factors towards this confidence?

      ……

      ……

   b. What can be done to improve their confidence in performing physical assessment?

      ……

      ……

4. In your opinion, are qualified nurses in your hospital well experienced in performing physical assessment?

	1. Yes
	2. No

   a. What impact does this contribute towards role modeling for nurse interns regarding performance of physical assessment?

      ……

      ……

5. In your opinion, are nurse interns in your facility motivated to perform physical assessment on their patients?

	1. Yes
	2. No

   a. Which factors contribute towards this motivation of nurse interns?

      ……

      ……

6. Is there adequate supervision of nurse interns in your facility?

	1. Yes
	2. No

   a. In which ways does this contribute towards achievement of physical assessment competence?

      ……

      ……

7. How are nurse interns in your hospital empowered to perform physical assessment on their patients?

      ……

      ……

      ……

8. How often does the hospital carry out continuous medical education on physical assessment?.....

   a. If your opinion, how does this contribute towards development of physical assessment competence of nurse interns and the quality of patients'management?

      ……

      ……

      ……

9. In your opinion, do the wards have adequate equipment necessary for performance of physical assessment?

	1. Yes
	2. No

   a. How does this affect performance of physical assessment on patients by nurse interns?

      ……

      ……

      ……

10. Does the hospital provide adequate orientation for nurse interns at the beginning of internship programme?

	1. Yes
	2. No

a. What impact does this have on physical assessment competence of nurse interns?

……

……

11. Do you experience nursing staff shortage in your hospital?

	1. Yes
	2. No

a. If yes, how does this affect performance of physical assessment and supervision of nurse interns?

……

……

12. How does the culture or protocols in the ward hinder nurse interns from performing physical examination?

……

……

a. In your opinion, what can be done to improve the culture or protocols in the ward to enhance performance of physical examination?

……

……

13. In your opinion, do you think the Nursing Council of Kenya evaluation tool for nurse interns at the end of each placement ensures accuracy, equality and fairness?

	1. Yes
	2. Partly
	3. No

a. What can be done to ensure its accuracy, equality and fairness?

……

……

14. We have come to the end of the interview. Please give any other suggestion on how to enhance performance of physical assessment by nurse interns? ……

Thank you.

APPENDIX VI: LETTER FROM DIRECTOR OF POSTGRADUATE STUDIES

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

Tel: 056-30870
Fax: 056-30153
E-mail: directordps@mmust.ac.ke
Website: www.mmust.ac.ke

P.O Box 190
Kakamega – 50100
Kenya

Directorate of Postgraduate Studies

Ref: MMU/COR: 509099

26th April, 2021

Nelly Jepchumba Kiplagat,
HNR/G/01-52569/2018,
P.O. Box 190-50100,
KAKAMEGA.

Dear Ms. Jepchumba,

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your Masters Proposal entitled: ***"Nursing Intern's Competency in Physical Assessment in Western Kenya"*** and appointed the following as supervisors:

1. Dr. Mary Kipmerewo - SONMAPS, MMUST
2. Dr. Damaris Ochanda - SONMAPS, MMUST

You are required to submit through your supervisor(s) progress reports every three months to the Director of Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Nursing & Midwifery Graduate Studies Committee and Chairman, Department of Nursing Research, Education and Management and Graduate Studies Committee. Kindly adhere to research ethics consideration in conducting research.

It is the policy and regulations of the University that you observe a deadline of two years from the date of registration to complete your master's thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours Sincerely,

Dr. Consolata Ngala
DEPUTY DIRECTOR, DIRECTORATE OF POSTGRADUATE STUDIES

APPENDIX VII: LETTER FROM INSTITUTIONAL ETHICS REVIEW COMMITTEE

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY
Tel: 056-31375
Fax: 056-30153
E-mail: ierc@mmust.ac.ke
Website: www.mmust.ac.ke
P. O. Box 190-50100
Kakamega, Kenya

Institutional Ethics Review Committee (IERC)

Ref: MMU/COR: 403012 Vol 4 (01) **Date:** 14th July, 2021

Nelly Jepchumba Kiplangat,
HNR/G/01-52569/2018,
Masinde Muliro University of Science and Technology,
P.O. Box 190-50100, Kakamega.

Dear Ms. Jepchumba,

RE: Nursing Intern's Competency in Physical Assessment in Western Kenya. - MMUST/IERC/203/2021

Thank you for submitting your proposal entitled as above for initial review. This is to inform you that the committee conducted the initial review and approved (with no further revisions) the above Referenced application for one year.

This approval is valid from **14th July, 2021** through to **14th July, 2022**. Please note that authorization to conduct this study will automatically expire on by **14th July, 2022.** If you plan to continue with data collection or analysis beyond this date please submit an application for continuing approval to the MMUST IERC by **14th June, 2022.**

Approval for continuation of the study will be subject to submission and review of an annual report that must reach the MMUST IERC Secretariat by **14th June, 2022.** You are required to submit any amendments to this protocol and any other information pertinent to human participation in this study to MMUST IERC prior to implementation.

Please note that any unanticipated problems or adverse effects/event resulting from the conduct of this study must be reported to MMUST IERC. Also note that you are required to seek for research permit from NACOSTI prior to the initiation of the study.

Yours faithfully,

Dr. Gordon Nguka (PhD)
Chairman, Institutional Ethics Review Committee

Copy to:
- The Secretary, National Bio-Ethics Committee
- Vice Chancellor
- DVC (PR&I)

APPENDIX VIII: RESEARCH PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **658537**

Date of Issue: **21/July/2021**

RESEARCH LICENSE

This is to Certify that Sr.. Nelly Jepchumba Kiplagat of Masinde Muliro University of Science and Technology, has been licensed to conduct research in Bungoma, Kakamega, Kericho, Kisii, Kisumu, Nakuru, Transnzoia, Uasin-Gishu on the topic: NURSING INTERN'S COMPETENCY IN PHYSICAL ASSESSMENT IN WESTERN KENYA for the period ending : 21/July/2022.

License No: **NACOSTI/P/21/11911**

658537

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

APPENDIX IX: APPROVAL LETTER FROM KAKAMEGA COUNTY GENERAL HOSPITAL

COUNTY GOVERNMENT OF KAKAMEGA

E-mail: wpgh15@yahoo.com
Telephone: Kakamega 0702930346
When replying, please quote:

REF: CGH/KAK/ERC/VOL.I/109

COUNTY GENERAL HOSPITAL
P.O. Box 15-G.P.O-50100
KAKAMEGA

DATE: 1st October, 2021

MINISTRY OF HEALTH SERVICES

SR. NELLY JEPCHUMBA KIPLAGAT
LICENCE NO. NACOSTI/P/21/11911

RE: RESEARCH PROPOSAL APPROVAL – NO. ERC/131-10/2021

This is to inform you that **Kakamega County General Hospital Ethics Review Committee (KCGH ERC)** has approved your research proposal titled: ***"Nursing Interns competence in physical assessment in Western Kenya".*** The approval period is 1st October 2021 – 21st July, 2022

This approval is subject to compliance with the following requirements:

i. Only approved documents including informed consent, study instruments, MTA will be used.
ii. All changes including amendments, deviations and violations are submitted for review and approval by the **KCGH ERC.**
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **KCGH ERC** within 24 hours of notification.
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety of welfare of the study participants and others or affect the integrity of the research must be reported to **KCGH ERC** within 24 hours.
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. 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.
vii. Submission of an executive summary report within 90 days upon completion of the study to **KCGH ERC**.

This approval should be attached to your research license from National Commission for Science, Technology and Innovation (NACOSTI) and also other necessary clearances.

Samuel

01 OCT 2021

for DR. AJEVI AUSTINE
CHAIRMAN
ETHICS AND RESEARCH COMMITTEE
CGH - KAKAMEGA

APPENDIX X: APPROVAL FROM JARAMOGI OGINGA ODINGA TEACHING &REFERRAL HOSPITAL

COUNTY GOVERNMENT OF KISUMU
DEPARTMENT OF HEALTH

Telephone: 057-2020801/2020803/2020321
Fax: 057-2024337
E-mail: medsuptnpgh@yahoo.com
ceo@jaramogireferral.go.ke
Website: www.jaramogireferral.go.ke
When replying please quote
GEN/21A
Ref:

JARAMOGI OGINGA ODINGA TEACHING &
REFERRAL HOSPITAL
P.O. BOX 849-40100
KISUMU

2nd December, 2021
Date .....

Nelly Jepchumba Kiplagat

Dear Nelly

RE: PERMISSION TO COLLECT DATA

Following approval of protocol titled "Nursing Intern" Competency in Physical Assessment in Western Kenya at JOOTRH", you are hereby permitted to proceed with the activity.

Thank you.

Yours sincerely

CHIEF EXECUTIVE OFFICER
JARAMOGI OGINGA ODINGA TEACHING &
REFERRAL HOSPITAL(JOOTRH)
P.O. BOX 849-40100, KISUMU
DATE.....

DR. GEORGE RAE
CHIEF EXECUTIVE OFFICER
JOOTRH – KISUMU

APPENDIX XI: APPROVAL FROM COUNTY GOVERNMENT OF TRANS NZOIA

REPUBLIC OF KENYA

COUNTY GOVERNMENT OF TRANS NZOIA
DEPARTMENT OF HEALTH
HEALTH CORPORATE SERVICES

Office of the Director (H.C.S.)
health-corporate-services@outlook.com

P.O. Box 4211-30200, Kitale
Tel: +254-722-540-959

4th October, 2021

To: Sr. Nelly Jepchumba Kiplagat,
Ortum Mission Hospital,
P.O. Box 1312,
ORTUM

Dear Sr. Nelly Kiplagat,

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on the topic "***Nursing Interns' Competency in Physical Assessment in Western, Kenya***", I am pleased to inform you that the authority is hereby granted.

Please note that the authority granted is only administrative and is subject to the validity of the following two (2) requirements:

i. Approval from a competent Institutional Ethics Review Committee (IERC);

ii. Approval from the National Commission for Science, Technology and Innovation (where applicable);

Please ensure that your research is conducted within the time stipulated in your application. Any extensions shall require fresh endorsement.

With Best Wishes.

DIRECTOR
HEALTH CORPORATE SERVICES
04 OCT 2021
COUNTY GOVERNMENT OF TRANS NZOIA
P. O. Box 4211 - 30200, KITALE

Sincerely,

Dr. Masibo W. Sammy,
Director - Health Corporate Services,
County Government of Trans Nzoia.

Vision: A Healthy and Nationally Competitive County

APPENDIX XII: APPROVAL FROM KISII TEACHING AND REFFERAL HOSPITAL

KISII COUNTY GOVERNMENT

DEPARTMENT OF HEALTH

Telegramme "Medical"
Telephone: (058) 31310 Kisii
E-Mail: kisiihospital@gmail.com
Web: www.kisiihospital.org.ke
***Ref:* ISERC/KTRH/001/22**

CHIEF EXECUTIVE OFFICER
KISII TEACHING & REFERRAL HOSPITAL
P.O Box 92 – 40200,
KISII
Date: 15th, February 2022

TO WHOM IT MAY CONCERN

RE: AUTHORIZATION OF NELLY JEPCHUMBA TO CONDUCT A RESEARCH STUDY TITLED 'NURSING INTERN'S COMPETENCY IN PHYSICAL ASSESSMENT IN WESTERN KENYA AT THE KISII TEACHING REFERRAL AND TEACHING HOSPITAL.'

The above subject matter refers.

Having met all the requirements, **NELLY JEPCHUMBA**, from **MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY** is authorized to conduct research in the County Health Department, at the Kisii Teaching and Referral Hospital within the next 365 days from the date of this letter.

The study will be carried out subject to adherence to the laid down procedures. Confidentiality of the study subjects should be observed by the researcher who should submit the final data to the County Research Unit for retention and use.
Study timelines exceeding 365 days will require fresh application that will include the annual progress report.

Kindly accord her any support that he requires that falls within the scope of this study.

THE KISII TEACHING AND REFERRAL HOSPITAL
★ 15 FEB 2022 ★
Sign:.....
P. O. Box 92 - 40200, KISII

DR. STANLEY RATEMO
RESEARCH COORDINATOR
FOR: CHIEF EXECUTIVE OFFICER
KISII TEACHING AND REFERRAL HOSPITAL

Copy to:-

- THE NURSING SERVICES MANAGER
- HEAD OF OUTPATIENT DEPARTMENT
  KISII TEACHING AND REFERRAL HOSPITAL

APPENDIX XIII: APPROVAL FROM MOI TEACHING AND REFERRAL HOSPITAL

An ISO 9001:2015 Certified Hospital

MOI TEACHING AND REFERRAL HOSPITAL

Telephone :(+254)053-2033471/2/3/4
Mobile: 722-201277/0722-209795/0734-600461/0734-683361
Fax: 053-2061749
Email: ceo@mtrh.go.ke/directorsofficemtrh@gmail.com

Nandi Road
P.O. Box 3 – 30100
ELDORET, KENYA

Ref: ELD/MTRH/R&P/10/2/V.2/2010

2nd March, 2022

Nelly Jepchumba Kiplagat,
Masinde Muliro University,
School of Nursing,
P.O. Box 190-50100,
KAKAMEGA-KENYA.

NURSING INTERNS' COMPETENCY IN PHYSICAL ASSESSMENT IN WESTERN KENYA

You have been authorised to conduct research within the jurisdiction of Moi Teaching and Referral Hospital (MTRH) and its satellites sites. You are required to strictly adhere to the regulations stated below in order to safeguard the safety and well-being of staff, patients and study participants seen at MTRH.

1. The study shall be under Moi Teaching and Referral Hospital regulation.
2. A copy of MTRH/MU-IREC approval shall be a prerequisite to conducting the study.
3. Studies intending to export human bio-specimens must provide a permit from MOH at the recommendation of NACOSTI for each shipment.
4. No data collection will be allowed without an approved consent form(s) to participants unless waiver of written consent has been granted by MTRH/MU-IREC.
5. Take note that **data** collected must be treated with due confidentiality and anonymity.

The continued permission to conduct research shall only be sustained subject to fulfilling all the requirements stated above.

02/03/2022

DR. WILSON K. ARUASA, *MBS, EBS*
CHIEF EXECUTIVE OFFICER
MOI TEACHING AND REFERRAL HOSPITAL

MOI TEACHING AND REFERRAL HOSPITAL
CEO
APPROVED
02 MAR 2022
SIGN.....
P. O. Box 3-30100, ELDORET

c.c. - Senior Director, Clinical Services
- Director of Nursing Services
- HOD, IHRISM

APPENDIX XIV: APPROVAL FROM NAKURU COUNTY GOVERNMENT

REPUBLIC OF KENYA
NAKURU COUNTY GOVERNMENT
DEPARTMENT OF HEALTH SERVICES

NAKURU COUNTY
COUNTY OF UNLIMITED OPPORTUNITIES

Email:rvpghnakuru@yahoo.com
Mobile: +254721750460

NAKURU PROVINCIAL GENERAL HOSPITAL
P.O. BOX 71-20100
NAKURU

When replying please quote:

REF: R&EC/PGH/NKU/VOLI/2021

24th August 2021

RE: PREAUTHORIZATION GUIDELINES

I **SR. NELLY JEPCHUMBA KIPLAGAT** from Masinde Muliro University of Science and Technology agree to adhere to the laid down procedures of the institution as I undertake my study here.

QUESTIONEER (AREA OF STUDY)

"NURSING INTERNS' COMPETENCE IN PHYSICAL ASSESSMENT IN WESTERN KENYA."

Upon finishing the study, I will submit a hard and soft copy of my findings to the institution.

Signed..... **Date**..5/10/2021.....
ID. NO/Passport ..22906512.....
Institution...MASINDE MULIRO UNIVERSITY.....
Contacts ..0721709228.....

SUPERINTENDENT - NAKURU LEVEL 5
P. O. Box 71 - 20100
NAKURU
25 AUG 2021
Sign

DR JAMES WAWERU
Chairperson.....**Sign**.....**Date**.....25/08/2021.

APPENDIX XV: APPROVAL FROM MINISTRY OF EDUCATION KERICHO COUNTY

REPUBLIC OF KENYA

MINISTRY OF EDUCATION
State Department of Early Learning and Basic Education

Email:cdekerichocounty@gmail.com
When Replying Please Quote:

County Education Office
P.O BOX 149
KERICHO

Ref: KER/C/ED/GC/2/VOL.II/110

12th August, 2021

TO WHOM IT MAY CONCERN.

RE: RESEARCH AUTHORIZATION: SR. NELLY JEPCHUMBA KIPLAGAT LICENCE NO.NACOSTI/P/21/11911.

I refer to the Director General NACOSTI Letter Ref: No. 658537 dated 21st July 2021 granting the above student authority to proceed for field work. Her area of study is titled: ***"NURSING INTERN'S COMPETENCY IN PHYSICAL ASSESSMENT IN WESTERN KENYA"*** for the period ending 21/07/2022.

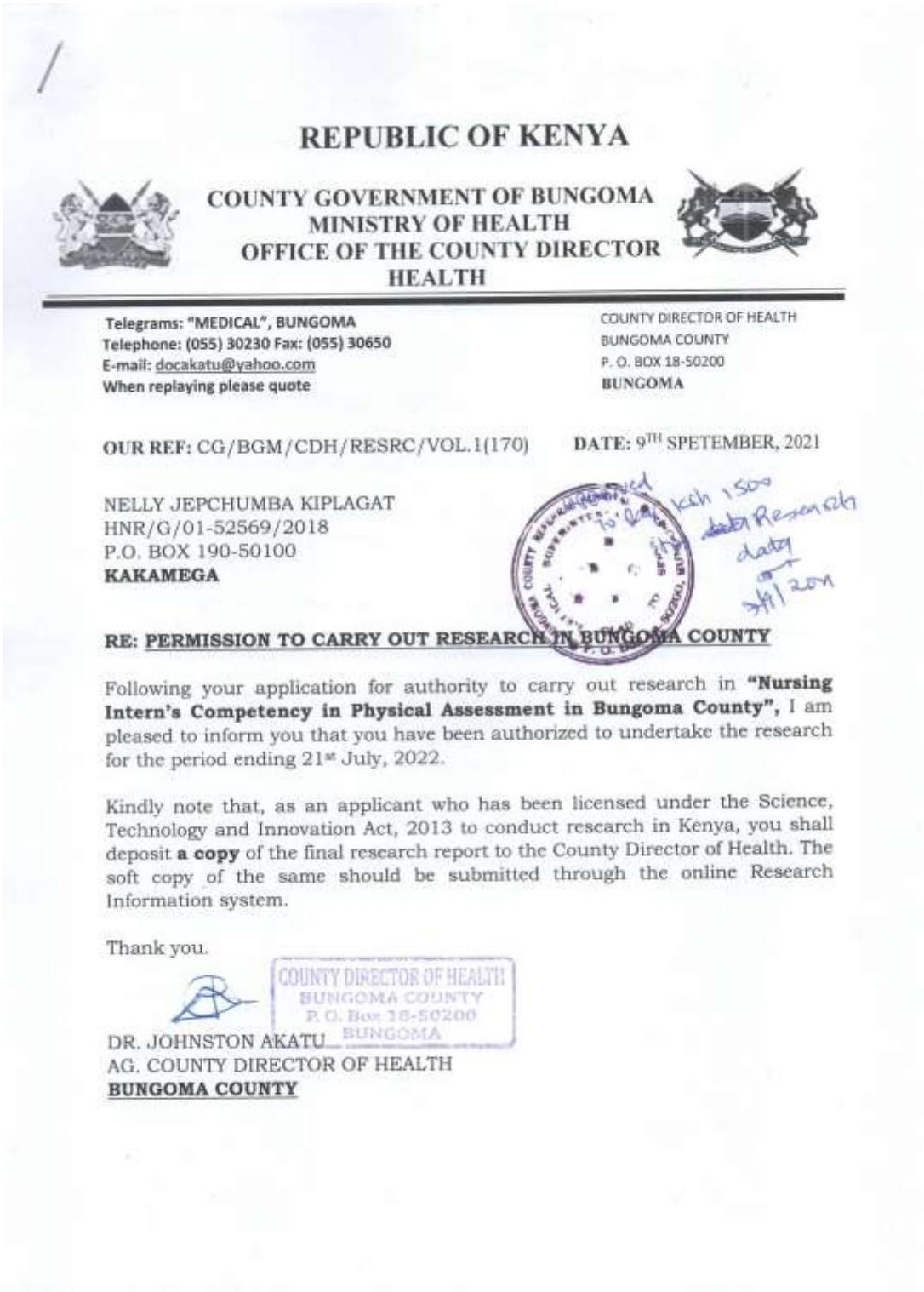
This is to request your office to accord her the necessary support during the data collection process.

Thank you.

FOR COUNTY DIRECTOR OF EDUCATION
KERICHO COUNTY
12 AUG 2021
P.O. BOX 149 – 20200,
KERICHO.

FREDRICK MAOGA
FOR: COUNTY DIRECTOR OF EDUCATION
KERICHO COUNTY.

APPENDIX XVI: APPROVAL FROM COUNTY GOVERNMENT OF BUNGOMA



REPUBLIC OF KENYA

COUNTY GOVERNMENT OF BUNGOMA
MINISTRY OF HEALTH
OFFICE OF THE COUNTY DIRECTOR
HEALTH

Telegrams: "MEDICAL", BUNGOMA
Telephone: (055) 30230 Fax: (055) 30650
E-mail: docakatu@yahoo.com
When replaying please quote

COUNTY DIRECTOR OF HEALTH
BUNGOMA COUNTY
P. O. BOX 18-50200
BUNGOMA

OUR REF: CG/BGM/CDH/RESRC/VOL.1(170) DATE: 9TH SPETEMBER, 2021

NELLY JEPCHUMBA KIPLAGAT
HNR/G/01-52569/2018
P.O. BOX 190-50100
KAKAMEGA

RE: PERMISSION TO CARRY OUT RESEARCH IN BUNGOMA COUNTY

Following your application for authority to carry out research in **"Nursing Intern's Competency in Physical Assessment in Bungoma County"**, I am pleased to inform you that you have been authorized to undertake the research for the period ending 21st July, 2022.

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 County Director of Health. The soft copy of the same should be submitted through the online Research Information system.

Thank you.

COUNTY DIRECTOR OF HEALTH
BUNGOMA COUNTY
P. O. Box 18-50200
BUNGOMA

DR. JOHNSTON AKATU
AG. COUNTY DIRECTOR OF HEALTH
BUNGOMA COUNTY