

**INVESTIGATION OF BACHELOR OF SCIENCE NURSING STUDENT
PERFORMANCE IN THE NURSING COUNCIL OF KENYA
LICENSURE EXAMINATIONS IN KENYA**

Anne Asiko Okanga

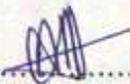
**A Research Thesis Submitted in Partial Fulfillment for the Requirements for the
Award of Master of Science Nursing Degree of Masinde Muliro University of
Science and Technology**

November, 2017

DECLARATION

Declaration by Student

This thesis is my original work and has not been presented for a degree or an award in any other university.

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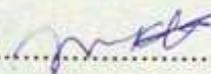
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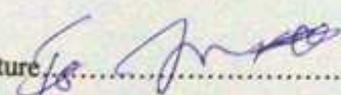
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Okanga A.A.

DEDICATION

I dedicate this work to my family that patiently shared their time to have me complete this work and to all the students who sat this examination.

I love you all.

ABSTRACT

Kenya has seen a drastic growth in nursing education sector recording high rates of enrolment of students to training while their performance in Nursing Council of Kenya (NCK) examination remained variable. This study investigated performance of BSc nursing students in NCK examinations by determining student characteristics, examining institutional characteristics and analyzing regulatory body characteristics in relation to performance. NCK identified it as priority area of research. The research design was retrospective, using mixed method approach to collect data. A total of 1292 records of students who sat examinations July 2012-June 2015 from NCK nurses' database was used. Cluster and purposive sampling were done for key informants interviewed from schools of nursing. Quantitative data was converted from MS Access to SAS version 8 and analyzed. Odds ratio was used to measure strength of association between student, institutional and regulatory body characteristics and performance with $p \leq 0.05$ being considered significant. Qualitative data was recorded and transcribed for content analysis. The proportion of those who passed and aged 30 years and above was significantly higher than those who were less than 30 years (OR: 1.6, 95% CI: 1.2-2.2, $p= 0.002$). Both class attendance policy and faculty experience had marginal association (OR: 0.4, 95%CI: 1.0-2.0, $p=0.068$) and (OR: 0.7, 95%CI: 0.5-1.0, $p=0.068$) respectively. Admission criteria, marital status and employment, together with validity and timing of examination were reported by key informants to influence performance. In conclusion the study identified age, faculty years of experience and class attendance policy as significant factors that were associated with performance. Marital status, employment, timing of examinations and validity were reported by key informants to influence performance. The study recommends training institutions to continue with upgrading programmes, identify ways of addressing low performance, uphold class attendance policy, select faculty based on experience. NCK to review their examination process, set examination that test competency and conduct licensure examinations after internship. Results can be used to predict performance and facilitate development of policies for recruitment and examination.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACT	American College Test
AMREF	American Medical Research Foundation
ATI	Assessment Technology Inc.
BScN	Bachelor of Science in Nursing
CAP	Chapter
CARICOM	Caribbean Community
CAT	Computerized Adaptive Testing
CI	Confidence Interval
COD	Chairperson of Department
CXC	Caribbean Examination Council
DE	Distant Education
FP	Family Planning
FTF	Face to Face
GLUK	Great Lakes University of Kisumu
GPA	Grade Point Average
HESI	Health Education Systems, Inc.
HRM	Human Resource Management
KCSE	Kenya Certificate of Secondary Education

KEMU	Kenya Methodist University
KRCHN	Kenya Registered Community Health Nurse
KU	Kenyatta University
KUCCPS	Kenya Universities and Colleges Central Placement Service
LAQ	Long Answer Questions
MCQ	Multiple Choice Questions
MMUST	Masinde Muliro University of Science and Technology
MOH	Ministry of Health
MS Access	Microsoft Access
NACOSTI	National Commission for Science Technology and Innovation
NCK	Nursing Council of Kenya
NCLEX-RN	National Council Licensure Examination for Registered Nurses
NCSBN	National Council for State Board of Nursing
NLE	Nursing Licensure Examination
NLN	National League for Nursing
NLNA	National League for Nursing Achievement Test
NQEX-RPN	National Qualified Examination for Registered Professional Nurses
NTC	Nurse Training College
OR	Odds ratio

PEPFAR	Presidents Emergency Plan for Aids Relief
PSSP	Private Sponsored Students' Program
RENR	Regional Examination for Nurse Registration
RGNC	Regional General Nursing Councils
SAQ	Short Answer Questions
SAS	Statistical Analysis System
SAT	Scholastic Aptitude Test
SPSS	Statistical Package of Social Sciences
SSCE	Senior School Certificate Examination
TTC	Teachers Training College
UEAB	University of Eastern Africa Baraton
UON	University of Nairobi
USA	United States of America
WHO	World Health Organization
WGCTA	Watson Glaser Critical Thinking Appraisal

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter presents the background information of the study, problem statement, justification of the study, research questions, research objectives and the conceptual framework for the study.

1.2 Background

1.2.1 Licensure Examinations in Nursing Education

Nurses and other members of health professions handle human lives necessitating no room for mistakes because any error done could cost the life of a patient. This requires them to be sensitive, caring, committed, and equipped with skills and knowledge in performance of their roles (Oh *et al*, 2011). Quality education is crucial to the development of any profession. The need to produce nurses capable of functioning as safe practitioners in the health care is key. This has been necessitated by the increasing cost of health care. Sophisticated advances in medical sciences and technology, increasing awareness and knowledge through internet have all increased the expectations of the public for quality care and demand for their rights (Ogbonaya, 2014). It therefore demands that nurses should possess recognized qualification before they can be registered and practice legally in any country,(Oh *et al*, 2011) and this qualification comes with a pass in their licensure examination. Such demands make academic performance a priority to students as well as their teachers (Ukpong& George, 2013).

University education is the key to the growth of any profession. Nursing education programs in many parts of the world are now being offered at universities and colleges affiliated to universities (Dolamo&Olubiyi, 2013).In the USA, nursing and the education of nurses is controlled from within the profession through the state board of nursing and the board exam establishes the new graduate nurse's readiness to render safe and competent service to health consumers after passing the NCLEX-RN licensure examination (Cooper, 2012). In Pennsylvania, every school must maintain a minimum percentage pass of graduates to stay open and this standard is set by the State Board of Nursing (Carrick, 2011). According to New Jersey Administrative Code, (2011), every school is mandated to ensure that it retains above 75% pass rate in order to maintain its accreditation.

In China, high pass rate on the examination promote nursing schools reputation, maintain accreditation, attract new students, and ensure that qualified nurses provide safe care for the public. Passing the NQEX-RPN is becoming a critical issue for each nursing student and every nursing school (Xiao *et al.*, 2014). In Australia, professional education accreditation is concerned with quality of the profession and its work from the perspective of public interest and community safety (Australian Nursing and Midwifery Accreditation Council, 2012). In Nigeria, Educators, examiners and regulatory agencies have severally complained of poor performance of the students in the licensure examination (Ogbonaya *et al.*, 2014). Concerns about the shortage of nurses and public expectations regarding the value of services consumed have created need for monitoring performance (Dubois *et al.*, 2013).

Klopper citing *The Economist* (2005); The Kampala Declaration and Agenda for Global Action made during the First Global Forum on Human Resource for Health (HRH) in 2008 identified several strategies to strengthen the health workforce, including scaling-up health worker education and training monitored by health workforce information systems (Appiagyei, 2014).

Kenya's health workforce density is below the threshold needed to meet health related Strategic Development Goals (Appiagyei, 2014). The 2010 Lancet report, Health Professionals for a New Century, recommended investments in pre-service nursing education as a priority consideration within the framework of the health system. It also embraced the fact that regulation, education, training, research and service delivery synergize one another.

NCK reports indicated that Kenya had 82 accredited nurse training institutions of which ten of these 82 institutions opened between 2010 and 2012 (Appiagyei, 2014). The number has increased to 101 by 2015. Of these institutions twenty-two are offering BScN (NCK, 2015). CAP 257 of the laws of Kenya mandates NCK as the regulatory body to prescribe and conduct examinations for persons seeking registration or enrolment under the Act. It is the expectation of the NCK that the nursing students develop capacity for independent clinical judgment, creative and critical thinking demanded of them by consumers of health products (NCK, 2014).

1.3 Statement of the Problem

Licensure examination is increasingly becoming a high stakes event in which passing is an important milestone in the graduates' professional development (Nyangena, 2013). A pass in examination depends on many factors that can include student factors,

institutional factors and regulatory body factors. The evaluation of teaching and learning process is done on the basis of set standards (Idowu, 2013). Kenya is experiencing rapid growth of the nursing training institutions with corresponding increase in the number of enrolled students. Among these are Universities that now offer BScN programs for two and a half years for upgrading and four years for direct entry students. At the end of their training these students are subjected to the NCK licensure examination which determine their being allowed to practice if they pass. However in the recent past, the student performance in the examination has been poor raising concerns of NCK, training institutions, the students and other stake holders.

Regardless of a background of selection embracing very high performance in high school that required students to have an A with cluster points of 39.5 and above by most institutions, the performance in the licensure examination was not comparable. It is important to note that it is the same A that students of medicine are admitted to universities with. Reports of January 2015 overall results portrays an average performance of the students. There was 0 (0 %) distinction, 3 (0.5 %) credit, 491 (88.6 %) pass with 52 (9.4 %) fail (NCK, 2015). The poor performance reported in the recent past has warranted the need to conduct an investigation to unravel the possible factors that could be associated with poor performance.

1.4 Main Objective

The aim of the study was to investigate the performance of the Bachelor of Science in nursing students in the NCK examinations in Kenya.

1.5 Specific Objectives

The specific objectives of the study are to:

- (i) Determine the relationship between BScN student characteristics and their performance in the NCK examinations.
- (ii) Examine institutional characteristics and their relationship with performance in the NCK examinations by the BScN students.
- (iii) Analyze the regulatory body characteristics and their relationship to performance in examinations by the BScN students.

1.6 Research Hypothesis

There is no significant relationship between student characteristics and performance in NCK examinations by the Bachelor of Science nursing students in Kenya.

1.7 Justification of the Study

Investigating the performance of BScN students in NCK examination provides valuable information that can be used to predict performance, enhance graduation rates, increase success on national nursing licensure examination and create policies. The information can be used to assist the NCK and other stake holders including the educational institutions in planning to enhance student performance and ensure up to date preparation for students (Nadine, 2009). The study may also be used by NCK and institutions to address gaps identified in examination process to enhance validity in the NCK examinations. Understanding these relationships provided information that supports proper selection of prospective students into schools of nursing and in turn help in producing quality nurses (Ogbonaya, 2014). It is therefore important that the trends identified in this research would form basis for future research.

1.8 Limitations of the Study

- The NCK database lacked some key variables that were important for this study that include marital status, employment, faculty student ratio per university, mode of study.
- Time lapse between college completion and the examination time was not provided for in the database.
- To mitigate the possible bias, key informant interviews were conducted to ensure that the missing information on database could be gathered from key informant interviews and the results triangulated.

1.9 Conceptual Framework

Figure 1.1 below presents the conceptual framework of the study.

The framework for this study was adopted from Donabedian structure Process Outcome model (2005). Donabedian structure process outcome model is a framework used to examine health services and evaluate quality care. Basing on the concepts, an improvement in the structural aspects would automatically yield a good process thus enhancing a good outcome. Taken in the educational perspectives and as adapted by (Truman, 2012) the concept of structure is viewed as those factors relating to individual student, their environment which could include institutional characteristics and the regulatory body characteristics. Wholesomely, structural factors when integrated in a specific programme, which is conceptualized as the process can produce a positive or negative outcome. Balancing these structural factors is important in determining the student performance (Truman, 2012). Basing on the model Structure factors are individual characteristics, institutional characteristics and the regulatory body

characteristics. The process factor is the BScN programme and the outcome factors are the pass or fail in the NCK examination. These individual characteristics include each student's age, gender, employment and marital status, which may or may not impact on learning processes and outcomes. The structure factors also includes the institutional characteristics such as type of institution, mode of study, teacher characteristics, and school policies, among others. On the other hand, regulatory body characteristics include the examination validity. These factors can be affected by the BScN programme, an interaction produces the product which is either a pass or fail.

Conceptual Framework

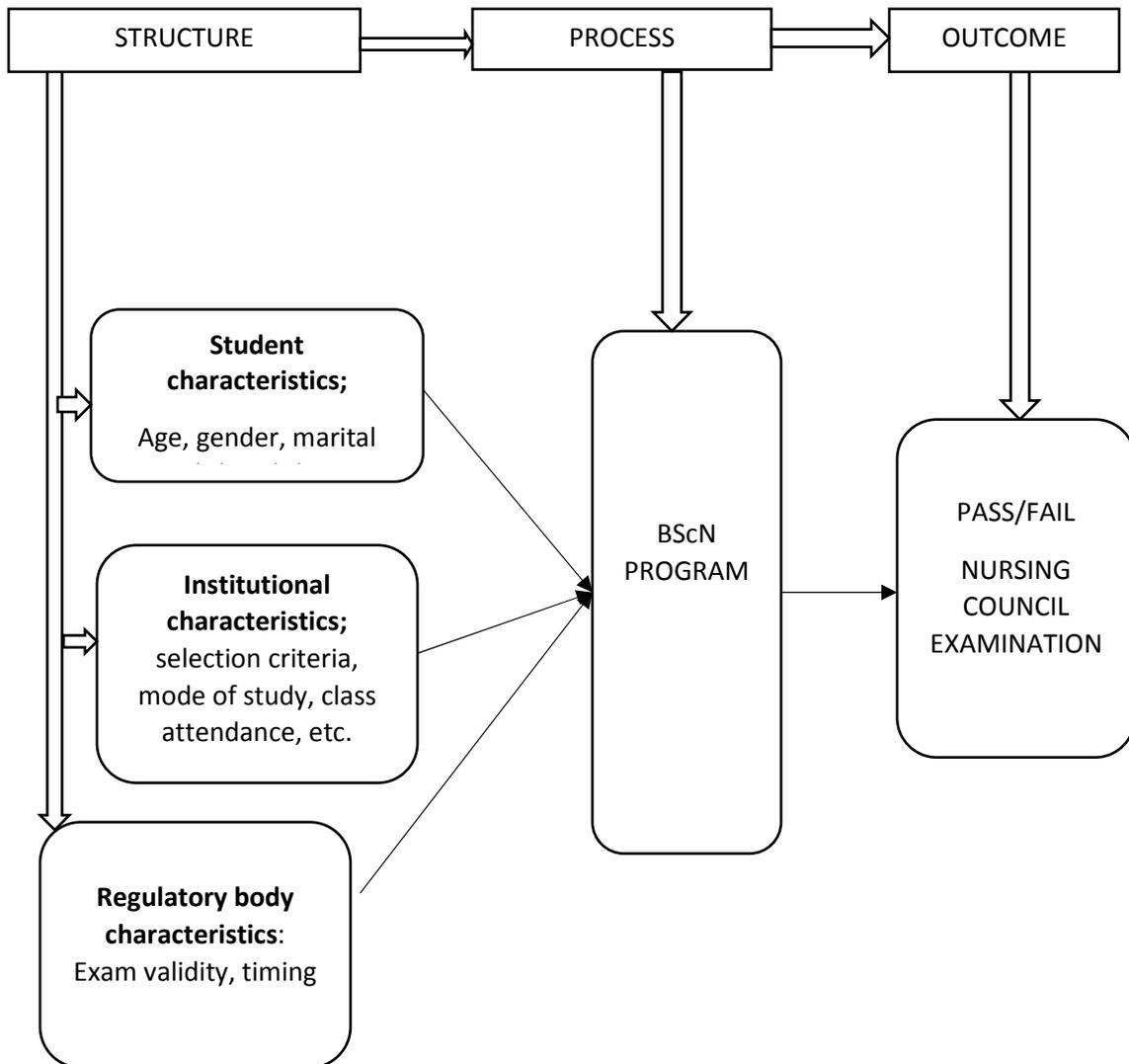


Figure 1.1 Structure Process Outcome model Adopted from Donabedian (2005)

1.10 Operationalization of Terms

The following terms represent the definitions that are used within this thesis.

Direct entry: Students on full time training selected after secondary level education without diploma in nursing.

Fail: Achievement of a score of 49 and below % in the examination

Mode of study: This is used to denote full time class starting Monday to Friday, part time class taking two or three days a week or weekend only class or distant learning.

Pass: Achievement of a score of 50 and above % in the examination

Performance: Examination pass or fail in the nursing council of Kenya examination

Regulatory body: Refers to Nursing Council of Kenya or any other professional body concerned with control of the profession

Selection criteria: Institutionalized basis of selecting students into nurse training schools

Upgrading: Student on part time who have a diploma in nursing

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

Literature review was conducted basing on the objectives identified to recognize gaps that this research sought to fill. It encompasses information on the student characteristics, institutional and regulatory body characteristics. Previous studies have identified several factors that affect student performance in various institutions. These include learning styles, learning preferences, parental factors, family income, class size and so many others (Jayanthi *et al.*, 2014). Because of the huge number of variables that can be considered (Farooq, 2011), the researcher narrows down on a few deemed relevant to this study and categorizes them as student, institutional and regulatory body characteristics.

2.2 Student Performance in Examination

Yusif *et al.*,(2011), citing Birdsall, (1996) state that countries with low levels of literacy have difficulties achieving high levels of growth. Levels of educational attainment and human capital are ingredients for overall economic growth. High quality education is crucial to the development of any profession. Several professions such as law, medicine and nursing require candidates to pass licensing examination prior to practice (Coons, 2014). The need to produce quality, safe practitioners in the health care is paramount, especially with the increasing cost of health care. Sophisticated advances in medical sciences and technology, increasing awareness and knowledge through internet have all increased the expectations of the public for quality care and demand for their rights

(Ogbonaya, 2014). Overall, quality of nursing education must continue to develop to its best so as to meet the student and patient needs (Coons, 2014). Pass rate, which is a requirement for continued accreditation is an indicator of faculty and program effectiveness, and some pass rates need to be attained in order for a program to maintain its accreditation (Silvestri, 2013).

Students present several reasons for not performing well in academics. These include lack of parental guidance, inadequate travel time and language barrier. Admission of students with lower qualifications in the nursing program is also a reason reported for students not performing well in BScN examination according to a study on selected factors influencing the academic performance of the first year basic B. Sc. nursing students (Joykutty *et al.*, 2012).

2.3 Student Characteristics Influencing Performance in the NCK Examinations

These include age of the student, gender, marital status and employment of the student.

2.3.1 Age of Student

Following the education system in Kenya, most BScN students first attempt the Nursing Council of Kenya examinations within the age ranges of twenty-one to twenty-five years. This is because the average age of student joining university education is at 19 years and the minimum period a BScN will spent in school is 4 years. This puts the students exit age from university averagely at 23 years (Odhiambo & Onyango, 2015). However, the upgrading students who have passed through other nursing programs such as certificate and ordiploma in nursing sit for the same examination as the direct entry students. Most of them are usually older, employed and married. By understanding what makes adult learners different from direct entry fulltime students, educators can provide

learning environment that help adult learners increase their chances of success (Cari & Jason, 2011). Being older in age may lead to better GPA scores, although it may not have a significant impact on academic performance ($p>0.05$) (Jayanthi *et al.*, 2014). In the systematic reviews done by (Pitt *et al.*,2012), older students were performing better than their younger counterparts.

2.3.2 Gender

Research done by (Jayanthi *et al.*,2014)on factors contributing to academic performance of students in a tertiary institution in Singapore found out thatfemale students exhibit higher GPA scores than their male counterparts This was shown by the differences between the GPA of female students and male students, Cohen's d ($d = 1.16$). Taylor, (2012) citing Has *et al.*,(2004) shows males failing the nursing council examinations at a higher rate than females, a view shared by (Jayanthi *et al.*, 2014). On the contrary, (Meece& Jones, 1996)and (Pitt *et al.*, 2012)did not identify any relationship between gender and performance. Systematic review by (Sears et al,2015) on examining the relationships between NCLEX-RN performance and nursing student factors, found out that had little influence in predicting performance in NCLEX-RN examination.

2.3.3 Marital Status

Nursing studies have structures that allow students into programs irrespective of their marital status. Marital status does not seem to influence performance in the licensure examination in any way as reported by (Nyangena *et al.*, 2013) in the study on factors influencing success in Bachelor of science in nursing graduates in Nursing Council of Kenya licensure examination. The same findings are echoed by (Fullerton &Severino, 1995) in the study on factors that predict performance on national certification

examination for nurse-midwives. A study conducted in north eastern Nigeria by (Amuda, et al, 2016) on marital status and age as predictors of academic performance of students found out that marital status and age did not significantly predict academic performance in college students.

2.3.4 Employment

Some of the characteristics of adult part time upgrading students are family commitment and employment as found out by (Cari & Jason, 2011). In their study on adult learning theory, highest GPAs were reported to be held by students who did not work and by those who worked more than 20 hours per week. These shows that students are able to balance work and academics. However, (Cooper, 2012) finds negative effects of working while attending college showing a relationship with undesirable influences on academic success and health. Giving its recommendation on how to improve performance in the NCLEX examination, the taskforce mandated with investigation asked the employers to provide fulltime benefits and scholarships for staffs, encourage and assist employees prepare for examinations. They also recommended special recognition for employees who pass examination in their institutions (Iowa Board of Nursing, 2006). Full time students working more than 16 hours per week exhibited poor performance in several studies that were reviewed (Pittet *al*, 2012).

2.4 Institutional Characteristic Influencing Performance in the NCK Examinations

The purpose of any educational system is to develop the minds of individuals so as to become responsible rational adults well prepared to handle every situation of life. Institutional characteristics are those factors within an institution that can influence

performance of students. This study has considered the following factors; admission criteria, type of institution, mode of study, school policies and teacher characteristics.

2.4.1 Type of Institution

A study done on relationship between school quality and students performance in selected schools of nursing in south western Nigeria revealed that performance of students in was best in private schools of nursing in the nursing and midwifery final qualifying examination followed by the performance of student nurses in the Mission school of nursing in the same examination and least performance was in the state nursing schools (Idowu, 2013). A study by (Kija *et al*, 2016)revealed there was no difference basing on type of school $p \Rightarrow 0.059$. There was a significant difference in the facilities available in public schools as compared to private schools and this could influence performance regardless of the school type (Sabitu *et al.*, 2012).

2.4.2 Admission Criteria Basing on Entry Qualifications

The nature of nursing profession requires that students who would like to be nurses be properly screened to determine their aptitudes and qualifications (Navarro, 2011). According to a study on predicting success in nursing programs, educational institutions determine the criteria for admission for their students (Crouch, 2014) usually basing on researched evidence thus providing great potential for academic success as echoed in a study on predicting academic progression for student registered nurse anaesthetist(Burns, 2011). A study by (Manieri *et al.*, 2015), found out that pre admission tests conducted for prospective nursing students were determinants of performance in the final examination. Higher preadmission test scores were correlated with high pass scores, school completion and pass rates.

As a requirement for admission to a nursing school, the BScN graduates must have a specified mean grade for university admission and cluster subject grades required for the nursing program(Nyangena *et al*, 2013). Kenyan public universities have a criteria that categorizes the selection under the Kenya Universities and Colleges Central Placement Services (KUCCPS) versus the Private Sponsored Students Program (PSSP) basing on grade attained in the Kenya Certificate of Secondary Education (KCSE) examinations. At the same time, the NCK has its own subject cluster of which every nursing school must adhere to in their selection of nursing students.

A strong relationship was identified between entry qualifications and performance in the licensure examination which was statistically significant ($r = 0.48$; $p < 0.05$) (Ogbonaya *et al.*, 2014); ($p = 0.022$), Kijaet *al.*, 2016) and ($p = 0.001$),(Pitt *et al.*, 2012). On the contrary, (Oducado &Penuela, 2014) found the high school grade to be non-significant in relation to performance ($t=0.441$).

2.4.3 Mode of Study

A study was carried out on 20 years of research on academic performance differences between traditional and distance learning summative meta analysis and trend examination.The study identified that there are higher chances of attaining higher learning outcomes in the online environment than in the face-to-face and thus superiority of the face to face (FTF) modality over its distance learning alternative has been successfully negated (Shachar, 2010). Part time and distant leaners have demonstrated higher abilities in patient care and managerial roles (Nguku, 2009).

2.4.4 Teacher Characteristics

There has been changing roles of teachers from them being teacher centered to being student centered and this calls for evolution of skills to meet this changing roles as found out in the study on teaching quality and performance among experienced teachers in Malaysia (Hamid *et al.*, 2012). Good teachers do not only display their competence in the subject area but also support their students in terms of displaying friendliness, optimism and creating a conducive learning environment. Faculty play an important role in modeling family members, community members and citizens of a country because these are roles assumed by the students outside the training institutions. These are activities related to the teacher and include the teacher student ratio, teacher qualifications, teacher experience and teaching methods. The study reported that teacher qualities among them experience and qualifications predicted the performance of the teacher which further impacted on the performance of the students.

Eyewole, (nd) found out a significant relationship between teachers' years of experience and teachers' job performance. Teachers' years of experience significantly influence their job performance which translated into better student outcomes.

2.4.4.1 Teacher Student Ratio

The standard requirement for student teacher ratio in the schools of nursing falls at one to ten and those that meet this requirement performed better. This is according to a study on relationship between school quality and students performance in selected schools of nursing in south western Nigeria (Idowu, 2013). In Kenya, a study on tutor capacity found out that no institutions among the interviewed had the standard required faculty-to-student ratio of 1:10, by the NCK. This resulted in increased faculty workload and less mentorship of students thus impacted negatively on the student performance. This

was also identified in the study on informing the scale-up of Kenyas nursing workforce: a mixed methods study of factors affecting pre-service training capacity and production (Appiagyei *et al.*, 2014). Hazelkorn, (2013) in the study on the university ranking system states that “smaller ratio of student to faculty is viewed as better and related to better teaching because it is assumed to provide conducive learning environment” and this index is used in the multi ranking of universities internationally. Small classes with small student teacher ratio have exhibited better performance, increased level of student participation, increased level of individual student support with less time being wasted on management issues as revealed by the study by Ballantine & Spade, (2015).

2.4.4.2 Teacher Qualifications

Bishop & Verleger (2013) identified the most influential force affecting student performance to be the teacher. This necessitates that the teacher undergo quality education. Higher teacher qualifications is attributed to better student performance (Idowu, 2013). Students require teachers as facilitators or guides and this can only be successful if the teacher has the right qualifications. These includes content mastery and this is gained through advances in learning (Bishop & Verleger 2013). Teacher education showed positive outcomes in student performance because the teachers were able to identify students’ common right or wrong answers basing on their own levels of understanding (Sadler *et al.*, 2012). However, a study by (Mareike *et al.*, 2013) found out that teachers academic abilities did not have an effect on the students’ instruction process and performance.

2.4.4.3 Teacher Experience

In education, teacher experience is the key factor in personnel policies that affect current employees with less experienced teachers tending to be more effective than those that have stayed long in the particular employment (King, 2010). However this view is conflicted in several studies. Eyewole, (n.d) in his study that found out that the higher the number of years of experience, the better the individual teacher performance with better student outcomes. World Bank report, (1997)also showed a positive correlation between the teacher experience in years and the learners' academic achievements. Darling, (2010)identified that with continued teacher performance assessments longer serving teachers performed better because of the increased chances they had on improving on their previous performances and this would automatically reflect in improved learner outcomes. King, (2010) in a meta-analysis study revealed that less experienced teachers were less effective in terms of student outcomes and this thought is shared also by (Alos *et al.*,2015).

2.4.5 School Policies

These includes variables like the mode of study, class attendance, pass mark and teaching methods. The goal of educational activities is to pass all students that demonstrate sufficient knowledge of the syllabus content and fail those who do not (Idowu, 2013). Policies can be enacted that contribute to the predictions of how the students will perform in the actual examination (Ong &Palompon, 2012).

Student class attendance is a major concern for educators. This is according to a study on factors affecting student academic performance which found out that poor attendance hinders academic achievement (Amitava *et al.*, 2010). Both teacher and student

absenteeism results in reduction in academic performance of the students in examination (Jafta, 2013). The effect of absence from class on student performance is shown to have adverse effects on student performance in any examination (Arulampalam *et al.*, 2012). Among the teacher related factors that were found to have a high impact in relation to performance was lateness and absenteeism (Alos *et al.*, 2015). Teaching methods are those techniques or approaches the teacher uses to bring the learner into contact with the content to be learned. Teaching methods are a way, an approach, or a process to communicate information. Some examples of methods are lecture, group discussion, one to-one instruction, demonstration and return demonstration, gaming, simulation, roleplaying, role-modeling, self-instruction modules, computer-assisted instruction, and distance learning techniques. Teaching methods can be both the innovative and traditional. A study on flipping the classroom to improve student performance found out that by correctly using innovative methods, faculty are better able to model students which enables the students to integrate theory and clinical practice (Missildine *et al.*, 2013). Method of delivery was identified as one of the factors that positively or negatively influenced the performance of students in their examination with innovative methods exhibiting high impact than the traditional methods as reported by Alos *et al.*, (2015) in their study on factors affecting academic performance student nurses of Bachelor of science nursing students. Freeman *et al.*, (2013) in a meta-analysis on active learning increases student performance in science, engineering and mathematics of several studies identified that most of them had recorded poor performance of students taught using traditional lecture methods as compared to those taught using innovative methods.

2.5 Regulatory Body Characteristics Influencing Performance in NCK Examinations

Performance in any examination can be influenced by several factors including methods and techniques used in the conduct of the examination (Joykuttyet *al.*, 2012). Since licensure examinations for nurses are set and conducted by the regulatory body which is the nursing councils, the characteristics include the validity of examination, time lapse after college completion and taking the licensing examination. Validity as an aspect examined the entire process of setting, marking, moderating and even invigilation of the examination.

2.5.1 Validity of the Nursing Council Examinations

Validity of an examination determines how well questions capture the concept (Nadine, 2009). According to the study on validity and reliability in social science research, in subjective tests, such as essay tests, measurement errors are often caused by fluctuations in standards by the individual grader and by the differences in standards of different graders (Drost, 2011). Validity of a test can be compromised if that test item is not used for performing the reason it was intended to do (Coons, 2014) citing (Spurlock, 2006). Taking an example of the RENR whose chief objective is to test the competence of nurses, ensuring the fitness to practice and public safety examination are weighed by domains of nursing and accorded a percentage per each domain (RENR, 2014). This is then followed by weighing the same examination by Blooms taxonomy levels considering questions on knowledge and comprehension being awarded 20 %, application 50% while analysis, synthesis and evaluation is accorded 30%. The questions are purely multiple choice questions of two papers of one hundred to one

hundred and twenty questions each. RENRE embraces use of a blue print that guides the conduct and content of the exam which is aimed at attaining the highest levels of validity and reliability (Ibid). On the other hand, the NCLEX-RN utilizes the Bloom's taxonomy for the cognitive domain as a basis for writing and coding items for the examination. This is because nursing requires application of knowledge, skills and abilities, and so most of the items are written at the application or higher levels of cognitive ability that needs complex thought processing. The framework of client needs is selected for the examination in order for the examination to offer a universal structure for crucial for nursing actions and capabilities and it focuses on the client as a whole (NCLEX-RNTEST PLAN, 2013).

2.5.1.1 Examination Processing

According to Nyangena *et al.*,(2011) in the study on evaluation of clinical training in nursing in Kenya, a setter is a qualified tutor with high integrity, good judgment and experience of three years and above. Setters develop and set examination basing on the NCK curriculum in Kenya. Examination setters ensure that the examination meet the entire domain of nursing practice achieved by involving panels of volunteers from all over the country representing the spectrum of nursing specialties and practice (Nadine, 2009). The same standards are upheld for markers of the examination and moderators as reported in the document for rules for the conduct and supervision of Nursing and Midwifery examinations in Uganda(Ugandan Nurses and Midwives Examination Board, 2013). Performance in the examination can be affected by style or pattern of question paper, sequencing of question, strictness in marking and student hand writing among many other factors that are involved during the period of processing. This was found out

in a study on factors affecting performance in examination at university level (Rasul & Bukhsh, 2011).

Comparing the Nursing Council of Kenya examination with the NCLEX-RN, the NCLEX-RN utilizes a Test Plan that provides a concise summary of the content and scope of the licensing examination and guides the process of examination development. (NCLEX-RN TEST PLAN, 2013). The examination is administered to candidates by computerized adaptive testing (CAT) and measurement. This makes candidates examination unique because it is assembled interactively as the examination continues. Computer technology selects items to administer that match the candidate's ability. The examination items are stored in a large item pool and grouped according to the level of difficulty. After the candidate answers an item, the computer calculates an ability estimate based on all of the previous answers the candidate selected. The next item administered is chosen to measure the candidate's ability in the appropriate test plan category. This process is repeated for each item, creating an examination tailored to the candidate's knowledge and skills while fulfilling all NCLEX-RN Test Plan requirements. This goes on until a pass or fail decision is made. All registered nurse candidates must answer a minimum of 75 items. The maximum number of items that a registered nurse candidate may answer is 265 during the allotted six-hour time period. The maximum six-hour time limit to complete the examination includes the tutorial, sample questions and all breaks. Candidates may be administered multiple choice items as well as items written in alternate formats. These formats may include but are not limited to multiple response, fill-in-the-blank calculation, ordered response, and/or hot spots. All item types may include multimedia such as charts, tables, graphics, sound and

video. All items go through an extensive review process before being used as items on the examination (NCLEX-RNTEST PLAN, 2013).

2.5.1.2 Examination Malpractices

Examination malpractices take various forms to include leakage, impersonation, smuggling of foreign materials, copying and collusion (Oko& Adie, 2016). King, (2012) in her study identified examination leakage as one of the biggest threat examination validity which can lead to bad consequences. Examination leakage is usually driven by desire to pass at all cost, anxiety and lack of confidence in all the stake holders who include the students, their parents and even the training institutions (Drost 2011). Other causes identified by Nnam & Inah, (2015) in their study include lack of modern means of invigilation and ill preparation of students. Achio, (2012) reported that student try all forms of malpractices in order for them to pass examinations. Some studies have even recommended heavy punishment as a way of rooting out the vice (Idowu, 2013) However, the NCLEX-RN TEST PLAN, (2013) stipulates that all candidates are instructed to adhere to exam center rules ensure the examination security and confidentiality failure to which attracts disciplinary actions including criminal prosecution and denial of licensure.

2.5.2 Examination Timing in Relation to Completion of Training

This is the period between the time the student completes his or her training and the time the student sits for licensure examination. It can be institution dependent where by the time lapse between when the student completed the programme in the institution and the next time the examination is offered by the regulatory body is long. This period can also be prolonged by a student who is not ready to sit examination basing on individual

reasons. NCSBN survey findings showed that pass rates decrease with time between graduation and completion of the examination (IOWA Board of Nursing, 2006). Nyangena *et al*, (2013) suggested that students sit for examination immediately after graduation. However, questions arise on whether this can apply to direct entry students who have not had work experience. The Oklahoma taskforce report in addressing the issue of poor performance in the NCLEX examination recommended that the students take the licensure examination immediately after graduating from the schools of nursing and within a period of not more than a year (IOWA Board of Nursing, 2006).

Summary

A combination of factors play different roles among students as opposed to a singular factor. Various studies in different countries evaluating same determinants show them as either influencing or not influencing performance and therefore none can be utilized as an actual determinant. Therefore it is important to study this particular population to identify their unique determinants for success in the licensure examination and production of a high qualified competent nursing workforce.

CHAPTER THREE

METHODOLOGY

3.1 Overview

This chapter describes the techniques and approaches that were used during this study. The study design, site of the study are described, the population, sample size and sampling procedures are described and the instruments that are employed for collection of data are also explained. The section concludes with the outline of data analysis and dissemination of findings.

3.2 Study Design

The study design is analytic, retrospective study using both qualitative and quantitative data collection methods. The researcher chose analytic design because beyond describing the variables, the study went further to make inferences into the relationship that exist thus giving meaning to the study. The researcher linked a particular outcome which is a pass/ fail in the Nursing Council of Kenya examination by the Bachelor of Science nursing students with various independent variables. The researcher used record review in gathering information from NCK database.

3.3 Study Area

Nursing council of Kenya forms the main study area because this is the place where all the data of the students is kept. This is because the nursing council of Kenya has all the data concerning the nursing institutions, the students enrolled for nursing and the outcomes from the licensure examination. The students who had completed training and sat

for nursing council examination within the period July 2012 to June 2015 whose records were examined. Registered schools of nursing country wide were also considered to include; public schools, private schools and faith based schools proportionately where the key informants were interviewed.

3.4 Target Population

The study population comprise all BScN students' records of NCK examination in the NCK database from 2012 July to 2015 June totaling to 1292 and six heads of schools of nursing respectively. Also included is the head in the department that handles examination at the NCK.

3.5 Inclusion Criteria

- Institutions offering Bachelor of Science Nursing education
- Institutions that had enrolled their students for nursing council examinations during the period July 2012-June 2015.
- Institutions presenting their students for Nursing Council of Kenya examinations twice a year.
- Heads of Nursing institutions and schools
- Head of department at the NCK that handles examination issues.
- All student data for 2012 July to 2015 June.

3.6 Exclusion Criteria

- Institutions having one examination in a year.
- Data of students having second attempt or more on the nursing council examination.

3.7 Sampling Design

The researcher clustered the nurse training institutions into three categories. These are private, public and faith based. Proportionate allocation of participants into the cluster was done basing on their level of representation. Because the faith based and private institutions were few (three), they were all allowed into the sample. However, public institutions were five and therefore simple random sampling was done. Three out of the five institutions were picked which is more than the minimum thirty percent acceptable for a sample. This was achieved by picking three folded papers representing the institutions from a box randomly. For key informants, purposive sampling was done where heads of schools of nursing sampled were interviewed. The chairperson of the department dealing with examination at the NCK was also purposively sampled. All candidates' records of examination for the period July 2012 to June 2015 were included in the sample for data base analysis.

3.8 Sample Size Determination

Number of institutions meeting the inclusion criteria were eight. These were five Public institutions (UON, KU, Egerton, MMUST and Moi universities), one private (GLUK) and two faith based (UEAB, KEMU) institutions. Three out of five public universities (UON, MMUST and Moi universities) were selected which form more than 30% of the population. One of the public institutions was used as a pilot institution. The two faith based institutions were both included in the sample because they were few. The remaining one private institution was also included in the sample. This finally led to the research using six out of the eight institutions in the study. One institution, which was a

public institution was used for conducting pilot study thus eliminated from the key informant interviews but its database records were included in the main study. The institution was selected because it had the similar characteristics with the study area.

3.9 Instrument Development

Items for the transcription form used to collect data from the nursing council of Kenya data base were developed by the researcher with the aid of the supervisors. Variables in the form include; Index no/code, Mode of study, Age, Gender, Marital status Employment, Employer, Mean score in KCSE, Date of entry into training, Type of institution, Date of completion of training and Dates of examination.

Research tool for key informant interviews was adopted from one used by the Task Force report from the nursing education institutions and faculty RENRE, (2014) which was used across the states that the study was carried out. The items on the tool were revised and customized to fit in my study.

3.10 Validity and Reliability of the Instrument

Validity is the extent to which an instrument measures what it purports to measure. A pilot study was done to test if the questions were answering what they were intended to test. One of the public institutions was used for piloting purposes. A further refining of the tool was done after the pretest.

3.11 Data Collection Procedures

Data collection involved retrieving information from the NCK offices database at Nairobi. The key items that information was required on were identified and the specific data was merged using unique index identifiers. Retrieval of the information from the

database was done by the data records officer at the nursing council of Kenya. Key informant interviews were carried out using the key informant interview guides and data recorded. The subjects interviewed in the key informant interviews were heads of departments in the schools of nursing and the head of department handling examination at the nursing council of Kenya. Data collection from the key informants were done by the researcher herself. The reference period was July 2012 to June 2015.

3.12 Data Management

The demographic data was identified using a unique index key identifier that yielded records of 8,678 candidates. From these, the index identifier was merged with the grade results that had the same unique identifiers yielding records of 2,356 candidates and a perfect merge yielded records of 2,354 candidates after eliminating the repeated numbers. After excluding dataset of the universities that were not meeting the eligibility criteria, candidates' records remained 1,399. To ensure that we reported only the first pass any results that had a zero indicated the examination was a repeat and therefore were excluded from the data to be analyzed. Therefore the dataset that was used for analysis had 1,292 records of students.

The course duration was not provided for in the database, therefore commencement date was subtracted from the examination date, thus providing the course duration. Any duration of four years to six years was regarded as direct entry while the rest were regarded as upgraders to help the researcher identify the mode of study. The same reference was used for employment and marital status which were also missing in the database. However the period lapse between completion of training and date of examination could not be elicited from the data base information provided. For

categorical data, credit and pass were all deemed as a pass and accorded a 1 while a fail was accorded a 2.

3.13 Data Analysis

Raw data was double checked for accuracy and coded. Data analysis was done using a SAS software Version 8. To provide a profile of students, frequencies, means, range and standard deviations for data was computed. Bivariate analysis of dependent and independent variables was also done with p [less than or equal to] .05, being considered significant. To determine relationship between selected variables and performance in NCK examination regression analysis was used because the dependent variable was dichotomous. Regression analysis was computed to test relationship on institutional characteristics. Dependent variable tested reflected either passing or failing of the nursing council examination while the independent variables tested reflected the student, institutional and regulatory body characteristics. Content analysis was done for qualitative data.

3.14 Ethical Considerations

The researcher sought approval to conduct the study from Masinde Muliro University School of graduate studies, and ethical clearance from the Research Ethics Committee of Masinde Muliro University and permit from National Commission for Science, Technology and Innovation (NACOSTI). The researcher also sought permission from the nursing council of Kenya to utilize their data. Random selection of schools was done for fairness. For justice, participants' anonymity was maintained prior to the compiling and analysis and the database was maintained secure throughout the study to ensure that no harm to individuals or institutions occurred. Informed consent was obtained from

participants in the key informant interviews from the institutions involved and participants were allowed to withdraw from study at any point without suffering any consequences.

3.14 Dissemination of Research Findings

The NCK will be provided with the findings report. This data will also be disseminated in forums such as scientific conferences.

CHAPTER FOUR

RESULTS

4.1 Overview

The primary aim of the study was to evaluate performance of the BScN students in the Nursing Council examinations in Kenya. It therefore required determining the relationship between the selected variables and performance (pass/fail). The chapter presents demographic characteristics of the students, student characteristics which include age, gender, marital status and employment in relation to performance. It also provides results on institutional characteristics to include type of institution, admission criteria, and mode of study, school policies and teacher characteristics and their relation to performance. Finally the chapter provides findings on regulatory body characteristics and their relationship to performance.

General Findings

The total number of students who sat the NCK examination for the period July 2012 to June 2015 was 1292 while for the two complete years 2013-2014 was 790. The highest number of students who sat for examination was recorded in the year 2014 which was 470 (36.4%) students compared to the previous year 2013 which was 320 (24.7%). For the data presented on the half years which were 2012 and 2015, the highest number was in 2015 with 405 (31.3%) while 2012 was least with 97 (7.6%) students.

Figure 4.1 below illustrates that, during the 2012 period UEAB recorded the highest proportion of students being 39 (40.2%). This proportion then dropped in 2013 but went up again in 2014. GLUK started with slightly higher proportion although lower than KEMU and UEAB, but then experienced a drop throughout the rest of the period. KU had a drop in the year 2013 but the proportion went up again in 2014. MMUST experienced an increase throughout the period while Moi and UON increased their proportion of enrolment in 2013 and dropped in 2014.

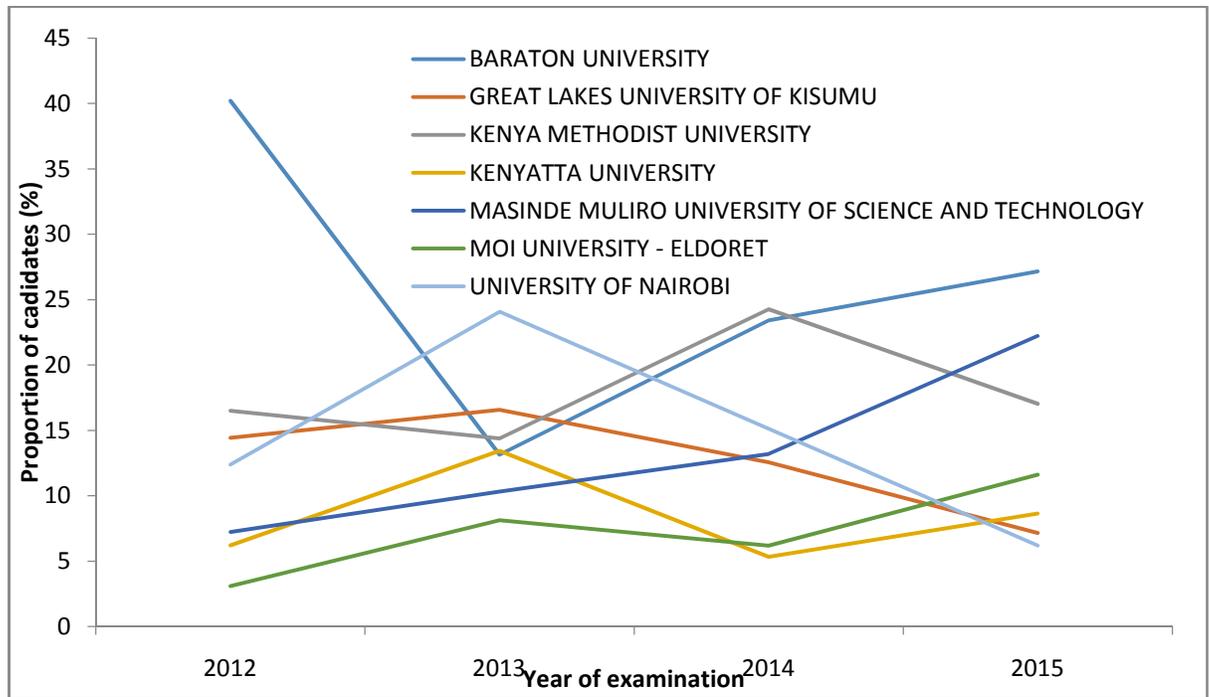


Figure 4.2: Year of Examination by institution

4.2 Demographic Characteristics of Students

Age of the BScN students

Among the demographic characteristics presented in this study is the age of the students.

Table 4.1 below presents data on the age of students.

Age was distributed in groups of 10 year intervals ranging from 20-29 years, 30-39, 40-49 then 50 years and above. Results on age group comparison show that majority of the students were between ages of 20-29 years old and that was 667 (51.6%) followed by ages of 30 to 39 years being 390 (30.2%) while the least were those above 50 years 55 (4.3%) of the total students that sat for the nursing council examinations during the reference period. UON had the highest population of students 173 out of 185 (93.5%) being ages 20 – 29 years followed by UEAB with 128 (42.5%). The least was GLUK having only 17 out of 155 (11%) of the students being age 20 – 29 years old. For ages 30-39 years, GLUK had the highest percentage 61.3% followed by KEMU with 38.8%. KEMU had the highest population of students who were above 50 years being 20 out of 55 (8.2%) of the total population although some universities such as KU and UON had none of their students in that age bracket 50 and above years. The mean age of the students was 32.3 ± 8.2 (20.9 – 58.8). GLUK had the highest mean age of 36.8 ± 7.0 (23.2 – 57.5) years, while UON had the lowest mean of 27.0 ± 2.9 (20.9 – 46.7). This clearly indicated that majority of UoN students were younger than others. The private and faith based institutions had high mean age compared to the public institutions because most of the public institutions admitted majority of the students through KUPPS while faith based and private students were purely on a private sponsored program.

Table 4.1: Age of BScN students

Variable	Categories	UEAB (%)	GLUK (%)	KEMU (%)	KU (%)	MMUST (%)	MOI (%)	UON (%)	Total (%)
Age group in years	20 – 29	128 (42.5)	17 (11.0)	74 (30.2)	94 (86.3)	92 (47.9)	89 (84.8)	173 (93.5)	667 (51.6)
	30 – 39	110 (36.5)	95 (61.3)	95 (38.8)	14 (12.8)	54 (28.2)	12 (11.4)	10 (5.4)	390 (30.2)
	40 – 49	50 (16.6)	35 (22.6)	56 (22.9)	1 (0.9)	35 (18.2)	1 (1.0)	2 (0.9)	180 (13.9)
	>=50	13 (4.3)	8 (5.2)	20 (8.2)	0 (0.0)	11 (5.7)	3 (2.9)	0 (0.0)	55 (4.3)
	Total	301	155	245	109	192	105	185	1292
Mean age in years	Mean±SD	33.4±8.3 (22.4 – 57.9)	36.8±7.0 (23.2 – 57.5)	36.0±8.5 (23.0 – 57.4)	27.0±3.6 (21.3 – 47.2)	32.8±9.2 (21.5 – 58.8)	27.4±5.6 (21.8 – 53.1)	27.0±2.9 (20.9 – 46.7)	32.3±8.2 (20.9 – 58.8)
	(Range)	–	–	–	–	–	–	–	–

Gender of the BScN students

Table 4.2 below introduces gender of the students in the institutions in terms of numbers and percentages.

Out of the total 1292, 945 (73.1%) of the students who sat for the NCK examination during the period July 2012 to June 2015 were female while 347 (26.9%) were males.

Across all the universities, the proportion of females exceeded that of males with UEAB leading with 249 out of 301 (82. %) of the students being females and only 52 (17.3%) were males, while Kenyatta University had the least with 67 out of 109 (61.5%) females and 42 (38.5%) males.

Table 4.2 Gender of BScN students

Variable	Categories	UEAB (%)	GLUK (%)	KEMU (%)	KU (%)	MMUST (%)	MOI (%)	UON (%)	Total (%)
Gender	Male	52 (17.3)	40 (25.8)	48 (19.6)	42 (38.5)	64 (33.3)	32 (30.5)	69 (37.3)	347 (26.9)
	Female	249 (82.7)	115 (74.2)	197 (80.4)	67 (61.5)	128 (66.7)	73 (69.5)	116 (62.7)	945 (73.1)
	Total	301	155	245	109	192	105	185	1292
	Total	301	155	245	109	192	105	185	1292

4.3 Student Characteristics and Performance

To investigate the relationship between BScN student characteristics and their performance in the NCK examination. The following variables were examined: age, gender, marital status and employment

Overall Performance Basing on Age and Gender

Table 4.3 below present information on the overall performance basing on age and gender. Age is categorized into four groups ranging from age 20-29, 30-39, 40-49 and 50 and above. Gender is categorized into two groups as either male or female.

The overall percentage pass in all the institutions was 1087 out of 1292 (84.1%). The highest percentage pass was recorded in age group 30-39 and was (89.5%) which was followed by age 40-49 years with 84.4%. Age 50 and above category performed marginally better than the lowest in age group 20-29 by getting 81.8% against (81.1%).

Gender results showed that males performed marginally better than their female counterparts by having 84.2% pass against females with 84.1%.

Table 4.3: Overall performance in relation to age and gender

Variable	Categories	Pass (%)	Fail (%)
Age group in years	20 – 29	541 (81.1)	126 (18.9)
	30 – 39	349 (89.5)	41 (10.5)
	40 – 49	152 (84.4)	28 (15.6)
	>=50	45 (81.8)	10 (18.2)
	Total	1087 (84.1)	205 (15.9)
Gender	Male	292 (84.2)	55 (15.8)
	Female	795 (84.1)	15 (15.9)
	Total	1087 (84.1)	205 (15.9)

4.3.1 Age and Performance by Institution

Table 4.4 below presents information on the age by institution. Age is categorized according to age group in years into four main categories.

The average percentage pass for ages 20-29 was 81.1% pass. KU had the highest pass in this category with 85 out of 94 students passing (90.4%), followed by MMUST with 83.7% pass while GLUK that had the least percentage pass in the same category with 12 out of 17 passing (70.6%). For ages 30-39 years, the average performance pass was 89.5% pass. In the same age group (30-39) years, MOI had all its 12(100%) students

passing followed by MMUST with 51 (94.4%) pass then KEMU with 86 out of 95 (90.5%) and among the ages 40-49 years, KU, MOI and UON which all had two and below students recorded 100% pass followed by GLUK with 35 students in the same group having 88.6 % pass and the least was MMUST with 80 percent pass. MMUST had all the students 11(100%) in the age group of 50 and above passing followed by KEMU which had 20 students and recorded a 90.5% pass whereas UEAB performed poorest in the category with only 8 out of 13 students passing (61.5%).

Table 4.4: Performance by institution in relation to age

Variable	Category	UEAB		GLUK		KEMU		KU		MMUST		MOI		UON		Total	
		Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)
Age group in years	20 – 29	104 81.3	24 18.7	12 70.6	5 29.4	57 77.1	17 22.9	85 90.4	9 9.6	77 83.7	15 16.3	73 82.1	16 17.9	133 76.9	40 23.1	541 81.1	126 18.9
	30 – 39	98 89.1	12 10.9	81 85.3	14 14.7	86 90.5	9 9.5	12 85.7	2 14.3	51 94.4	3 5.6	12 100.0	0 0.0	9 90.0	1 10.0	349 89.5	41 10.5
	40 – 49	41 82.0	9 18.0	31 88.6	4 11.4	48 85.7	8 14.3	1 100.0	0 0.0	28 80.0	7 20.0	1 100.0	0 0.0	2 100.0	0 0.00	152 84.4	28 15.6
	>=50	8 61.5	5 38.5	6 75.0	2 25.0	18 90.0	2 10.0	0 0.0	0 0.0	11 100.0	0 0.0	2 66.7	1 33.3	0 0.00	0 0.00	45 81.8	10 18.2
	Total	251	50	130	25	209	36	98	11	167	25	88	17	144	41	1087	205

4.3.2 Gender and Performance by Institution

Table 4.5 below presents information on the performance of the students in the different institutions basing on gender.

Averagely 292 (84.2%) males passed the national licensure examination for the period under study with only 55 (15.85%) failing compared to the females 795 (84.1 %) passed while 15 (15.9%) failed. The highest percentage pass for males was from KU with 37 out of 42 candidates (88.10 %) followed by MMUST with 56 out of 64 candidates (87.5%) and this was lower than the females which was 61 out of 67 (91.0%) for KU followed by MMUST with 111 out of 128 (86.7%). The lowest performance was among the female students, UON which recorded the lowest percentage pass of 86 out of 116 (74.1 %).

Table 4.5: Performance by institution in relation gender

Variable	Category	UEAB		GLUK		KEMU		KU		MMUST		MOI		UON		Total	
		Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)
Gender	Male	42 80.8	10 19.2	32 80.0	8 20.0	41 85.4	7 14.6	37 88.1	5 11.9	56 87.5	8 12.5	26 81.3	6 18.7	58 84.1	11 15.9	292 84.2	55 15.8
	Female	209 83.9	40 16.1	98 85.2	17 14.8	168 85.3	29 14.7	61 91.0	6 9.0	111 86.7	17 13.3	62 84.9	11 15.1	86 74.1	30 25.9	795 84.1	150 15.9
	Total	251 83.4	50 16.6	130 83.9	25 16.1	209 85.3	36 14.7	98 89.9	11 10.1	167 87.0	25 13.0	88 83.8	17 16.2	144 77.8	41 22.2	1087 84.1	205 15.9

Table 4.6 below demonstrates bivariate analysis of socio demographic characteristics (age and gender) and performance. In this table, age is categorized into two broad group with one group being 30 years and above while the other is age below 30 years.

There was a significant association between age group and performance. The proportion of those who passed and were aged 30 years and above was significantly higher than those who were aged less than 30 years. (OR: 1.6, 95% CI: 1.2-2.2, p= 0.002). This implies that those who were older were more than one and a half times more likely to have passed compared to those who were younger. Further analysis on gender and performance did not show any significant association.

Table 4.6: Bivariate analysis of socio-demographic characteristics and performance

Independent variable	% Pass (n=1087)	% Fail (n=205)	OR	95% CI	P value
Age group in years					
>= 30	87.4	12.6	1.6	1.2 – 2.2	(0.0021)
< 30	81.1	18.9			
Gender					
Male	84.2	15.9	1.0	0.7 – 1.4	0.99
Female	84.1	15.9			

4.3.3 Marital Status and Performance

The total number of key informants from the schools of nursing interviewed were six. Marital status was reported to influence the performance in this study with 4 out of 6 (66.7 %) participants reporting that married student performed better in examination and only 2 (33.3%) reporting contrary. One participant number commenting on marital status stated;

“These are men and women holding family responsibilities and on rare occasions do the parents take care of their needs while in school. They owe responsibility to several people. How can you imagine with all these burdens on their shoulders that one can play around with their studies? In fact most emerge the best in performance and almost always.”

Comparing with the bivariate analysis for age and performance, the majority of the candidates thirty years and above were married and this was the category that exhibited the best performance in regards to age (OR: 1.6, 95% CI: 1.2-2.2, p= 0.002).

4.3.4 Employment and Performance

Regarding employment, four out of six (66.7 %) of the respondents felt that employment contributed to better performance and therefore the students who were employed were likely to perform better than those who were not. The above response were corroborated with the finding on analysis of information regarding age from the data base. This was because majority of the student within the age bracket 20-29 years performed the least among the categories yet it was the common age attributed to non-employment grounding on the assumption that most students exit the university between

ages 23 to 26 years. Majority of the participants agreed that employment affects the way student perform together with their study habits. One participant reported that;

“Employment institutions provide tougher conditions for their staff even when it involves going to school. They are ever confronted with targets until they are used to setting their targets and striving to achieve them. Passing the nursing council examination to them is like any other achievement requiring to be met and therefore targets are set by individual learners to ensure they pass”.

4.4 Institutional Characteristics and Performance

To examine institutional characteristics’ and their relationship with performance in the NCK examinations by the BScN students. The characteristics examined include type of institution which is categorized as public, faith based and private. Mode of study is categorized as either full time direct entry or part time upgrading. Admission criteria is either KUPPS admission or PSSP. The school policies examined includes policy on teaching methods, student class attendance and pass mark policy while the teacher characteristics include teacher qualifications, teacher student ratio and teacher experience.

Table 4.7 below illustrates the overall performance by institution

Generally, all the institutions had 84.1% pass. The highest percentage pass was from K U (89.9%), followed by MMUST (87.0%) and the least was UON with 77.8% pass. See table 4.6 below illustrating performance by institution.

Table 4.7: Performance by institution

Categories	UEAB		GLUK		KEMU		KU		MMUST		MOI		UON		Total	
	Pass (%)	Fail (%)														
Total	251	50	130	25	209	36	98	11	167	25	88	17	144	41	1087	205
	83.4	16.6	83.9	16.1	85.3	14.7	89.9	10.1	87.0	13.0	83.8	16.2	77.8	22.2	84.1	15.9

4.4.1 Type of Institution and Performance

Figure 4.2 represents performance by type of institution. Three types of institution are presented and these are public, faith based and private.

Generally, the percentage pass was higher in the faith based institutions compared to the performance in the public institutions while being lowest in the private institutions.

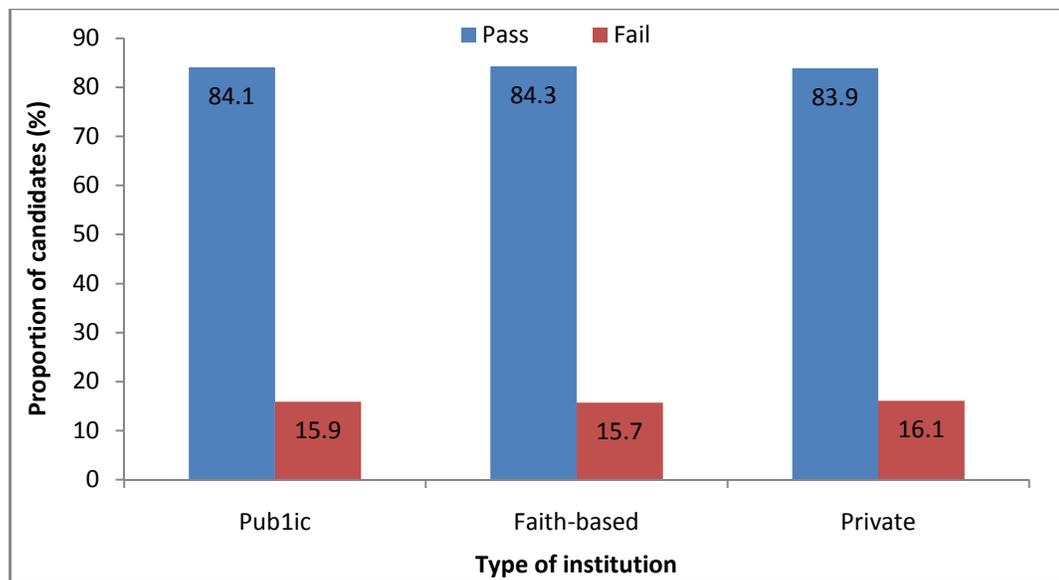


Figure 4.3: Performance by type of institution

Performance by socio-demographic characteristics and type of institution

Table 4.8 below presents information on the socio demographic characteristics and types of institution in relation to performance.

Concerning the age, the highest percentage pass was registered among the ages 30-39 which was 349 out of 390 (89.49%). In the same age group the Public institutions performed better than faith based institutions and private institutions respectively by having 84 out of 90 (93.33%) against 184 out of 305 (89.76%) and 81 out of 95 (85.26%) respectively. Lowest performance was displayed among the ages 20-29 across the institutions and was much lower in the private institutions being at 12 out of 17 (70.59%) pass than public at 368 out of 448 (82.14%) and faith based 161 out of 102 (79.70%) and also comparing with ages above 50 that had higher percentages.

A total of 591 (45.7%) belonged to public institutions, 546 (42.3%) to faith based institutions while 155 (12.0%) belonged to private. Overall, the proportion of males (84.1%) and females (84.1%) with a pass was comparable. By type of institution, females 98 out of 115 (85.2%) in private institutions performed better than their male counterparts 32 out of 40 (80%) in contrast to the public where the proportion of females with a pass was 320 out of 384 (83.3%). The difference, was however, very slim in faith-based institutions where females with a pass constituted 377 out of 446 (84.5%) and the males 83 out of 100 (83%).

Table 4.8: Performance by socio-demographic characteristics and type of institution

Variable	Public		Faith-Based		Private		Total	
	Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)	Pass (%)	Fail (%)
Gender								
Male	177 85.51	30 14.49	83 83.00	17 17.00	32 80.00	8 20.00	292 84.1	55 15.9
Female	320 83.33	64 16.67	377 84.53	69 15.47	98 85.22	17 14.78	795 84.13	150 15.87
Total	497 (84.0)	94 (16.0)	460 (84.2)	86 (15.8)	130 (83.8)	25 (16.2)	1087 (84.1)	205 (15.9)
Age groups in years								
20 – 29	368 82.14	80 17.86	161 79.70	41 20.30	12 70.59	5 29.41	541 81.11	126 18.89
30 – 39	84 93.33	6 6.67	184 89.76	21 10.24	81 85.26	14 14.74	349 89.49	41 10.51
40 – 49	32 82.05	7 17.95	89 83.96	17 16.04	31 88.57	4 11.43	152 84.44	28 15.56
>=50	13 92.86	1 7.14	26 78.79	7 21.21	6 75.00	2 25.00	45 81.82	10 18.18
Total	497	94	460	86	130	25	1087	205

Table 4.9 below presents information on results of logistic regression analysis for type of institution and performance

On subjecting the data to regression analysis, there was no association found between the type of institution and performance. The P values for public was 0.97, faith based 0.92 and private 0.92 therefore all having no significant relationship with performance.

Table 4.9 Logistic regression analysis of institutional characteristics and Performance

Independent variable	% Pass (n=1087)	% Fail (n=205)	OR	95% CI	P value
Type of institution					
Public	84.1	15.9	0.99	0.7-1.3	0.97
Others	84.2	15.8			
Faith-based	84.3	15.7	1.0	0.8-1.4	0.92
Others	84.1	15.9			
Private	83.9	16.1	0.9	0.6-1.5	0.92
Others	84.2	15.8			

4.4.2 Admission Criteria and Performance

Table 4.10 below is a sample raw cluster point table. It was extracted from data provided to the universities on university cut of points. It presents on how cluster and aggregate points are arrived at in grading the KCSE results for student. The universities base on this while admitting the students to the various programs.

The selection criteria of all universities conformed to the nursing council requirements for entry into BScN program which was a C+, however university admission differed depending on individual university cut off points. In this table, A- ranged from 40.1 to 46.8 points (raw cluster) and basic aggregate of 74 to 80 points although raw cluster point varied from university to university giving rise to variations in admission criteria basing on the CUE requirements as some universities had higher raw cluster points than others. As much as the cut point was clear for university entry, those students admitted on KUCCPS programme were admitted with higher points compared to those admitted on the parallel programme commonly referred to as PSSP which accepted students to same program but with a minimum qualification of C+ mean score and a basic aggregate of 46-52 points. There is a clear 28 aggregate point difference in students admitted to the university in the two programs. Private and faith based institutions differed on their selection criteria although they were able to conform to the nursing council requirements for admission into the BScN program. Irrespective of all these majority of the key informants reported that majority of the students who were direct entry and had enrolled on parallel programme performed poorly compared to their counterparts who were admitted through the KUCCPS and this was reported by 2 out of 3 (66.7%) of the total participants in the public institutions. However this information was only valid for the

public universities because the private universities did not utilize the same criteria for admission.

Table 4.10: Sample table of KCSE raw cluster points

		RAW CLUSTER POINTS →													
		48	47	46	45	44	43	42	41	40	39	38	37	36	35
A	84	48.0	47.5	47.0	46.5	46.0	45.4	44.9	44.4	43.8	43.3	42.7	42.1	41.6	41.0
	83	47.7	47.2	46.7	46.2	45.7	45.2	44.6	44.1	43.6	43.0	42.5	41.9	41.3	40.7
	82	47.4	46.9	46.4	45.9	45.4	44.9	44.4	43.8	43.3	42.7	42.2	41.6	41.1	40.5
	81	47.1	46.6	46.1	45.6	45.1	44.6	44.1	43.6	43.0	42.5	41.9	41.4	40.8	40.2
A-	80	46.8	46.4	45.9	45.4	44.8	44.3	43.8	43.3	42.8	42.2	41.7	41.1	40.6	40.0
	79	46.5	46.1	45.6	45.1	44.6	44.1	43.5	43.0	42.5	42.0	41.4	40.9	40.3	39.7
	78	46.3	45.8	45.3	44.8	44.3	43.8	43.3	42.7	42.2	41.7	41.2	40.6	40.1	39.5
	77	46.0	45.5	45.0	44.5	44.0	43.5	43.0	42.5	42.0	41.4	40.9	40.3	39.8	39.2
	76	45.7	45.2	44.7	44.2	43.7	43.2	42.7	42.2	41.7	41.2	40.6	40.1	39.5	39.0
	75	45.4	44.9	44.4	43.9	43.4	42.9	42.4	41.9	41.4	40.9	40.4	39.8	39.3	38.7
	74	45.1	44.6	44.1	43.6	43.1	42.6	42.1	41.6	41.1	40.6	40.1	39.6	39.0	38.5
B+	73	44.7	44.3	43.8	43.3	42.8	42.4	41.9	41.4	40.8	40.3	39.8	39.3	38.8	38.2
	72	44.4	44.0	43.5	43.0	42.5	42.1	41.6	41.1	40.6	40.1	39.5	39.0	38.5	37.9
	71	44.1	43.7	43.2	42.7	42.3	41.8	41.3	40.8	40.3	39.8	39.3	38.7	38.2	37.7
	70	43.8	43.4	42.9	42.4	42.0	41.5	41.0	40.5	40.0	39.5	39.0	38.5	37.9	37.4
	69	43.5	43.0	42.6	42.1	41.7	41.2	40.7	40.2	39.7	39.2	38.7	38.2	37.7	37.1
	68	43.2	42.7	42.3	41.8	41.3	40.9	40.4	39.9	39.4	38.9	38.4	37.9	37.4	36.9
B	67	42.9	42.4	42.0	41.5	41.0	40.6	40.1	39.6	39.1	38.6	38.1	37.6	37.1	36.6
	66	42.5	42.1	41.7	41.2	40.7	40.3	39.8	39.3	38.8	38.4	37.9	37.4	36.8	36.3
	65	42.2	41.8	41.3	40.9	40.4	40.0	39.5	39.0	38.5	38.1	37.6	37.1	36.6	36.1
	64	41.9	41.5	41.0	40.6	40.1	39.7	39.2	38.7	38.2	37.8	37.3	36.8	36.3	35.8
	63	41.6	41.1	40.7	40.2	39.8	39.3	38.9	38.4	37.9	37.5	37.0	36.5	36.0	35.5
	62	41.2	40.8	40.4	39.9	39.5	39.0	38.6	38.1	37.6	37.2	36.7	36.2	35.7	35.2

4.4.3 Mode of Study and Performance

All the institutions under study had both the upgrading and direct entry group of students. All upgraders for the purpose of study were mature entry ages 30 and above. Basing on the age of the student therefore, there was a significant relationship between age and performance with those higher than 30 years performing better than those below 30 years. (OR: 1.6, 95% CI: 1.2-2.2, $p= 0.002$). On the same understanding 4 out six (66.7%) of the key informants reported that part-timer students performed better than the full time counterparts.

4.4.4 School Policies and Performance

Table 4.11 below presents statistics done by a logistic regression analysis of the school policies in relation to performance.

School policies examined included teaching methods, class attendance and pass mark. The institutions chiefly reported to be either using problem based learning or mixed methods. All the institutions had policies on class attendance with some having it at 75% attendance and above while others were below 75%. However, the enforcement of the policies could not be elicited from the respondents. The policy on class attendance displayed marginal relationship with performance (OR: 0.4, 95%CI: 1.0-2.0, $p=0.068$) thus indicating that the institutions with class attendance policy of 75% and above were likely to perform better than those with below 75% class attendance. While teacher absenteeism is not acceptable in all institutions, only private and faith based institutions had clear policies on handling the vice accounting to 50% of the population of study. Comparing the performance using the above policies, there was no significant relationship that existed between the teaching methods adopted by the institutions and

performance of the students in the nursing council examinations in the same institutions (OR: 1.0, 95% CI: 0.7-1.4, p=0.93). The pass mark policy was also established not to be having significant relationship between those institutions having 50% pass mark and those of 40% pass mark and the performance in the NCK examinations. (OR: 1.0, 95%CI: 0.6-1.5, p=1.0).

Table 4.11: Logistic regression analysis of school policies and Performance

Independent variable	% Pass* (n=989)	% Fail* (n=194)	OR	95% CI	P value
Teaching methods			1.0	0.7-1.4	0.93
Problem -based	83.5	16.5			
Mixed methods	83.7	16.3			
Policy on class attendance			0.4	1.0-2.0	0.068
=< 75	84.8	15.2			
< 75	80.0	20.0			
Pass mark policy			1.0	0.6-1.5	1.0
50%	83.6	16.4			
40%	83.9	16.1			

4.4.5 Teacher Characteristics and Performance

Table 4.12 below presents information on ratio of faculty to student. Both full time alone and full time combined with part time were considered separately. Descriptive statistics are presented in Table 4.12

The faculty student ratio for the schools of nursing was calculated basing on the total number of the students and faculty in the schools during the period of study. Basing on the key informant data collected three out of six institutions had their total student faculty ratio at 1:7 and one at 1:10 thus making it 4 out of 6 (66.7%) of the universities that met the nursing council of Kenya requirement of the ratio of 1:10 or less. However, one institution had a ratio of 1:15 which was almost twice the smallest ratio of 1:7. The institution that recorded the highest performance pass had the lowest ratio of 1:15 with total faculty while the least performance was recorded from an institution with a ratio of 1:10.

Table 4.12: Ratio for fulltime and part-time faculty to student

Institution	MOI	MMUST	UON	UEAB	KEMU	GLUK
Faculty part-time/full-time	26	28	36	33	38	27
Number of faculty full-time alone	21	22	26	23	15	21
Number of students	183	400	344	393	232	186
Ratio total faculty/students	1:7	1:15	1:10	1:12	1:7	1:7
Ratio full-time faculty alone	1:9	1:19	1:14	1:17	1:16	1:9

Table 4.13 below presents logistic regression results for faculty student ratio.

A logistic regression analysis of the faculty student ratio and performance was done for both full-time and part-time faculty and fulltime faculty alone. The normal recommended Nursing Council of Kenya ratio of 1:10 was used to distinguish between the normal and abnormal ratio. The findings revealed no significant relationship between ratio of faculty to student (OR: 0.9, 95%CI 0.6-1.2: p=0.38) and (OR: 1.0, 95% CI: 0.7-1.5, p=1.0) respectively. The chances of passing or failing could therefore not be altered by an increase or decrease in the faculty student ratio in the schools of nursing.

Table 4.13 Logistic regression analysis of faculty-student ratio and Performance

Independent variable	% Pass* (n=989)	% Fail* (n=194)	OR	95% CI	P value
Ratio of faculty(full-time and part-time) to students					
=< 1:10 (normal	82.7	17.2	0.9	0.6-1.2	0.38
>1:10	84.8	15.2			
Ratio of faculty(full-time) to students					
=< 1:10 (normal	83.8	16.1	1.0	0.7-1.5	1.0
>1:10	84.5	16.5			

Table 4.14 below presents information on academic qualification and experience of faculty.

Faculty qualification concept was represented by doctorate in nursing or nursing related field, while the experience was presented by mean faculty experience in years. The results revealed insignificant relationship between academic preparation; doctorate and performance with an (OR: 1.1, 95% CI: 0.8-1.6, p=0.49). The mean faculty experience portrayed a marginal relationship with performance (OR: 0.7, 95% CI: 0.5-1.0, p=0.068) thus the higher the faculty years of experience, the likelihood of better performance scores in the students in the licensure examination.

Table 4.14 Logistic regression analysis of faculty academic qualification and experience and Performance

Independent variable	% Pass* (n=989)	% Fail* (n=194)	OR	95% CI	P value
Total number of faculty basing on academic qualification (doctorate in nursing)					
≥ 3	84.9	15.1	1.1	0.8-1.6	0.49
< 3	83.1	16.9			
< 13	84.8	15.2			
Mean years of experience of faculty years			0.7	0.5-1.0	0.068
=< 10	80.0	20.0			
> 10	84.8	15.2			

4.5 Regulatory Body Characteristics and Performance

Examined here in this objective is the concept of validity of the nursing licensure examinations in Kenya. The entire process of examination is presented here from the reports from the key informants starting from examination setting, moderation, invigilation and marking.

4.5.1 Validity of Examination

Reporting on the validity of the NCK examination, the key informants at the nursing council of Kenya reported that;

“Nursing council of Kenya examination is developed basing on the curriculum of the NCK in collaboration with nursing schools. Examination content is selected on wide area of content to ensure that wide range of important aspects are considered. Current trends and events both nationally and internationally also inform the choice of areas to be examined. However, individual examination setters have liberty on exact question choices, but are given areas the question need to come from, how many questions and the type of question as either MCQ, SAQ, LAQ or combined which are further subjected to panels of review to fine tune and bring out the objectivity in the examinations tools. A paper is passed by the panel after a series of reviews or moderation and the reviewers speaking in one mind that actually the paper is worth the level of the student. Previous performance in the examination also forms a guide on content selection as analysis of poorly and well performed areas are always explored”

When asked to comment on their views on the validity of the NCK examination majority of the participants’ comments were related to NCK examination itself. Their feelings

were that the NCK examination did not really measure the theoretical concept a licensure examination for nursing is expected to measure “fitness to practice”.

One of the participants responded;

“The NCK should adopt changes in the way they set their examination. Validity of the exam cannot be elicited. It is so difficult for two of us or three of us to agree on a specific answer especially the long answer and short answer questions. This subjects the examination to a lot of subjectivity and not objectivity. Imagine that I can’t read your hand writing, how do you expect me to mark that examination objectively yet I have limited time to do the marking. Secondly what is in my mind when I am setting a particular question may not be what is in the other persons mind. This means that when they mark a paper I set, they may not score the student the way I would have done. Let them benchmark with other countries that have adopted different strategies”

Another participant said;

“The NCK should change their style of setting examinations and set application questions relevant to the depth of learning experienced by the students in their learning institutions. Imagine after taking the student too deep during the training then come to examination you have to reorient the student again. Again, if you happen to sample any nursing council paper and cluster the questions into those addressing knowledge, those addressing attitude and those addressing practice, you will be surprised that the exam that purports to test the fitness to practice still has majority of the questions addressing knowledge.

Another participant said;

“Nursing Council of Kenya should consider the examination to be an ongoing process and not an end in itself. I see the examination to be a norm for the Nursing Council of Kenya with no value being added to the end product who is the student. No wonder the students will engage in all manner of crafts just to pass the examination regardless of the consequences”.

The other participant said;

“I see no variation between the Nursing Council examinations of Kenya for the BScN and the KRCHNs, in fact it appears more basic compared to institutional examination. Why can't Nursing Council of Kenya bench mark with examinations such as NCLEX-RN and adopt a system that can examine the competency that is required from the candidate in the job market where they are going to practice”.

Comparatively, the message denoted from the key informants was clear that the Nursing Council examination had a threat to its validity. Majority of the areas and concerns of the key informants pointed to a weakly valid examination all together which highly affects performance of the students in the Nursing Council examination. Among the many areas pointed to be lacking validity apart from the examination itself were;

Examination Processing

On answering the question “*who are the examination setters, makers and moderators,*” the key respondent reported that;

“Examination setters, moderators and markers are experienced members of faculty in various institutions with different areas of subject specialty and regarded of high integrity by the institutions. The selection of examination setters, markers and moderators followed rigorous exercise and collaboration between the NCK and schools of nursing. During the process of examination, tight controls are put in place to ensure security of the examination to include restriction of any material entering or leaving the preparation room. All resources required for examination preparation are contained and maintained within the confines of the examination custody. Each individual marker marks a section of an individual’s paper basing on the marking key, individual judgment and if in conflict within self-concerning a particular performance, then they subject the paper to another examiner who independently passes their own judgment on the performance of the candidate. If two or three markers have an issue with a particular candidate performance, then a collective review of the candidate’s paper is done”

When asked to respond on the format of the NCK examinations, the respondent stated that;

“All questions are set using the model of 20 multiple choice questions drawn from the whole spectrum of what is to be covered in that particular paper. This

questions take several forms including true/false question, matching of two or so categories, or choosing the correct answer from available four choices labelled A, B, C, D. Part two contains at most eight short answer questions also drawn from the whole content spectrum while part three consist of two long answer questions which could be single or broken into smaller parts. The total number of question items for one nursing council paper is usually averagely thirty (30) items and a total of four papers are done this makes the items to be averagely one hundred and twenty (120) test items. During the entire learning process, the students are subjected to several competence assessments”.

One participant in the institutional key informant interview reported that;

“Allocating MCQ 20 marks and the rest 80 marks made the examination less valid since it is easier to achieve construct validity with MCQ, than with short answer and long answer questions. Short and long answer questions are prone to examination marker bias resulting from lack of experience, burnout and illegible handwriting among many others. It is no wonder that the best only a handful students can achieve in these examinations is a credit yet the selection brings into the system among the brightest of the students in the country”.

Another respondent said that;

“The format of the examination made it highly prone to examination malpractices especially examination cheating. If by chance you land on the paper earlier, which is highly possible, then you simply revise and pass”.

Examination Malpractices

On inquiring concerning examination malpractices, the key informant said that;

“Examination malpractices is not a new vocabulary to the nursing council of Kenya and neither is it to the schools of nursing. Various aspects of malpractices are experienced all through the examination periods. However, the Nursing Council has not experienced high level malpractices to the BScN examinations in the recent past to warrant being a threat to validity. In addition, Nursing Council of Kenya has clearly stipulated examination guidelines and penalties that ensure that examination conduct is held with the esteem it warrants by all the relevant parties. Tight controls put up by the Nursing Council of Kenya ensures the sealing of any loopholes that could encourage examination leakage and retain the responsibility of ensuring high integrity standards are upheld during the examination process”.

Most participant claimed of having had of examination leakage as a complaint in most of the examination. One participant stated that;

“It remains unclear on reality of this vice because few incidences are ever brought on board. However going by the national trends in other national examinations like the KCSE and KCPE it would be burying our heads in sand to assume the same can't happen for nursing”.

Another participant said;

“Basing on the way our examinations are set, chances of malpractices are quite high unless rearrangements take place to make cheating in examination an impossible activity”.

Another participant reported that;

“I have seen strange things happen during the process of students doing the nursing council examination. If invigilators can make corrections on an examination paper during the process of the examination, I ask myself are all other invigilators doing the same in their centers?, is this correction what was in the mind of the setter, is the marking key capturing the corrected information for this particular center and what about other centers?. Secondly invigilators are deemed super humans that can't collaborate with students to steal examination. They are allowed to move around in the examination room with their phones on.....probably browsing and also move in and out of the examination rooms even with question papers. Thirdly the one meter square distance is too small for some hawks eyes of students. They keep peeping left right and showing each other. For me, the process should be made smatter”.

The other participant said;

“As long as the same type and method of examination continues, examination stealing may never end. This is a vice perpetuated by greedy staffs right from the NCK, to the poorly mentored faculty in the schools who want to be seen as

performing when they are not, to parents corruptly willing to part with anything to have their children pass and finally to the less enthusiastic student who learn just for the sake of it”.

4.5.2 Examination Timing

On responding to a question relating to examination timing and performance in the Nursing Council of Kenya examinations, the participant explained that;

“The NCK had an organized standard schedule for examinations twice a year for all carders of students which is usually January and July for BScN although dates have been changed currently. Institutions on the other hand present their students for the examination once the students have completed their university programme and ceased their study in their university. This schedule however does not determine who does the examination and when they do. Individual students, once through with the training institutions apply to the Nursing Council of Kenya for examinations after paying a fee basing on their preferred time of sitting for the nursing council examination. This means that a student can take longer period as long as they feel they are not ready to sit the licensure examination. Previously institution would present the group of students to the council depending on the completion of training meaning they were the main determinant together with nursing council on when the group of students would sit examination”.

All institutional participants in the key informant interview had the opinion that the longer the duration a student stayed before sitting for the Nursing Council examination, the higher the individual chances of failing the same examination. This meant that the

overall performance in the NCK examination highly depended on the period lapse between the completion of training and time of taking the examination. One participant reported that;

“The examination would probably achieve its fit to practice purpose if it was carried out after the student completing the internship period because that is the ideal time they were being released into the job market”.

On examining the student training manual provided to the students and the schools from NCK, it clearly stipulated the mandatory nursing council practical assessments that the students required to undertake while in training. This comprehensively covered all the areas that are relevant in the nursing practice at the BScN level. For students to undertake this practical the requirement, they must have had a minimum period of guided practice and the practical assessment pass mark is 65%. The manual prescribes for every mode of study the minimum clinical competence required in procedure performance prior to any assessment. This competence examination are all undertaken during designated period when the student is in training. Evaluation of these competencies and students is carried out by the tutors in the institutions and the mentors from the clinical sites. A pass in the competence examinations is a pre requisite for every student before being presented for the Nursing Council of Kenya examination by the training institution (NCK student training file, 2014).

CHAPTER FIVE

DISCUSSION

5.1 Overview

The chapter covers discussions of the findings. This is done by comparing the results and other researchers' findings and recommendations are made basing on the same.

5.2 Student Characteristics and Performance

The results found that the proportion of those who passed and were aged 30 years and above was significantly higher than those who were aged less than 30 years. (OR: 1.6, 95% CI: 1.2-2.2, $p = 0.002$). This could be attributed to the fact that the students in that age group were likely upgraders who have had previous exposure to the same kind of examination before. This study supports the finding of (Jayanthi *et al.*, 2014), that reported older students performed better than the pre-service students. Pitt *et al.*, (2012) in the systematic reviews also found out that more studies had identified older students performing better than their younger counterparts. However, (Hakimzadeh, 2013), reported that age did not have any significant relationship with performance. Also reporting the same was (Amankwaa *et al.*, 2015) who did not find any association between age, gender, and academic performance of the students.

Gender on the other hand did not have a significant relationship with performance in the nursing council examinations a finding also reported by (Pitt, *et al.*, 2012) and Borde (1998). However, (Jayanthi *et al.*, 2014) reported a relationship contrary to this study with females performing better than males. The same findings were echoed by (Khani *et*

al.,2012) and (Tailor, 2012), citing Has *et al.*, (2004) that had reported females performing better than their male counterparts.

Marital status and employment both had 66.7% of the key informant respondents reporting their relationship to performance. However, studies by (Nyangena *et al.*, 2013) and (Fullerton & Severino, 1995) had earlier reported no influence of marital status to performance. This perception of married students performing better in the NCK examinations specifically could be related to the fact that most of them may belong to the age group 30 years and above and as a result have had similar exposures to the same kind of exams. This same explanation provided for marital status does apply to employment status although several studies supported the negative influence of employment on performance (Cari & Jason, 2011; Cooper, 2012; Iowa board of nursing, 2006 Pitt *et al.*, 2012)

5.3 Institutional Characteristics and Performance

The fact that there was no significant relationship between school type and passing is an indicator that there is no difference basing on admission criteria because all the faith based and private institutions admission criteria was different from the GoK criteria except for the upgrading group. Similar findings by (Oducado & Penuela, 2014) also found no relationship between the high school grade which is used during the selection process and performance with results being ($t=0.441$). However other studies identified strong relationship between entry qualifications and performance in the licensure examination which was statistically significant ($r = 0.48$; $P < 0.05$) (Ogbonaya *et al.*, 2014; Kija *et al.*, 2016; Pitt *et al.*, 2012). Key informants from the public schools reported existence of relationship between entry qualifications and performance by

stating that those who entered the system through the PSSP program and direct entry mode performed poorer than their upgrading counterparts. On the other hand, some studies showed relationship between types of school with passing the licensure examination where by the private school had been displayed to perform better than state schools (Idowu, 2013). Kija *et al.*,(2016) and Sabitu *et al.*, (2012) reported no influence of school type on performance (school $< P= 0.059>$). As much as the percentage pass was higher in the faith based institutions compared to the public institutions while being lowest in the private institutions, the p values of type of school demonstrated no relationship with all the p values ranging from 0.92-0.97.

There was a significant relationship between age and performance with those higher than 30 years who were part time upgraders performing better than those below 30 years who were mostly direct entry. (OR: 1.6, 95% CI: 1.2-2.2, $p= 0.002$). Four (66.7%) of the key informants reported that part timer students performed better than the full time counterparts. This results corroborate the findings of Shachar, (2010) that reported part time leaners performing better.

There was no significant relationship that existed between the teaching methods adopted by the institutions and performance of the students in the nursing council examinations in the same institutions (OR:1.0, 95% CI: 0.7-1.4, $p=0.93$). Those same findings are reflected in the pass mark policy with no significant relationship existing between those institutions having 50% pass mark and those of 40% pass mark (OR:1.0,95% CI: 0.6-1.5, $p=1.0$). However, the policy on class attendance displayed marginal relationship with performance (OR: 0.4, 95% CI: 1.0-2.0, $p=0.068$). This confirms the studies of (Amitava *et al.*,2010); (Alos *et al.*,2015); (Jafta, 2013) and (Arulampalam *et al.*, 2012), who

demonstrated that both teacher and student absenteeism resulted in reduction in academic performance.

The findings reported no significant relationship between ratio of faculty to student with p values of normal being 0.38 and the abnormal 1.0. The chances of passing or failing could therefore not be altered by an increase or decrease in the faculty student ratio. This contradicts the studies of (Idowu, 2013) and (Appiagyei *et al.*, 2014) who found a positive relationship between teacher student ratio and performance with higher number of teachers increasing the chances of student passing examination. The same findings were recounted by (Hazekorn, 2013) and (Ballantine & Spade 2015). The results reported insignificant relationship between academic preparation; doctorate in nursing and performance with an (OR: 1.1, 95% CI: 0.8-1.6, p=0.49). This agrees with the findings of (Mareike *et al.*,2013) in their study who found no relationship between teacher qualifications and performance, though (Sadler *et al.*, 2012) established a positive relation between teacher qualifications and passing.

Comparatively, mean faculty experience also portrayed a marginal relationship with performance (OR: 0.7, 95% CI: 0.5-1.0, p = 0.068). This matches with (Eyewole, n d) in his study that found out that the higher the number of years of experience, the better the individual teacher performance with better student outcomes. Also World Bank, (1997) report showed a positive correlation between the teacher experience in years and the learners' academic achievements, finding also identified by (Darling, 2010); (King, 2010); and(Alos *et al.*, 2015) .

5.4 Regulatory Body Characteristics and Performance

Reasonably, the message denoted from the key informants was clear that the nursing council examination had a threat to its validity. Majority of the areas and concerns of the key informants pointed to a weakly valid examination all together which highly affects performance of the students in the NCK examination. It was also felt by one participant that the format of the examination made it highly prone to examination malpractices especially examination cheating. For instance this report states that:

Drosts' view in her study that pointed out that in subjective tests, such as essay tests, measurement errors are often caused by fluctuations in standards by the individual grader and by the differences in standards of different graders (Drost, 2011). This clearly indicates the low objectivity of the NCK examination.

Comparing this with the NCLEX-RN report, it is clear that the process used by the two examinations is quite different. (Nadine, 2009) reported that to ensure that the NCLEX examination is valid with respect to content, face, construct, predictive, and scoring validity, the examining body follows strict examination conduct procedures. This is in line with the key informant reports received from our examining body but negated by other informants. However, weighing by domains of nursing and accorded a percentage per each domain and by Blooms taxonomy levels as is the case for NCLEX and RENRE, (RENRE, 2014) the same could not be elicited for this NCK examination posing the question” how well do questions capture the concept of assessing the candidates for the competence and declaring them “fit to practice”.

Basing on the reports of the key informants, the findings of the study does agree with other findings that performance in the examination can be affected by style or pattern of

question paper, sequencing of question, strictness in marking and student hand writing, marker understanding of question and surrounding circumstances among many other factors that are involved during the period of processing (Rasul & Bukhsh, 2011).

Comparing the NCK examination with the NCLEX-RN, the latter utilizes a Test Plan that provides a concise summary of the content and scope of the licensing examination and guides the process of examination development (NCLEX-RNTEST PLAN, 2013). The examination is administered to candidates by computerized adaptive testing thus using computer technology and measurement. This makes every candidates' examination unique because it is assembled interactively as the examination continues. Computer technology selects items to administer that match the candidate's ability. After the candidate answers an item, the computer calculates an ability estimate based on all of the previous answers the candidate selected. The next item administered is chosen to measure the candidate's ability in the appropriate test plan category. This process is repeated for each item, creating an examination tailored to the candidate's knowledge and skills while fulfilling all NCLEX-RN Test Plan requirements. This makes it quite difficult for the student to pre determine the kind of questions they are likely to be exposed to. Examining the question items of the three examining institutions, NCLEX-RN had 265 items, RENRE had 240 while NCK had 120-140 items making the former two liable to high content validity as compared to the later. However on examining the student training manual provided to the students and the schools from the Nursing Council of Kenya (NCK student training file, 2014), the study conclude from this that though the Nursing Council examination validity is questioned by many, the concept of validity may not altogether be lost. This is because the passing of

practical assessments, coupled with the final licensure exam itself increases the content coverage.

Reports of malpractices likely to be experienced because of the nature of the entire examination process pointed to a threatened validity of the examination. This information is in line with the study of Oko& Adie, (2016) that found out various forms of examination malpractices as being deep rooted in the systems and that of Nnam& Inah, (2015) that reported lack of modern invigilation and ill preparation as some of the causes to malpractices. Royal, (2012) identified these as a threat to validity. The findings also agrees with Aderogba, (2011) that this is usually driven by desire to pass at all cost, anxiety and lack of confidence as student try all forms of malpractices as identified by Achio, (2012).

Royal & Puffer,(2012) in her study also identified malpractices as one of the leading reasons of an examination lacking validity thus the reason to question “*did the students who passed the NCK examinations really pass? Did those that failed really fail?*” Student try all forms of malpractices as reported by (Achio, 2012) especially when the examination provides the loopholes for such and therefore the key informants concerns that the vice can affect the results we see poses a strong relationship between examination leakage and the performance in the nursing council of Kenya examination.

All institutional participants in the key informant interviews had the opinion that the longer the duration before sitting for the Nursing Council examination, the higher the individual chances of failing the same examination. This information agrees with the NCSBN survey findings that showed that Pass rates decreasing with time between graduation and completion of the examination (IOWA Board of Nursing, 2006).

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Overview

The chapter covers conclusion and recommendations of the study. This is done systematically starting with conclusions on student characteristics in relation to performance, followed by institutional characteristics and their relationship with performance and finally a conclusion of regulatory body characteristics and their relationship with performance in the nursing council of Kenya examinations. It also covers the recommendations that are made basing on the findings of the study.

6.2 Conclusion

The study found out that age had a significant relationship with performance. This is because majority of the students aged 30 years and above performed better than their younger counterparts.

Marital status and employment are also reported to have an influence on whether a student passes their licensure examinations or not.

Type of institution has no relationship with performance among nursing students. This could be because apart from the classroom the institutions had little or no influence on clinical sites and this formed part of the learning of the nursing student.

Admission criteria influences performance in that those admitted with lower points in the parallel program were perceived to have lesser performance as compared to their counterparts admitted with higher grades. However, the ones utilizing the part-time

mode of study who were mainly upgraders performed better irrespective of their lower entry grade.

School policies such as class attendance has a significant relationship with performance with those institutions upholding class attendance policy at 75% and above performing better than those that had it at lower than 75%. However, the pass mark policy does not display any relationship with performance and the same applies to the policy on teaching methods.

Teacher characteristics examined include faculty qualifications, student faculty ration and faculty experience. Only faculty experience reported relationship with performance with those institutions having mean faculty experience 10 years and above performing better than those with experience below 10 years. The key informants expressed their feelings that the lack of validity of the NCK examination has both direct and indirect effects on the performance of the students in the Nursing Council examinations. With right structures and right process, validity of the examination could be enhanced. The timing of the examination is also reported to influence performance. The longer the student stayed after completion of training and before sitting for the examination the higher the chances of failing regardless of their mode of study.

The study therefore rejects the null hypothesis that states that, there is no significant relationship between student characteristics and performance in the NCK examinations among the BScN students in Kenya.

6.3 Recommendations

The study makes recommendations to address the findings to the institutions of nursing and to the regulatory body. The recommendations include;

- Nursing council should consider updating the data base to cover all variables captured from student and institutions of nursing. This includes marital status, employment status and agency, time of exit from nursing schools among others.
- Schools of nursing to continue with upgrading programs and identify ways of addressing low performance among the direct entry student.
- Schools of nursing to uphold class attendance policy of 75% and above attendance.
- Schools of nursing to consider faculty experience during the recruitment process.
- Nursing council to benchmark with other regulatory bodies with intension of reviewing examination process with the target of testing competency.
- Nursing council examination to be administered to students immediately after internship after they have acquired some competence levels
- Further study to be done on relationship of marital status and employment with performance.

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APPENDICES

APPENDIX I: TRANSCRIPTION FORM FOR NURSING COUNCIL DATABASE

- 1 Index no/code-----
- 2 Mode of study [1] Direct Entry [2] Part time
- 3 Age (in numbers)-----
- 4 Gender [1] Male [2] Female
- 5 Marital status [1]Married [2] Single
- 6 Employment [1] Yes [2] No
- 7 Employer [1] GoK [2] Mission [3] Private [4] Other
- 8 Mean score in KCSE [1] A [2] B [3] C [4] OTHER
- 9 Date of entry into training-----
- 10 Type of training institution [1] GoK [2] Faith Based [3] Private
- 11 Date of completion of training-----
- 12 Dates of examination -----

APPENDIX II: KEY INFORMANT GUIDE FOR NURSING COUNCIL STAFF

1 What is the format of the examination?-[1] oral, [2] Multiple choice questions, [3] essays, [4] mixed method, [5] other(Specify)

2 (a)

What are their qualifications of an examination setter?	
	Number
Doctorate in Nursing	
Doctorate (Other)	
MScN	
Masters (Other)	
BScN	
Bachelor (Other)	
Professors	

(b)

What are their qualifications of an examination marker?	
	Number
Doctorate in Nursing	
Doctorate (Other)	
MScN	
Masters (Other)	
BScN	
Bachelor (Other)	
Professors	

3 How do you achieve validity?-----

4 Tell me about the examination process-----

5 Tell me about any incidences of examination malpractices you experience if
any-----

6 Given an opportunity, which changes would you wish to implement in your
examination organization and conduct.-----

APPENDIX III: TRANSCRIPTION FORM FOR HEAD OF INSTITUTION

1. Type of institution: [1] GOK, [2] Mission [3] Private
2. Mode of study:[1] Direct entry [2] Part time
3. Number of students graduating during the three-year period-----
4. Number of Faculty full time----- Part time -----
for the three-year period

5. Academic Preparation of Faculty		Faculty Teaching Experience	
	Number		Number
Doctorate in Nursing		Less than 1 year	
Doctorate (Other)		1 – 3 years	
MScN		4 – 6 years	
Masters (Other)		7 – 9 years	
BScN		10 – 19 years	
Bachelor (Other)		20 years and above	

Faculty rank (Please indicate numbers)	
	Number
Instructor	
Tutorial fellow	
Assistant lecture	
Lecturer	
Senior Lecturer	
Associate Professor	
Professor	

APPENDIX IV: KEY INTERVIEW GUIDE FOR HEAD OF INSTITUTION

1. Which teaching methods do your staffs regularly use-----

2. Describe the selection criteria employed by your institution and its relation to nursing council of Kenya and CUE criteria?-----

3. Which policies do your school holds on pass mark?-----

4. Which policies does your school holds on class attendance?-----

5. Tell me about your perceptions on NCK examination process -----

6. Kindly give any comment in regards to NCK examination malpractices-----

7. Any other comments you may have on performance of students in the nursing council examinations-----

APPENDIX V: COPY OF CONSENT FORM FOR SCHOOLS OF NURSING

My name is Anne Asiko

I am currently involved in a research study evaluating the performance of BScN students in the NCK examinations in Kenya. The study is performed as partial fulfillment of the requirements for my Master of Science degree of Masinde Muliro University under the supervision of Prof; John M. Okoth and Mr. John Arudo; Department of clinical nursing and health informatics (MMUST).

Your participation in this project will provide useful information and enhanced understanding of this topic. You qualify for participation because you are head of department in the school thus a key informant. You will be required to answer oral questions asked by the interviewee and partly fill a questionnaire. The total time involved in participation will be approximately 45 minutes.

Participation in this study is strictly voluntary. You may withdraw from the study at any point without penalty. Participation is not associated with the performance of your school. All data from this project are confidential and will be used for research purposes only. There is minimal to no risk to participants in this study. If you have questions at any time during your participation, please contact me or MMUST. If you have concerns, please feel free to decline from participation at any point in this project. By signing this consent form, you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing consent to take part in this study. Thank you for your assistance in this research study.

ANNE ASIKO OKANGA

0721582788

Name of and signature of participant (please print) -----

Signature of researcher ----- date-----

APPENDIX VI: ETHICAL APPROVAL TO CONDUCT RESEARCH



MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

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

P.O Box 190
Kakamega – 50100
Kenya

Office of the Dean (School of Graduate Studies)

Ref: MMU/COR: 509079

Date: 7th March 2016

Anne Asiko Okanga
HNR/G/20/14
P.O. Box 190-50100
KAKAMEGA

Dear Ms. Okanga

RE: APPROVAL OF PROPOSAL

Following communication from the Departmental Graduate Studies Committee and the Faculty Graduate Studies Committee, I am pleased to inform you that the Board of the School of Graduate Studies meeting held on 25th February 2016 considered and approved your Masters proposal entitled: *'Evaluation of Bachelor of Science Nursing Student Performance in the Nursing Council of Kenya Licensure Examinations in Kenya'* and appointed the following as supervisors:

1. Prof. John Okoth - Department of Clinical Nursing & Health Management - MMUST
2. Mr. John Arudo - Department of Clinical Nursing & Health Management - MMUST

You are required to submit through your supervisor(s) progress reports every three months to the Dean SGS. Such reports should be copied to the following: Chairman, School of Nursing and Midwifery Graduate Studies Committee and Chairman, Clinical Nursing and Health Management. 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 Masters 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,

PROF. HENRY KEMONI
EXECUTIVE DEAN, SCHOOL OF GRADUATE STUDIES

