UGANDA MANAGEMENT INSTITUTE

OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE) AND ACADEMIC PERFORMANCE OF NURSING STUDENTS IN UGANDA

By

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Declaration

I, Kisembo Godfrey hereby declare that, this is my original work and has not been presented to any university or institutions of higher learning for any academic award. Where secondary sources of information used in this work, have been acknowledged.

Date ……

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Approval

This dissertation has been written under our supervision and has been submitted for the award of the degree of Masters in Institutional Management And Leadership Of Uganda Management Institute supervisors.

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Declaration

This dissertation is dedicated to my family members who have missed my real fatherly care, company and time for the years I have spent pursuing this course. My special appreciation goes Mrs. Mulabiza Mebra and my precious lovely children; the S boys i.e. Solomon, Shawn, Shilon and Sheldon for their spiritual and moral support.

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List of acronyms

AHP	Allied Health Professionals
CVI	Content Validity Index
MOES	Ministry of Education and Sports
OSCA	Objective Structured Clinical Assessment
OSCE	Objective Structured Clinical Examination
UNMEB	Uganda Nurses and Midwives Examination Board
UNMC	Uganda Nurses and Midwives Council

Abstract

The study examined the influence of Objective Structured Clinical Examination (OSCE) implementation on academic performance of nursing students in Uganda. The study was guided by the following objectives: to establish the relationship between OSCE design and academic performance of nursing students; to establish the relationship between OSCE assessment and academic performance of nursing students and to establish the relationship between OSCE preparations and academic performance of nursing students. A descriptive and correlation research design was used. The study employed both quantitative and qualitative approaches. The study population consisted of 2424 participants. A sample size of 355 respondents was selected using stratified, convenience and purposive sampling techniques. Quantitative data analysis consisted of descriptive statistics (percentages) and inferential statistics (Spearman correlation, coefficient of determination and regression). Content analysis was used to analyze qualitative data. Findings revealed that OSCE design has a positive influence (68.6) on academic performance of nursing students. OSCE preparation has a positive influence (66.4) on academic performance of nursing students. And OSCE assessment has a negative influence (18.7) on academic performance of nursing students. It was concluded that OSCE variables (design and preparation) positively influence academic performance of nursing students but not OSCE assessment. It was recommended that OSCE assessment need to be revisited if academic performance of nursing students is to improve.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This study examined the relationship between OSCE implementation and academic performance of nursing students in Uganda. In this study, OSCE implementation was treated as the independent variable, whilst academic performance of nursing students was treated as the dependent variable. Each of these variables was conceptualized as indicated in the conceptual framework. This chapter thus presents the background to the study, statement of the problem, purpose of the study, objectives, research questions, hypotheses, conceptual framework, significance, justification, scope of the study, and operational definitions of terms.

1.2 Background to the Study

The background to the study is presented in four themes including historical, theoretical, conceptual, and contextual background.

1.2.1 Historical background

Historically, the Objective Structured Clinical Examination (OSCE) was first used in the 1970s as an assessment of competence carried out in a well-planned, structured and objective way (Harden and Gleeson, 1979).OSCE was originally developed in 1975 in Dundee Scotland by Dr. Harden to avoid the many disadvantages of the traditional clinical examination. Globally, in United Kingdom, OSCE was established within medicine and was inaugurated as nurse education tool (Nulty et al, 2011). Later, it was realized that the assessment of knowledge and skills plays an important part in student nurses' progression though pre-registration programmes because they need to demonstrate competency and confidence in the performance of clinical skills (Nursing and

Midwifery Council, 2007). In Canada, OSCE was introduced in 1980s to assess clinical skills in both pre-registration and postgraduate programmes (Rushforth, 2007; Major, 2005). Later, the NMC (2007) published essential skills clusters in response to the poor acquisition of clinical skills within nursing, and recommended using OSCE for assessing student nurses for medicines administration in particular and this became the global roots of introducing OSCE to improve the performance of nursing students.

In developing countries of Africa, OSCE was first introduced in South Africa Nursing department and later in Ghana. It has been used to assess medical students and in more recent years, has been increasingly utilized to assess students from Nursing and Allied Health Professionals (AHP) and it is now an acceptable tool of assessment (Helene, 2007). It was found to be an effective assessment tool because it examines knowledge, skills and attitudes, (Wilkes, 2011). According to Vander (2005), OSCE was also found to be valid, reliable and reputable as it addresses all the 3 domains of Brooms Taxonomy of Cognitive, Affective and Psychomotor in Western part of Africa.

Uganda borrowed a leaf and started implementing it to replace the subjective type of assessment in 2007 and it's now part of curriculum in all nursing schools in Uganda. Since its genesis in Uganda, it has registered high number of successes. It has been integrated in the curriculum of nurses training and AHP have also adopted it. These successes are attributed to the tremendous efforts and commitment exhibited by various responsible bodies like Uganda Nurses and Midwives Examination Board (UNMEB), Uganda Nurses and Midwives Council (UNMC), Ministry of Education and Sports (MOES) and management of nursing training schools in Uganda. The examination covers a broad range of clinical skills much wider than a conventional examination and it was established to improve feedback between staff and students (Samira, 2012).

However, implementation of OSCE has also experienced a lot of challenges. There seems inadequate staffing to implement the programme and the few tutors and clinical instructors present probably are not experienced enough to implement it. Tutors who have been teaching perhaps for many years in a more traditional way might be apathetic or resistant to the idea of change and the schools lack infrastructure to handle OSCE. The program is also still in its pilot stage and little research has been done to evaluate its performance. It's therefore imperative that the study seeks to establish the relationship between OSCE implementation and academic performance of nursing students in Uganda.

1.2.2 Theoretical background

This study was guided by the constructivist learning theory advanced by Bartlett in 1932 and formalized by Jean Piaget in 1950. Under this framework the role of the trainer becomes that of a facilitator, providing guidance so that learners can construct their own knowledge. A constructivist-based training program to improve performance will, therefore, accentuate that the learner should be an active participant constructing knowledge about tasks so as enhance their performance, and not just a passive receptacle for information (Chen, 2001). This idea intimates that in the a school environment like nursing school, design, assessment procedure and preparation can be among the most effective ways of improving performance of students. In a nutshell, the constructivist learning theory advocates alignment of OSCE implementation in design, marking criteria and preparation with real organizational activities if the goal of melioration of performance of nursing students is to be realized in form of improving pass rate, students grades, curriculum objective mystery and students perception of positive program impact.

1.2.3 Conceptual Background

The study was majorly guided by two variables that is; OSCE implementation as the independent variable and academic performance of nursing students as the dependent variable. OSCE is an objective structured clinical/practical examination which is intended to assess components of clinical competences in history-taking, physical examination, counseling, patient management, simple procedures, communication and attitude using agreed check list and students are rotated around a number of stations which have observers with checklists (Edeisten, 2010). In addition, Harden and Gleeson (1979) define OSCE implementation as an assessment of competence carried out in a well-planned, structured and objective way.

On the other hand, Bernadin, Kane, Ross, Spina and Johnson (1995), Kane (1996) and Armstrong (2006) regard performance as simply the record of outcomes achieved. Brumbach (1988), however, looks at performance from a broader perspective and refers to it as both the behaviours and results of manpower when executing a task. Accordingly, in this study, performance was operationally measured by rate of passing, student's grades, curriculum objective mastery and student's perception of positive program impact. Passing rate is conceptualized as the level under which nursing student pass OSCE. Student grades; these were conceptualized as the marks obtained by nursing students when they attend OSCE. Curriculum objectivity mastery was used to refer to the level at which nursing students mastered the OSCE curriculum.

1.2.4 Contextual Background

In 2007, Uganda initiated OSCE implementation to replace the subjective type of assessment and it's now part of curriculum in all nursing schools in Uganda. According to Uganda Nurses and Midwives Examination Board (UNMEB, 2008), Uganda Nurses and Midwives Council (UNMC, 2007), Ministry of Education and Sports (MOES, 2009), OSCE implementation

in Uganda's nursing schools must ensure that it follows the standardized design, assessment/marking procedures and preparations required. OSCE design must be objective, structured and adequate clinical examiner. OSCE assessment must follow the standardized marking procedures, prescription charts and standardized mark sheets. OSCE preparation must also ensure that students are prepared and assessors are well prepared and familiar with all kind of equipment. These are recommended in anticipation to improve the performance of nursing students in form of testing clinical skill performance and competence in skills such as communication, clinical examination, medical procedures/prescription, exercise prescription, joint mobilization / manipulation techniques, radiographic positioning, radiographic image evaluation and interpretation of results (Samira, 2012). However, despite the introduction of OSCE implementation, the academic performance of nursing students has not improved to the level that was expected. The number of failures seems to have been increasing every year. Table 1 has more details.

Table 1: showing the Performance of Nursing Students in Uganda

Year	**Registered students**	**Passed**	**Failed**
2012	1023	876	147
2013	1850	1467	383
2014	2808	2414	239

In table 1 above, it is indicated that the percentage of students failing has been increasing since 2012 up to 2014, 14.4%, 20.7% and 8.5% of nursing students have been failing all over Uganda

since 2012, 2013 and 2014 respectively (UNMEB, 2014). It's therefore imperative that the study sought to establish the relationship between OSCE implementation and academic performance of nursing students in Uganda.

1.3. Statement of the problem

OSCE implementation is recognized as a tool for improving the performance of nursing students (Kropmans, 2012).It was from this basis that the Uganda Nurses and Midwives Examination Board (UNMEB, 2008), Uganda Nurses and Midwives Council (UNMC, 2007), Ministry of Education and Sports (MOES, 2009) adopted OSCE in design, assessment criteria and preparation in the virtue to improve the performance of nursing students in Uganda..In addition to that MOES ensures that every nursing school is only accredited when they have acceptable number of tutors and well equipped skills laboratory for practical demonstrations.

However, despite the introduction of OSCE, the performance of nursing students has remained unconvincing. For example, there is increased public concern about the remarkable decrease in the quality of nursing care across the country as stated by the Minister for Health at Uganda Nurses day celebrations in Butabika where she argued the Uganda nurses to stop abusing patients (Platform for Uganda news and information, 2013). It was also emphasized in the meeting of Association of Principles of Health Training Institutions of Uganda in Kabale which was in September 2013 that the quality of nurses training has deteriorated which directly affects the quality of nurses who qualify. The reduced quality of care may be attributed to the change in the method of assessment of students from the subjective type to OSCE and other factors. The poor quality of care may also be attributed to the decline in performance of students in the subsequent years. This is in reference to the UNMEB release 2012 where students mainly failed practical examination which is OSCE, the final exit examination (Weekly Observer, 22/7/2012). The head

of nursing Makerere University College of Medicine was also quoted saying ‘’I’m equally worried of the poor results of nurses as its the public to suffer most because they will go and open up clinics but what kind of services will they offer’’ (weekly Observer, 22/7/2012).Therefore, if this situation is not fixed, it may lead to increased poor quality clinical services in public health centers in Uganda. It is from this background that this study was conducted to assess the relationship between OSCE and academic performance of nursing students in Uganda.

1.4. Purpose of the Study

The purpose of this study was to examine the relationship between OSCE implementation and academic performance of nursing students in Uganda.

1.5. Objectives of the Study

The objectives of this study were:

i. To establish the relationship between OSCE design and academic performance of nursing students.
ii. To establish the relationship between OSCE assessment and academic performance of nursing students.
iii. To establish the relationship between OSCE preparations and academic performance of nursing students.

1.6. Research Questions

This study sought to answer the following questions:

i. What is the relationship between OSCE design and academic performance of nursing students?

ii. What is the relationship between OSCE assessment and academic performance of nursing students?

iii. What is the relationship between OSCE preparations and academic performance of nursing students?

1.7. Hypotheses

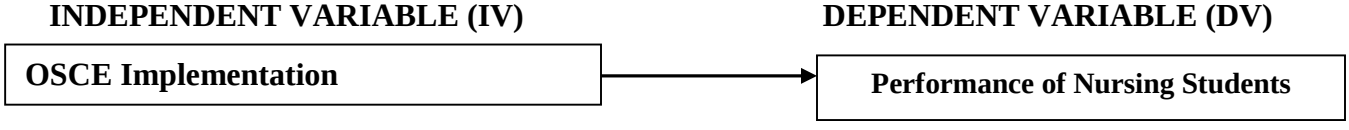
This study tested the hypotheses that:

H_1=There is a positive relationship between OSCE design and academic performance of nursing students.

H_2=There is a positive relationship between OSCE assessment and academic performance of nursing students.

H_3=There is a positive relationship between OSCE preparations and academic performance of nursing students.

1.8. Conceptual Framework



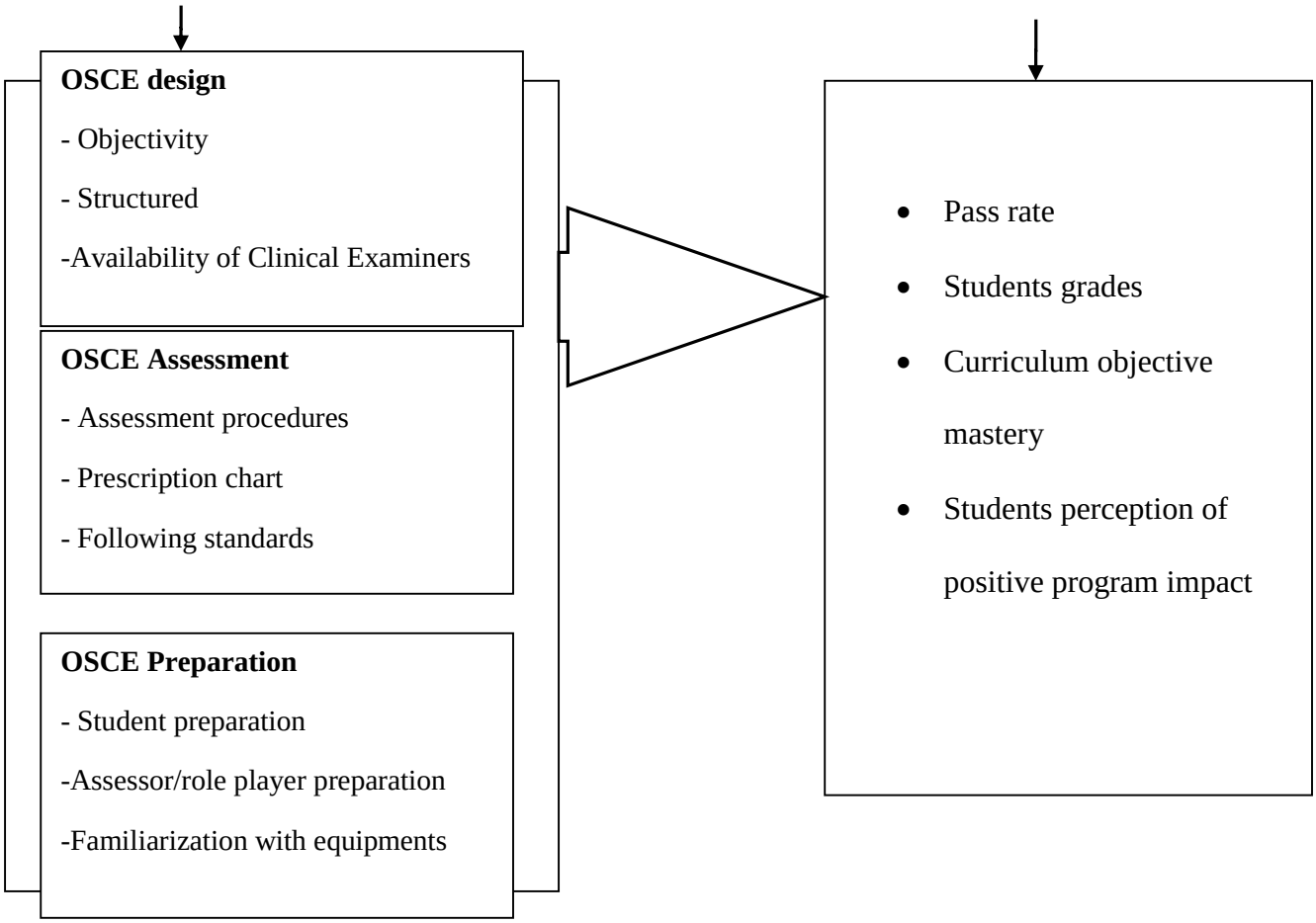


Figure 1.1: *A Conceptual Framework for the understanding the Relationship between OSCE implementation and Performance of nursing students*

Source: *Adapted and modified from Carpenter (1995); Boursicot et al (2011). Developing and running an OSCE: a personal reflection. British Journal of Midwifery; 14: 12, 725-729.*

From the conceptual framework in Figure 1.1, it was hypothesized that OSCE implementation has a relationship with performance of nursing students. It was assumed that if OSCE implementation is done while following the design, marking/assessment procedures and ensure preparation required, this can influence the performance of nursing students in terms of rate of passing, students grades, curriculum objective mastery and students perception of positive program impact.

1.9. Significance of the study

It's hoped that this study may be helpful to both the internal and the external stake holders. OSCE is one of the new innovations in nursing training curriculum which is still in its pilot stage. The program has been implemented for 7 years but little research has been done to evaluate the implementation of the program. Once this study is done, it may elicit strengths of OSCE which can be promoted and challenges affecting its implementation to which solutions can be obtained for its smooth running. This pilot study may provide valuable feedback in the process of refining and standardizing the OSCE format in the nursing schools. The study may also provide additional information to UNMEB, MOH and MOES which can be used as basis for revising the curriculum or future research geared towards training quality nurses who meet both national and international standards.

1.10. Justification of the study

Since its inception in 2007, OSCE has experienced very many challenges like inadequate resources, financial constraints and lack of experience among its implementers (Matshidiso, 2007). According to the executive secretary UNMEB, there are also inadequate qualified tutors and clinical instructors and lack of enough equipment in hospitals and health centers where the students train from (Nursing and Midwifery Council, 2010). Thus, the rationale for undertaking this study lied on the fact that there is a need to understand that the linkage between OSCE implementation and performance of nursing students in nursing schools in the four regions of Uganda since no specific study has been done in Uganda.

1.11. Scope of the Study

1.11.1 Content Scope

This study was limited to examining the relationship between OSCE implementation and performance of nursing students. OSCE implementation in this study was limited to OSCE design, OSCE marking and OSCE preparation, whilst performance of students was measured using pass rate and grade, mastery of the curriculum and perception towards the positive impact of the program.

1.11.2 Geographical Scope

The study was conducted in the four regions of Uganda that is; Northern, Southern, Western and Eastern, covering prominent public nursing schools. These regions were chosen because national picture of the research problem and it is accessible to the researcher and tallies very well with the operationalisation of the research problem under study.

1.11.3. Time Scope

The study focused on the time framed 2012-2014 because this is the period when the OSCE program has been in operation.

1.12. Operational Definitions of Terms

OSCE design; this referred to a circuit of short (the usual is 5–10 minutes although some use up to 15 minute) stations, in which each candidate is examined on a one-to-one basis with one or two impartial examiner(s) and either real or simulated patients (actors or electronic patient simulators). OSCE must be designed in form of objectivity, structure and clinical examination.

OSCE Assessment; this meant assessing in OSCEs being done by the examiner. Occasionally written stations, for example, writing a prescription chart, are used and these are marked like written examinations, again usually using a standardized mark sheet.

OSCE Preparation; this referred to preparing for OSCEs. In an OSCE, clinical skills are tested rather than pure theoretical knowledge. It is essential to learn correct clinical methods and then practice repeatedly until one perfects the methods whilst simultaneously developing an understanding of the underlying theory behind the methods used.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter reviewed the literature related to establishing the relationship between OSCE implementation and academic performance of nursing students. The review was conceptualized under the objectives of the study and focused primarily on OSCE design, preparation and assessment and their relationship with academic performance of nursing students. These were considered the pillars of the study.

2.2. Theoretical framework

The theoretical framework for this study was derived from the constructivist learning Theory pioneered by Bartlett in 1932.Formalization of the theory of constructivism is generally attributed to Jean Piaget (1950). The Constructivist Learning Theory is an alternative to two theories, videlicet the behaviorist learning theory which views a learner as passive, akin to a programmed animal that merely responds to environmental stimuli and the cognitive learning theory which views a learner as only an information processor and nothing beyond that (Gagne, 1972). The theory of constructivism posits that each individual will utilize their prior knowledge and experiences to construct new, related, and/or adaptive concepts in learning. In the constructivist's view, meaning is closely connected with experience as individuals come to a learning situation with a cognitive structure based on previous experiences (Hanley, 1994). Based on this view, training programs should be designed such that training content is directly related to improving employee performance. Constructivism built on the findings of behaviorism and

cognitivism learning theories by establishing that besides response to environmental stimuli and information processing using a learner's cognitive structures, a learner constructs information.

On the basis of the constructivist standpoint, training to enhance performance of learners should involve the facilitation of learning by coaching them in the knowledge construction process (Kerka, 1997). A constructivist-based training program to improve performance will, therefore, accentuate that the learner should be an active participant constructing knowledge about tasks, and not just a passive receptacle for information (Chen, 2001).

As adapted in this study, the constructivist learning theory holds that training of learners influences their performance. Training design, implementation, preparation and assessment of students influence their behaviors and results while executing their duties and responsibilities. However, in adopting the constructivist learning theory for this study, the researcher is not ignorant of its shortcomings. Constructivism promotes an open-ended learning experience where the methods and results of learning are not easily measured and may not be the same for each learner (George, 1991). Despite the fact that this theory has strengths in explaining this study, it is not without criticism. It is evident that this theory seems to be a good theory in explaining behaviors in the natural setting more than medical field.

2.3. OSCE design and academic performance of nursing students

An OSCE usually comprises a circuit of short (the usual is 5–10 minutes although some use up to 15 minute) stations, in which each candidate is examined on a one-to-one basis with one or two impartial examiner(s) and either real or simulated patients (actors or electronic patient simulators) (Bartfay et al, 2004). Each station has a different examiner, as opposed to the traditional method of clinical examinations where a candidate would be assigned to an examiner

for the entire examination. Candidates rotate through the stations, completing all the stations on their circuit. In this way, all candidates take the same stations. It is considered to be an improvement over traditional examination methods because the stations can be standardized enabling fairer peer comparison and complex procedures can be assessed without endangering patient's health (Bujack et al, 1991).

As the name suggests, an OSCE is designed to be: *objective*- all candidates are assessed using exactly the same stations (although if real patients are used, their signs may vary slightly) with the same marking scheme (Bujack et al, 1991). In an OSCE, candidates get marks for each step on the mark scheme that they perform correctly, which therefore makes the assessment of clinical skills more objective, rather than subjective. It is also designed to be *structured* - stations in OSCEs have a very specific task. Where simulated patients are used, detailed scripts are provided to ensure that the information that they give is the same to all candidates, including the emotions that the patient should use during the consultation. Instructions are carefully written to ensure that the candidate is given a very specific task to complete. The OSCE is carefully structured to include parts from all elements of the curriculum as well as a wide range of skills (Khattab and Rawlings, 2001). And lastly it is designed to *a clinical examination* - the OSCE is designed to apply clinical and theoretical knowledge. Where theoretical knowledge is required, for example, answering questions from the examiner at the end of the station, then the questions are standardized and the candidate is only asked questions that are on the mark sheet and if the candidate is asked any others then there will be no marks for them (Hodges, 2003a).

Assessment of clinical competence is an essential requirement of health professional education. Since its development in the 1970s, the Objective Structured Clinical Examination

(OSCE) has gained acceptance as a benchmark for clinical skills assessment (Bartfay, et al 2004). The OSCE is defined as "an approach to the assessment of clinical competence in which the components of competence are assessed in a well-planned or structured way with attention being paid to objectivity" (Harden 1988, p. 19), or as an assessment of well-defined clinical skills (Ward & Willis 2006). An OSCE requires each student to demonstrate specific skills and behaviors in a simulated work environment with standardized patients. It typically consists of a circuit or series of short assessment tasks (stations), each of which is assessed by an examiner using a predetermined, objective marking scheme (Bartfay et al, 2004; Major, 2005; Ward &Barrat, 2005). The OSCE has become a well-established method of assessment in medical education (Ward & Barratt, 2005) and is increasingly being used as a method of assessment in nursing and allied health curricula (Bartfay et al 2004; Wessel et al, 2003).

Furthermore, as a method of clinical skills assessment, the OSCE possesses a number of intrinsic advantages. Firstly, it can include both summative and formative components, in which a judgment or evaluation of an individual's performance is made (summative) followed by the provision of feedback, from which the student can learn (formative) (Taras, 2005). Secondly, because each student is required to demonstrate specific behaviors in a simulated work environment, strict control over the clinical context is possible, while at the same time, reflecting real-life professional tasks. This control eliminates the 'luck of the draw' problem that arises when students are assessed within the 'real-world' clinical environment with actual patients (Bartfay et al, 2004) as well as the risk of harm occurring to a patient. The underlying premise is that such standardized procedures ensure objectivity and maximize reliability in assessment (Bartfay et al, 2004; Major 2005). It is imperative to note therefore that there is a clear indication from the above literature that OSCE design has a relationship with academic performance of nurses; however,

such literature has been limited in scope and ignores the situation in Uganda. This study therefore, was undertaken to fill this gap.

2.4. OSCE assessment and academic performance of nursing students

Marking in OSCEs is done by the examiner. Occasionally written stations, for example, writing a prescription chart, are used and these are marked like written examinations, again usually using a standardized mark sheet. One of the ways an OSCE is made objective is by having a detailed mark scheme and standard set of questions (Issenberg, et al, 2005). The examiner can often vary the marks depending on how well the candidate performed the step. At the end of the mark sheet, the examiner often has a small number of marks that they can use to weight the station depending on performance and if a simulated patient is used, then they are often asked to add marks depending on the candidates approach. At the end, the examiner is often asked to give a "global score". This is usually used as a subjective score based on the candidates overall performance, not taking into account how many marks the candidate scored (Humphrey-Murto and MacFadyen, 2002). The examiner is usually asked to rate the candidate as pass/borderline/fail or sometimes as excellent/good/pass/borderline/fail. This is then used to determine the individual pass mark for the station. Many centers allocate each station an individual pass mark. The sum of the pass marks of all the stations determines the overall pass mark for the OSCE. Many centers also impose a minimum number of stations required to pass which ensures that a consistently poor performance is not compensated by a good performance on a small number of stations.

There are, however, criticisms that the OSCE stations can never be truly standardized and objective in the same way as a written exam. It has been known for different patients / actors to afford more assistance, and for different marking criteria to be applied. Finally, it is not uncommon at certain

institutions for members of teaching staff be known to students (and vice versa) as the examiner. This familiarity does not necessarily affect the integrity of the examination process, although there is a deviation from anonymous marking. However, in OSCEs that use several circuits of the same stations the marking is repeatedly shown to be very consistent which supports the validity that the OSCE is a fair clinical examination (Major, 2005).

OSCEs have traditionally been marked on optical mark reader sheets. With the advent of tablet computers and Wi-Fi, a number of systems have been developed to mark examinations electronically, eliminating the need for printing and scanning thousands of mark sheets used in each OSCE circuit. Research comparing traditional paper-based OSCEs with an online marking tool (OMIS) found significant improvements in terms of accuracy, financial feasibility and time-costs, while the validity of the OSCE exam itself can be measured and improved using the generalizability theory alongside student results. Electronic scoring with OMIS increases fairness of result calculations through the application of Regression analysis as a standard setting method, thereby highlighting issues around inter-rater reliability and validity of OSCE station forms.

As students progress to a higher level of study, the stations become more complex (Mitchell et al, 2009; Zaidi, 2006). Unlike OSCEs in medicine, where real patients are frequently used, nursing tends to use role players (actors or academic staff) or manikins as the patient. The move away from using OSCEs to assess skills in isolation to a more holistic approach where the skills are more integrated into the assessment is intended to make the assessment more realistic (Major, 2005). Filming students' performance in formative and summative OSCEs is common practice. The film can be used to identify areas where students need to improve, or by assessors to resolve a query regarding a student's performance and also as a form of moderation. This should take place

for summative OSCEs to avoid any subjectivity, and external examiners should be involved in reviewing the content of the stations, checklists and marking criteria.

Assessment plays a major role in the process of medical education, in the lives of medical students, and in society by certifying competent physicians who can take care of the public. The very foundation of medical curricula is built around assessment milestones for students. For example, in the United States medical students must pass a series of steps towards licensure before graduating from medical school. It is assessment and evaluation that often drives the curricula of medical schools and students measure their progress through the curriculum by the examinations they have passed (Miller, 2000).

Schemes of assessment must support the curriculum and allow students to prove that they have achieved the curricular outcomes. This means assessment must allow students to demonstrate the breadth and depth of their knowledge, and to show what they can do. Professional attitudes and behavior must also be assessed. Medical schools should use a range of assessment techniques that are appropriate for testing the curricular outcomes. Medical schools should determine the most appropriate scheme of assessment for their curriculum (Newstead, 2002). However, schemes must meet best practice in assessment, and medical schools must be able to provide evidence that the schemes are valid and reliable, and that they have processes for setting standards and making decisions about student performance.

When students get close to graduating, their knowledge, skills, attitudes and behavior must be thoroughly assessed to determine their fitness to practice as pre-registration house officers. Assessment becomes a motivating force for them to learn. Society has the right to know that physicians who graduate from medical school and subsequent residency training programmes are

competent and can practice their profession in a compassionate and skilful manner. It is the responsibility of the medical school to demonstrate that such competence has been achieved, and the responsibility of accreditation agencies to certify that the educational programmes in medical schools can do what they promise. Assessment is of fundamental importance because it is central to public accountability (Piercey, 2005).

A checklist is frequently used to mark OSCEs to increase the objectivity and reliability of the assessment, especially when several assessors are required. This consists of the skill broken down into steps, which are marked using a binary rating ("achieved" or "not achieved"). The complete OSCE assesses professional behavior, communication, consent, hand washing, temperature, pulse, respiratory rate and manual blood pressure. Two lecturers are present, one as the patient (unless an actor is used) and one leading the assessment, with both contributing towards the final mark (Major, 2005). The student stays in the same room and performs the skills in any order, but must cleanse their hands before and after contact with the patient.

Intuitively, it makes sense to use OSCEs (i.e. many stations) because they have high face validity (Newstead 1992), that is, both students and examiners see them as measuring skills relevant to clinical practice. Moreover, a large part of the success of the OSCE in its original form was because it was found to be more reliable and valid than other more traditional forms of clinical assessment, such as long cases and viva voce examinations (Bartfay et al 2004; Brosnan et al 2006; Harden & Gleeson 1979). However, despite consistent findings of high face validity (Ward & Barratt 2005; Brosnan et al 2006; Bujack et al 1991b), the large number of adaptations has resulted in inconsistencies in the reliability and validity of the OSCE, which have been well documented (Rushforth 2007). To overcome these and ensure acceptable reliability and content validity, a recurring recommendation in the literature is to include a larger number of short stations

(approximately five minutes) (Schuwirth& van der Vleuten 2003; Selby et al 1995; Bartfay et al 2004). In particular, the need for more rigorous evaluation of OSCEs in nurse education programs has been highlighted (Khattab& Rawlings 2001; Brosnan et al 2006), as these assessments are directed towards assurances that passing students can practice safely in the clinical setting with patients.

Circular logic is an important factor that affects the predictive validity of all forms of observed assessment including the OSCE, and highlights the difference between assessment of competence and the assessment of performance. OSCEs assess the presence of behaviors that the OSCE itself has the proclivity to affect (Hodges 2003a). To illustrate, sociologist Goffman (1959, cited in Hodges 2003b), notes that when emphasis is placed on performance of a social interaction such as ensuring a patient's psychological comfort through the use of effective communication and interpersonal skills and empathic treatment, individuals become adept at altering their performance to portray an interaction they believe would demonstrate their competence. That is, the examination context itself may encourage the individual to behave in a socially desirable manner which may not truly reflect the way the individual would perform in a real world situation. Thus, one may query the extent to which OSCEs adequately assess some psychosocial skills sets / competency components and consequently query the OSCE's predictive validity for these types of competencies.

The concept of assessing integration of skills in nurse undergraduates contravenes Benner's (1984) Novice to Expert taxonomy which describes the development of competence. Benner defines the performance of junior undergraduate nurses as being at the novice level, where the focus is on remembering rules with little or no attention being paid to contextual factors.

Specifically, novices concentrate on learning discrete, context-free skills such as measuring patients' weight, recording fluid intake and output, temperature, blood pressure, pulse and other such "objectifiable, measurable parameters of a patient's condition" (Benner 1984, p.20). Benner's conclusion that nursing students operate at the novice level has been echoed by others (Ellerton&Gregor 2003; Fisher &Parolin 2000; Pigott 2001; Watkins 2000) and includes recognition of an approach to nursing practice that is largely procedural (Ellerton&Gregor 2003).

The assessor and patient need clear guidelines about their roles and how much interaction is allowed with the student – the student must also be made aware of this. The assessor must be totally familiar with and have a good understanding of the marking criteria and guidelines. It is useful for first-time assessors to observe some OSCEs to gain insight into the process. A global rating scale can be used in combination with a checklist or on its own (Rushforth, 2007). The scale allows the overall quality of the student's performance to be assessed by an experienced and knowledgeable assessor (Rushforth, 2007). An example of a global rating score involves the assessor identifying the level of the skill performance across the range "excellent/good/satisfactory/borderline pass/borderline fail/fail". A Likert scale of "pass-borderline-fail" can be used by the assessor to judge a student's performance. The assessor must have a sound understanding of the assessment and the marking tool.

Major (2005) acknowledged the benefits of assessing discrete skills for novices, and introduced workstation activities such as urine testing, injection technique and resuscitation technique, as well as the skills required for safe practice prior to students' first clinical placement, including hand washing, basic life support and safe manual handling (Major 2005). For second year undergraduates, Major (2005) recognizes taxonomies of learning through the use of OSCEs

where more complex skills are divided into a series of related steps. Similarly, Friedman Ben-David (2000), who has contributed significantly to developing protocols for OSCE construction, recommends an approach similar to Major (2005) where simulations in assessment should progress from discrete to integrated abilities, as the student progresses through their degree. Not only is this recommendation in line with Benner's Novice to Expert taxonomy (Benner et al 1996), it also supports the notion that an important requirement in using OSCEs is to ensure that the level of the assessment task is consistent with the expected level of performance and limited clinical experience, rather than attempting to take an integrated holistic approach which incorporates more complex cognitive processes such as critical thinking. From literature reviewed on this segment, it is evident that OSCE assessment has a relationship with academic performance of nurses; however, such literature has been limited in scope and ignores the situation in Uganda. This study therefore, was undertaken to fill this gap.

2.5. OSCE preparations and performance of nursing students

Preparing for OSCEs is very different from preparing for an examination on theory. In an OSCE, clinical skills are tested rather than pure theoretical knowledge. It is essential to learn correct clinical methods and then practice repeatedly until one perfects the methods whilst simultaneously developing an understanding of the underlying theory behind the methods used (Salas and Burke, 2002). Marks are awarded for each step in the method; hence, it is essential to dissect the method into its individual steps, learn the steps, and then learn to perform the steps in a sequence. For example, when performing an abdominal examination, a student is instructed to first palpate for the liver, and then to palpate for the spleen.

This seemingly meaningless order becomes relevant when it is considered that those with enlarged livers often also have enlarged (spleens Ward, H., & Willis, 2006). Most nursing

institutions have clinical skills labs where students have the opportunity to practice clinical skills such as taking blood or mobilizing patients in a safe and controlled environment. It is often very helpful to practice in small groups with colleagues, setting a typical OSCE scenario and timing it with one person role playing a patient, one person doing the task and if possible, one person either observing and commenting on technique or even role playing the examiner using a sample mark sheet. Many OSCE textbooks have sample OSCE stations and mark sheets that can be helpful when studying in the manner. In doing this the candidate is able to get a feel of running to time and working under pressure. In many OSCEs the stations are extended using data interpretation. For example, the candidate may have to take a brief history of chest pain and then interpret an electrocardiogram. It is also common to be asked for a differential diagnosis, to suggest which medical investigations the candidate would like to do or to suggest a management plan for the patient (Major, 2002).

Applications of OSCE with its many stations with the focus on specific tasks or skills vary from the single integrated assessment station of an OSCA which provides an holistic patient assessment (Major, 2005). The OSCA single station integrates many areas such as communication skills, observation and recording of vital signs, assistance with personal hygiene, movement from bed to chair, observations, and reporting of wound status. Khattab and Rawlings (2001) report using a two-component OSCA for student nurses: one for tasks (skills assessment) and one for questions (knowledge assessment). The emphasis in the first component was on techniques and communication skills; and in the second on the clinical findings and their student's interpretation of these findings. Students were required to perform a whole examination including a general examination of cardiovascular, respiratory, nervous, and musculoskeletal systems and the abdomen and glands. Students were then questioned on three levels of cognitive activity:

knowledge of anatomy and physiology, clinical reasoning, and the relationship of the physical examination to clinical significance.

However, the multi-station OSCEs have also been used for undergraduate nurse students to assess not only advanced clinical practice skills but also student's interpretation of these findings. Ward and Barratt (2005), developed a 10-station OSCE consisting of three physical examination stations, three history taking stations, three communication stations (incorporating interpretation and giving a laboratory result, patient management, patient education / health promotion, and exploration of a problem relating to mental health), and one question-and-answer station. Others have used even larger OSCEs - up to 20 stations - with a wide array of skills being incorporated for evaluation (Chesser et al 2004; Wilkinson et al 2000; Humphrey-Murto & MacFadyen, 2002). In short, there is a broad variety in the application of the OSCE, ranging from assessment of the purely technical - evaluating brief tasks or students' acquisition of skills, to assessment of professional competence - evaluating intellectual components such as clinical judgment and/or integration of a range of skills and knowledge.

Preparation is vital and increases students' confidence in performing skills during the OSCE and in clinical areas (Street and Hamilton, 2010). Formative or mock OSCEs also increase confidence and competence (Alinier, 2003). Students preparing for an OSCE should: Be psychologically prepared; Be familiar with how equipment works; Know which procedures/guidelines are to be used in the OSCE; Be familiar with checklist/marking criteria; Rehearse skills; Know the timing of the OSCE; Develop skills on clinical placement; Revise the underpinning theory of skills; Use feedback from mock/formative OSCEs; Use available resources such as guided study, quizzes and videos; Check whether they should wear uniforms; Confirm the date, time, venue and allow enough time to get there; Practice answering questions verbally.

Nursing is a dynamic process that constantly changes in response to a variety of social contextual influences making it difficult to replicate within an examination context (Benner 1984; Hodges 2003a; McMullen et al 2003; Piercey 1995). McMullen et al (2003) argue that if the objective of the assessment is to obtain an holistic perspective of competence, then complex combinations of knowledge, skills, attitudes and values need to be brought together in context-specific situations that incorporate interacting contextual factors and ethics. A case in point is the myriad of organizational demands, for example staffing and availability of appropriate resources, placed on a nurse that may mediate the nature of the nurse's critical thinking ability and behavior, at a specific point in time. Evaluating critical thinking skills such as problem-solving, clinical reasoning, decision-making, by simulated assessment cannot capture the complex and changing nature of organizational demands (Benner 1984). Insofar as the OSCE is unable to take account of interacting contextual factors that are common in the clinical environment, this presents a major limitation with regard to its predictive validity when used for this purpose. Although an important advantage of the OSCE is its ability to provide a standardized clinical assessment, it is this very advantage which prevents it accommodating the myriad cultural, economic and sociopolitical contexts that exist within the larger clinical nursing context (McGrath et al 2006). In other words, the level of competence in critical thinking as assessed by an OSCE is unlikely to fully reflect the student's ability to competently apply critical thinking in the real-life clinical setting.

Nursing practice is complex, consisting of a mix of different competency components. Some, such as technical skills, are essential for safe practice, are readily quantified using standardized instruments, while others require a more qualitative approach (McGrath et al, 2006). For example, there are difficulties inherent in measuring the construct of caring – a core component of nursing practice (McGrath et al, 2006). Specifically, an OSCE may not be able to adequately

assess the range of behaviors within the concept of caring. As Bartfay et al (2004) state, "the completeness of an examination depends on the number of behaviors sampled"; and as McGrath et al (2006) illustrate further, the aspects that are assessable in an OSCE may not be sufficient to confirm (or refute) that the nurse is in fact, a caring nurse. Thus, the assessment of complex and essentially subjective constructs, such as caring, empathy and other interpersonal skills are vulnerable to findings of low validity and poor inter-rater reliability within an OSCE. Again, contextual information is needed to judge the appropriateness of a nurse's behavior; therefore the extent to which psychosocial constructs, such as caring, are appropriate for evaluation via the OSCE approach is questionable.

It is imperative to note therefore that there is a clear indication from the above literature that OSCE preparation has a relationship with academic performance of nurses, however, such literature has been limited in scope and ignores the situation in Uganda. This study therefore, was undertaken to fill this gap.

2.6. Summary of Literature Review

The literature reviewed clearly indicated that there are a number of studies in place that have viably established a relationship between OSCE and academic performance of nursing students' world over. However, the literature ignored nursing students in Uganda. Still the literature reviewed is reportedly done in previous years of 2010 and below. Currently, we are in 2015 and new developments or changes within the OSCE design, assessment and preparation have come up, which called for a study like this to try to empirically test the literature reviewed and weigh the progress of the new developments in place. The study revealed new works in place

especially on the relationship between OSCE design, assessment and preparation and academic student's performance.

CHAPTER THREE

METHODOLOGY

3.1. Introduction

This chapter therefore comprised research design, study population, determination of sample size, sampling techniques, data collection methods, data collection instruments, quality control, data collection procedures, data analysis, measurement of variables, and ethical considerations.

3.2 Research Design

This study used both descriptive and correlation research design. Descriptive research design enables an investigation of results while explaining and describing variables whilst, a correlation research design enables the researcher to find out the relationship between the study variables, (Sekaran, 2003). This type of research design was selected as ideal for this research because the study intended to identify predictive relationships by using correlations. In this study, numerical figures and descriptive information was obtained, giving it both a quantitative and qualitative research dimension. The study thence used both qualitative and quantitative approaches during sampling, data collection, quality control, and analysis. At data collection stage, qualitative design involved administering open ended interview and questionnaire questions to the respondents, whilst the quantitative design was involve administering closed ended interview and questionnaire questions to respondents.

3.3. Study Population

This study was conducted in four regions of Uganda that is; Northern, Southern, Western and Eastern, covering prominent private and public nursing schools. The study population consisted of 2400 nursing students who have passed through OSCE and 24 lecturers (UNMEB, 2014; Ministry of Education and Sports Records, 2012).The nursing students were chosen in this study because they were pivotal and formed a basis for evaluation when it comes to their performance as per OSCE. This means that their information is too important. For lecturers, they were vital since they participate in design, assessing and preparing OSCE which they use in evaluating performance.

3.4. Determination of the Sample Size

The sample size was determined using the table in Appendix III from a study by Morgan and Krejcie (1970, as cited in Amin, 2005). This therefore means that the sample included 331 nursing students. The sample sizes are depicted in Table 3.1.

Table 2: Sample Size of Respondents and Sampling Technique

Category of Population	Population Size	Sample Size	Sampling Technique
Lecturers from nursing schools	24	24	Purposive sampling
Nursing students	2400	331	Stratified Random and convenience sampling
Total	**2424**	**355**	

Source: primary data

From Table 3.1, it can be observed that the researcher worked with a sample size of 95 respondents using a blend of purposive and stratified random sampling techniques.

3.5. Sampling Techniques

The study used both probabilistic and non-probabilistic sampling techniques.

3.5.1. Probabilistic Sampling Techniques

From the existing probabilistic sampling techniques, the study used stratified random and convenience sampling technique. Stratified random sampling was used to select nursing students from four regions in Uganda. This technique was chosen because the category of nurses has a large population size and as such warranted creating equal strata and employ simple random sampling

to minimize sampling bias. After establishing strata, convenience sampling was used to select students who are accessible (Mugenda & Mugenda, 2003).

3.5.2. Non-probabilistic Sampling Techniques

From the existing non-probabilistic sampling techniques, purposive sampling was employed to select lecturers who were targeted due to their perceived knowledge arising out of known experience that they have. This technique was employed following the postulate that if sampling had to be done from smaller groups of key informants, there is need to collect very informative data, and thus the researcher needed to select the sample purposively at one's own discretion (Sekaran, 2003).

3.6. Data Collection Methods

3.6.1. Survey

This was used to collect primary data from nursing students, and, it involved use a semi-structured questionnaire depicted in Appendix I. The method of survey using a semi-structured questionnaire was deemed appropriate since part of the questionnaire offers the students a choice of picking their answers from a given set of alternatives while the other part of the questionnaire allowed them to qualify their responses (Amin, 2005).

3.6.2. Interview

This was used to collect primary data from lecturers. It involved use of a semi-structured interview guide depicted in Appendix B. The method of interview using a semi-structured interview guide was deemed appropriate since the aforementioned categories of staff had vital information yet no time to fill in questionnaires (Sekaran, 2003).

3.6.3. Documentary Review

This was used to collect secondary data and was guided by a documentary review checklist. Documents from Ministry of Health, Ministry of Education and Sports, UNMEB, public and private libraries with literature relevant to the research topic were analyzed as secondary sources of data to supplement primary data from survey and interviews (Amin, 2005).

3.7. Data Collection Instruments

3.7.1. Questionnaire

Questionnaires were used to collect data from the nursing students from four regions in Uganda. The questionnaire (Appendix I) was used in this case because it has proved to be an invaluable method of collecting a wide range of information from a large number of individuals especially when it comes to people like nurses (Sekaran, 2003). The questionnaires are popular because the respondents filled them in at their own convenience and are appropriate for large samples. The questionnaire was designed with both open and closed ended questions (Amin, 2005).

3.7.2. Interview guide

The researcher prepared and used a semi-structured interview guide to conduct interviews with lecturers. Interviews were chosen because they are thought to provide in-depth information about a particular research issue or question. Still, interviews were chosen because they made it easy to fully understand someone's impressions or experiences, or learn more about their answers as compared to questionnaires. According to Mugenda and Mugenda (2003), interviews are advantageous in that they provide in-depth data which is not possible to get using questionnaires.

3.7.3. Documentary Review Checklist

This consisted of a list of documents (Sekaran, 2003) particularly concerning OSCE and academic performance of nursing students which were directly relevant. Most of these documents were obtained MOH and UNMEB like exam results.

3.8. Quality control

3.8.1. Validity

The validity of the questionnaires was established using the content validity test. Using the ratings the content validity indices were computed. The Cronbach Alpha method of internal consistency was used to compute the reliability of the measures of the variables of the study using various questionnaire items administered to respondents (Kothari, 1990).

Table.2. Content Validity Indices for the Questionnaire

Variable	Description	No. of Items	Content validity index
Independent	OSCE design	10	.797
	OSCE preparation	14	.885
	OSCE assessment	9	.718
Dependent	Academic performance	9	.795

Source: Primary data

According to Content validity Index, the questionnaire was considered valid since all the coefficients in Table 2 were above 0.7 which is the least recommended CVI in survey studies (Amin, 2004; Gay, 1996).

3.8.2. Reliability

Gay (1996) defined reliability as the degree of consistency that the instrument demonstrates. After pilot testing in the field, reliability of the instrument, on multi-item variables (i.e.OSCE and academic performance) was tested via the Cronbach Alpha Method provided by Statistical Package for the Social Scientists (Foster, 1998). The researcher used this method because it was expected that some items or questions would have several possible answers. The researcher established reliability of the questionnaires by computing the alpha coefficient of the items (questions) that constituted the dependent variable and that of the items that constituted the independent variable. The results are as on Table 3:

Table 3. Reliability indices for the respective sections of the questionnaire

Variable	Description	No. of Items	Cronbach alpha
Independent	OSCE design	10	.831
	OSCE preparation	14	.767
	OSCE assessment	9	.761
Dependent	Academic performance	9	.767

According to Cronbach Alpha Coefficient Test (Cronbach, 1971), the questionnaire was considered reliable since all the coefficients in Table 4 were above 0.7 which is the least recommended CVI in survey studies (Amin, 2004; Gay, 1996).

3.9. Data Collection Procedures

The researcher obtained a letter from Uganda Management Institute introducing him to nursing schools in four regions in Uganda and specifying that the data to be collected was solely

for study purposes. Upon obtaining the requisite permission, the researcher proceeded with data collection starting with giving out questionnaires to the students. After that interviews were conducted with lecturers.

3.9. Data Analysis

Data was analyzed both quantitatively and qualitatively.

3.9.1. Quantitative data analysis

Quantitative data analysis involved use of both descriptive and inferential statistics in the Statistical Package for Social Scientists (SPSS). Descriptive statistics entailed determination of measures of central tendency such as mean, mode, median; measures of dispersion such as range, variance, standard deviation; frequency distributions; and percentages. Data was processed by editing, coding, entering, and then presented in comprehensive tables showing the responses of each category of variables. Inferential statistics included correlation analysis using a correlation coefficient and regression analysis using a regression coefficient in order to answer the research questions. According to Sekaran (2003), a correlation study is most appropriate to conduct the study in the natural environment of an organization with minimum interference by the researcher and no manipulation. A correlation coefficient was computed because the study entailed determining correlations or describing the association between two variables (Oso & Onen, 2008).

3.9.2. Qualitative data analysis

Qualitative data analysis involved both thematic and content analysis, and, was based on how the findings related to the research questions. Content analysis was used to edit qualitative data and reorganize it into meaningful shorter sentences. Thematic analysis was used to organize data into themes and codes were identified (Sekaran, 2003). After data collection, information of

same category was assembled together and their similarity with the quantitative data created, after which a report was written. Qualitative data was interpreted by composing explanations or descriptions from the information. The qualitative data was illustrated and substantiated by quotation or descriptions.

3.10. Measurement of Variables

- OSCE Implementation was measured using a 5-point Likert Scale from 1 (strongly disagree) to 5 (strongly agree)
- Academic performance of nursing students was measured using a 5-point Likert Scale from 1 (strongly disagree) to 5 (strongly agree)

The choice of this scale of measurement was that each point on the scale carries a numerical score which was used to measure the respondent's attitude and it was the most frequently used summated scale in the study of social attitude.

3.11. Ethical Considerations

One of the main ethical problems in this study was the privacy of the subjects and confidentiality of their information. To ensure privacy, the subjects were informed upfront that indeed their names were not be required, that they have the right to leave questions unanswered for which they do not wish to offer the requisite information, and that the researcher was not to put the respondent under pressure . To ensure confidentiality, the subjects were informed upfront that the information they give was solely used for academic purposes and data obtained on private matters was treated in confidence (Amin, 2005).

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF RESULTS

4.1. Introduction

This chapter presents findings of the study which was conducted to examine the influence of Objective Structured Clinical Examination (OSCE) and academic performance of nursing student in Uganda. The findings are presented according to the objectives of the study. In the first section, the social background of the respondents is given. In the second section, the empirical analysis of the study findings are analyzed (that is findings on the relationship between OSCE design, OSCE assessment, OSCE preparations and academic performance of nursing students) and the last section handles the testing of hypothesis that were set for this study to prove. The response rate in the whole study is explained in Table 4 below;

4.2. Response rate

Table 4: showing the response rate

Respondents	Sample size	Frequency	Percentage

Lecturers from nursing schools	24	19	79.2%
Nursing students	331	254	76.7%
Total	**355**	**273**	**76.9%**

Table 4 above indicates that out of the 355 respondents that were set for the study for investigation, 273 were able to respond to the study. The remaining 82 of the respondents couldn't be reached because some of them were out of the area during the time for research, others couldn't attend to the researcher in the specified time and some of them had travelled for official duties for a specified period of time. However, according to Amin (2005), 70% of the respondents are enough to represent the sample size set for the study. This means that 76.9% is adequate for this study.

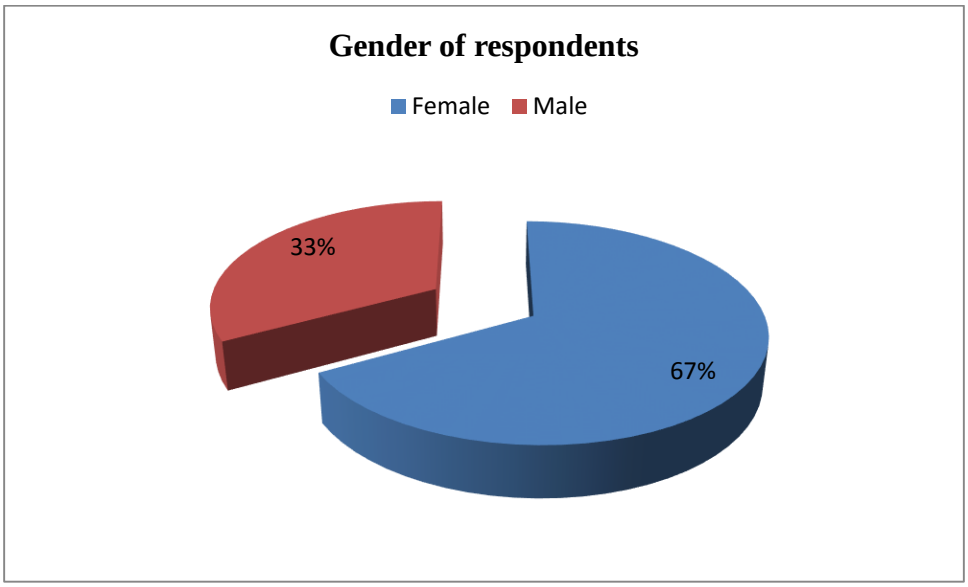
4.3. Background of the Respondents

This theme handles the background information on the respondents that were used in the study. Among these characteristics included, gender, age, type of education being undertaken by nurses in nursing schools in Uganda.

4.3.1. Gender of the respondents

To understand the gender of the respondents, the researcher recorded their gender and below is the results that were recorded in figure 1.

Figure 1: Gender of the respondents

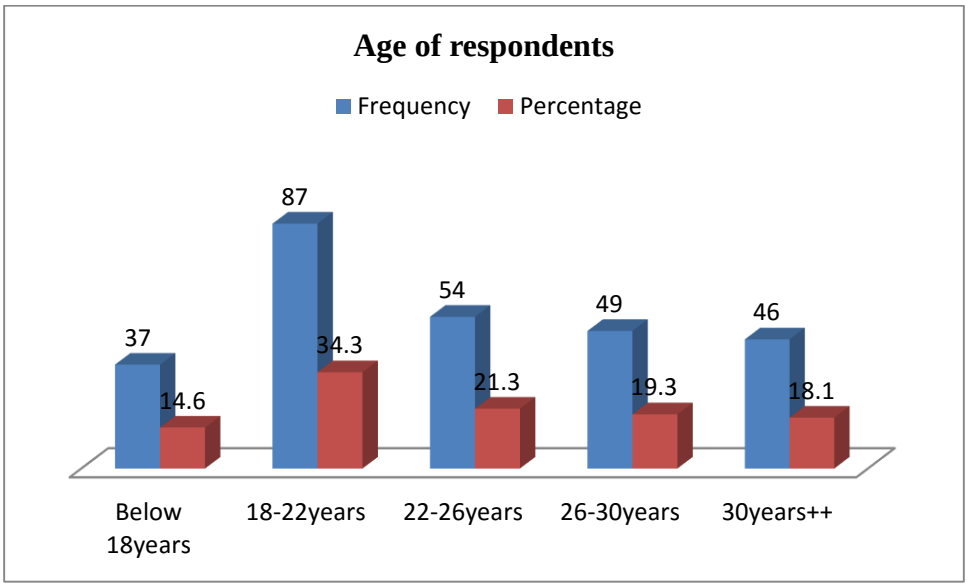


From figure 1, it is indicated that the study was conducted mainly from the female students who constituted 67%. Males on the other hand, were represented by 33% of the respondents. On the other hand, from the interviews conducted, the male respondents taken a highest toll, they constituted 56% of the respondents and female took the smaller portion of 44%. This implies that fundamentally, the biggest portion of the respondents were females, this enabled the study to capture adequate information required from both sexes no matter the number.

4.3.2. Age of the Respondents

To establish the age of the respondents, respondents were asked to state their ages and below are the results that were recorded in figure 2.

Figure 2: showing age of the respondents



From figure 2, it was found out that most of the respondents had 18-22years and these took the highest toll of 34.3%. Those who were in the category of 22-26 constituted 21.3%, 26-30years were represented by 19.3%, 30years and above had 18.1% of representation and the last category of 18years and below was represented 14.6%. On the other hand, from the interviews conducted, most of the respondents were between above 50years and these took a percentage of 50%. Those who were between 40-49years took 40% and 30-39 had 10% of the respondents. The above statistics tell us that the study was conducted mostly in the people who had been in nursing schools for a relatively good time and have a good experience and awareness of OSCE implementation and academic performance.

4.3.3. Level of Education Undertaken By Nurses

Respondents were also asked to state their years for study in the respective nursing schools and their responses are as shown in figure 3 below.

Figure 3: showing year of study

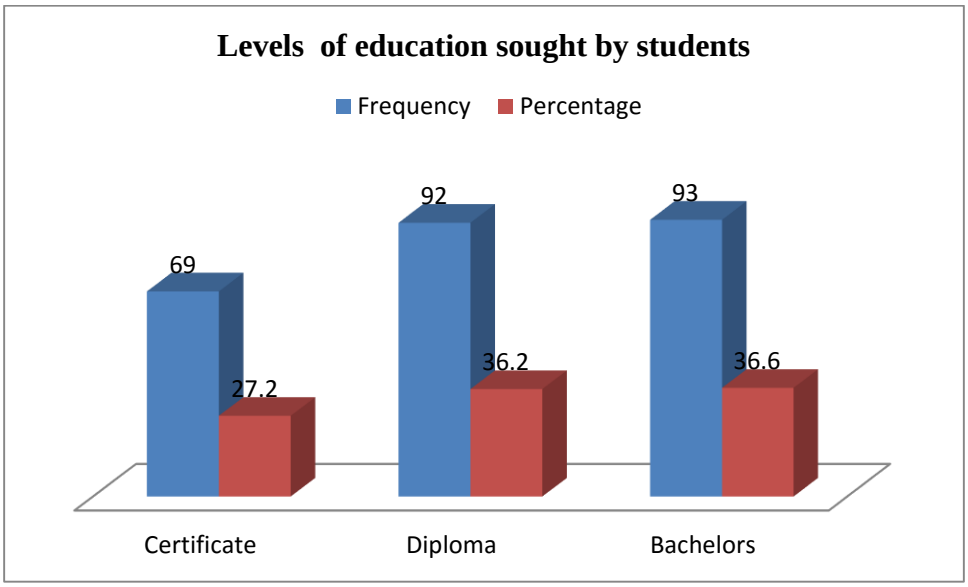


Figure 3 indicates that most of the nursing students were on Bachelor's and diploma level of education and these constituted 36.6% and 36.2% respectively. For those on certificate, these had 27.2% of respondents. The levels of education meant most of the respondents were knowledgeble enough.

4.4. Empirical findings

In this section, the research findings are presented as per the objectives adopted for the study. These findings were thus obtained on the relationship between OSCE design and academic performance of nursing students; the relationship between OSCE assessment and academic performance of nursing students and the relationship between OSCE preparations and academic performance of nursing students. In this case therefore, to understand whether there is a relationship between OSCE implementation and academic performance of nursing students in Uganda, respondents were introduced to different pre-conceived statements as per each variable to listen to their views and below are the findings that were found on each dimension.

4.4.1 Academic performance of nursing students in Uganda

To understand theacademic performance of nursing students in Uganda, the respondents were introduced different items to have their say. Their responses were computed by making an aggregate of responses given by respondents to the 8-items and 5point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Not sure, 4=Agree and 5=Strongly Agree), which sought to measure the academic performance of nursing students in Ugandawhich were categorized according to theirpercentages, means and standard deviation as follows:

Table 5: Descriptive Statistics on academic performance of nursing students in Uganda

Items	1	2	3	4	5	Mean	Std Deviation
Most students in this nursing school passed at a distinction level	61.8%	25%	0%	3.9%	9.2%	1.09	1.282
Most students in this nursing school obtained a pass	53.9%	34.2%	6.5%	2.6%	3.9%	1.11	1.195
Most students in this nursing school were ungraded	59%	26.3%	7.8%	3.9%	7.8%	1.21	.926
A big number of students have mastered the curriculum	0%	0%	2.6%	47.3%	50%	4.25	.886
Most students pass out with the required clinical skills	9%	6%	10.5%	45%	28.5%	4.30	1.165
Our nursing school has the best student in the region	0%	10.5%	25.5%	36%	27%	4.31	.756
Most students in this nursing school passed at a credit level	3%	3%	22.5%	40.5%	30%	4.37	1.309
Most students pass out with the required clinical knowledge	3%	4.5%	13.5%	43.5%	34.5%	4.45	1.309

The results in Table 5 above revealed that the means for all items were above 3.5. Based on the scale of 1-strongly disagree to 5-strongly agree, any data mean of above 3.5 indicates existence of the variables understudy. This thus, statistically means that the academic performance of nursing students in Uganda was promising. The items that confirmed the above statistical claim

included; Most students pass out with the required clinical knowledge (4.45); Most students in this nursing school passed at a credit level (4.37); Our nursing school had the best student in the region (4:31); Most students pass out with the required clinical skills (4.30); A big number of students have mastered the curriculum (4.25). These implied that most of the nurses in nursing schools in Uganda pass out with the required clinical knowledge, at least with a credit and required clinical skills.

Additionally even those items that were indicated with lower means continued to confirm that at least the academic performance of nursing students was adequate and these included: Most students in this nursing school were ungraded (1.21); most students in this nursing school obtained a pass (1.11); most students in this nursing school passed at a distinction level (1.09). These meant that the issues of ungrading and obtaining passes were not so common. However, achieving a distinction was not so common. This in one way implied lack of good performance which can be presumably linked to OSCE implementation.

From the interviews conducted, it was indicated by 78.2% of the interviewees that the academic performance of nurses in Uganda has been improving for the last five years. They indicated that most of the students have been graded in credit than before. 66% of the key informants admitted that distinctions were not so much common in their area but at least even issues of failure were also less registered. He was quoted saying:

> *"Our nursing school has had one of the best performances in Uganda…last year, we had over 400 students, we had over 12% of our students passing with a distinction, 33% passed with a credit and 46% were graded in pass…only 9% of the students failed…I think this can give a better picture of what you what to find out…"*

In a further confirmation, another key informant was quoted saying:

> *"The performance of our nurses has been really good…we have had no failures here because we ensure that we follow the OSCE guidelines as set by Uganda Nurses and Midwives Examinations Board…and for sure if you can get some of our students trained in Kasanga here, I think they can always be the best…"*

The above findings seemed to indicate one thing that the performance of nurses in Uganda was really convincing. However, this was contrary to what documents reviewed indicated. For instance, according to New Vision (2014), it indicated that the performance of nurses in Uganda has been sinking. It is quoted that "AS the number of candidates sitting for nursing got slashed to half, the performance also slightly went down, according to results released Uganda Nurses and Midwives Examinations Board. In 2014 in May; 2,295 candidates sat for final examinations, but the number went down to 1,451 candidates from 33 accredited nursing schools in the country. Looking at this year's candidates out of the 1,389 certificate students, only 1,262 candidates (90.9%) passed the examinations. But it was only three candidates who got distinctions, and only 647 with credit scores. Last year, 45 candidates got distinctions and 1,470 got credits. This position is also confirmed by the Uganda Nurses and Midwives Examinations Board. The Board conducts two examinations in a year; in May and November. But a lot of retakes at diploma and certificate levels are too high. Uganda Nurses and Midwives Examinations Board (2014/2015) further incongruently ascertain the above position of the questionnaire and interview that for Diplomas 62 candidates were doing retakes, 45 passed and the other 17 still failed and were ungraded.

4.4.2. OSCE design and academic performance

To verify whether OSCE is implemented in the design set in nursing schools in Uganda, respondents were introduced different items to have their say. Their responses were computed by making an aggregate of responses given by respondents to the 10-items and 5point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Not sure, 4=Agree and 5=Strongly Agree), which sought to measurethe whether OSCE is implemented in a well set design in nursing schools in Uganda which were categorized according to their percentages, means and standard deviation as follows:

Table 6: Descriptive Statistics on OSCE design and academic performance

Items	**1**	**2**	**3**	**4**	**5**	**Mean**	**Std Deviation**
Each candidate is examined on a one-to-one basis with one or two impartial examiner(s)	17.1%	9.2%	34.2%	26.3%	21%	2.38	1.021
In case when theoretical knowledge is required, for example, answering questions from the examiner at the end of the station, then the questions are standardized and the candidate is only asked questions that are on the mark sheet and if the candidate is asked any others then there will be no marks for them	25%	43.4%	11.8%	10.5%	9.2%	2.44	1.197
Where simulated patients are used, detailed scripts are provided to ensure that the information that they give is the same to all candidates, including the emotions that the patient should use during the consultation.	25%	22.3%	26.3%	23.6%	6.5%	3.09	1.181
Each candidate is examined with either real or simulated patients (actors or electronic patient simulators)	11.8%	13%	5.2%	47.3%	22.3%	3.54	.700

Candidates are made to rotate through the stations, completing all the stations on their circuit	13%	7.8%	13%	38%	27.6%	3.55	.689
The OSCE is designed to apply clinical and theoretical knowledge	7.8%	22.3%	2.6%	42%	25%	3.55	.507
The OSCE is carefully structured to include parts from all elements of the curriculum as well as a wide range of skills	15.7%	10.5%	0%	51.3%	22.3%	3.55	.497
Instructions are carefully written to ensure that the candidate is given a very specific task to complete	5.2%	21%	3.9%	35.5%	26.3%	3.58	.578
Stations in OSCEs have a very specific task	14.4%	6.5%	11.8%	34.2%	30.2%	3.64	.493
Candidates get marks for each step on the mark scheme that they perform correctly	7.8%	14.4%	9.2%	28.9%	36.8%	4.58	.467
Each station has a different examiner when undertaking OSCE	0%	3.9%	5.2%	40.7%	50%	.4.59	4.18

The results in table 6 above revealed that the means for most of the items were above 3.5. It was found out that out of the 10-items that were introduced to respondents, 7-items were indicated with a data mean above 3.5 and 3-items had data means below 3.5. Based on the scale of 1-strongly disagree to 5-strongly agree, any data mean of above 3.5 indicates existence of the variables understudy. This thus, statistically means that nursing schools in Uganda adhere and

implement OSCE in the design expected. Among the items that had means above 3.5 included; Each station has a different examiner when undertaking OSCE (4.59); Candidates get marks for each step on the mark scheme that they perform correctly (4.58); Stations in OSCEs have a very specific task (3.64); Instructions are carefully written to ensure that the candidate is given a very specific task to complete (3.58); The OSCE is carefully structured to include parts from all elements of the curriculum as well as a wide range of skills (3.55); The OSCE is designed to apply clinical and theoretical knowledge (3.55); Candidates are made to rotate through the stations, completing all the stations on their circuit (3.55); Each candidate is examined with either real or simulated patients (actors or electronic patient simulators) (3.54). This thus means that nursing schools in Uganda followed very well the OSCE design in teaching their students.

However, on the other hand, some of the respondents indicated that there were some elements of abusing the OSCE design. For instance, some of the items that confirm such a claim included; Where simulated patients are used, detailed scripts are provided to ensure that the information that they give is the same to all candidates, including the emotions that the patient should use during the consultation (3.09); In case when theoretical knowledge is required, for example, answering questions from the examiner at the end of the station, then the questions are standardized and the candidate is only asked questions that are on the mark sheet and if the candidate is asked any others then there will be no marks for them (2.44); Each candidate is examined on a one-to-one basis with one or two impartial examiner(s) (2.38). This implies that some of the important steps in implementing OSCE design in examining students were not being done and adhered too and this is presumed to have had an impact on the academic performance of nursing students in Uganda.

The views from the key informants continually supported the above position, where 68% of the interviewees admitted that the OSCE design was being followed in educating and examining nursing students. They opinioned that a circuit of short (5–10 minutes although) stations, in which each candidate is examined on a one-to-one basis with one or two impartial examiner(s) is well adhered to. 56% of the key informants added that they go ahead and make sure that the process is designed in form of objectivity, structure and clinical examination. One of the key informants was quoted in an interview saying:

> *"We do adhere to the OSCE design in examining our students…for instance in case when theoretical knowledge is required, for example, answering questions from the examiner at the end of the station, then the questions are standardized and the candidate is only asked questions that are on the mark sheet and if the candidate is asked any others then there will be no marks for them…"*

It was recorded from another key informants saying:

> *"….The OSCE is carefully structured to include parts from all elements of the curriculum as well as a wide range of skills … Each candidate is examined on a one-to-one basis with one or two impartial examiner(s) and Candidates get marks for each step on the mark scheme that they perform correctly"*

The above views from the key informants creates a belief that OSCE design is appeased when examining students and this is assumed to have an impact on academic performance of nurses in Uganda. However, according to the documents reviewed-Uganda Nurses and Midwives Examinations Board (2014/2015) indicates that one of the major reasons for failure of nursing students is lack of masterminded OSCE design which even the implementers are still struggling to comprehend and follow as it must be done.

4.4.2.1 Correlation results for OSCE design and academic performance

The first null hypothesis stated, *"There is a positive relationship between OSCE design and academic performance of nursing students."* Spearman correlation coefficient (r) was used to test the hypothesis. Table 7 presents the test results.

Table 7: Correlation results

			OSCE design	academic performance
Spearman's rho	OSCE design	Correlation Coefficient	1.000	.669**
		Sig. (2-tailed)	.	.022
		N	254	254
	academic performance	Correlation Coefficient	.669**	1.000
		Sig. (2-tailed)	.022	.
		N	254	254

**. Correlation is significant at the 0.01 level (2- tailed).

Findings show that there was a significant positive correlation (rho = .669) between OSCE design and academic performance of nursing students. The coefficient of determination (rho^2 = .4475) shows that OSCE design accounted for 44.8% change in academic performance of nursing students. These findings were subjected to a test of significance (p) and it is shown that the significance of the correlation (p = .022) is less than the recommended critical significance at 0.05.

Thus, the relationship was significant. Because of this, the hypothesis *"There is a positive relationship between OSCE design and academic performance of nursing students"* was accepted.

Thus, the implication of the findings was that OSCE design used in examining nursing students has improved on their academic performance. The positive relationship implies that a change in OSCE design relates to a significant change in academic performance of nursing students in Uganda. The positive nature of the correlation implied that *OSCE design* must be followed in examining students if academic performance of nursing students is to improve.

4.4.2.2 Regression results for OSCE design and academic performance

A further analysis was conducted using a regression to determine the extent to which OSCE design predict academic performance of nursing students. Findings are presented in Table 8, accompanied by analysis and interpretation.

Table 8: Model summary

Regression Statistics					
Multiple R	.652				
R Square	.425				
Adjusted R Square	.420				
Standard Error	3.34				
Observations	254				
ANOVA					
	df	*SS*	*MS*	*F*	*Sig F*
Regression	1	12.858	12.858	82.786	.000
Residual	253	17.396	.155		
Total	254	66			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	
Intercept	1.623	.334	4.865	.000	
OSCE design	.672	.074	9.099	.000	

Findings in Table 8 show a moderate linear relationship (Multiple R = .652) between OSCE design and academic performance of nursing students. The adjusted R Square shows that OSCE design followed account for 42% change in academic performance of nursing students in Uganda. These findings were subjected to an ANOVA test, which showed that the significance (Sig F = .000) of

the Fishers ratio (F = 82.786) was greater than the critical significance at .05. Hence, the findings were accepted. Interview findings supported the findings obtained from questionnaires.

4.4.3 OSCE assessment and academic performance

To understand whether examiners adhered to OSCE assessment in nursing schools in Uganda, respondents was introduced different items to have their say. Their responses were computed by making an aggregate of responses given by respondents to the 14-items and 5point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Not sure, 4=Agree and 5=Strongly Agree), which sought to understand to adherence to OSCE assessment criteria in nursing schools in Uganda which were categorized according to their percentages, means and standard deviation as follows:

Table 9: Descriptive Statistics on OSCE assessment and academic performance

Items	**1**	**2**	**3**	**4**	**5**	**Mean**	**Std Deviation**
If a simulated patient is used, then they are often asked to add marks depending on the candidates approach	23.6%	36.8%	30.2%	6.5%	3.9%	2.34	1.589
Both knowledge and skill assessment is done when undertaking OSCE	21%	30.2%	18.4%	22.3%	21%	3.09	1.540
The examiner can often vary the marks depending on how well the candidate performed the step	9.2%	19.7%	32.8%	25%	14.4%	3.14	1.444
prescription charts are used which are marked like written examinations	10.5%	19.7%	30.2%	22.3%	14.4%	3.16	1.307
A detailed mark scheme is used when assessing students	3%	28.5%	31.5%	30%	6%	3.24	0.765
Standard set of questions are used when assessing students	11.8%	25%	48.6%	0%	15.7%	3.26	.667
All candidates are assessed using exactly the same stations (although if real patients are used, their signs may vary slightly) with the same marking scheme	1.3%	21%	%	35.5%	21%	3.39	.516

At the end of the mark sheet, the examiner often has a small number of marks that they can use to weight the station depending on performance	3.9%	11.8%	26.3%	31.5%	27.6%	3.64	.411
Standardized mark sheet are used in assessing students	0%	0%	7.8%	69.7%	22.3%	4.20	.414
At the end, the examiner is often asked to give a "global score".	0%	0%	0%	63.1%	36.8%	4.37	.433
Both knowledge and skill assessment is done when undertaking OSCE	3.9%	3.9%	7.8%	39.4%	44.7%	4.50	.926
The examiner is usually asked to rate the candidate as pass/borderline/fail or sometimes as excellent/good/pass/borderline/fail.	0%	0%	7.8%	32.2%	60%	4.51	.641

The results in Table 9 above revealed that there was doubt on whether OSCE assessments were being followed by examiners, and this is because there was because of very many responses that had means below 3.5 and few items below 3.5. It was found out that out of the 14-items that were introduced to respondents, 5-items were indicated with a data mean above 3.5 and 9-items had data means below 3.5. Based on the scale of 1-strongly disagree to 5-strongly agree, any data mean of below 3.5 indicates non-existence of the variables understudy. This thus, statistically means that to high extent OSCE assessment was not well done. Among the items that confirmed this claim included; All candidates are assessed using exactly the same stations (although if real

patients are used, their signs may vary slightly) with the same marking scheme (3.39); Standard set of questions are used when assessing students (3.26); A detailed mark scheme is used when assessing students (3.24); prescription charts are used which are marked like written examinations (3.16); The examiner can often vary the marks depending on how well the candidate performed the step (3.14); Both knowledge and skill assessment is done when undertaking OSCE (3.09); If a simulated patient is used, then they are often asked to add marks depending on the candidates approach (2.34). This therefore implied that there were a lot of malfeasances in assessing OSCE and this might have had an effect on academic performance of nursing students in Uganda.

On the other hand, it was dissolved that to some point, OSCE assessment was being done. Among the items that confirm this claim included; The examiner is usually asked to rate the candidate as pass/borderline/fail or sometimes as excellent/good/pass/borderline/fail (4.51); Both knowledge and skill assessment is done when undertaking OSCE (4.50); At the end, the examiner is often asked to give a "global score" (4.37); Standardized mark sheet are used in assessing students (4.20); At the end of the mark sheet, the examiner often has a small number of marks that they can use to weight the station depending on performance (3.64). This means that at least a lesser extent OSCE assessment was indicated as being adhered too.

Despite the fact that the views from the questionnaire wholly seemed not in support of adhering to OSCE assessment, over 73% of the interviewees seemed incongruent and contrary to what the majority had indicated that assessing in OSCEs being done by the examiner. They opinioned that occasionally written stations, for example, writing a prescription chart, are used and these are marked like written examinations, again usually using a standardized mark sheet. 46% of the key informants showed that the examiner is usually asked to rate the candidate as

pass/borderline/fail or sometimes as excellent/good/pass/borderline/fail. One of the Key informants had this to say:

> *"All candidates are assessed using exactly the same stations with the same marking scheme… at the end of the mark sheet; the examiner often has a small number of marks that they can use to weight the station depending on performance"*

The above confirms that OSCE assessment was being done at certain extent and this is likely to have affected the academic performance of nursing students in Uganda.

4.4.3.1 Correlation results on OSCE assessment and academic performance

To test if OSCE assessment had a relationship with academic performance of nursing students**,** a spearman rho correlation coefficient was done by the study and the results are shown in Table 10 below. To verify this hypothesis, a null hypothesis was derived that *"There is a positive relationship between OSCE assessment and academic performance of nursing students."*

Table 10: Correlation results

			OSCE assessment	Academic performance
Spearman's rho	OSCE assessment	Correlation Coefficient	1.000	-.433**
		Sig. (2-tailed)	.	.052
		N	254	254
	Academic performance	Correlation Coefficient	-.433**	1.000
		Sig. (2-tailed)	.052	.
		N	254	254

**. Correlation is significant at the 0.01 level (2-tailed).

Findings show that there was a negative correlation (rho = -.433) between OSCE assessment and academic performance of nursing students. Since the correlation does imply causal-effect as stated in the first and second objective, the coefficient of determination (rho^2 = .18748), which is a square of the correlation coefficient was computed and expressed as a percentage to determine the change in academic performance of nursing students due to OSCE assessment. Thus, findings show that OSCE assessment accounted for 18.7% change in academic performance of nursing students. These findings were subjected to a test of significance (p) and it is shown that the significance of the correlation (p = .052) is greater than the recommended critical significance at 0.05. Thus, the effect was insignificant. Because of this, the hypothesis *"There is a positive relationship between OSCE assessment and academic performance of nursing students* "was rejected.

The implication of these findings is that OSCE assessment has negatively affected the academic performance of nursing students. The negative influence implied that a change in OSCE assessment can contribute to academic performance of nursing students. The negative nature of the influence implied that examiners need to look into the OSCE assessment, if the academic performance of nursing students is to improve.

4.4.3.2 Regression results for OSCE assessment and academic performance

Further analysis was conducted using a regression to determine the extent to which OSCE assessment predict academic performance of nursing students. Findings are presented in Table 11, accompanied with an analysis and interpretation.

Table 11: Model summary

Regression Statistics					
Multiple R	.227				
R Square	.184				
Adjusted R Square	.181				
Standard Error	.092				
Observations	254				
ANOVA					
	df	*SS*	*MS*	*F*	*Sig F*
Regression	1	20.688	20.688	242.200	.000[a]
Residual	253	9.567	.085		
Total	254	30.254			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	
Intercept	-3.018	-.108	4.865	.000	
OSCE assessment	-.413	-.027	9.099	.000	

***Source**: Primary data*

Findings in Table 14 show a weak linear relationship (Multiple R = .227) between OSCE assessment and academic performance of nursing students. Going by the adjusted R Square, it is shown that OSCE assessment account for 18.1% change in academic performance of nursing students. These findings were subjected to an ANOVA test, which showed that the significance (Sig F = .000) of the Fishers ratio (F = 242.200) was greater than the critical significance at .05. Hence, the findings were accepted.

4.4.4 OSCE preparation and academic performance

To understand whether nursing schools in Uganda adhered to OSCE preparation, respondents were introduced different items to have their say. Their responses were computed by making an aggregate of responses given by respondents to the 10-items and 5point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Not sure, 4=Agree and 5=Strongly Agree), which sought to measure the adherence of nursing schools in Uganda to OSCE preparationwhich were categorized according to their percentages, means and standard deviation as follows:

Table 12: Descriptive Statistics on OSCE preparation and academic performance

Items	**1**	**2**	**3**	**4**	**5**	**mean**	**Std Deviation**
Eachcandidate is examined on a one-to-one basis with one or two impartial examiner(s)	10.5%	14.4%	30.2%	26.3%	18.4%	3.28	1.331
Each station has a different examiner when undertaking OSCE	7.8%	17.1%	28.9%	27.6%	18.4%	3.33	1.141
Where simulated patients are used, detailed scripts are provided to ensure that the information that they give is the same to all candidates, including the emotions that the patient should use during the consultation.	10.5%	13%	31.5%	22.3%	22.3%	3.42	1.133
Candidates are made to rotate through the stations, completing all the stations on their circuit	13%	15.7%	3.9%	39.4%	19.7%	3.54	1.107
The OSCE is designed to apply clinical and theoretical knowledge	9.2%	10.5%	11.8%	43.4%	25%	3.57	.588
The OSCE is carefully structured to include parts from all elements of the curriculum as well as a wide range of skills	21%	21%	6.5%	38%	13%	3.70	.506

In case when theoretical knowledge is required, for example, answering questions from the examiner at the end of the station, then the questions are standardized and the candidate is only asked questions that are on the mark sheet and if the candidate is asked any others then there will be no marks for them	6.5%	6.5%	7.8%	50%	28.9%	4.01	.483
Each candidate is examined with either real or simulated patients (actors or electronic patient simulators)	3.9%	3.9%	7.8%	52.6%	31.5%	4.12	.464
Stations in OSCEs have a very specific task	2.6%	2.6%	6.5%	53.9%	34.2%	4.14	.433
Instructions are carefully written to ensure that the candidate is given a very specific task to complete	0%	5.2%	16.6%	44%	33.1%	4.22	.476
Candidates get marks for each step on the mark scheme that they perform correctly	2.6%	2.6%	6.5%	53.9%	34.2%	4.49	1.245

The results in table 12 above revealed that the means for most of the items were above 3.5. It was found out that out of the 10-items that were introduced to respondents, 7-items were indicated with a data mean above 3.5 and 3-items had data means below 3.5. Based on the scale of 1-strongly disagree to 5-strongly agree, any data mean of above 3.5 indicates existence of the variables understudy. This thus, statistically means that OSCE preparations were being followed

and adhered too which is important in improving academic performance of nursing students. Among the items that had means above 3.5 included; Candidates get marks for each step on the mark scheme that they perform correctly (4.49);Instructions are carefully written to ensure that the candidate is given a very specific task to complete (4.22); Stations in OSCEs have a very specific task (4.14); Each candidate is examined with either real or simulated patients (actors or electronic patient simulators) (4.12); In case when theoretical knowledge is required, for example, answering questions from the examiner at the end of the station, then the questions are standardized and the candidate is only asked questions that are on the mark sheet and if the candidate is asked any others then there will be no marks for them (4.01); The OSCE is carefully structured to include parts from all elements of the curriculum as well as a wide range of skills (3.70); The OSCE is designed to apply clinical and theoretical knowledge (3.57); Candidates are made to rotate through the stations, completing all the stations on their circuit (3.54). This thus implies that while examining nursing students in Uganda OSCE preparation is well followed by examiners.

On the other hand, some of the responses exposed areas which are doubted of whether they are being followed and this included: Where simulated patients are used, detailed scripts are provided to ensure that the information that they give is the same to all candidates, including the emotions that the patient should use during the consultation. (3.42); each station has a different examiner when undertaking OSCE (3.33); each candidate is examined on a one-to-one basis with one or two impartial examiner(s) (3.28). This thus means that some stations had same examiners and emotions of students are not well prepared to undertake such exams and these are likely to have a hand in the continued failure of nursing students in Uganda.

The findings from the interviewees seemed congruent to what most of the respondents in the questionnaire had indicated. 86% of the interviewees agreed with the view that OSCE preparation are given to nursing students. They opinioned that in an OSCE, clinical skills are tested more than pure theoretical knowledge, they indicated that it is made very essential that students learn correct clinical methods and then practice repeatedly until one perfects the methods whilst simultaneously developing an understanding of the underlying theory behind the methods used. 54% of the key informants further asserted that each candidate is examined with either real or simulated patients (actors or electronic patient simulators). One of the tutors in one nursing school in Mulago was quoted saying:

> *"....in case when theoretical knowledge is required, for example, answering questions from the examiner at the end of the station, then the questions are standardized and the candidate is only asked questions that are on the mark sheet and if the candidate is asked any others then there will be no marks for them…"*

Further confirmation of the adherence to OSCE preparations, one of the key informants said:

> *".....where simulated patients are used, detailed scripts are provided to ensure that the information that they give is the same to all candidates, including the emotions that the patient should use during the consultation…"*

The above views from the key informants creates a belief that OSCE preparations are followed when examining students and this is assumed to have an impact on academic performance of nurses in Uganda. However, according to the documents reviewed-Uganda Nurses and Midwives Examinations Board (2014/2015) indicates that one of the major reasons for failure of nursing students is non adherence to OSCE preparations which many students find hard to follow.

4.4.4.1 Correlation results for OSCE preparation and academic performance

To test if OSCE preparation had a relationship with academic performance of nursing students, a spearman rho correlation coefficient was done by the study and the results are shown in Table 13 below. To verify this hypothesis, a null hypothesis was derived that *"There is a positive relationship between OSCE preparations and academic performance of nursing students."*

Table 13: Correlation results OSCE preparation and academic performance

			OSCE preparation	academic performance
Spearman's rho	OSCE preparation	Correlation Coefficient	1.000	.828**
		Sig. (2-tailed)	.	.008
		N	254	254
	academic performance	Correlation Coefficient	.828**	1.000
		Sig. (2-tailed)	.008	.
		N	254	254

**. Correlation is significant at the 0.01 level (2-tailed).

Findings show that there was a significant positive correlation (rho = .828) between OSCE preparationand academic performance of nursing students. Since the correlation do imply causal-effect as stated in the first objective, the coefficient of determination (rho^2 = .6855), which is a square of the correlation coefficient was computed and expressed as a percentage to determine the change in academic performance of nursing students in Uganda. Thus, findings show that OSCE preparationaccounted for 68.6% change inacademic performance of nursing students. These

findings were subjected to a test of significance (p) and it is shown that the significance of the correlation (p = .008) is less than the recommended critical significance at 0.05. Thus, the effect was significant. Because of this, the hypothesis*"There is a positive relationship between OSCE preparations and academic performance of nursing students."*was accepted.

The implication of these findings is that there exists a positive relationship between OSCE preparations and academic performance of nursing students.The significant positive relationship implied that a change in OSCE preparation contributed to a significant change in academic performance of nursing students. The positive nature of the influence implied that the change in OSCE preparation was in the opposite direction with academic performance of nursing studentswhereby addressing OSCE preparation can contribute to high academic performance of nursing studentsand vice versa.

4.4.4.2 Regression results for OSCE preparation and academic performance

Further analysis was conducted using a regression to determine the extent to which OSCE preparation predict on academic performance of nursing students. Findings are presented in Table 14, accompanied with an analysis and interpretation.

Table 14: Model summary

Regression Statistics					
Multiple R	.817				
R Square	.667				
Adjusted R Square	.664				
Standard Error	.300				

Observations	254				
ANOVA					
	df	*SS*	*MS*	*F*	*Sig F*
Regression	1	20.187	20.187	224.567	.000[a]
Residual	253	10.068	.090		
Total	254	30.254			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	
Intercept	3.194	.100	31.790	.000	
OSCE preparation	.352	.024	14.986	.000	

Findings in Table 8 shows a strong linear relationship (Multiple R = .817) between OSCE preparation and academic performance of nursing students. Going by the adjusted R Square, it is shown that OSCE preparation account for 66.4% change in OSCE preparation and academic performance of nursing students. These findings were subjected to an ANOVA test, which showed that the significance (Sig F = .000) of the Fishers ratio (F = 224.567) was greater than the critical significance at .05. Hence, the findings were accepted.

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter presents the summaries of the findings, discussions of objectives set for the study, conclusions derived from the findings, and the recommendations that will help in improving academic performance of nursing students in Uganda based on the findings of the study. Limitations, contributions of the study and areas of further study are also suggested.

5.2. Summary

5.2.1. OSCE design and academic performance

The study findings revealed that there is a positive relationship between OSCE design and academic performance of nursing students. This hypothesis was tested and accepted. This was because of the favorable results from Pearson correlations which indicated that the Pearson Correlation Coefficient value is 0.669, in respect to the hypothesis and statistically significant at .022 which is less than 0.05 (level of significance). This implied that, there is a statistically positive and significant influence among the means.

5.2.2. OSCE assessment and academic performance

The study findings revealed that there is a positive relationship between OSCE assessment and academic performance of nursing students. This hypothesis was tested and accepted. This was because of the favorable results from Pearson correlations which indicated that the Pearson Correlation Coefficient value is 0.828, in respect to the hypothesis and statistically significant at

.008 which is less than 0.05 (level of significance). This implied that, there is a statistically negative and insignificant relationship among the means.

5.2.3. OSCE preparation and academic performance

The study findings revealed that there is a negative relationship between OSCE preparation and academic performance of nursing students. This hypothesis was tested and rejected. This was because of the unfavorable results from Pearson correlations which indicated that the Pearson Correlation Coefficient value is -0.433, in respect to the hypothesis and statistically insignificant at .052 which is greater than 0.05 (level of significance). This implied that, there is a statistically negative and insignificant influence among the means. This meant that there is a need to ensure that OSCE preparation is followed in nursing schools if the academic performance of nursing students is to improve.

5.3 Discussion of the study findings

The discussion of the study findings has been made as per the study objectives below;

5.3.1. OSCE design and academic performance

The first hypothesis stated, *"There is a positive relationship between OSCE design and academic performance of nursing students."* The inferential statistics indicated that there is a positive relationship between OSCE design and academic performance of nursing students. The study findings were in line with what earlier scholars like Bartfay et al (2004) had indicated that with OSCE design, the academic performance of nurses will always improve. They adds that an OSCE usually comprises a circuit of short (the usual is 5–10 minutes although some use up to 15 minute) stations, in which each candidate is examined on a one-to-one basis with one or two impartial examiner(s) and either real or simulated patients (actors or electronic patient simulators).

Bartfay et al (2004) in further support of the study findings indicated that each station has a different examiner, as opposed to the traditional method of clinical examinations where a candidate would be assigned to an examiner for the entire examination. Bujack et al (1991) argues that candidates rotate through the stations, completing all the stations on their circuit. In this way, all candidates take the same stations. It is considered to be an improvement over traditional examination methods because the stations can be standardized enabling fairer peer comparison and complex procedures can be assessed without endangering patient's health.

Bujack et al (1991)and Major (2005) further concur with study findings that in an OSCE, candidates get marks for each step on the mark scheme that they perform correctly, which therefore makes the assessment of clinical skills more objective, rather than subjective. It is also designed to be *structured* - stations in OSCEs have a very specific task. Where simulated patients are used, detailed scripts are provided to ensure that the information that they give is the same to all candidates, including the emotions that the patient should use during the consultation. Instructions are carefully written to ensure that the candidate is given a very specific task to complete. The OSCE is carefully structured to include parts from all elements of the curriculum as well as a wide range of skills (Khattab and Rawlings, 2001). And lastly it is designed to *a clinical examination* - the OSCE is designed to apply clinical and theoretical knowledge. Where theoretical knowledge is required, for example, answering questions from the examiner at the end of the station, then the questions are standardized and the candidate is only asked questions that are on the mark sheet and if the candidate is asked any others then there will be no marks for them (Hodges, 2003a).

5.3.2. OSCE assessment and academic performance

The second hypothesis stated, *"There is a positive relationship between OSCE assessment and academic performance of nursing students."* The inferential statistics indicated that there is a negative relationship between OSCE assessment and academic performance of nursing students. The study findings were contrary to what earlier scholars had indicated. For instance, Issenberg, et al (2005) indicated that an OSCE assessment to have a positive effect on academic performance, it must be made objective where it has a detailed mark scheme and standard set of questions. They further note that the examiner can often vary the marks depending on how well the candidate performed the step. Humphrey-Murto and MacFadyen (2002) in support of the above findings showed that for performance to improve, at the end of the mark sheet, the examiner often has a small number of marks that they can use to weight the station depending on performance and if a simulated patient is used, then they are often asked to add marks depending on the candidates approach.

Major (2005) further shows that at the end, the examiner is often asked to give a "global score". This is usually used as a subjective score based on the candidates overall performance, not taking into account how many marks the candidate scored. The examiner is usually asked to rate the candidate as pass/borderline/fail or sometimes as excellent/good/pass/borderline/fail. This is then used to determine the individual pass mark for the station. Many centers allocate each station an individual pass mark. The sum of the pass marks of all the stations determines the overall pass mark for the OSCE. Many centers also impose a minimum number of stations required to pass which ensures that a consistently poor performance is not compensated by a good performance on a small number of stations.

Miller (2000) argues that assessment plays a major role in the process of medical education, in the lives of medical students, and in society by certifying competent physicians who can take care of the public. The very foundation of medical curricula is built around assessment milestones for students. For example, in the United States medical students must pass a series of steps towards licensure before graduating from medical school. It is assessment and evaluation that often drives the curricula of medical schools and students measure their progress through the curriculum by the examinations they have passed.

Major (2005) acknowledged the benefits of assessing discrete skills for novices, and introduced workstation activities such as urine testing, injection technique and resuscitation technique, as well as the skills required for safe practice prior to students' first clinical placement, including hand washing, basic life support and safe manual handling (Major 2005). For second year undergraduates, Major (2005) recognizes taxonomies of learning through the use of OSCEs where more complex skills are divided into a series of related steps. Similarly, Friedman Ben-David (2000), who has contributed significantly to developing protocols for OSCE construction, recommends an approach similar to Major (2005) where simulations in assessment should progress from discrete to integrated abilities, as the student progresses through their degree.

5.3.3. OSCE preparation and academic performance

The third hypothesis stated, *"There is a positive relationship between OSCE preparations and academic performance of nursing students."* The inferential statistics indicated that there is a positive relationship between OSCE preparations and academic performance of nursing students. The study findings were in line with what earlier scholars had indicated that preparing for OSCEs is very different from preparing for an examination on theory (Chesser et al 2004; Wilkinson et al

2000). Alinier (2003) congruently with study findings indicated that preparation is vital and increases students' confidence in performing skills during the OSCE and in clinical areas. He adds that formative or mock OSCEs also increase confidence and competence. He further asserts that students preparing for an OSCE should: be psychologically prepared; Be familiar with how equipment works; Know which procedures/guidelines are to be used in the OSCE; Be familiar with checklist/marking criteria; Rehearse skills; Know the timing of the OSCE; Develop skills on clinical placement; Revise the underpinning theory of skills; Use feedback from mock/formative OSCEs; Use available resources such as guided study, quizzes and videos; Check whether they should wear uniforms; Confirm the date, time, venue and allow enough time to get there; Practice answering questions verbally.

Chesser et al (2004) further affirms the study findings that in an OSCE, clinical skills are tested rather than pure theoretical knowledge. It is essential to learn correct clinical methods and then practice repeatedly until one perfects the methods whilst simultaneously developing an understanding of the underlying theory behind the methods used (Salas and Burke, 2002). Marks are awarded for each step in the method; hence, it is essential to dissect the method into its individual steps, learn the steps, and then learn to perform the steps in a sequence. For example, when performing an abdominal examination, a student is instructed to first palpate for the liver, and then to palpate for the spleen.

This seemingly meaningless order becomes relevant when it is considered that those with enlarged livers often also have enlarged (spleens & Willis, 2006). Most universities have clinical skills labs where students have the opportunity to practice clinical skills such as taking blood or mobilizing patients in a safe and controlled environment. It is often very helpful to practice in small groups with colleagues, setting a typical OSCE scenario and timing it with one person role

playing a patient, one person doing the task and if possible, one person either observing and commenting on technique or even role playing the examiner using a sample mark sheet (Chesser et al 2004). Many OSCE textbooks have sample OSCE stations and mark sheets that can be helpful when studying in the manner. In doing this the candidate is able to get a feel of running to time and working under pressure. In many OSCEs the stations are extended using data interpretation. For example, the candidate may have to take a brief history of chest pain and then interpret an electrocardiogram.

Khattab and Rawlings (2001) in support of study findings indicated that applications of OSCEs with its many stations with the focus on specific tasks or skills vary from the single integrated assessment station of an OSCA which provides an holistic patient assessment. They added that the OSCA single station integrates many areas such as communication skills, observation and recording of vital signs, assistance with personal hygiene, movement from bed to chair, observations, and reporting of wound status. Khattab and Rawlings (2001) report using a two-component OSCA for student nurses: one for tasks (skills assessment) and one for questions (knowledge assessment).

5.4 Conclusions

5.4.1 OSCE design and academic performance

The first objective was “To establish the relationship between OSCE design and academic performance of nursing students.” The research question was “What is the relationship between OSCE design and academic performance of nursing students?” The researcher had hypothesized that, “There is a positive relationship between OSCE design and academic performance of nursing students”. The findings of this study showed that there is a positive relationship between OSCE design and academic performance of nursing students. Centered on the empirical results of this

study, it is concluded that OSCE design followed by nursing schools in examinations have improved on academic performance of nursing students in Uganda.

5.4.2 OSCE assessment and academic performance

The second objective was “To establish the relationship between OSCE assessment and academic performance of nursing students.” The research question was “What is the relationship between OSCE assessment and academic performance of nursing students?” The researcher had hypothesized that, “There is a positive relationship between OSCE assessment and academic performance of nursing students”. The findings of this study showed that there is a negative relationship between OSCE assessment and academic performance of nursing students. Centered on the empirical results of this study, it is concluded that OSCE assessment used in assessing nursing students had negatively affected the academic performance of nursing students in Uganda.

5.4.3 OSCE preparation and academic performance

The third objective was “To establish the relationship between OSCE preparation and academic performance of nursing students.” The research question was “What is the relationship between OSCE preparation and academic performance of nursing students?” The researcher had hypothesized that, “There is a positive relationship between OSCE preparation and academic performance of nursing students”. The findings of this study showed that there is a positive relationship between OSCE preparation and academic performance of nursing students. Centered on the empirical results of this study, it is concluded that OSCE preparation followed by nursing schools in examinations have improved on academic performance of nursing students in Uganda.

5.5 Recommendations

In light of the above conclusions, below are the suggested recommendations as each study objective;

- In OSCE single station, integrate many skills areas such as communication, observation and recording of vital signs, assistance with personal hygiene to improve competence of nursing students and this will at the end improve the academic performance.
- Provide detailed scripts in case of using patients to learn to ensure that the information that they give is the same to all candidates, including the emotions that the patient should use during the consultation
- The assessor should be totally familiar with and have a good understanding of the marking criteria and guidelines. It is useful for first-time assessors to observe some OSCEs to gain insight into the process.
- Expand clinical skills labs where students can have the opportunity to practice clinical skills such as taking blood or mobilizing patients in a safe and controlled environment

5.6 Limitations of the study

The study registered a number of limitations and these majorly included;

- Some respondents deliberately failed to answer the questionnaire. This gave the researcher hard time but she had to resource and replaced such people with the same people in the target population.
- Secondly, some respondents wrongly filled the questionnaires. This came as a result of time constraints as some of them rushed to answer the question and attend to their work.

But the researcher managed to recover most of the questionnaires well filled. Those which were wrongly filled were ignored.

- Time was one of the study's major constraints as the researcher couldn't meet some people as expected since they had travelled abroad. Since the study had a specified time, the researcher replaced such people with their personal assistants.
- In spite of all these challenges however, the researcher did everything he could to undertake it successfully

5.7 Areas recommended for further study

Wholesomely the study tried to meet and achieve the set objectives as shown in the write-up, however, in the process the researcher has observed certain areas that require further researcher. These include:

- The study was limited to two variables; OSCE implementation and academic performance. There is therefore a need for further study to take into consideration of considering more than one variable that may be affecting academic performance of nursing students because it may not only be OSCE but also others
- This study was limited to some few nursing schools in Uganda. This makes the study limited to those few nursing schools in Uganda. There is a need also for a further study to be replicated in other nursing schools in Uganda to ascertain the similarity and differences in the findings.

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APPENDIX I:

QUESTIONNAIRE FOR NURSING STUDENTS IN NURSING SCHOOLS

INTRODUCTION

Dear Respondent,

The researcher is a student of Master of Institutional Management and Leadership (MIML) at Uganda Management Institute (UMI), Kampala, Uganda. He is undertaking a research to generate data and information on *"Objective Structured Clinical Examination (OSCE) and Academic Performance of Nursing Student in Uganda"*. You have been selected to participate in this study because of the status you have in the school that is central to the kind of information required. The information you provide is solely for academic purposes and will be treated with utmost confidentiality. Kindly spare some of your valuable time to answer these questions by giving your views where necessary or ticking one of the alternatives given. Indeed your name may not be required. Thank you for your time and cooperation.

SECTION A: BACKGROUND DATA

Please circle the numbers representing the most appropriate responses for you in respect of the following items:

1. Your gender a) Male b) Female

2. What is your age group?

a) Below 18 b) 18-22 c) 22-26, d) 26-30, d) 30 and above

3) State your type of education you are on in this nursing school

a) Certificate b) Diploma c) Bachelors

SECTION B: INDEPENDENT VARIABLE – OSCE IMPLEMENTATION

i) OSCE design

In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree

No	Statement	1	2	3	4	5
1	Each candidate is examined on a one-to-one basis with one or two impartial examiner(s)					
2	Each candidate is examined with either real or simulated patients (actors or electronic patient simulators)					
3	Each station has a different examiner when undertaking OSCE					
4	Candidates are made to rotate through the stations, completing all the stations on their circuit					
5	The OSCE is designed to apply clinical and theoretical knowledge					
6	The OSCE is carefully structured to include parts from all elements of the curriculum as well as a wide range of skills					
7	Instructions are carefully written to ensure that the candidate is given a very specific task to complete					

No	Statement	1	2	3	4	5
8	Candidates get marks for each step on the mark scheme that they perform correctly					
9	Stations in OSCEs have a very specific task					
	In case when theoretical knowledge is required, for example, answering questions from the examiner at the end of the station, then the questions are standardized and the candidate is only asked questions that are on the mark sheet and if the candidate is asked any others then there will be no marks for them					
10	Where simulated patients are used, detailed scripts are provided to ensure that the information that they give is the same to all candidates, including the emotions that the patient should use during the consultation.					

ii) OSCE assessment

In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree

No.	Statement	1	2	3	4	5
1	Marking in OSCEs is done by the examiner					

No.	Statement	1	2	3	4	5
2	All candidates are assessed using exactly the same stations (although if real patients are used, their signs may vary slightly) with the same marking scheme					
3	Standardized mark sheet are used in assessing students					
4	prescription charts are used which are marked like written examinations					
5	A detailed mark scheme is used when assessing students					
6	Standard set of questions are used when assessing students					
7	The examiner can often vary the marks depending on how well the candidate performed the step					
8	At the end of the mark sheet, the examiner often has a small number of marks that they can use to weight the station depending on performance					
9	If a simulated patient is used, then they are often asked to add marks depending on the candidates approach					
10	At the end, the examiner is often asked to give a "global score".					

No.	Statement	1	2	3	4	5
11	Both knowledge and skill assessment is done when undertaking OSCE					
12	The examiner is usually asked to rate the candidate as pass/borderline/fail or sometimes as excellent/good/pass/borderline/fail.					

iii) OSCE preparation

In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree

No.	Statement	1	2	3	4	5
1	In OSCE, Clinical skills are tested rather than pure theoretical knowledge					
2	Marks are awarded for each step in the method					
3	When performing an abdominal examination, a student is instructed to first palpate for the liver, and then to palpate for the spleen					
4	We have clinical skills labs where students have the opportunity to practice clinical skills such as taking blood or mobilizing patients in a safe and controlled environment					

No.	Statement	1	2	3	4	5
5	Many OSCE textbooks have sample OSCE stations and mark sheets that can be helpful when studying in the manner					
6	OSCEs the stations are extended using data interpretation (i.e the candidate may have to take a brief history of chest pain and then interpret an electrocardiogram)					
7	The OSCA single station integrates many areas such as communication skills, observation and recording of vital signs, assistance with personal hygiene, movement from bed to chair, observations, and reporting of wound status					
8	OSCE is able to take account of interacting contextual factors that are common in the clinical environment					

SECTION C: DEPENDENT VARIABLE – ACADEMIC PERFORMANCE OF NURSING STUDENTS

In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree

No.	Statement	1	2	3	4	5
1	Most students in this nursing school passed at a distinction level					
2	Most students in this nursing school passed at a credit level					
3	Most students in this nursing school obtained a pass					
4	Most students in this nursing school were ungraded					
5	A big number of students have mastered the curriculum					
6	Most students pass out with the required clinical skills					
7	Most students pass out with the required clinical knowledge					
8	Our nursing school had the best student in the region					

THANK YOU FOR YOUR PARTICIPATION!

APPENDIX II:

INTERVIEW SCHEDULE FOR LECTURERS IN NURSING SCHOOLS

1. Are you ensuring the implementation of OSCE in this region?
2. If yes, is the design of OSCE followed when implementing OSCE?
3. If yes, what is consisted in OSCE design?
4. Has OSCE design improved on the academic performance of nursing students? Give reasons
5. How is OSCE assessment done?
6. Has OSCE assessment improved on the academic performance of nursing students? Give reasons
7. Do you ensure preparation of OSCE?
8. What do you follow in preparing for OSCE?
9. Has OSCE preparation improved on the academic performance of nursing students? Give reasons

.....……

…….

THANK YOU SO MUCH!

APPENDIX III:

TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION

N	***S***	***N***	***S***	***N***	***S***
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Source: Krejcie& Morgan (1970, as cited by Amin, 2005)

Note.—*N* is population size.

S is sample size